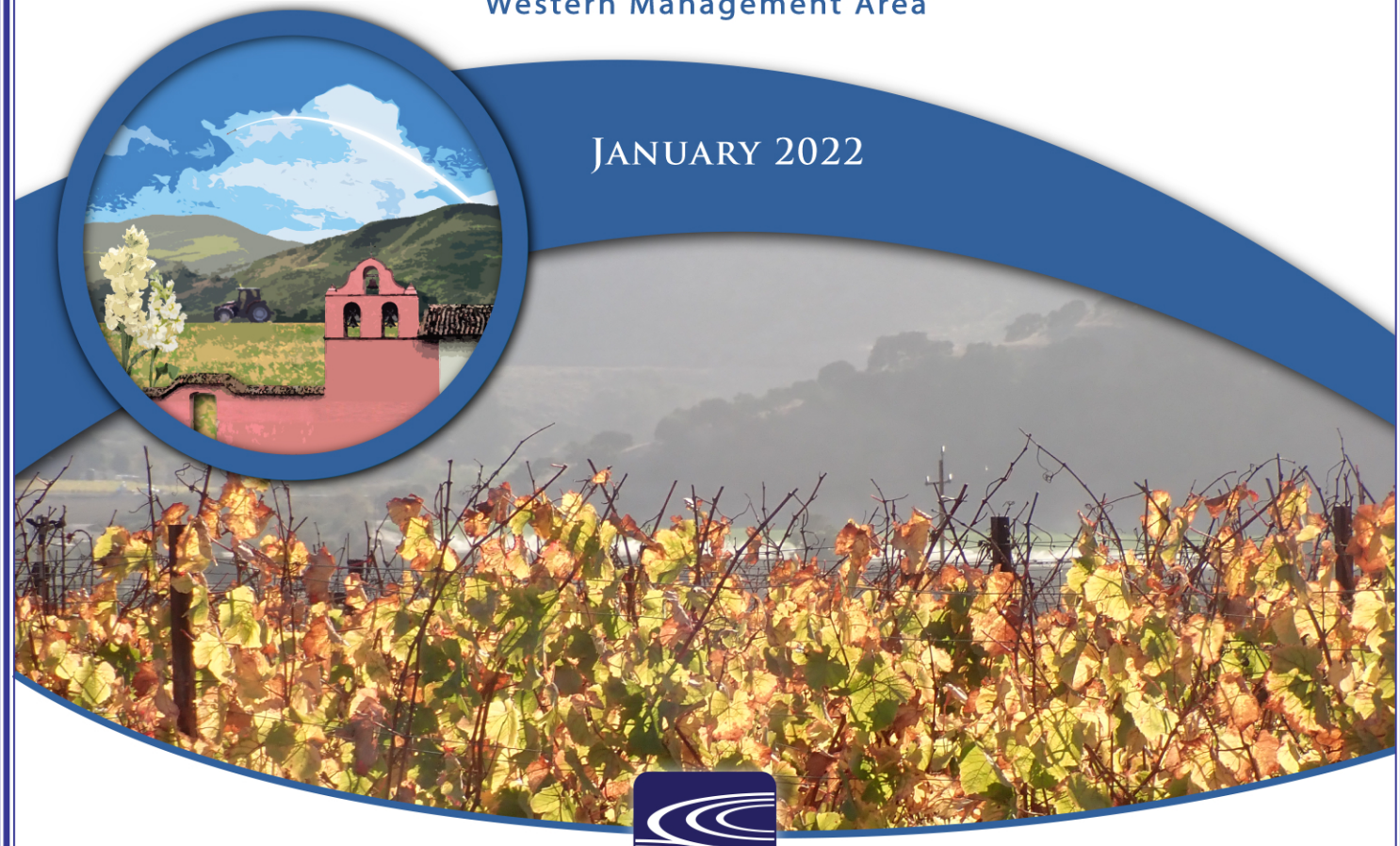
Groundwater Sustainability Plan
for the
Santa Ynez River Valley Groundwater Basin
Bulletin 118 Basin No. 3-15
Western Management Area
Groundwater Sustainability Agency

