County of Santa Barbara
2019 Groundwater Basins
Summary Report

Public Works Department
Water Resources Division
Water Agency

130 East Victoria Street
Santa Barbara, CA 93101
(805) 568-3440

August 20, 2019

A report on the general condition of groundwater throughout Santa Barbara County.

On the cover (clockwise from top right):

Drum Canyon in Santa Ynez River Valley Groundwater Basin
Production well in San Antonio Creek Valley Groundwater Basin
Vineyards in the Cuyama Valley Groundwater Basin

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www.countyofsb.org/pwd/water

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ACRONYMS:

CASGEM	California Statewide Groundwater Elevation Monitoring
DWR	California Department of Water Resources
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
SBCWA	Santa Barbara County Water Agency
MSL	Mean Sea Level
NWIS	National Water Information System
SGMA	Sustainable Groundwater Management Act
SMVWCD	Santa Maria Valley Water Conservation District
SYRWCD	Santa Ynez River Water Conservation District
TMA	Twitchell Management Authority
USGS	United States Geological Survey
USBR	United States Bureau of Reclamation
VAFB	Vandenberg Air Force Base
WSEL	Water Surface Elevation

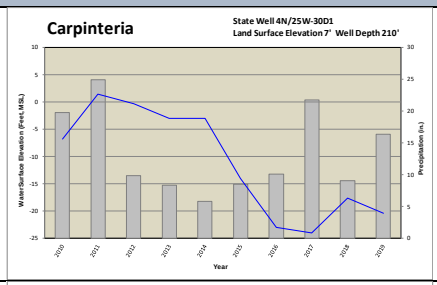
EXECUTIVE SUMMARY

While several of Santa Barbara County groundwater basins show preliminary signs of recovery from the impact of the 2012-2018 drought, no basins have yet rebounded to pre-drought levels. Other basins have remained fairly stable, or continue to decline. To illustrate recent changes and the effect of precipitation on groundwater recharge, the following charts show water level elevations below land surface for selected wells for the last ten years, (represented by blue line) along with total precipitation (represented by gray bars). Additional detail is located in the main body of this report.

SOUTH COAST GROUNDWATER BASINS

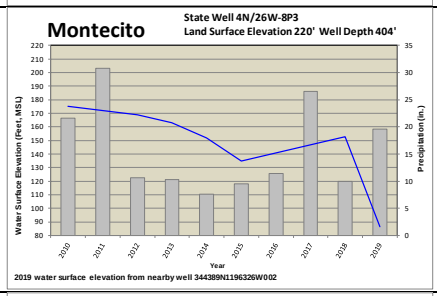
CARPINTERIA GROUNDWATER BASIN

SUMMARY: Water levels drop during extended years of drought (1945-1951, 1984-1990, and 2012-2018), and historical monitoring data indicate levels reached their lowest elevation in 2017.



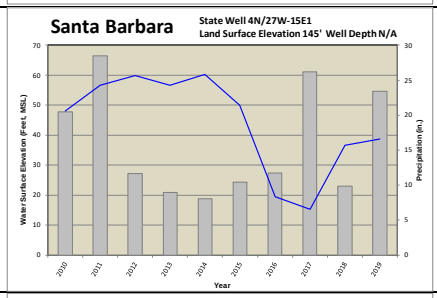
MONTECITO GROUNDWATER BASIN

SUMMARY: Water levels drop during extended years of drought (1945-1951, 1984-1990, and 2012-2018), and have not rebounded to pre-drought levels.



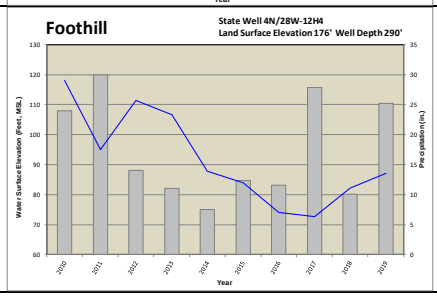
SANTA BARBARA GROUNDWATER BASIN

SUMMARY: Water levels drop during extended years of drought (1945-1951, 1984-1990, and 2012-2018), and have not rebounded to pre-drought levels.



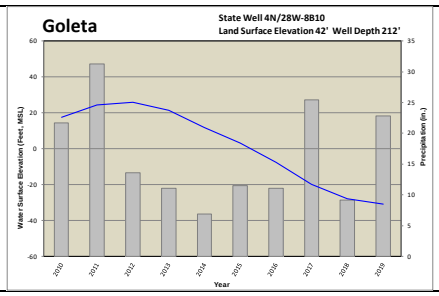
FOOTHILL GROUNDWATER BASIN

SUMMARY: Water levels drop during extended years of drought (1945-1951, 1984-1990, and 2012-2018), and have not rebounded to pre-drought levels.



GOLETA GROUNDWATER BASIN

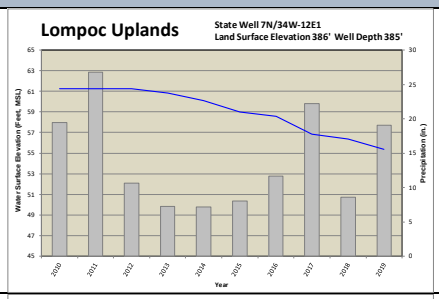
SUMMARY: Water levels drop during extended years of drought (1945-1951, 1984-1990, and 2012-2018), and have not rebounded to pre-drought levels.



SANTA YNEZ RIVER VALLEY GROUNDWATER BASIN

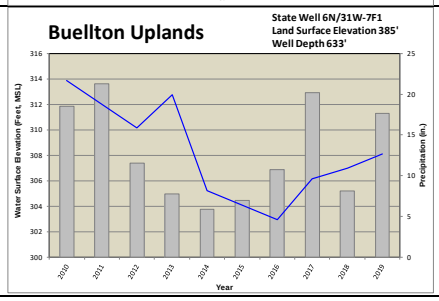
WESTERN MANAGEMENT AREA

SUMMARY: Water levels within the Lompoc Uplands have continued to decline for the period of available record starting in 1930, while the Lompoc Plain has remained fairly stable. Water levels within the alluvium along the river have historically remained stable.



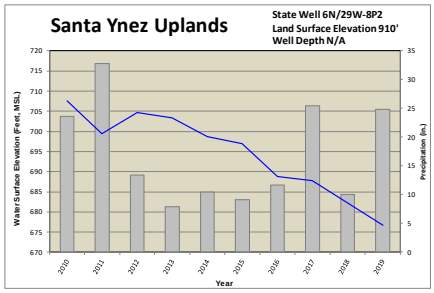
CENTRAL MANAGEMENT AREA

SUMMARY: Water levels within the management area have historically been stable, with minimal long-term declines. Levels are currently rising as a response to precipitation and recharge. Water levels within the alluvium along the river have historically remained stable.



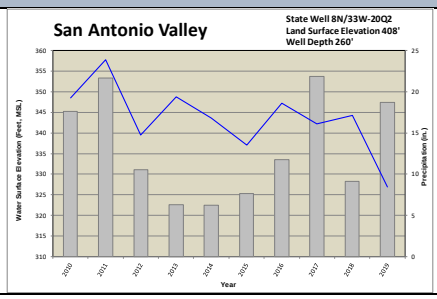
EASTERN MANAGEMENT AREA

SUMMARY: Water levels in the western portion of the Eastern Management Area have continued to drop in recent years. Water levels within the uplands and foothills to the east as illustrated in the corresponding graph have historically remained stable, showing some gradual declines in recent years. Water levels within the alluvium along the river have historically remained stable.



SAN ANTONIO CREEK VALLEY GROUNDWATER BASIN

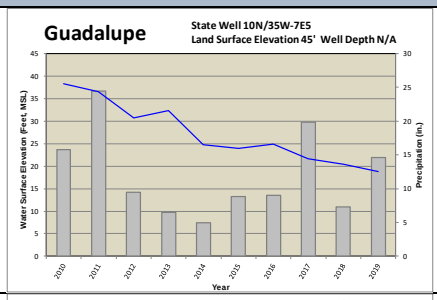
SUMMARY: Water level declines in some locations have been greater than 100 feet since the 1950s and levels continue to decline throughout the basin.



SANTA MARIA RIVER VALLEY GROUNDWATER BASIN

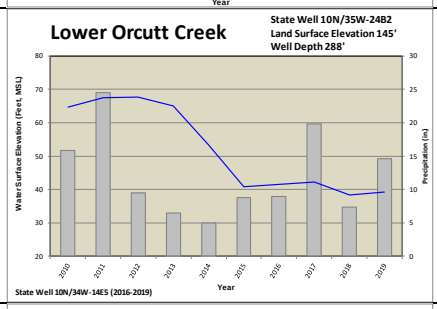
COASTAL AREA

SUMMARY: Water levels have been steadily declining since about Water Year 2000, with a more rapid rate of decline during the recent drought.



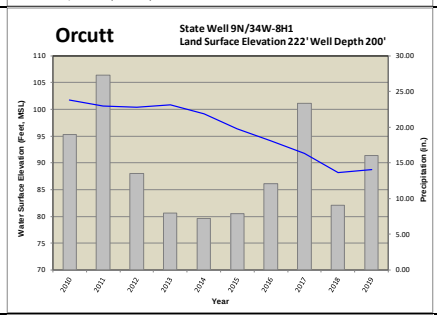
CENTRAL AGRICULTURE

SUMMARY: Water levels have been declining since about Water Year 2000, with a more rapid rate of decline during the recent drought.



