Ventura County
Watershed Protection District
Water Resources Division

2017 Annual Report of Groundwater Conditions

Ventura County
Watershed Protection District
Water Resources Division

MISSION:

"Protect, sustain, and enhance
Ventura County watersheds now
and into the future for the benefit of
all by applying sound science,
technology, and policy."

2017 Annual Report of Groundwater Conditions

Cover Photo: Agricultural well in the Upper Ventura River Basin.

Ventura County Watershed Protection District
Water Resources Division
Groundwater Section

2017 Annual Report of Groundwater Conditions

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Executive Summary

Groundwater is the primary water source in Ventura County supplying approximately 67% of total water for domestic, agricultural, municipal, and industrial purposes. Groundwater quality and supply is protected through Ventura County Code of Ordinances, No. 4468 (Well Ordinance). The Well Ordinance regulates the construction, maintenance, usage and destruction of wells and engineering test holes (soil borings) in such a manner that the groundwater of the County will not be contaminated or polluted, and that water obtained from wells will be suitable for beneficial use and will not jeopardizing the health, safety, or welfare of the people of Ventura County.

Calendar year 2016 was the fifth consecutive year of below average rainfall in the County, which was designated as an area of exceptional drought by the U.S. Drought Monitor. The drought and regulatory constraints caused a decrease in surface water releases and surface water diversions with an increase in local groundwater extractions. Due to extended drought and below average precipitation groundwater elevations in most of the basins in Ventura County showed a continuing decline.

Water quality trends within County basins were generally unchanged from previous years. Basin summary sheets included in the Report appendices include analyses of water level and water quality trends over a five-year period.

The County does not regulate groundwater extraction. Groundwater extractions are regulated by three the Ojai Basin Groundwater Management Agency (OBGMA), the Fox Canyon Groundwater Management Agency (FCGMA), and United Water Conservation District (UWCD). These agencies cover approximately 8% of the County land area. Well owners and operators within these agency boundaries are required to report extractions to the respective jurisdictional agency. Well usage outside of a groundwater management agency boundary is reported through annual usage statements sent to well owners by the County.

In 2014, legislation known as the Sustainable Groundwater Management Act (SGMA) was enacted that requires Groundwater Sustainability Agencies (GSAs) to form in all high and medium priority basins. GSAs have formed in all high and medium priority basins in the County and are developing respective Groundwater Sustainability Plans (GSPs) to manage groundwater supplies. In 2014, the County passed an emergency ordinance temporarily banning new groundwater wells in high- and medium-priority basins. The emergency ordinance was enacted to protect groundwater supply after an increase in new well applications following SGMA legislation. The emergency ordinance ends within a Department of Water Resources (DWR)-designated basin when a respective GSA submits GSP to the DWR.

This report provides a summary of Calendar Year 2017 water quality and groundwater elevation conditions in the 28 recognized groundwater basins of Ventura County.

1.0 Introduction

The Ventura County Watershed Protection District (WPD) was formed on September 12, 1944, as the "Ventura County Flood Control District." Since 2003, it has been known as the WPD. The Groundwater Resources Section of the WPD has collected groundwater quality data since 1928. Previous groundwater data was published in Triennial or Quadrennial reports in a collaborative effort with the Flood Control District, Hydrology Section. The last such report was published in December 1986 covering the years 1981 through 1984. Between 1985 and 2004, the Groundwater Resources Section drafted several unpublished Groundwater Conditions Reports. In 2006, the first Groundwater Quality Report was published for the years 2005 to 2006. This report is the 12th consecutive publication.

The purpose of this report is to provide information on groundwater conditions in Ventura County and to publish the results of the quarterly groundwater elevation measuring of approximately 200 wells and Fall groundwater quality sampling of water supply wells.

This Annual Report includes Basin Summary Sheets that provide a one-page summary of water level and quality trends over a five-year period (**Appendix F**). Subsequent report sections present detailed water quality and water level data for each of the basins.

1.1 General County Information

Ventura County was formed on January 1, 1873, when it separated from Santa Barbara County and is currently one of 58 counties in the State of California. The Los Padres National Forest accounts for 46% of the land mass in the northern portion of the county. Fertile farmland in the southern half of the county makes it a leading agricultural producer, ranked tenth among California counties in total crop value in 2014 and eleventh among all counties in the United States (www.farmbureauvc.com). Together, farmland and the Los Padres National Forest occupy half of the county's 1.2 million acres.

There are ten incorporated cities including Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, Santa Paula, Simi Valley, Thousand Oaks, and San Buenaventura (Ventura).

1.1 Population

On May 1, 2016, the California State Department of Finance estimated Ventura County's population to be 856,508, an increase of 0.7 percent over the revised 2015 population estimate of 850,491. The Cities of Moorpark and Camarillo had the largest estimated percentage increase in population (1.8 and 1.5 percent respectively) over the previous year. Ventura County's population is expected to exceed 900,000 by the year 2025.

2.0 County Well Ordinance

The first County Water Well Ordinance was adopted by the Board of Supervisors in 1970 and has undergone six revisions. The current Well Ordinance was last updated in December 2014 (No. 4468) to better align with SGMA.

The Well Ordinance provides for the protection of groundwater quality and supply so that groundwater will be suitable for beneficial use and not jeopardize the health, safety or welfare of the people of Ventura County. Well permits are issued for the installation and destruction of wells and engineering test holes. Quarterly water level measurements, annual water quality sampling, groundwater basins condition reporting, review of development projects, and provision of water quality and well information are carried out to better support the purpose of the Well Ordinance.