WMA
Western Management Area



January 2022

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EXECUTIVE SUMMARY

ES Abstract

This Groundwater Sustainability Plan (GSP) is prepared in accordance with the 2014 Sustainable Groundwater Management Act (SGMA) and covers the Western Management Area (WMA) of the Santa Ynez River Valley Groundwater Basin (Basin or SYRVGB) located in coastal central California. There are two principal aquifers within the WMA: an Upper Aquifer, consisting of younger alluvial sediments that are primarily associated with river and surface water geomorphic processes, and a Lower Aquifer, which is more extensive throughout the Basin and consists of older geologic depositions. Marginal geologic formations containing perched water-bearing soils are also identified within the Basin but are not principal aquifers managed under SGMA. The Santa Ynez River is the primary surface water source within the Basin. The underflow of the Santa Ynez River is considered part of the river flow and is managed as surface water pursuant to the administrative authority and jurisdiction of the State Water Resources Control Board (SWRCB) over waters flowing in known and definite channels. The analyses conducted for this GSP indicate that current Basin conditions are sustainable with no current undesirable results (defined as significant and unreasonable impacts to sustainability indicators). Potential undesirable results in the future have been identified and specific minimum thresholds have been developed to help ensure that undesirable results do not occur under future conditions. Potential project operations and management actions designed to maintain and improve groundwater conditions and sustainability have been identified and are described within this GSP.

ES Chapter 1: Introduction

ES Introduction, Administrative Information, and Notes and Communication (GSP Sections 1a, 1b, 1c)

SGMA requires that the Basin develop one or more GSPs that outline how the Basin will achieve groundwater sustainability by 2042. Physical and political complexities within the Basin resulted in decisions by local public agencies to develop three GSPs under a coordination agreement to satisfy SGMA requirements for the entire Basin. The Western, Central, and Eastern Management Areas (WMA, CMA,

and EMA) make up the Basin. This GSP has been prepared to address the SGMA requirements for the WMA portion of the Basin.

The primary sustainability goal and purpose of these GSPs are to manage groundwater resources in the WMA, CMA, and EMA without causing undesirable results and facilitate long-term beneficial uses of groundwater within the Basin. Beneficial uses of groundwater in the Basin include municipal, domestic, and agricultural uses, in addition to riparian habitat that supports environmental ecosystems.

In 2016 and 2017, five local Groundwater Sustainability Agencies (GSA) were established for the Basin. Five GSA eligible public entities ratified an agreement and formed the WMA GSA, with each of the public entities having a seat on the WMA GSA Committee. Four of the five member agencies, the City of Lompoc, Vandenberg Village Community Services District, Mission Hills Community Services District, and the Santa Ynez River Water Conservation District all have voting seats on the Committee, whereas the Santa Barbara County Water Agency has a non-voting seat.

During the development of this GSP the WMA GSA Committee met regularly on SGMA matters. The GSA developed an Outreach and Engagement Plan to facilitate engagement with stakeholders. A volunteer public Citizens Advisory Group (CAG) was created, with members representing a group of groundwater users to help solicit public feedback on GSP elements. Newsletters and press releases about the GSA and SGMA were created and distributed through numerous channels, including utility bills. All three management areas used a centralized website to aid with communications, tracking meetings, and receiving public comments.

ES Plan Area (GSP Section 1d)

The Basin is a coastal groundwater basin measuring approximately 317 square miles, located in Santa Barbara County, California. Each of the three management areas of the Basin is covered by a GSP; this GSP is for the WMA, which is approximately 133.7 square miles. The WMA itself is divided into six subareas based on hydrogeology and topography: the Lompoc Plain, Lompoc Terrace, Lompoc Upland, Santa Rita Upland, Santa Ynez River Alluvium, and the Burton Mesa. The Lompoc Plain, Lompoc Upland, and Santa Rita Upland form the majority of the total extent of the WMA. The Lompoc Terrace and Burton Mesa are almost entirely within the federal Vandenberg Space Force Base (VSFB; formerly Vandenberg Air Force

Base) boundary and are mostly perched aquifers. These two subareas have generally been excluded from past water resources studies of the Basin. The Santa Ynez River Alluvium is the underflow of the Santa Ynez River in that area is not groundwater as defined by SGMA and thus is not be managed by the WMA GSA, because such underflow constitutes subterranean water flowing in known and definite channels that is treated as surface water and subject to the jurisdiction and management of the SWRCB.