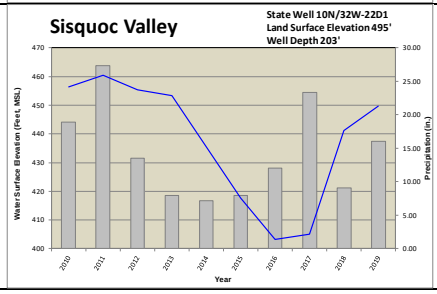
ORCUTT

SUMMARY: Water levels have been declining since about Water Year 2000, with a more rapid rate of decline during the recent drought.

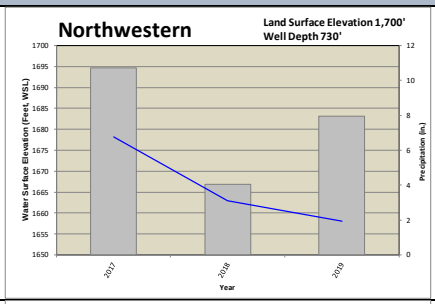
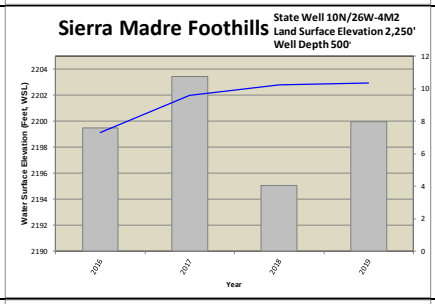
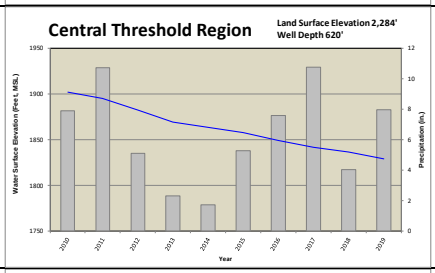
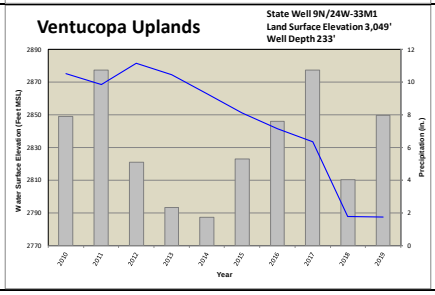


SISQUOC VALLEY

SUMMARY: Water level data show noticeable recent recharge along the Sisquoc River as a result of river infiltration during Water Years 2017 and 2019.



CUYAMA VALLEY GROUNDWATER BASIN

NORTHWESTERN THRESHOLD REGION **SUMMARY:** Shallow wells indicate that water levels have historically remained stable. Deep wells along the river to the east have experienced continued declines as a result of recent agricultural development in 2016.	
WESTERN THRESHOLD REGION **SUMMARY:** Water levels in shallow wells are close to land surface and have generally remained stable for many decades.	
CENTRAL THRESHOLD REGION **SUMMARY:** Water levels within this region have been steadily declining since the late 1940s, with long term hydrographs showing declines of nearly 300 feet.	
EASTERN THRESHOLD REGION **SUMMARY:** This region has historically remained fairly stable, however recent water level data indicate that the aquifer has not rebounded following the most recent drought and have continued to decline since 2012.	
SOUTHEASTERN THRESHOLD REGION **SUMMARY:** Water levels within this region are shallow with depth to water about 50 feet. No recent data are available.	NO GRAPH AVAILABLE
BADLANDS THRESHOLD REGION **SUMMARY:** There is little agriculture or development in this area and groundwater use is therefore minimal. No recent data are available.	NO GRAPH AVAILABLE

INTRODUCTION

This report summarizes current conditions in Santa Barbara County's groundwater basins. The Santa Barbara County Board of Supervisors terminated the proclamation of local drought emergency on March 19, 2019 which had been in effect since January, 2014. The drought emergency proclamation was terminated as a result of significant increases in surface water storage within County reservoirs which filled substantially during the 2019 winter. However, unlike the County's surface water storage, groundwater resources may not react as quickly following precipitation events. Groundwater recharge is complex and can vary between and within each groundwater basin as a result of varying aquifer materials, local geology, physical barriers, hydrology, evapotranspiration, and anthropogenic activity. Water levels may rise quickly in shallow wells when located in alluvium along flowing rivers and creeks. Deeper wells however, may not show signs of recharge for many years following wet seasons.

While deliberating termination of the local drought emergency, the Board of Supervisors directed the Water Agency to prepare an annual report which illustrates groundwater conditions, summarizes the various monitoring programs throughout the County, and outlines the resources available for locating groundwater data. Online data resources available to the public are hyperlinked within the report, with expanded web addresses located in Attachment G. A variety of public online data resources are also provided in Attachment F. Only alluvial groundwater basins defined by the Department of Water Resources (DWR) are included in this report. Although parts of some basins are located outside the boundary of Santa Barbara County, only data located within the County are included. Sub-basins within the larger groundwater basins are differentiated as determined by jurisdictional boundaries or natural barriers to groundwater movement. Hydrographs of water surface elevation (WSEL) below mean sea level (MSL) for representative monitoring wells located within each of these basins are plotted showing yearly precipitation totals above and below 80% of average within the basin to clearly illustrate long-term storage trends, seasonal recharge response, and discharge. Discrete water level values illustrated in these hydrographs are representative of yearly maximum aquifer levels during early spring before significant agricultural pumping resumes.

GROUNDWATER MONITORING PROGRAMS

Water level data, measured as depth to water below land surface, have been collected from groundwater monitoring networks throughout Santa Barbara County for decades. Data from these networks are representative of the major aquifers and are intended to emphasize the role of local variables such as geology, topography, and land use on recharge, sub-surface flow, and distribution. These data also illustrate temporal variability in groundwater levels and are combined with meteorological data to assist in the interpretation of ambient water level changes. The temporal and spatial distribution of the monitoring network has changed over time and is dependent on many factors including funding, local groundwater study objectives, legislative requirements, and landowner access. Some networks have been developed to track long-term trends, while others are more specific to modeling goals or local water distribution objectives.

Monitoring Entities

The Santa Barbara County Water Agency (SBCWA) has maintained a comprehensive and long-standing groundwater monitoring network in cooperation with the United States Geological Survey

(USGS). The network is located primarily within the unincorporated areas of Santa Barbara County. Additional data collection efforts are completed or sponsored by local water districts and municipalities throughout the County. Agencies including the City of Santa Barbara, Goleta Water District, and the Santa Maria Valley Water Conservation District (SMVWCD) also maintain monitoring networks in cooperation with the USGS. Other local water districts and municipalities support water level data collection efforts which are often for internal tracking within the district's or municipality's production well network. Some data are available to the public through the internet, while other data must be requested directly from the monitoring agency. The following agencies conduct groundwater monitoring within Santa Barbara County:

- Carpinteria Valley Water District*
- City of Buellton
- City of Guadalupe
- City of Lompoc*
- City of Santa Barbara*
- City of Santa Maria*
- City of Solvang
- Golden State Water Company
- Goleta Water District*
- Los Alamos Community Services District
- Mission Hills Community Services District
- Montecito Water District*
- Cuyama Community Services District
- Santa Maria Valley Water Conservation District*
- Santa Ynez River Water Conservation District*
- Santa Ynez River Water Conservation District Improvement District #1
- United States Bureau of Reclamation
- Vandenberg Air Force Base
- Vandenberg Village Community Services District

(* denotes agency with available data online)

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA) was passed in 2014 to create a framework for groundwater sustainability throughout California. Groundwater basins that are designated as high or medium priority by the DWR must form a Groundwater Sustainability Agency (GSA). Each GSA will be responsible for the development, implementation, and oversight of a Groundwater Sustainability Plan (GSP). GSPs must be developed and approved by 2022, or by 2020 in critically over-drafted (high priority) basins, and must achieve groundwater sustainability within 20 years of GSP adoption. GSP objectives require that all future use of groundwater will not cause undesirable results which include: declining water levels, reduction of groundwater storage, seawater intrusion, degraded water quality, land subsidence, and depletion of interconnected surface water. Table 1 shows the status of GSA formation and GSP preparation for each groundwater basin within Santa Barbara County.

One requirement of the GSP is to establish a monitoring network to track water level changes, groundwater storage, and monitor pre-determined water level thresholds within each basin to prove sustainability objectives are achieved. Although GSAs have been created for all Phase 1 high and medium priority basins within the County, GSPs, and therefore monitoring networks, have yet to be finalized and approved. Once approved, monitoring networks will be developed and water level data will be available to the public through online portals.