2.1 Permits

Permits are required for construction and destruction of groundwater wells, cathodic protection wells, monitoring wells, and geotechnical borings. The permits are required to ensure wells and borings are constructed and sealed per the California DWR Well Standards.

Permits are issued throughout the County, except within the City of Oxnard which issues well permits within its city boundaries. 126 permits for wells and engineering test holes were conditioned and issued during calendar year 2016.

2.2 Well Inspections

Per the Well Ordinance, well seals are inspected for each water supply well installation or destruction, cathodic protection well installation or destruction, and major modifications or repairs to existing water supply wells.

2.3 Well Inventory and Status

At the end of 2016 there were 9,131 well records in the County database in the categories listed in **Table 2-1**.

Table 2-1: Inventory and Status of Wells.

2017 Status	Number
Active	4,133
Abandoned	412
Can't Locate	1,818
Non-Compliant	80
Non-Compliant Abandoned	128
Destroyed	2,614
Exempt	14

- Active wells are those wells that meet or exceed the minimum requirement of 8 hours pumping per calendar year as described in the County of Ventura Well Ordinance No. 4468.
- Abandoned wells are those wells that do not meet the 8-hour minimum usage requirement or are in a condition that no longer allows the well to be used.
- Can't Locate wells are old rural wells for which the Groundwater Section has historic well location data but the locations are now in areas that have subsequently been urbanized. There are several reasons why a well may be listed as "Can't Locate." The current owner of the property where the

historical well was understood to be located may be unaware of the existence of a well on his/her property, or an approved search has been conducted and no well has been found.

- Non-Compliant wells are generally active wells where the owner of the well has failed to respond to written communication from the Groundwater Section.
- Non-Compliant Abandoned wells are those wells where the owner of an abandoned well has failed to respond to written communication from the Groundwater Section to take action on an inactive well. The County's Well Ordinance prohibits anyone from owning an abandoned well. Abandoned wells pose a safety risk and may also act as a potential pathway for contaminants to reach groundwater.
- Destroyed wells are wells that have been properly destroyed under permit.
- Exempt wells are wells that have been found to be in good enough condition to remain inactive for a period of five years before being re-activated or re-inspected. To be listed as exempt, a well inspection report from a registered geologist or civil engineer and application fee, must be submitted by the well owner to the Groundwater Section for review and approval

3.0 Climate & Precipitation

The mean annual daily air temperature at the National Weather Service Oxnard area office was 63.4 degrees Fahrenheit, with an average maximum high of 88.8 degrees Fahrenheit and an average minimum low of 45.3 degrees Fahrenheit[1]. The average annual rainfall, countywide was approximately 23.4 inches[2] for the 2016/2017 water year[3]. Throughout the County, precipitation for the 2016/2017 water year was above 100 percent of normal. Oxnard received 152% of normal, while the East Ventura area received 119% of the normal rainfall total. **Figure 3-1** shows various rain gage/area rainfall totals comparing water year 2016/2017 to normal precipitation totals for that gage/area. Averages are determined from the 1957-1992 base period as this is the best 35-year period that represents the long-term average for multiple sites in Ventura County[4]. **Figure 3-2** depicts average rainfall for the periods from water year 1996/1997 to 2016/2017 for all of Ventura County. **Figure 3-3** shows a generalized distribution of rainfall across the county for wetter water years (2009/2010 and 2010/2011) and **Figure 3-4** shows rainfall distribution for drier water years (2015/2016 and 2016/2017).