Approximately 44% of the WMA is part of VSFB. The California Department of Parks and Recreation manages the La Purísima Mission State Historic Park, and the California Department of Fish and Wildlife manages the Burton Mesa Ecological Reserve as well as the offshore Vandenberg State Marine Reserve. Other public lands within the WMA include the Lompoc Federal Correctional Complex, local cities, school districts, and other district properties.

The public water agencies that formed the WMA GSA are the City of Lompoc, Vandenberg Village CSD, and Mission Hills CSD. Other water agencies in the WMA include American Water (supplies VSFB) and the small Mutual Water Companies (MWC) of Santa Rita, Tularosa, and Vista Hills. The Central Coast Water Authority (CCWA), a wholesale water agency, operates a water pipeline that passes through the WMA and conveys imported water from the State Water Project to the VSFB within the WMA and other agencies upstream of the WMA. Most people living in the WMA live near or within the City of Lompoc and adjacent communities of Vandenberg Village, or Mission Hills.

Three general plan areas, or equivalent areas, outlining land use in the WMA. The entire WMA is within the general plan area of the County of Santa Barbara. The City of Lompoc has a general plan for use within its jurisdiction, and the California Coastal Zone has a local coastal program under the California Coastal Commission. Additionally, the federal VSFB has its own plan governing land uses.

ES Additional GSP Elements (GSP Section 1e)

A data management system was implemented for this GSP in accordance with the SMGA. As part of its communications and public outreach, the WMA GSA prepared and distributed the Data Management Plan, a whitepaper describing the planned data management system (DMS). The DMS was then implemented.

ES Chapter 2: Basin Setting

ES Hydrogeologic Conceptual Model (GSP Section 2a)

A hydrogeologic conceptual model was developed and used to identify existing and projected groundwater conditions for the Basin. The hydrogeologic conceptual model presents the various conceptual components of the WMA's groundwater system, including the geologic setting; aquifer extents; physical properties, including water imports; and land use.

The geologic setting is related to the northward movement of the Pacific Plate relative to the North America Plate. Groundwater is found in younger geologic formations that have been uplifted and deformed into a large syncline fold. The Santa Ynez River has cut through and filled in the existing geology. The estuary and the Santa Ynez River Alluvium subarea are where the Santa Ynez River has cut into underlying non-water bearing units, causing a 'bedrock channel' that limits groundwater flow. The definable bottom and lateral extents of the Basin were determined using the three-dimensional geologic model included in the hydrogeologic conceptual model. For groundwater management purposes, two principal aquifers were defined based on the Lompoc Plain location: the Upper Aquifer, which consists of alluvial sediments, and the Lower Aquifer, which consists of the water-bearing Careaga Sand and Paso Robles Formation. The Orcutt Sand geologic unit is extensive over the Burton Mesa and most of the Lompoc Terrace, but water is perched, disconnected, and generally not used. The Santa Ynez River Alluvium subarea consists of alluvial formations in a bedrock channel that convey the Santa Ynez River and the underflow of the river. Accordingly, the Santa Ynez River and its underflow are managed by the SWRCB.

The topography of the WMA is varied, relatively flat in the Lompoc Plain, with hilly in the Lompoc Upland and Santa Rita Upland along the northern boundary. Rainfall is highly influenced by local topography. However, local slope and soil types influence runoff and the amount of potential recharge to the aquifers in any particular location.

Since 1997, the CCWA has delivered State Water Project water to the Basin though the 130 mile long Coastal Branch Pipeline that enters the Basin at Vandenberg Space Force Base and terminates at Lake Cachuma. State Project Water deliveries from the pipeline are received by the Vandenberg Space Force

Base in the WMA. Other water from this pipeline is delivered to City of Buellton, ID No.1, City of Solvang, and Lake Cachuma, east and upstream of the WMA. The Tecolote Tunnel conveys water from Lake Cachuma to Santa Barbara County south coast including the cities of Santa Barbara, Goleta, Montecito, and Carpinteria. The Tecolote Tunnel was completed in 1955 and is the newest of three tunnels used for exporting Santa Ynez River water to the south coast of Santa Barbara County.