Table 1: SGMA basin prioritization and GSP status

GROUNDWATER BASIN	BASIN PRIORITIZATION	GSA FORMATION	GSP COMPLETE	DWR BULLETIN 118 BASIN
Carpinteria	High (draft*)	In Progress	No	3-018
Montecito	Medium (draft*)	Yes	No	3-049
Santa Barbara	Very Low	N/A	N/A	3-017
Foothill	Very Low	N/A	N/A	3-053
Goleta	Very Low	N/A	N/A	3-016
Santa Ynez River Valley	Medium	Yes	No	3-015
San Antonio Creek Valley	Medium	Yes	No	3-014
Santa Maria Valley	Very Low (draft*)	N/A	N/A	3-012
Cuyama Valley	High (critically overdrafted)	Yes	Draft	3-013

(* denotes draft DWR basin prioritization status as of June 2019)

GROUNDWATER BASINS

South Coast Groundwater Basins

South Coast groundwater basins include Carpinteria, Montecito, Santa Barbara, Foothill, and Goleta. Boundaries for the five major south coast groundwater basins are designated by geologic features such as fault barriers to groundwater movement and impermeable bedrock or inferred geologic features recognized by changes in water level or water quality. Major water supply sources for South Coast water purveyors consist of groundwater, surface water, imported State water, recycled water, and more recently desalinization. The available quantity of surface and imported water is a result of seasonal precipitation and storage, and will directly affect groundwater extraction.

Historical maximum water level hydrograph trends for all South Coast basins display yearly fluctuations, with significant declines (reduced storage) during extended years of drought (1945-1951, 1984-1990, and 2012-2018). Recent water level measurements indicate that the aquifers have not rebounded following the most recent drought emergency and will require consecutive years of average or above average precipitation to rebound to pre-drought conditions.

Attachment A illustrates the active monitoring network and shows representative hydrographs for wells within South Coast aquifers. Historical data for all basins are available at the following link:

- Interactive NWIS map[1] with data for Hydrologic Unit 18060013 Santa Barbara Coastal.

Carpinteria Groundwater Basin (DWR Basin ID No. 3-018)

Carpinteria Valley Water District currently monitors water level at 11 wells as part of the California Statewide Groundwater Elevation Monitoring (CASGEM) program. Discrete data are collected every other month.

Water level data are available in the following locations:

- Current data are available on the CASGEM Water Data Library[2] webpage.
- Historic data specific to the Carpinteria Groundwater Basin are available using the interactive map located in the National Water Information System (NWIS)[3]
- Additional data are available in the files of Carpinteria Valley Water District upon request.

Montecito Groundwater Basin (DWR Basin ID No. 3-049)

Montecito Water District monitors water level at 14 wells as part of the CASGEM program. Discrete data are collected twice annually, usually in the spring and fall.

Water level data are available in the following locations:

- Current data are available on the CASGEM Water Data Library[2] webpage.
- Historical data specific to the Montecito Groundwater Basin are available using the interactive map located in NWIS[4].
- Additional data are available in the files of Montecito Water District upon request.

Santa Barbara Groundwater Basin (DWR Basin ID No. 3-017)

City of Santa Barbara works in cooperation with the USGS to monitor water levels at 42 wells as part of the CASGEM program. Discrete data are collected at monthly intervals.

Water level data are available in the following locations:

- Current data are available on the CASGEM Water Data Library[2] webpage.
- Historical data specific to the Santa Barbara Groundwater Basin are available using the interactive map located in NWIS[3].
- Real-time continuous data for production well 342630119442301, 004N027W08M005S[5].
- Additional data are available from the City of Santa Barbara Public Works upon request.

Foothill Groundwater Basin (DWR Basin ID No. 3-053)

City of Santa Barbara works in cooperation with the USGS to monitor water levels at 9 wells as part of the CASGEM program. Discrete data are collected at monthly intervals.

Water level data are available in the following locations:

- Current data are available on the CASGEM Water Data Library[2] webpage.

- Historical data specific to the Santa Barbara Groundwater Basin are available using the interactive map located in NWIS[6].
- Additional data are available from the City of Santa Barbara Public Works upon request.

Goleta Groundwater Basin (DWR Basin ID No. 3-016)

Goleta Water District works in cooperation with the USGS to monitor water levels at 47 wells as part of the CASGEM program. Discrete data are collected twice annually, usually in the spring and fall. The basin is considered very low priority under SGMA and has been adjudicated since 1994.

Water level data are available in the following locations:

- Current data are available on the CASGEM Water Data Library[2] webpage.
- Historical data specific to the Goleta Groundwater Basin are available using the interactive map located in NWIS[7].
- Additional data are available in the files of the Goleta Water District upon request.

Santa Ynez River Valley Groundwater Basin (DWR Basin ID No. 3-015)

Groundwater monitoring in the Santa Ynez River Valley Groundwater Basin has historically been completed by SBCWA in cooperation with the USGS. SBCWA is identified as the designated monitoring entity for CASGEM, and as of 2019, has assumed water level data collection activity from the USGS throughout the basin. In addition, the U.S. Bureau of Reclamation (USBR) collects water level data monthly along the Santa Ynez River and the City of Lompoc continue to monitor groundwater levels twice annually. Water supply sources in the Santa Ynez River Valley Groundwater Basin consist of groundwater, local surface water, and imported state water. The available quantity of surface and imported water is a result of seasonal precipitation and storage, and directly affects groundwater extraction.

The Santa Ynez River Valley Basin is defined by DWR as a medium priority basin. The Santa Ynez River Water Conservation District (SYRWCD) led the formation of three separate GSAs to represent three Management Areas. These Management Areas are based on hydrogeologic and jurisdictional boundaries, and are hydraulically interconnected. Within each Management Area, there are various sub-basins with differing hydrogeological characteristics. The Santa Ynez River Alluvium is a layer of alluvial material that follows the course of the Santa Ynez River through all three Management Areas.

Western Management Area

The Western Management Area contains the Lompoc Terrace sub-basin, the Lompoc Plains sub-basin, the Lompoc Uplands sub-basin, and a portion of the Santa Ynez River Alluvium. Water levels within the Lompoc Uplands have continued to decline for the period of available record starting in 1930, while the Lompoc Plain has remained fairly stable showing minor yearly fluctuations. Water levels within the alluvium along the river have historically remained generally stable as a result of direct recharge from the Santa Ynez River.

Central Management Area

The Central Management Area contains the Buellton Uplands sub-basin and a portion of the Santa Ynez River Alluvium. Water levels in the shallow wells within the alluvium are generally stable, with

little fluctuation. The remainder of this management area has historically been stable, with minimal declines in recent years as a result of the drought.

Eastern Management Area

The Eastern Management Area contains the Santa Ynez Uplands sub-basin and a portion of the Santa Ynez River Alluvium. Water levels throughout this management region react differently to land use and recharge. Generally, water levels in the western portion have dropped in recent years, and are similar to those observed following the drought of 1984 to 1990. It may require consecutive years of average or above average precipitation to reverse the trend. Water levels within the uplands and foothills to the east have historically remained stable, showing some gradual declines in recent years as a result of the drought.

Attachment B illustrates the active County monitoring network and representative hydrographs for wells within the basin. Historical and current water level data for the Santa Ynez River Valley Groundwater Basin are available in the following locations:

- Current data are available on the CASGEM Water Data Library[2] webpage.
- Interactive NWIS map[8] with data for Hydrologic Unit 18060010 Santa Ynez.
- *Annual Engineering and Survey Report on Water Supply Conditions of the Santa Ynez River Water Conservation District*[9] is developed by Stetson Engineers for the SYRWCD. The most recent reports can be downloaded from the SYRWCD website.
- Additional data are available in the files of the following agencies upon request:
    - Santa Barbara County Water Agency
    - City of Buellton
    - City of Lompoc
    - Mission Hills Community Services District
    - Santa Ynez River Water Conservation District
    - Santa Ynez River Water Conservation District ID#1
    - United States Bureau of Reclamation
    - Vandenberg Village Community Services District

San Antonio Creek Valley Groundwater Basin (DWR Basin ID No. 3-014)

Groundwater monitoring throughout the basin has historically been completed by SBCWA in cooperation with the USGS. SBCWA is identified as the designated monitoring entity for CASGEM. The network is currently more robust than it has been in previous years as the USGS completes a study of water availability in the basin in cooperation with SBCWA and Vandenberg Air Force Base (VAFB). As a medium priority basin under SGMA guidelines, the San Antonio Basin GSA has been formed and a GSP is currently under development. Maintaining a water level network within this basin will ultimately be the responsibility of the GSA. Groundwater is the only water supply source within the basin. Land within the valley is used primarily for agriculture, and production shifted in the 1980s from non-irrigated pastureland to irrigated crop and vineyards. This land use change resulted in an increase in groundwater withdrawals, which has exceeded recharge and reduced storage within the aquifer. Water level declines in some locations have been greater than 100 feet since the 1950s and levels continue to decline.

Attachment C illustrates the active monitoring network and representative hydrographs for wells within the basin. Historical and current water level data and GSA information for the San Antonio Creek Valley Groundwater Basin are available in the following locations:

- San Antonio Basin GSA website[10].
- Current data are available on the CASGEM Water Data Library[2] webpage.
- Interactive NWIS map[11] with data for Hydrologic Unit 18060009 San Antonio.
- San Antonio Creek Water Availability Study[12] webpage outlining the current comprehensive study and providing links to publications, historical and current groundwater data.
- Additional data are available in the files of SBCWA, Los Alamos Community Services District and VAFB upon request.