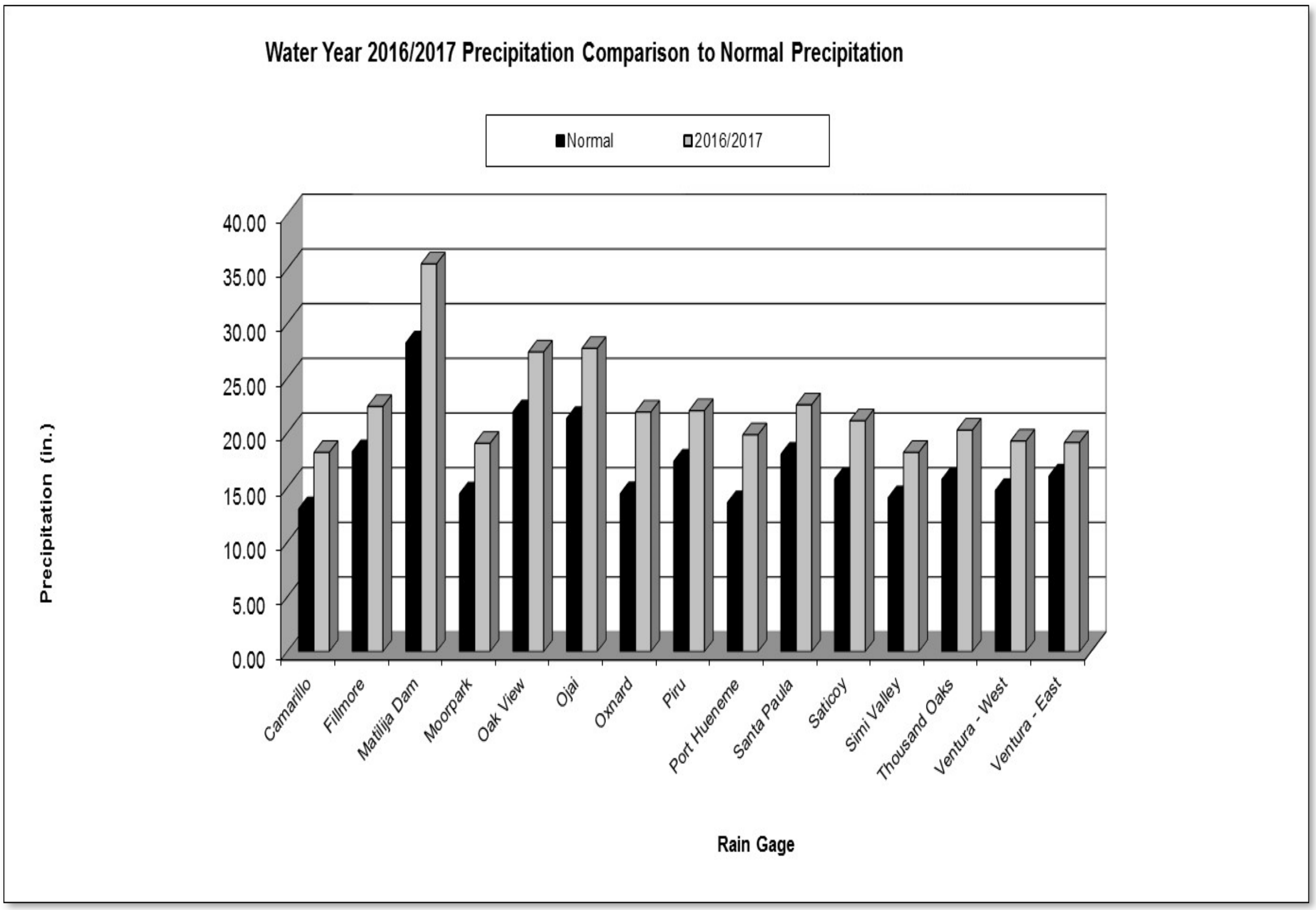


Figure 3-1: 2016/2017 precipitation and normal precipitation totals.

[1] Based on *preliminary* data from the National Climatic Data Center http://www.ncdc.noaa.gov.
[2] Based on preliminary data from all active rain gages.
[3] Water Year defined as: October 1 to September 30 of the following year. VCWPD precipitation data is *preliminary* and subject to change.
[4] According to the Ventura County Hydrology Section's Historic Rainfall webpage.

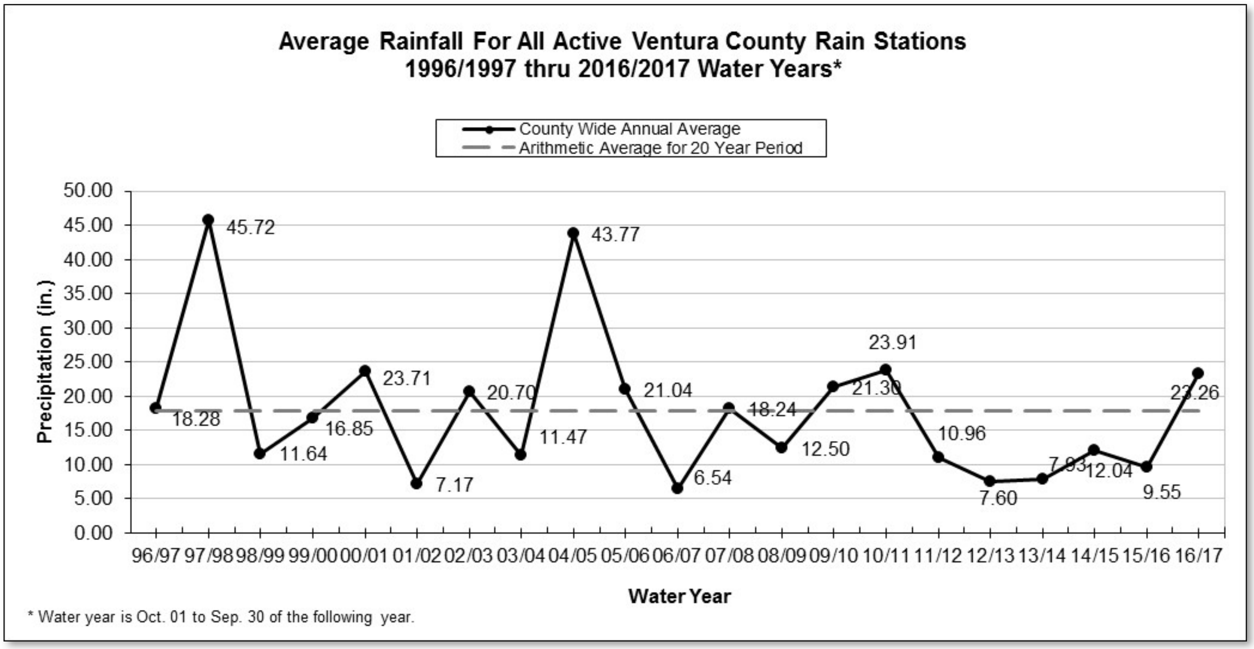


Figure 3-2: Average annual rainfall for Ventura County.