Groundwater within the WMA is primarily used for agriculture, which represents the largest proportion of land and water use within the Basin. Other uses of groundwater in the basin include municipal and light industrial, small domestic uses, and environmental uses, such as groundwater dependent ecosystems.

ES Groundwater Conditions (GSP Section 2b)

This GSP describes historical, existing, and projected groundwater conditions with regard to each of the six SGMA sustainability indicators including the chronic lowering of groundwater levels, significant and unreasonable reduction of groundwater in storage, significant and unreasonable seawater intrusion, degraded water quality, land subsidence, and depletion of interconnected surface water).

Groundwater elevation data was collected from wells throughout the WMA, in both the seasonal high (spring) and seasonal low (fall) conditions, for both the Upper Aquifer and the Lower Aquifer. Two sets of groundwater level contours were developed by interpolating between monitoring wells. Groundwater elevations in wells representing the Lower Aquifer were generally found to be higher than in the Upper Aquifer, which is similar to the results of past studies. Additionally, fall water levels were lower than spring levels, with the greatest difference being within the larger agriculturally developed portions of the WMA. In addition to preparing groundwater level contours, groundwater levels were plotted over time (hydrographs) to show the groundwater level trends at specific locations within the WMA.

Groundwater storage over time was compared against the year type and groundwater pumping: year type was found to be a primary influence on groundwater storage. To support this analysis, a quantitate method using flow at the Salsipuedes Creek measured by the U.S. Geologic Survey (USGS) streamflow gage is described which identify the qualitative “dry” and “wet” years.

Location of known potential groundwater contamination sites were identified. The responsibility of remediating groundwater is not under the jurisdiction of the GSA but lies with other state and local

agencies. Assessments to beneficial users in the basin and an assessment of recent (2015-2018) groundwater quality data were made for six constituents identified by the SWRCB. The goal of the GSP is to ensure than groundwater quality is not further degraded by groundwater pumping managed under this GSP.

Because the WMA is a coastal basin, seawater intrusion was considered a potential concern. There are several miles between the coast and beneficial uses inland of VSFB. On an annual basis, there are both surface and groundwater flows through the aquifer to the ocean. Long-term monitoring at two wells shows that conditions for chloride, sodium, and salinity are relatively constant over multiple decades.

Land subsidence was determined to be unlikely due to the geologic setting of the WMA. Recent remote sensing data provided by Department of Water Resources (DWR) from 2015 – present show very little change in land surface elevation. Additionally, historical infrastructure records do not indicate land subsidence.

An evaluation of interconnected surface water for the tributaries as a result of groundwater management actions was determined to be unlikely, given that there is little perennial surface water in the Basin and the depth to groundwater is below the channel thalweg even during wet periods. In the Lompoc Plain, the Upper Aquifer is seasonally hydraulically connected to the Santa Ynez River, and the Santa Ynez River in this reach has been identified as interconnected surface water. The surface water leaving the WMA (entering the Pacific Ocean) is a data gap that will be addressed with installation of a gage near the estuary. In connection with this data gap of surface water outflow, the quantity and timing of flow from the Upper Aquifer to the streamflow is also currently a data gap. However, the surface water of the Santa Ynez River within the WMA is still primarily influenced by releases from Cachuma Reservoir and by diversions via shallow wells in the alluvial underflow deposits upstream of the Lompoc Narrows, both of which are administered by the SWRCB.

Groundwater Dependent Ecosystems (GDEs) in the WMA were assessed using an assumed rooting depth and the current depth to groundwater. A map of the GDEs in the WMA was developed. Potential GDEs along the WMA upland tributaries were greater than 30 feet above the groundwater table and were screened out of consideration for future groundwater management. Potential GDEs along the Santa Ynez River are not considered vulnerable due to historically stable water levels, based on a review of previous

studies done in the area. The stability may in part be due to the management of the Santa Ynez River under SWRCB Order 2019-148.