Santa Maria River Valley Groundwater Basin (DWR Basin ID No. 3-012.01)

The Santa Maria River Valley Groundwater Basin resides in both Santa Barbara and San Luis Obispo Counties. Groundwater monitoring within Santa Barbara County has historically been conducted by the SBCWA in cooperation with the USGS, the Santa Maria Valley Water Conservation District (SMVWCD), and the Twitchell Management Authority (TMA). The TMA currently monitors water level as part of the CASGEM program. Discrete data are generally collected biannually at the hydraulic maximum (March) and minimum (October) level, with some wells being monitored quarterly. The groundwater basin is defined by DWR as very low priority. The basin underwent a lengthy process of adjudication (Santa Maria Valley Water Conservation District vs. City of Santa Maria et al.), with an original Judgment issued in 2008 and an amended Judgment issued in 2014.

Water supply sources for water users in the Santa Maria River Valley Groundwater Basin within Santa Barbara County include both groundwater and imported state water. Surface water stored in Twitchell Reservoir is also used to supplement groundwater recharge to the basin when available. Water levels in the basin began to noticeably decline in about 1945, coinciding with an increase in agriculture acreage and urban population. Levels have fluctuated significantly throughout the basin in recent decades as a result of climatic fluctuations, land use changes, and Twitchell Reservoir recharge availability. Water levels throughout the basin have been declining since the beginning of the most recent drought in 2012, with noticeable recharge evident recently along the Sisquoc River.

Attachment D illustrates the active 2018 monitoring network and representative hydrographs for wells within the basin. Historical and current water level data for the Santa Maria River Valley Groundwater Basin are available in the following locations:

- Current data are available on the CASGEM Water Data Library[2] webpage.
- Interactive NWIS map[13] with data for Hydrologic Unit 18060008 Santa Maria.
- *2018 Annual Report of Hydrogeologic Conditions, Water Requirements, Supplies and Disposition*[14] is developed by Luhdorff and Scalmanini under the guidance of the TMA. All reports can be viewed and downloaded from the City of Santa Maria website.

- Additional data are available in the files of the following agencies upon request.
    - City of Guadalupe
    - City of Santa Maria
    - Golden State Water Company
    - Santa Maria Valley Water Conservation District

Cuyama Valley Groundwater Basin (DWR Basin ID No. 3-013)

The Cuyama Valley Groundwater Basin resides within four counties to include Santa Barbara, San Luis Obispo, Kern, and Ventura. Groundwater monitoring within Santa Barbara County has historically been completed by the SBCWA in cooperation with the USGS. SBCWA is identified as the designated monitoring entity for CASGEM and, as of 2019, has assumed all water level data collection activity within the County basin boundary from the USGS.

Groundwater is the only water supply source available within the Cuyama Valley Groundwater Basin. Land use in the valley has changed significantly in recent decades, shifting from non-irrigated pastureland and dry farming, to irrigated potato and alfalfa following the expansion of the petroleum industry in 1940. Agriculture further evolved with the introduction of grain and carrot crops around 1970, and orchards and vineyards around 1985. Continued groundwater withdrawals during the last 80 years have exceeded recharge in many parts of the basin and reduced storage within the aquifer.

The Cuyama Basin is defined by DWR as a high priority, critically overdrafted basin. The Cuyama Basin GSA has developed a draft GSP, which was released in April 2019. As part of GSP development, six "threshold regions", illustrated in Figure E, were defined within the basin based on geology, land use, and groundwater conditions for the purpose of setting minimum water level thresholds. The hydraulic response within each region to natural and anthropogenic activity varies, although each region may be partially connected hydraulically. Monitoring and maintaining water level networks within each of these regions will ultimately be the responsibility of the GSA.

Northwestern Threshold Region

The Northwestern Threshold Region has historically been characterized by rangeland with limited development. In 2015, a new vineyard was developed within the eastern portion of this sub-basin. A limited data set of shallow wells indicates that water levels have historically remained fairly stable throughout this region. However, deep wells within the vineyard have experienced continued declines as a result of recent pumping, with water levels dropping as much as 35 feet since pumping began in 2016.

Western Threshold Region

There is little agricultural use in the Western Threshold Region and minimal use of groundwater. Water levels in shallow wells are close to land surface and based on a limited data set, have generally remained stable.

Central Threshold Region

The majority of the basin's agricultural use is located within the Central Threshold Region. Water levels within this region have been steadily declining since the late 1940s, with long term hydrographs showing declines of nearly 300 feet. Recent monitoring indicates that levels continue to decline in this region.

Eastern Threshold Region

There is moderate agricultural groundwater use in the Eastern Threshold Region. Water levels within this region tend to react quickly to precipitation, showing rapid recharge during times of increased precipitation. However, recent water level data indicate that the aquifer has not rebounded following the most recent drought and have continued to decline since 2012. Consecutive years of average or above average precipitation may be needed for this region to rebound to pre-drought conditions.

Southeastern Threshold Region

A small area of the Southeastern Threshold Region is located within Santa Barbara County, with the remainder located within Ventura County. Water levels within this region are shallow with depth to water about 50 feet.

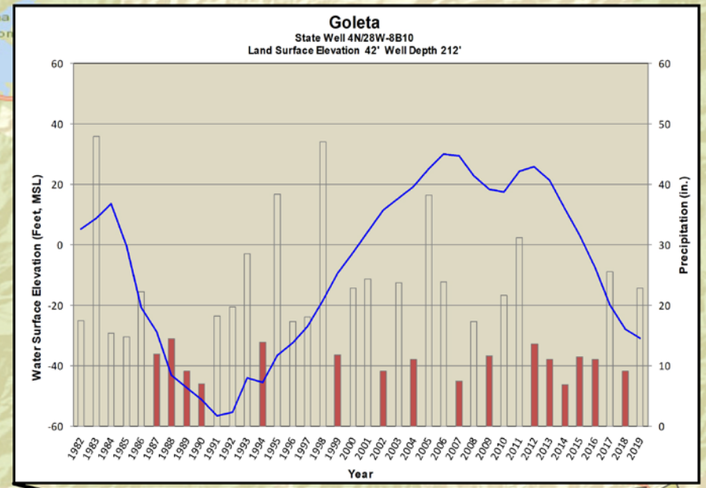
Badlands Threshold Region

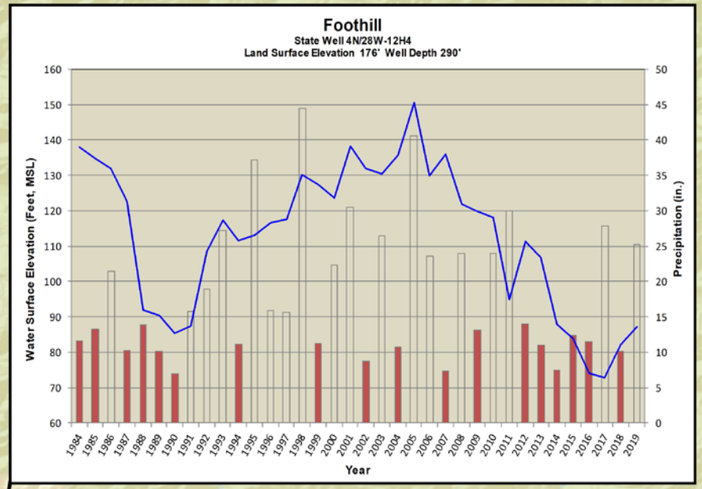
The Badlands Threshold Region is not located within Santa Barbara County. There is little agriculture or development in this area and groundwater use is therefore minimal.

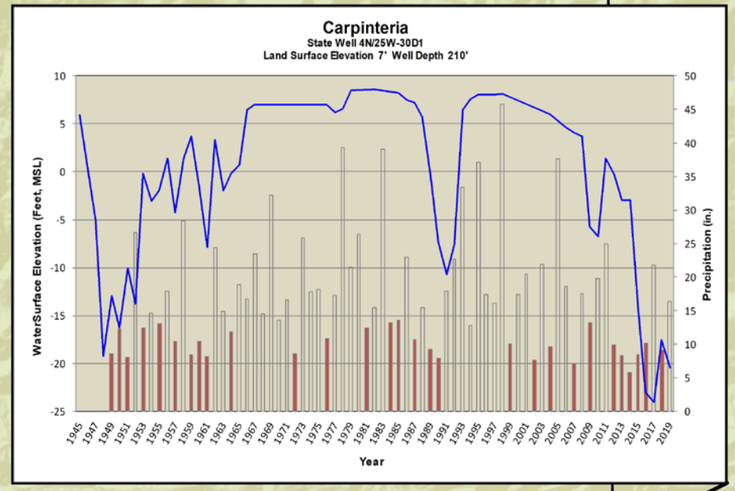
Attachment E illustrates the current monitoring network and representative hydrographs for wells within the Cuyama Valley aquifer system. Water level data and GSP information are available in the following locations:

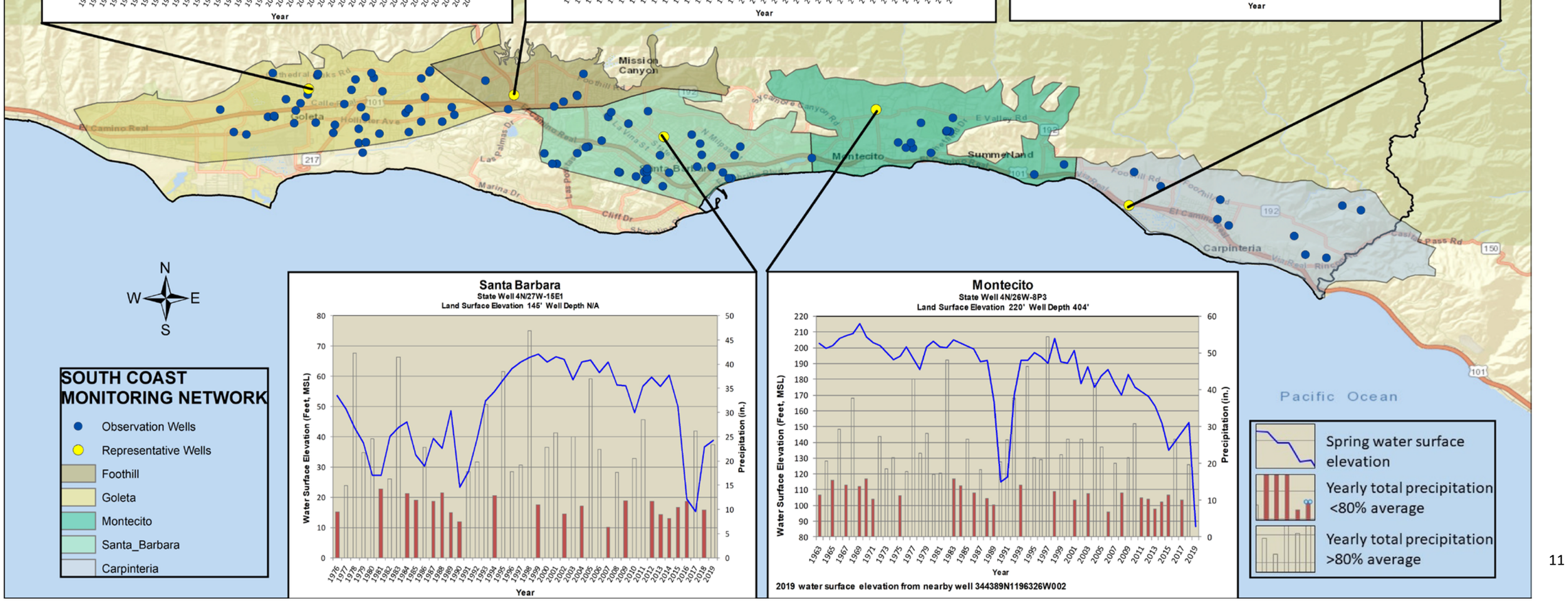
- Cuyama Basin GSA website[15].
- Current data are available on the CASGEM Water Data Library[2] webpage.
- Interactive NWIS map[16] with data for Hydrologic Unit 18060007 Cuyama.
- Cuyama Valley Water Availability Study[17] webpage outlining the comprehensive study completed in 2014 and providing links to publications, historical and current groundwater data.
- The Cuyama Valley Basin Data Management System[18] was created by the consultants Woodard & Curran for the Cuyama GSA.
- Additional data are available in the files of SBCWA and the Cuyama Community Services District.