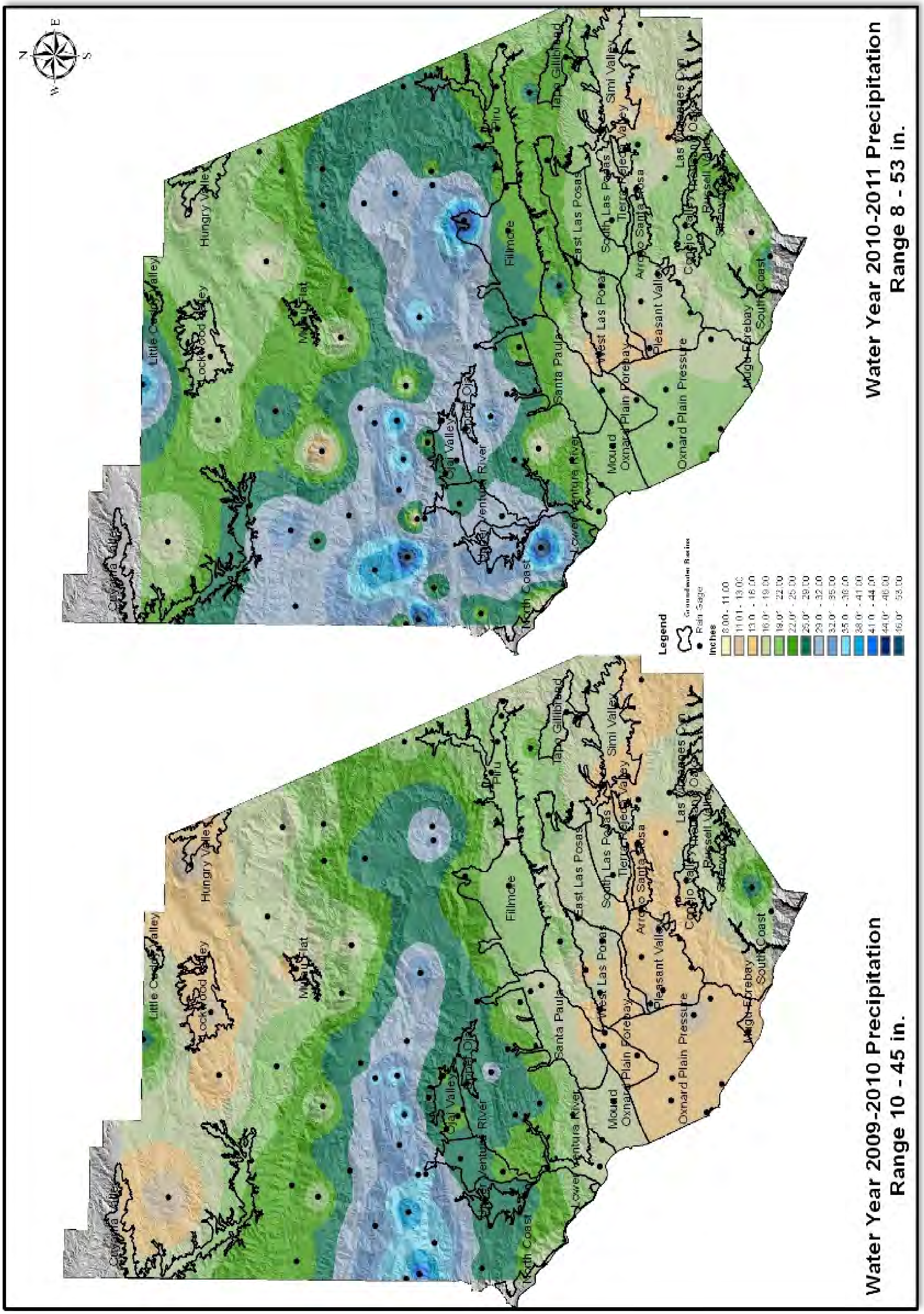


Figure 3-3: Precipitation maps of wet years.