ES Water Budget (GSP Section 2c)

Water budgets are calculations of the flows of water in and out of the various components of the Basin's surface water and groundwater systems. The various components of the water budget are introduced in the hydrogeologic conceptual model. Three water budget periods were created: historical, current, and projected. Water flows in any particular year are highly dependent on the weather, and to a lesser extent, the antecedent conditions. The selection of hydrologic years for each of the three budget periods was coordinated with the other two management areas (CMA and EMA).

The period of 1982 through 2018 was selected as the historical period. Stream flow along Salsipuedes Creek were used as a proxy for water supply conditions in the Basin. Flows during this historical period are similar to the long-term monitoring at the same gage, indicating that the years are likely representative of the long-term period. The years from 2012 to 2018 were all relatively dry years, so the current period was started in 2011. To meet the 50-year planning horizon required by SGMA, the projected period is 2018 through 2072.

The length of the historical water budget in this GSP is 36 years, which exceeds the 10-year SGMA requirement. For surface water, the average inflows were 116,290 acre-feet per year (AFY) and ranged from 5,870 to 827,250 AFY, with most of this variability influenced by the Santa Ynez River flows. Surface water outflows were on average 39,630 AFY and ranged from 12,660 to 158,810 AFY. Groundwater is less variable, with inflows ranging between 14,420 to 54,610 AFY, and an average inflow of 31,000 AFY. The two primary drivers of variability in groundwater were percolation from surface water and recharge from precipitation. Groundwater outflows ranged from 24,610 to 39,720 AFY, with an average of 32,000 AFY. Agricultural pumping was the largest influence on groundwater flow and had the greatest variation over the historical period. The total groundwater pumping during the historical period averaged 27,300 AFY. The current estimate of the sustainable yield, defined by SGMA as the maximum quantity of water that can be withdrawn annually without causing undesirable results, is currently estimated to be 26,400 AFY for the WMA based on the historical water budget.

For the current period (2011 through 2018), surface water average inflows were 37,890 AFY and ranged from 9,520 to 168,190 AFY, with most of this variability influenced by the Santa Ynez River flows. Surface water outflows were on average 39,630 AFY and ranged from 12,660 to 158,810 AFY. Groundwater is less variable for the current period, with inflows ranging between 16,420 and 42,050 AFY, and an average inflow of 31,030 AFY. For groundwater, the two primary drivers of variability were percolation from surface water and recharge from precipitation. Groundwater outflows ranged from 27,880 to 37,580 AFY, with an average of 32,240 AFY. Agricultural pumping was the largest influence on groundwater flow and had the greatest variation over this current period.

The projected period water budget estimates population increases, projected precipitation, and climate change factors. The City of Lompoc's 2020 Urban Water Management Plan projects water demand to increase by 30% in the 20-year planning period. Population growth and water demands in the remaining area of the WMA was estimated to follow recent trends with a 5% increase currently expected over the 20-year planning period (by 2042), and a 10% increase over the 50-year planning period (by 2072). Groundwater demand is expected to increase from 26,150 AFY in 2018 to 28,157 AFY in 2042 and 29,266 AFY in 2072. Projected water availability is expected to be relatively to the increase in demand which is projected to result in a loss of groundwater storage of up to 3,000 AFY, unless projects and management actions are undertaken to maintain sustainability.

ES Chapter 3: Monitoring Network and Sustainable Management Criteria

ES Monitoring Networks (GSP Section 3a)

The Monitoring Networks section of the GSP summarizes the parameters that were monitored in the Basin and identifies representative sites for monitoring for each of the six SGMA sustainability indicators.

Federal, state, and local monitoring networks are responsible for groundwater monitoring in the WMA, are described in this GSP. Prior to 2019, the U.S. Geological Survey conducted groundwater level monitoring in the WMA and the entire Basin. Starting in 2019 the groundwater level monitoring was taken over by the Santa Barbara County Water Agency. Local agencies, including the City of Lompoc and Vandenberg Village CSD, also collect groundwater level information. Estimates for groundwater storage rely on using the same network data.