ATTACHMENT A - South Coast Groundwater Basins





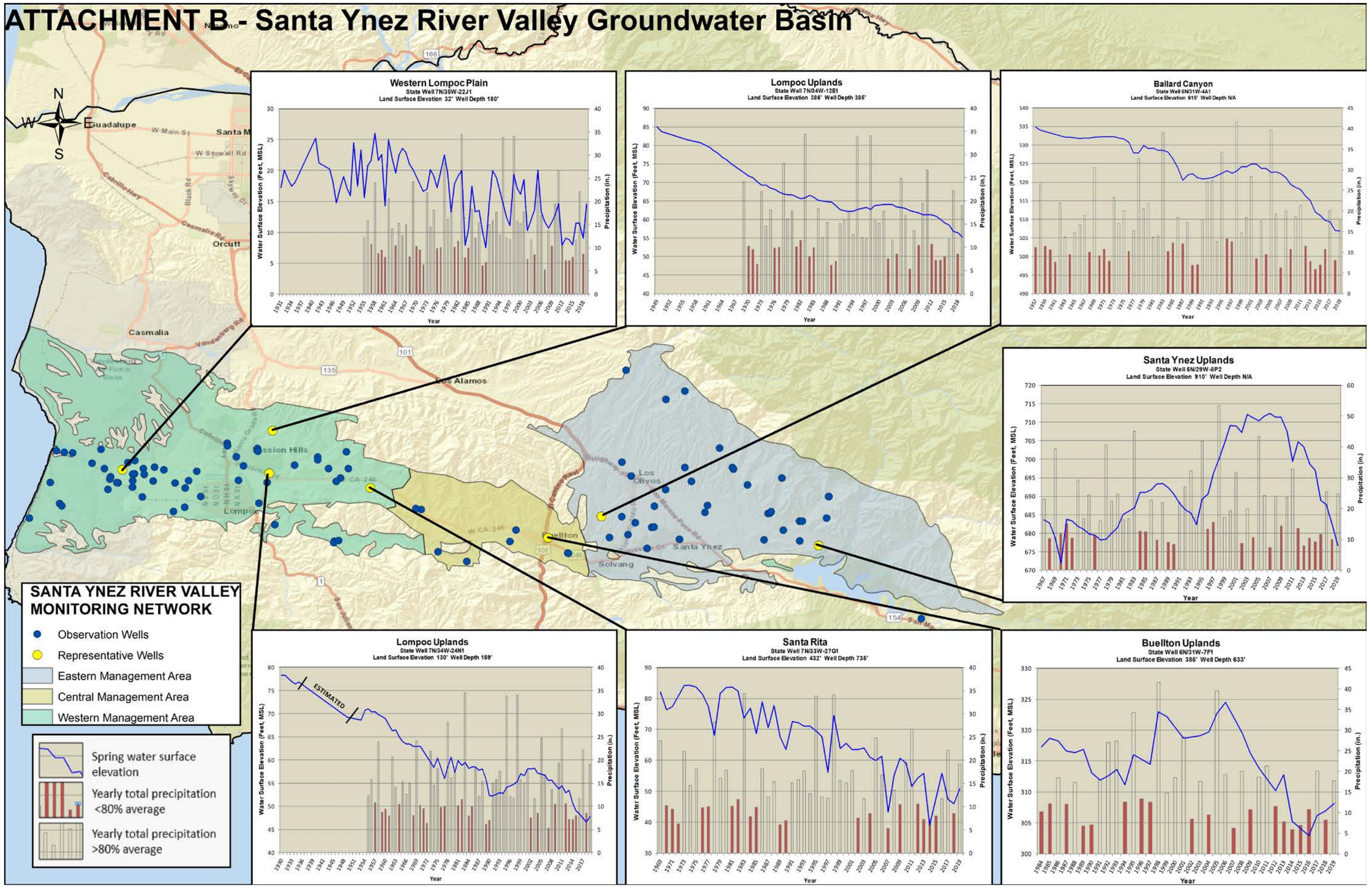




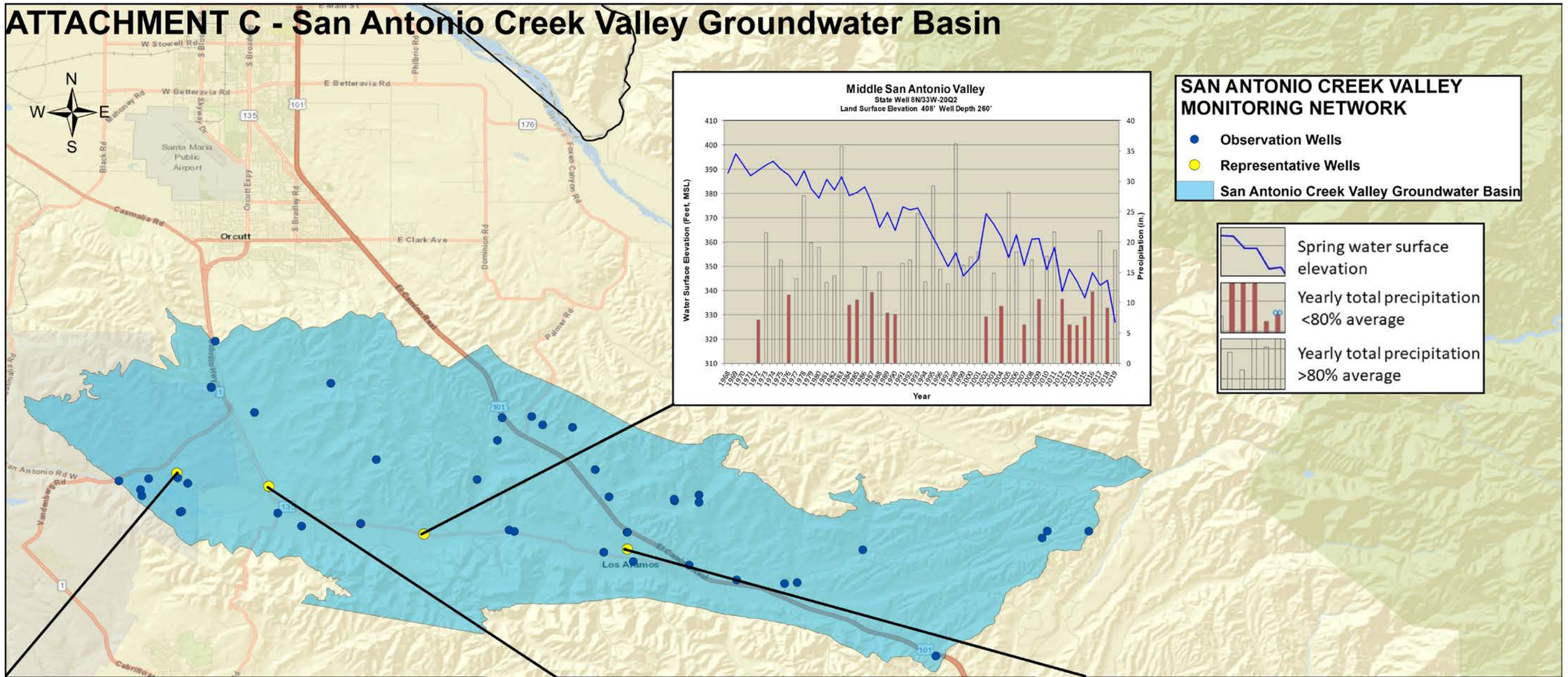
SOUTH COAST MONITORING NETWORK

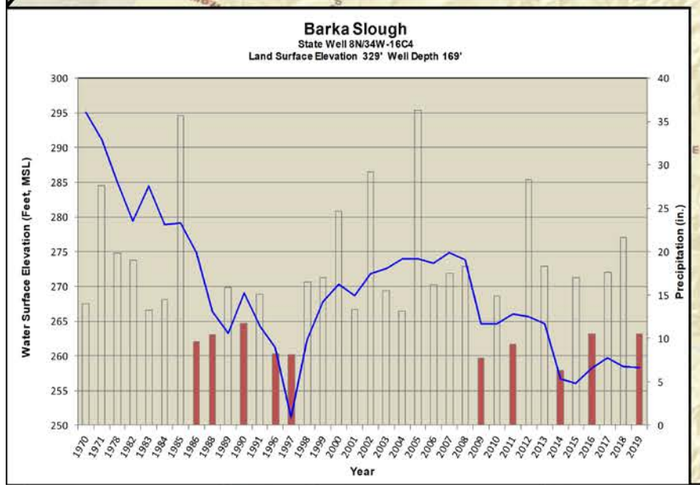
- Observation Wells
- Representative Wells
- Foothill
- Goleta
- Montecito
- Santa_Barbara
- Carpinteria

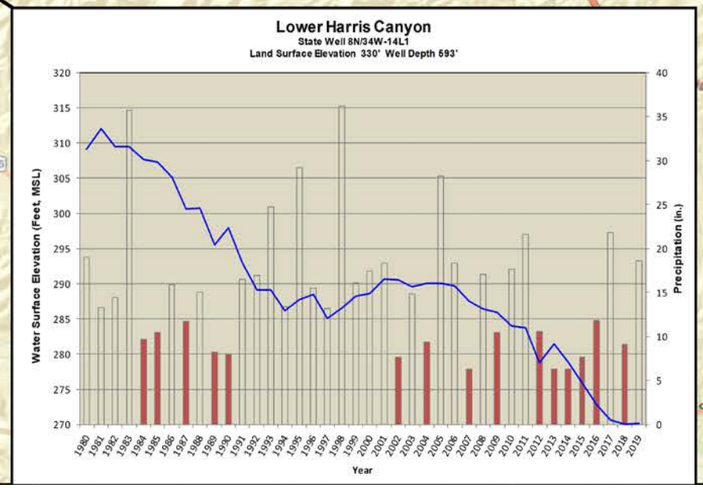
ATTACHMENT B - Santa Ynez River Valley Groundwater Basin

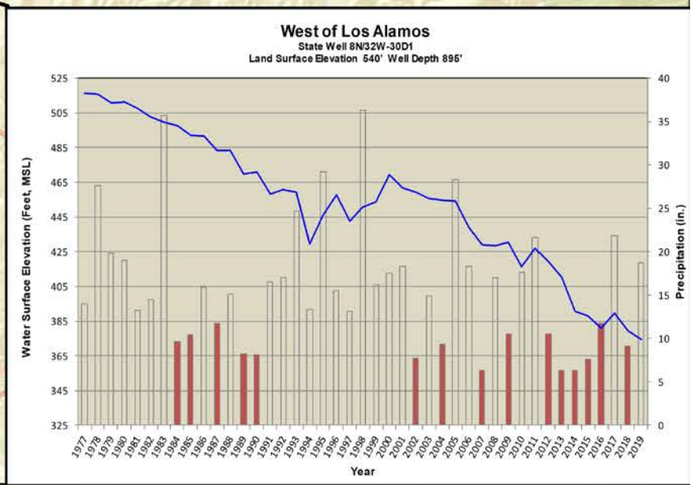


ATTACHMENT C - San Antonio Creek Valley Groundwater Basin

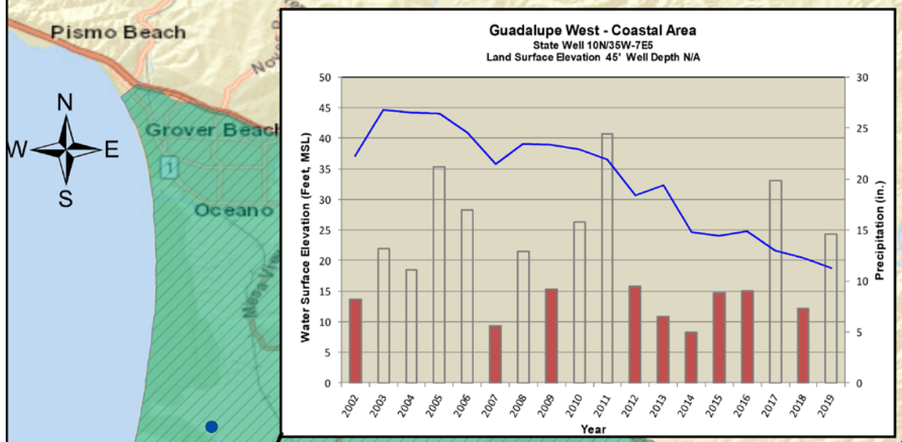


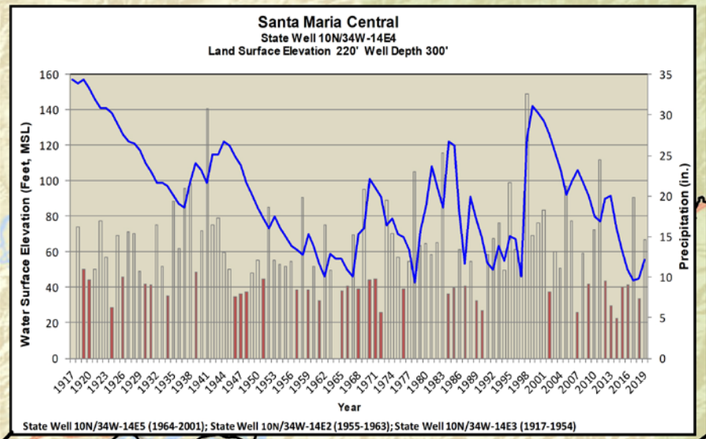


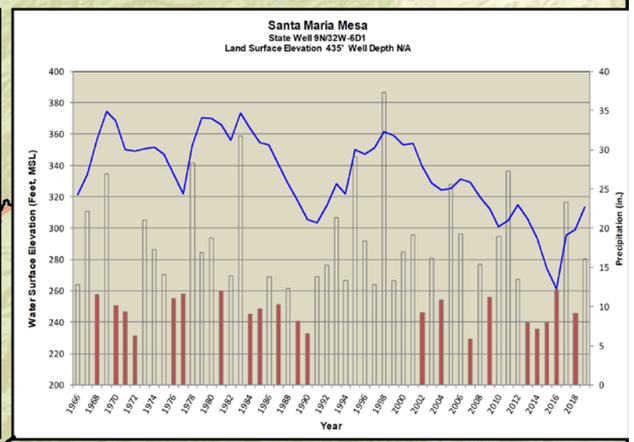


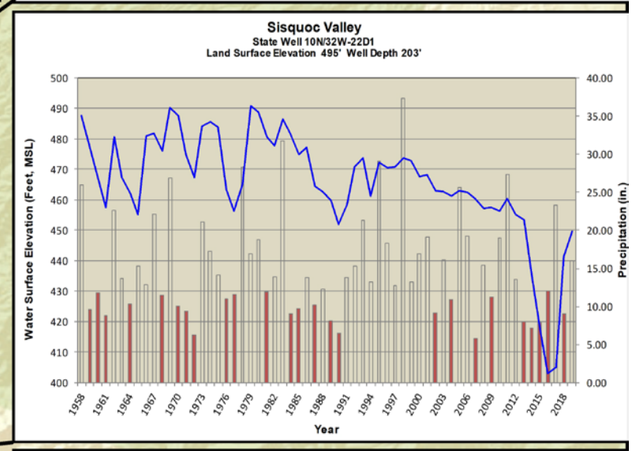


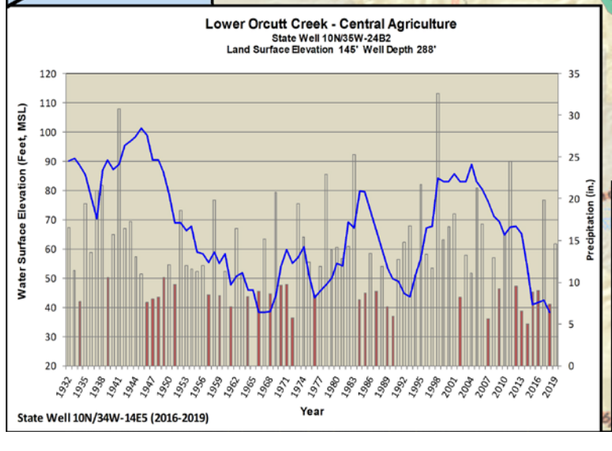
ATTACHMENT D - Santa Maria River Valley Groundwater Basin