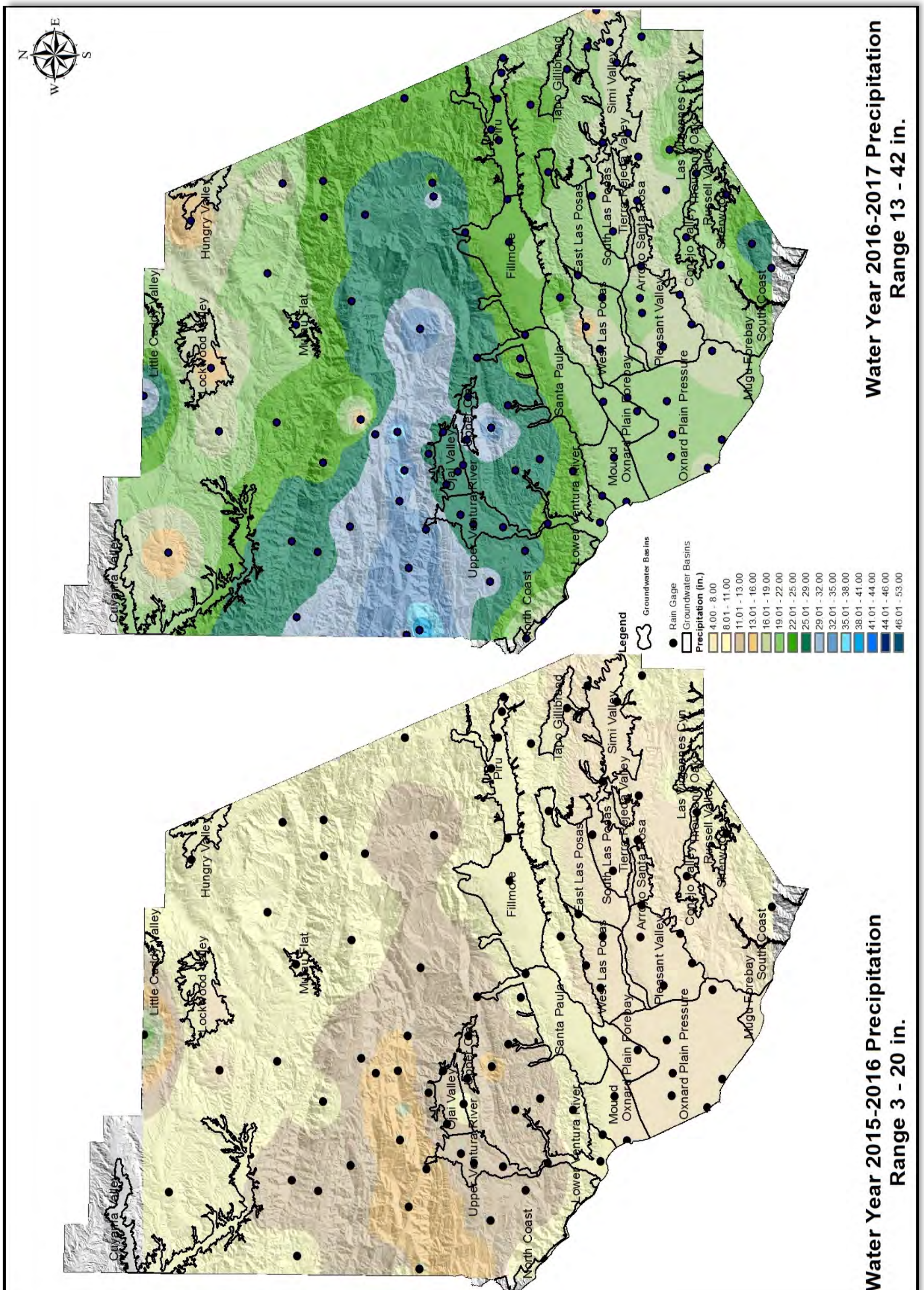


Figure 3-4: Precipitation maps of last two water years.

4.0 Groundwater

Most accessible groundwater is found in 28 County-designated groundwater basins (**Figure 4-1**). The group of basins in the south half of the County contain the largest groundwater reserves. The degree of interconnectedness of groundwater basins and aquifers within each basin is highly variable. Groundwater basins in the north half of the County do not join directly with other basins, while some groundwater basins in the south half of the County are connected on the surface and in the subsurface to varying degrees.

The County and local agencies, individual water purveyors, and the USGS all collect groundwater data. Recharge of groundwater occurs naturally from infiltration of rainfall and river/streamflow, artificially through injection of imported water and spreading of diverted river water into recharge basins.

Groundwater extraction data in certain basins is known and presented later in this report. Groundwater extraction data has been estimated in other basins.

Figure 4-1: Ventura County groundwater basins map.

4.1 Groundwater Quality Characterization

Groundwater contains a variety of chemical constituents at different concentrations. Flowing water assumes a diagnostic chemical composition from interactions with surrounding alluvium or bedrock. For most groundwaters, 95% of the ions are represented by positively charged cations sodium (Na+), potassium (K+), calcium (Ca2+), magnesium (Mg2+), and the negatively charged anions chloride (Cl-), carbonate (CO32-), bicarbonate (HCO3-), and sulfate (SO42-). These ionic species when added together account for most of the salinity that is commonly referred to as total dissolved solids (TDS). The Annual Report uses Piper and Stiff diagrams for basic characterization of the chemical composition of groundwater.

Piper Diagram

A piper diagram is a graph to visualize the chemistry of a water sample. The diagram is comprised of a ternary diagram in the lower left representing cations, a ternary diagram in the lower right representing the anions, and a diamond plot in the middle representing a combination of the two (composition) (**Figure 4-2**). Groundwater samples are interpreted as follows and illustrated in **Figure 4-3**:

- top quadrant: calcium sulfate waters – typically associated with gypsum and mine drainage
- left quadrant: calcium bicarbonate waters – typically shallow, fresh groundwater
- right quadrant: sodium chloride waters – typically marine and ancient groundwater
- bottom quadrant: sodium bicarbonate waters – typically deep groundwater influenced by ion exchange