Groundwater quality is currently monitored by three programs in the WMA:

- The U.S. Geological Survey-directed monitoring program;
- Public water system monitoring of drinking water sources by water suppliers as reported to Safe Drinking Water Information System (including City of Lompoc, Vandenberg Village CSD, Mission Hills CSD); and
- Monitoring by commercial agriculture as part of the Irrigated Lands Regulatory Program

Seawater intrusion is monitored in wells based on water quality sampling.

Land subsidence is monitored using monthly remote sensing satellite data, which covers the entire WMA. Additionally, there is a continuous GPS (CGPS) station in the WMA, and the Central Coast Water Authority, which operates the State Water Project pipeline, has remote access to operators that can be contacted in the event of subsidence. The remote sensing tracks elevation change, while CGPS tracks elevation and horizontal movement. If a decline in land surface elevation is observed, a follow-up analysis would need to be conducted to determine whether the cause was subsidence from groundwater depletion.

Finally, a U.S. Geological Survey stream gage (USGS ID 11133000) measure and records surface water inflow from the Santa Ynez River into the WMA. The surface water outflow from the WMA is currently a data gap which will be addressed with installation of a new gage near the estuary. Monitoring of potential surface water depletion is performed by collecting groundwater levels near the Santa Ynez River in addition to the monitoring of groundwater levels throughout the Upper Aquifer.

These existing monitoring networks were reviewed, and wells were selected from each based upon representativeness. Additionally, several areas were identified as locations where the network could be improved.

ES Sustainable Management Criteria (GSP Section 3b)

This section identifies the sustainability goal of the Basin, conditions of undesirable results for each of the six SGMA sustainability indicators, minimum thresholds at the representative sites, and measurable objectives. These criteria are described below and summarized in **Table ES-1**.

Sustainability goals were identified as follows:

- Maintain long-term groundwater elevation at levels adequate to support existing and anticipated beneficial uses.
- Maintain a sufficient volume of groundwater in storage to ensure groundwater availability during periods of drought and recovery during wet climate conditions.
- Maintain water quality conditions to support ongoing beneficial use of groundwater for agricultural, municipal, domestic, and industrial and environmental interests.

For each of the six SGMA sustainability indicators, the potential undesirable result is identified and quantified based on the identification criteria, and the potential effects on beneficial users are described.