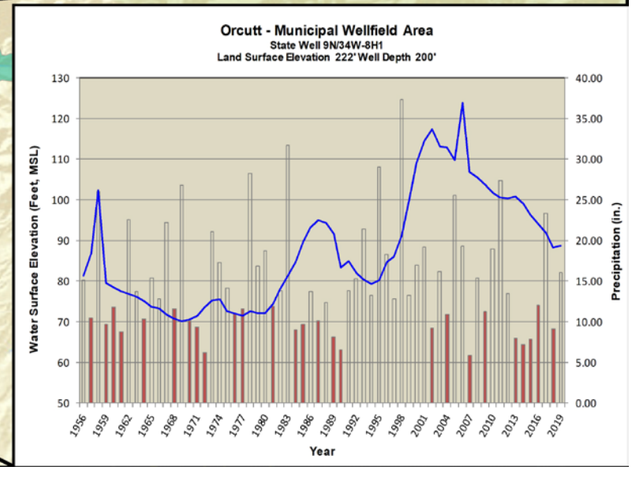


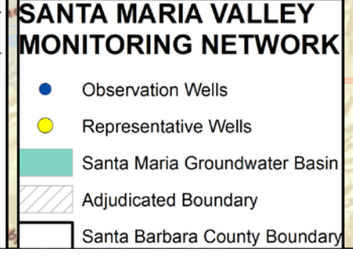


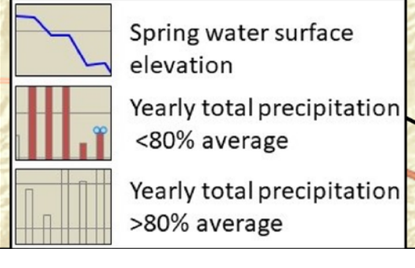




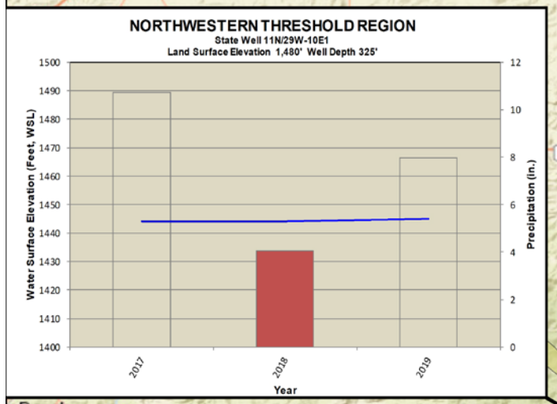


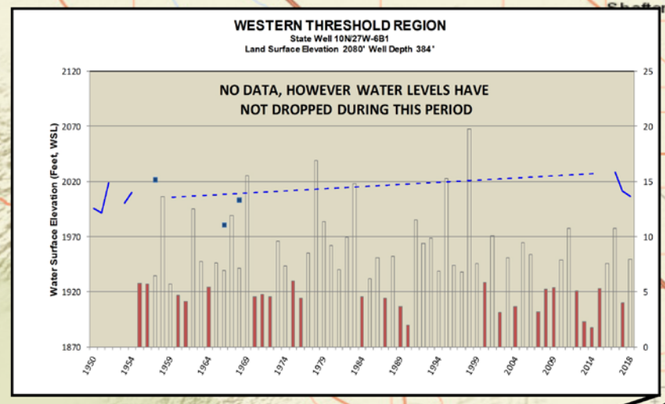


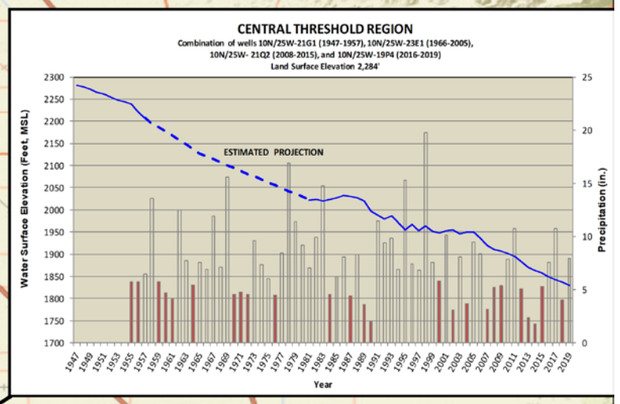


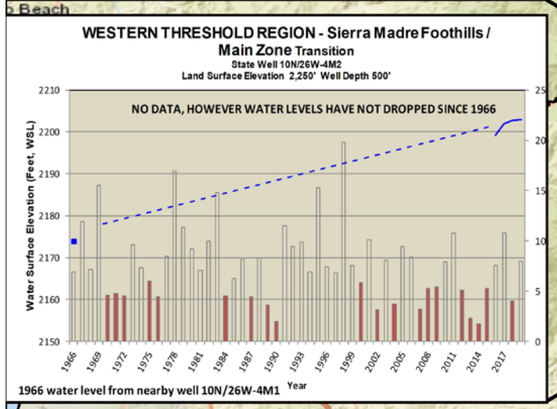


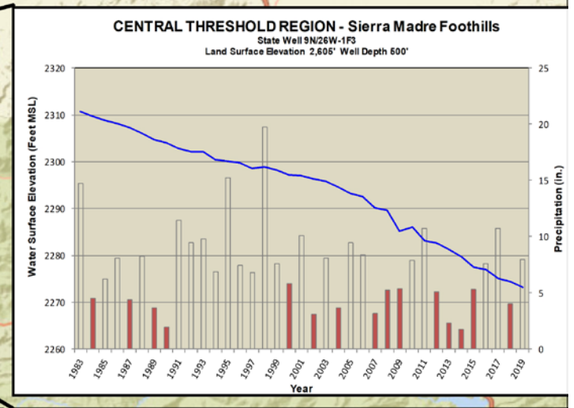
ATTACHMENT E - Cuyama Valley Groundwater Basin

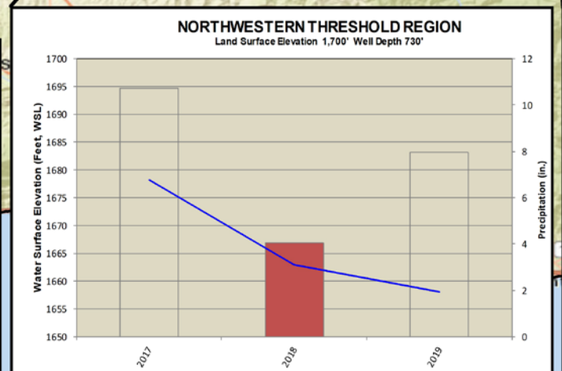


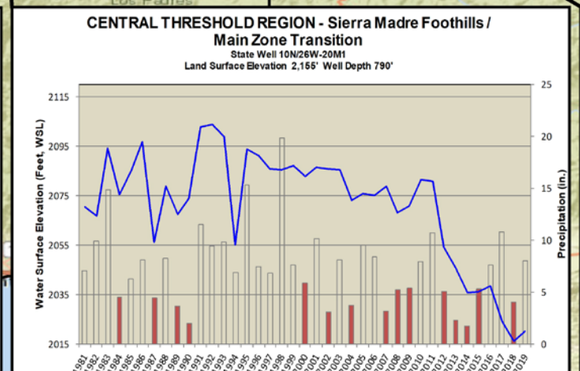


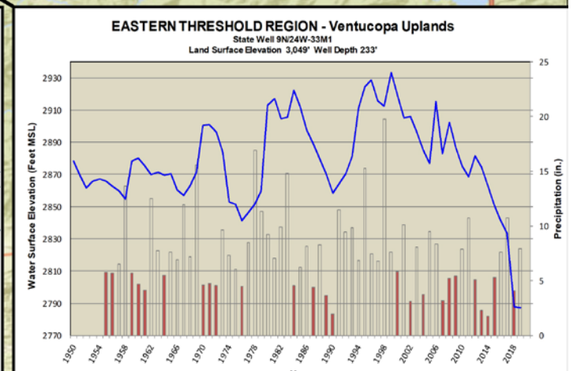












Attachment F - PUBLIC ONLINE GROUNDWATER DATA RESOURCES

California Statewide Groundwater Elevation Monitoring

The California Statewide Groundwater Elevation Monitoring (CASGEM) program was developed in 2009 by the Department of Water Resources to track and record groundwater level data and trends in basins throughout California. Designated monitoring entities are responsible for data collection and submittal within each of these basins. Groundwater level data used to populate the *Historical Groundwater Level Data* portion of this dataset was extracted from other resources such as the National Water Information System. The following web addresses will provide access to water level data in Santa Barbara County through the use of interactive maps and direct query:

- Interactive map[19] illustrating groundwater basins and monitoring entities throughout California.
- CASGEM Water Data Library[2] to find monitoring stations for a specific area.
- Select groundwater station retrieval parameters[20] within the County of Santa Barbara by well name, well number, or basin.
- A quick guide to locating water level data[21] in the CASGEM database.