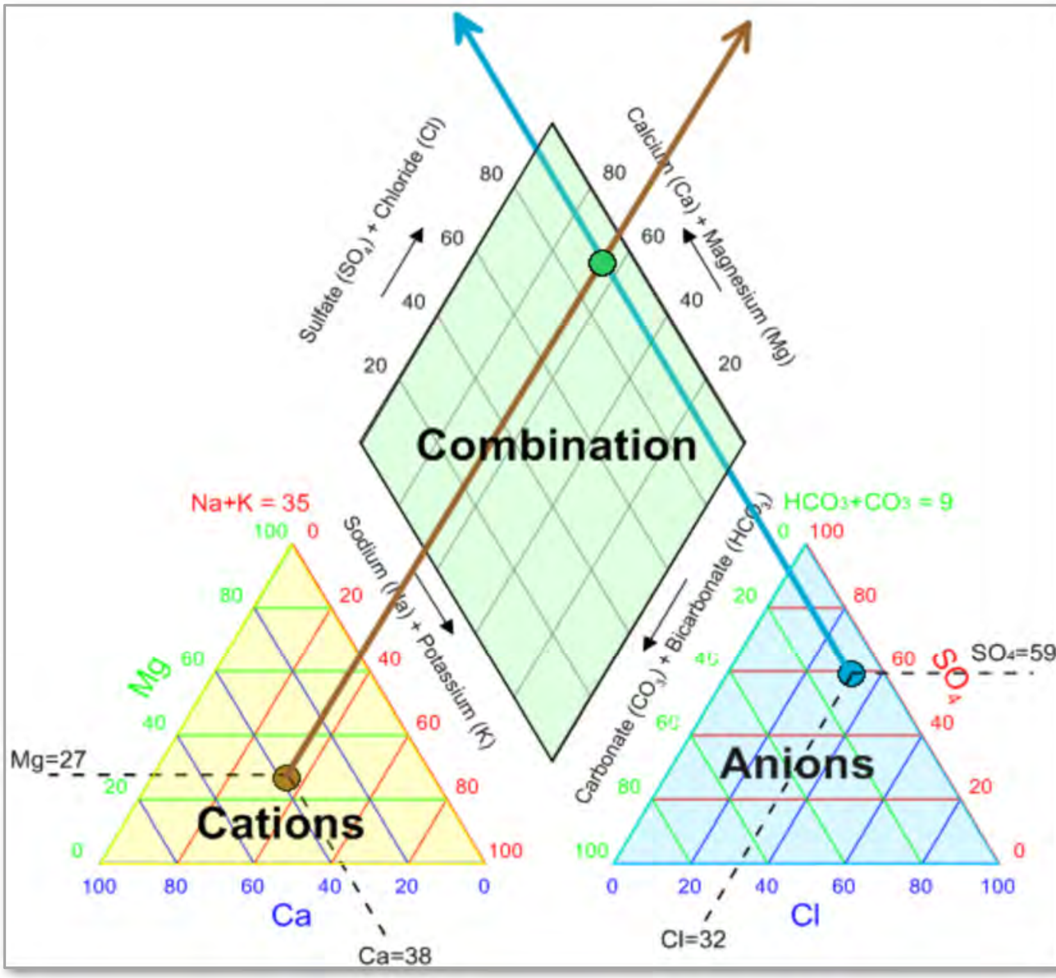


Figure 4-2: Example of a Piper Diagram.

The cations in this example plot in the mixed zone in the lower left triangle and the anions plot in the sulfate zone in the lower right triangle. Positions of the points projected on to the diamond shaped center field shows the water is calcium sulfate type. Piper diagrams for each basin are in **Appendix E**.

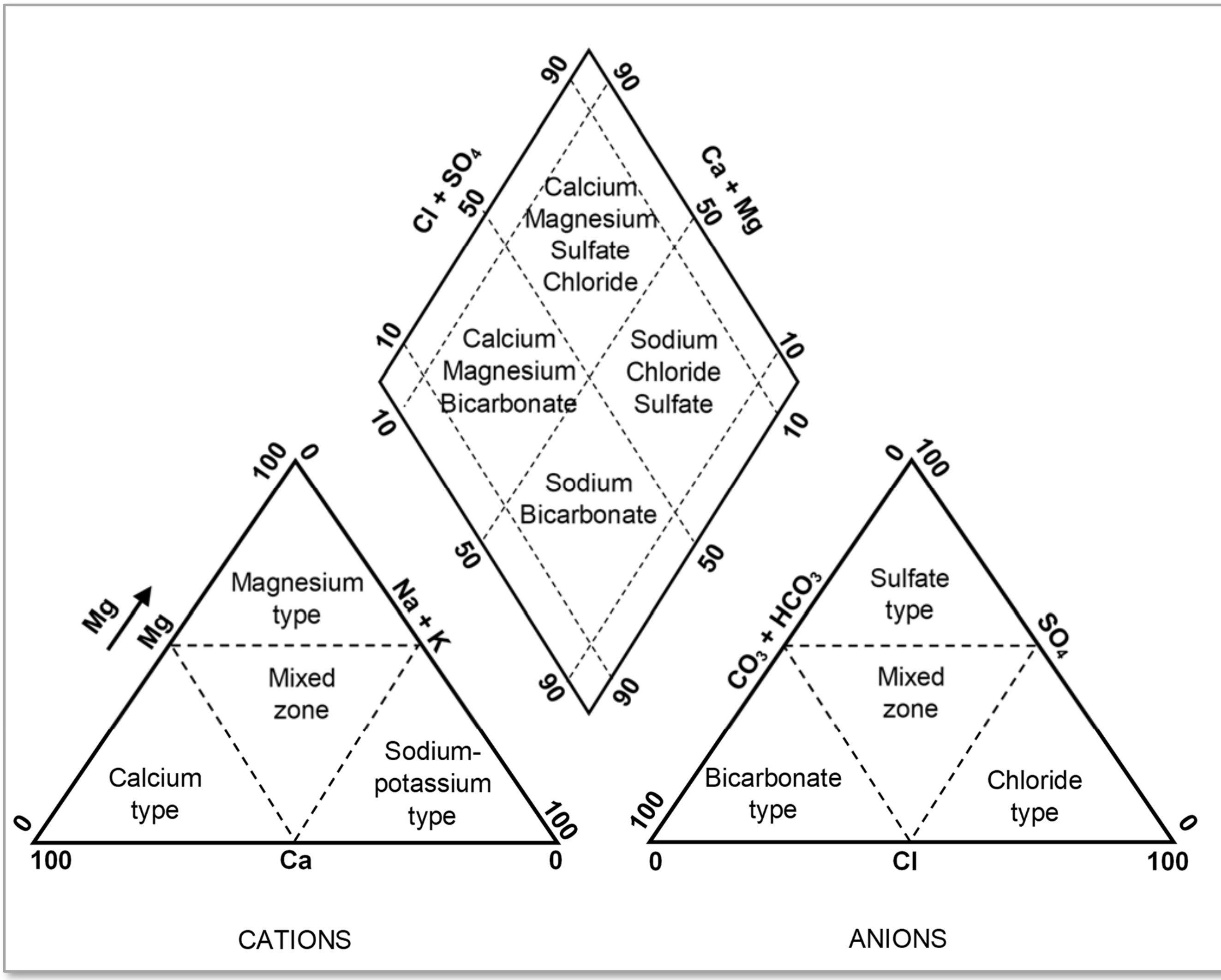


Figure 4-3: Piper diagram with water types.