Table ES-1
Sustainable Management Criteria Indicator Summary for the WMA

Sustainability Indicator	Minimum Threshold	Measurement	Measurable Objective	Undesirable Result
Chronic lowering of groundwater levels	Water level minimum thresholds for Representative Monitoring Wells (RMWs) screened in the Upper Aquifer established 10 feet below the 2020 levels. Water level minimum thresholds for RMWs screened in the Lower Aquifer established 20 feet or more below 2020 levels.	Groundwater elevations measured at 13 RMWs screened in the Upper Aquifer, and 13 RMWs screened in the Lower Aquifer.	Spring 2011 groundwater elevations.	Spring groundwater elevations that drop below the established groundwater elevation minimum thresholds in more than 50% of the RMWs for 2 consecutive years.
Reduction of groundwater in storage	Water level minimum thresholds for RMWs screened in the Upper Aquifer established 10 feet below the 2020 levels. Water level minimum thresholds for RMWs screened in the Lower Aquifer established 20 feet or more below 2020 levels	Groundwater elevations are used a proxy for the total volume of groundwater in storage. Groundwater elevations will be measured at 13 RMWs screened in the Upper Aquifer and 13 RMWs screened in the Lower Aquifer	Spring 2011 groundwater elevations.	Spring groundwater elevations that drop below the established groundwater elevation minimum thresholds in more than 50% of the RMWs for 2 consecutive years.
Seawater Intrusion	500 mg/L isocontour migrates east of the 2015 extent, out of the Vandenberg Space Force Base and into the WMA's jurisdictional boundary.	Chloride concentration isocontour maps and time-series of chloride concentrations measured at 17N/35W-17M1 and 7N/35W-21G2	The current extent of the 500 mg/L chloride isocontour.	The landward migration of the 500 mg/L chloride isocontour east of the Vandenberg Space Force Base jurisdictional boundary and corresponding increasing chloride concentration trends measured at 7N/35W-17K20 and 7N/35W-21G2.
Degraded Water Quality	For all constituents except Nitrate, minimum threshold concentrations were established near the historical high constituent concentrations based on individual time-series of concentration graphs and to ensure that the average minimum threshold concentrations do not exceed the RWQCB's established Water Quality Objectives by RWQCB. Nitrate minimum threshold concentration established at the drinking water Maximum Contaminate Level (MCL)	Salt and nutrient concentrations measured at 16 RMWs	The minimum of the secondary maximum contaminant levels (where applicable) and the 2015 groundwater concentration.	Minimum threshold exceedances for each constituent in more than 50% of the RWMs for 2 consecutive years.
Subsidence	A decline of six inches from 2015 land surface elevation resulting from groundwater extractions.	Review of publicly available land subsidence satellite data and continuous GPS data.	Land subsidence less than two inches compared to the 2015 InSAR data.	Land subsidence associated with groundwater production that exceeds half a foot from 2015 conditions.
Depletion of interconnected surface water	Groundwater Elevations in the Upper Aquifer and near the Santa Ynez River that drop 10 feet or more below 2020 groundwater elevation.	Groundwater elevations measured at three RMWs: 7N/34W-35K9, 7N/34W-29F2, and 7N/35W-21G2.	Groundwater elevations at 7N/35W-21G02, 7N/34W-29F02, and 7N/34W-35K09 equal to five feet below the elevation of the Santa Ynez River channel bottom.	Groundwater elevations in the Upper Aquifer that drop 10 feet or more below 2020 groundwater elevations in 2 of the 3 surface water depletion RMWs for 2 consecutive years. Key undesirable result is more surface water depletion due to groundwater extraction than prior to 2015.

RMW = Representative monitoring wells; RWQCB = Regional Water Quality Control Board; MCL =maximum contaminate level; SMCL = secondary maximum contaminate level; TDS = total dissolved solids; GPS = Global Positioning System; InSAR = Interferometric synthetic aperture radar; mg/L = milligrams per liter

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The potential undesirable result from chronic lowering of groundwater levels is less water available for beneficial users using existing infrastructure. This impairment would require more energy to pump water and potential replacement of wells to access water. This undesirable result could occur if groundwater extractions exceed the sustainable yield over a period of years. Evaluation of this potential undesirable result will be based on direct measurements of groundwater levels.

Groundwater storage is the volume of water that is stored in an aquifer. The potential undesirable result of a decline in groundwater storage is less water available for beneficial users, meaning that the water is physically not present to be extracted. As with groundwater levels, groundwater storage is related to pumping and other outflows exceeding the amount of water inflows into the groundwater basin over a period of years. Groundwater storage will be estimated using the groundwater elevation data to assess the volume of water involved.

The potential undesirable result from seawater intrusion is high salinity and other dissolved analytes that would make groundwater unusable for beneficial users. Seawater intrusion is quantified based on the chloride concentrations in wells and will be assessed using periodic sampling and measurements of water chemistry at indicator wells.

Potential undesirable result from degradation of water quality in the aquifer is impaired beneficial uses of the groundwater. To assess water quality, specific salts and nutrients are chosen for analysis. Specifically, concentrations of total dissolved solids, chloride, sulfate, boron, sodium, and nitrate.

Potential undesirable results due to land subsidence may include damage to surface infrastructure and collapsed pore space in the aquifers. Land surface elevation changes are quantified by a remote sensing (satellite) system that uses interference patterns between radar returns to accurately calculate changes in elevation over a wide region.

The potential undesirable results related to depletions in interconnected surface water and groundwater dependent ecosystems occur when impacts are greater than impacts due to groundwater extraction prior to 2015. The Santa Ynez River and River alluvium are under the jurisdiction of the SWRCB. The SWRCB retains administrative authority over the surface flow and underflow of the Santa Ynez River, including wells that divert the underflow upstream of the Lompoc Narrows. Depletions in interconnected surface

water are evaluated by assessing water levels in potential GDE areas along the Santa Ynez River and in the broader monitoring network of water levels in the Upper Aquifer.