Groundwater Watch

The California Active Water Level Network is hosted by the USGS and currently lists 273 groundwater monitoring locations in Santa Barbara County. Data are available for both continuous real-time water level elevation and discrete measurements. The network available on this interactive map includes wells measured at least once within the last 13 months by the USGS or by USGS cooperative agencies following USGS approved equipment and measurement protocols.

- Groundwater Watch, Santa Barbara County[22]

National Water Information System

The National Water Information System is hosted by the USGS and contains an extensive database of USGS approved water level data. These data were collected by USGS personnel or by cooperative agencies familiar with the protocols and techniques used by the USGS.

- NWIS - USGS Groundwater Data for California[23]
- Table of all groundwater level data[24] for 4,291 sites within Santa Barbara County
- NWIS groundwater data tutorial[25] for accessing historical and current data.

Santa Barbara County Conservation Blueprint Atlas

The Santa Barbara County Conservation Blueprint was developed through the combined efforts of the Santa Barbara Foundation, the Cachuma Resource Conservation District, and the Land Trust. The Blueprint provides a comprehensive report and interactive mapping atlas of the County's natural resources. Groundwater level data used to populate this webpage was extracted from other resources such as NWIS. The web address below provides access to an interactive map of the major groundwater resources of Santa Barbara County (last updated April 17, 2017).

- Santa Barbara County Conservation Blueprint Atlas[26]

Attachment G - WEB ADDRESSES FOR GROUNDWATER LEVEL DATA

1	https://maps.waterdata.usgs.gov/mapper/nwisquery.html?URL=https://nwis.waterdata.usgs.gov/ca/nwis/gwlevels?huc_cd=18060013&format=sitefile_output&sitefile_output_format=xml&column_name=agency_cd&column_name=site_no&column_name=station_nm&date_format=YYYY-MM-DD&rdb_compression=file&list_of_search_criteria=huc_cd_by_name&column_name=site_tp_cd&column_name=dec_lat_va&column_name=dec_long_va&column_name=agency_use_cd
2	http://wdl.water.ca.gov/waterdatalibrary/
3	https://maps.waterdata.usgs.gov/mapper/nwisquery.html?URL=https://nwis.waterdata.usgs.gov/ca/nwis/gwlevels?nw_longitude_va=-119.561414&nw_latitude_va=34.424244&se_longitude_va=-119.438866&se_latitude_va=34.368413&coordinate_format=decimal_degrees&format=sitefile_output&sitefile_output_format=xml&column_name=agency_cd&column_name=site_no&column_name=station_nm&date_format=YYYY-MM-DD&rdb_compression=file&list_of_search_criteria=lat_long_bounding_box&column_name=site_tp_cd&column_name=dec_lat_va&column_name=dec_long_va&column_name=agency_use_cd
4	https://maps.waterdata.usgs.gov/mapper/nwisquery.html?URL=https://nwis.waterdata.usgs.gov/ca/nwis/gwlevels?nw_longitude_va=-119.671077&nw_latitude_va=34.456832&se_longitude_va=-119.561528&se_latitude_va=34.411844&coordinate_format=decimal_degrees&format=sitefile_output&sitefile_output_format=xml&column_name=agency_cd&column_name=site_no&column_name=station_nm&date_format=YYYY-MM-DD&rdb_compression=file&list_of_search_criteria=lat_long_bounding_box&column_name=site_tp_cd&column_name=dec_lat_va&column_name=dec_long_va&column_name=agency_use_cd
5	https://waterdata.usgs.gov/nwis/uv/?site_no=342630119442301
6	https://maps.waterdata.usgs.gov/mapper/nwisquery.html?URL=https://nwis.waterdata.usgs.gov/ca/nwis/gwlevels?nw_longitude_va=-119.787896&nw_latitude_va=34.462685&se_longitude_va=-119.682843&se_latitude_va=34.436921&coordinate_format=decimal_degrees&format=sitefile_output&sitefile_output_format=xml&column_name=agency_cd&column_name=site_no&column_name=station_nm&date_format=YYYY-MM-DD&rdb_compression=file&list_of_search_criteria=lat_long_bounding_box&column_name=site_tp_cd&column_name=dec_lat_va&column_name=dec_long_va&column_name=agency_use_cd
7	https://maps.waterdata.usgs.gov/mapper/nwisquery.html?URL=https://nwis.waterdata.usgs.gov/ca/nwis/gwlevels?nw_longitude_va=-119.909088&nw_latitude_va=34.461412&se_longitude_va=-119.761975&se_latitude_va=34.417949&coordinate_format=decimal_degrees&format=sitefile_output&sitefile_output_format=xml&column_name=agency_cd&column_name=site_no&column_name=station_nm&date_format=YYYY-MM-DD&rdb_compression=file&list_of_search_criteria=lat_long_bounding_box&column_name=site_tp_cd&column_name=dec_lat_va&column_name=dec_long_va&column_name=agency_use_cd

8	https://maps.waterdata.usgs.gov/mapper/nwisquery.html?URL=https://nwis.waterdata.usgs.gov/ca/nwis/gwlevels?huc_cd=18060010&format=sitefile_output&sitefile_output_format=xml&column_name=agency_cd&column_name=site_no&column_name=station_nm&date_format=YYYY-MM-DD&rdb_compression=file&list_of_search_criteria=huc_cd_by_name&column_name=site_tp_cd&column_name=dec_lat_va&column_name=dec_long_va&column_name=agency_use_cd
9	https://syrwcd.com/annual-report
10	https://sanantoniobasingsa.org/
11	https://maps.waterdata.usgs.gov/mapper/nwisquery.html?URL=https://nwis.waterdata.usgs.gov/ca/nwis/gwlevels?huc_cd=18060009&format=sitefile_output&sitefile_output_format=xml&column_name=agency_cd&column_name=site_no&column_name=station_nm&date_format=YYYY-MM-DD&rdb_compression=file&list_of_search_criteria=huc_cd_by_name&column_name=site_tp_cd&column_name=dec_lat_va&column_name=dec_long_va&column_name=agency_use_cd
12	https://ca.water.usgs.gov/projects/san-antonio-creek/
13	https://maps.waterdata.usgs.gov/mapper/nwisquery.html?URL=https://nwis.waterdata.usgs.gov/ca/nwis/gwlevels?huc_cd=18060008&format=sitefile_output&sitefile_output_format=xml&column_name=agency_cd&column_name=site_no&column_name=station_nm&date_format=YYYY-MM-DD&rdb_compression=file&list_of_search_criteria=huc_cd_by_name&column_name=site_tp_cd&column_name=dec_lat_va&column_name=dec_long_va&column_name=agency_use_cd
14	https://www.cityofsantamaria.org/home/showdocument?id=26668
15	http://cuyamabasin.org/
16	https://maps.waterdata.usgs.gov/mapper/nwisquery.html?URL=https://nwis.waterdata.usgs.gov/ca/nwis/gwlevels?huc_cd=18060007&format=sitefile_output&sitefile_output_format=xml&column_name=agency_cd&column_name=site_no&column_name=station_nm&date_format=YYYY-MM-DD&rdb_compression=file&list_of_search_criteria=huc_cd_by_name&column_name=site_tp_cd&column_name=dec_lat_va&column_name=dec_long_va&column_name=agency_use_cd
17	https://ca.water.usgs.gov/projects/cuyama/
18	https://opti.woodardcurran.com/cuyama/login.php
19	https://dwr.maps.arcgis.com/apps/Styler/index.html?appid=c35c5efb72384065ad29635690b77329
20	http://wdl.water.ca.gov/waterdatalibrary/groundwater/index.cfm
21	http://wdl.water.ca.gov/waterdatalibrary/quick_guide.cfm
22	https://groundwaterwatch.usgs.gov/countymap.asp?sa=CA&cc=083
23	https://waterdata.usgs.gov/ca/nwis/gw/
24	https://nwis.waterdata.usgs.gov/ca/nwis/gwlevels?county_cd=06083&group_key=NONE&sitefile_output_format=xml&column_name=agency_cd&column_name=site_no&column_name=station_nm&format=html_table&date_format=YYYY-MM-DD&rdb_compression=file&list_of_search_criteria=county_cd
25	https://help.waterdata.usgs.gov/tutorials/groundwater-data
26	https://sbcblueprint.databasin.org/maps/e48a8a252c9c4addbeb81be4ea1870e7