Figure 4-3 shows how a Piper diagram is used to characterize water quality. Anions (Cl-, CO32-, HCO3-, and SO42-) and cations (Na+, K+, Ca2+, Mg2+) are each grouped, and their respective concentrations calculated. The concentrations are converted to milliequivalents/L (meq/L) and normalized on a percentage scale. The percent concentrations are plotted on the lower ternary diagrams. The position of the points is projected parallel to the magnesium and sulfate axes, respectively until they intersect in the center field (Fetter, 1988).

Stiff Diagram

A second method to present water quality results is through a stiff diagram (**Figure 4-4**). The same cations and anions that are plotted in the piper diagrams are shown in the stiff diagrams. The ions are plotted on either side of a vertical axis in milliequivalents per liter (meq/L), cations on the left of the axis and anions on the right. The polygonal shape created is useful in making a quick visual comparison of different water samples. Stiff diagrams for wells sampled this year are included on each basin map.

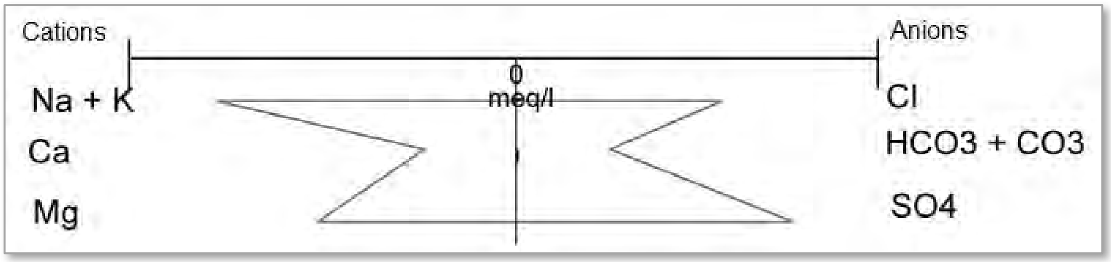


Figure 4-4: Example of Stiff Diagram.

4.2 Groundwater Quality Sampling

Water quality data is collected to assess groundwater quality within the County groundwater basins. Data from other organizations in the County is shared. Wells sampled in the north half of the County are shown in **Figure 4-5**. Wells sampled in the south half of the County are shown in **Figure 4-6**.

A total of 156 water supply wells were sampled throughout the County in 2017. Well owners are provided with a copy of the laboratory analysis and notified if any of the constituents analyzed exceed the State and Federal established maximum contaminant levels (MCLs).

Laboratory analyses are performed by Fruit Growers Laboratory in Santa Paula, a laboratory certified under the State Environmental Laboratory Accreditation Program. All wells were analyzed for irrigation suitability to determine the concentration of general minerals. A random subset of 51 wells were selected for analysis of California Title 22 metals, and 1 well were analyzed for gross alpha particles[5].

Complete water quality sampling results are included in **Appendix D**. General interpretations of the data are detailed in the following sub-sections.

Additional groundwater quality data is available from other sources, such as water districts and other agencies that collect and analyze groundwater. Organic groundwater chemistry data is also available for some areas of the County through the State Regional Water Quality Control Board's GeoTracker website for environmental cleanup sites (https://geotracker.waterboards.ca.gov/).

[5] Alpha particles (α-particles) are a type of radiation emitted by some radionuclides.