With each of the six potential undesirable results described above, specific minimum thresholds were determined to protect against the potential undesirable results. For groundwater levels, thresholds were based on where well screen elevations, sea level, and historical groundwater levels. For groundwater storage, minimum thresholds are based on the number of wells that met the groundwater level criteria. For seawater intrusion, thresholds were based on a chloride iso-contour protective of beneficial users. Minimum thresholds for water quality are based on Water Quality Objectives from the SWRCB. The land subsidence minimum threshold six inches or less relative to the 2015 elevations. Minimum thresholds for interconnected surface water will be monitored by measured water level elevations in nearby wells at or above historical low water levels.

Quantifiable goals for the maintenance or improvement of the Basin were identified as the measurable objectives. Groundwater elevations pre-drought conditions (i.e., Spring 2011) were identified as the measurable objective for groundwater levels and storage. Maintaining the current location of the chloride iso-contour near the Santa Ynez River estuary was established as the seawater intrusion measurable objective. No decline in water quality relative to 2015 was set for water quality. Less than two inches of land subsidence since 2015 was set for land subsidence. Finally, to protect surface water, nearby groundwater levels no lower than 5 feet below the local river channel bottom was set as the measurable objective.

Impacts of setting these management criteria on neighboring groundwater basins are expected to be minimal because the WMA is minimally connected to neighboring groundwater basins.

ES Chapter 4: Projects and Management Actions (GSP Section 4)

Projects and Management actions (PMAs) will be implemented to maintain groundwater sustainability in the WMA. The PMAs are categorized into four groups based on when each PMA would be implemented. Group 1 PMAs would be initiated within the first year after GSP submittal. Group 1 Management Actions such as water conservation, pumping fees and the installation of well meters are anticipated to close any potential shortfalls in maintaining the sustainable yield identified in the water budget and maintain sustainability goals. Additional Group 1 PMAs will increase water supplies further such as increased recharge through stormwater capture and recycled water projects.

If Group 1 PMAs fail to have the expected results, then further actions through the implementation of other PMA groups 2, 3, and 4 will be required. PMAs in Group 2 and 3 will be implemented when the early warning and Minimum Threshold triggers for the sustainability indicators are reached.

The WMA GSA is taking an adaptive management approach to WMA management over the planning horizon. Consequently, potential projects and management actions will continuously be considered and evaluated over the planning horizon to ensure that the most beneficial and economically feasible projects and management actions are implemented to achieve the sustainability goal in the WMA and Basin. Proposed projects and management actions may be modified, as necessary, if the intended project benefits are not realized in the intended timeframe.

ES Chapter 5: Plan Implementation (GSP Section 5)

This chapter describes actions to implement this GSP. Five implementation categories are described.

Implementation Group 1 is completion of work started during the drafting of this GSP. This is completion of data collection and survey work that commenced during the development of this GSP. This includes surveying all representative wells in the representative monitoring network. Additionally, data collected during the SkyTEM Airborne Geophysics aerial electromagnetic survey will be evaluated and used to update of the existing geologic model, hydrogeologic conceptual model, and numeric groundwater model.

Implementation Group 2 resolves data gaps in the monitoring network and the conceptual framework as identified in this GSP. This includes determining information about monitoring wells that currently have

no well perforation information by video surveying and sounding, and working with landowners on adding voluntary wells to the water level and quality monitoring network. A new surface water gage near the mouth of the Santa Ynez River is also considered to better quantify the amount of surface flow leaving the WMA.

Implementation Group 3 implementation items are data collection actions to allow for improved management of the WMA. Efforts to improve data collection information on water use in the Basin will be done, including additional information from well owners. In addition, the GSA will require the installation of water meters on all wells (excluding *de minimis* domestic wells).

Implementation Group 4 and Implementation Group 5 is improved data management and SGMA updates. The former consists of update and utilized the data management system, the latter is completing SGMA annual reports (first due in 2022) and 5-year assessment and updates to the GSP (first due in 2027) will be done as required by SGMA.