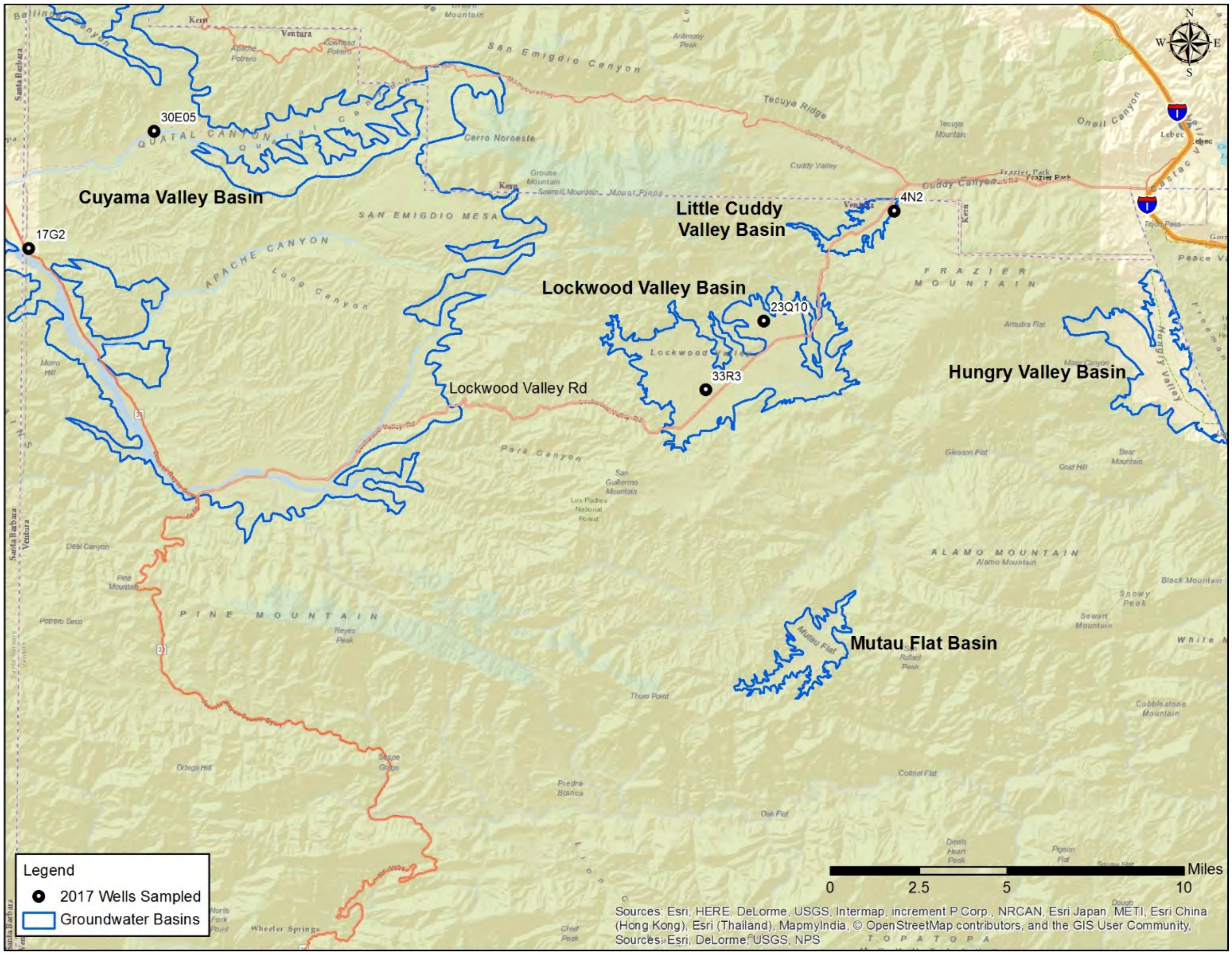


Figure 4-5: Location of wells sampled in North half of the County.

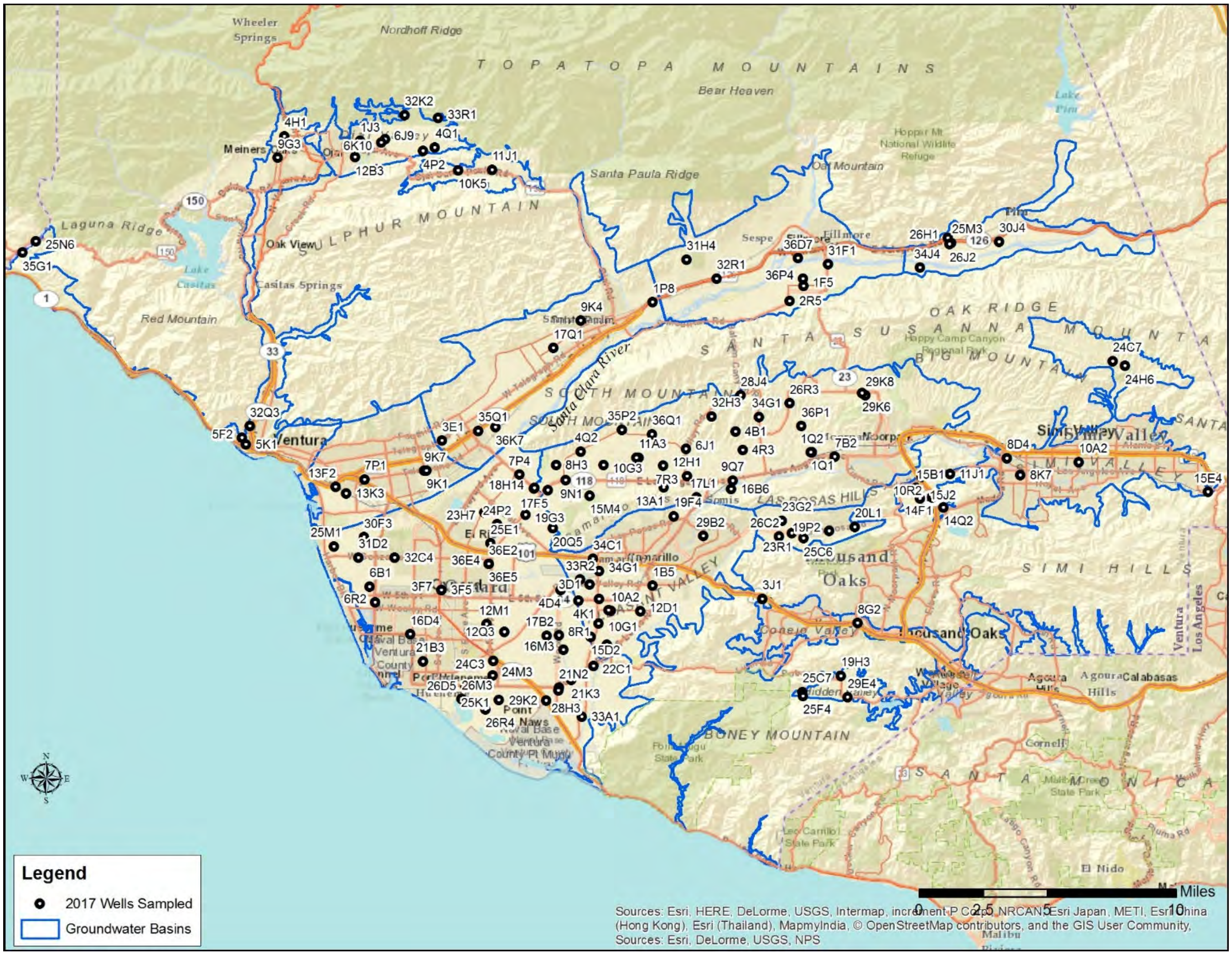


Figure 4-6: Location of wells sampled in South half of the County.

4.3 Water Quality Standards

The Annual Report uses Water Quality Standards established by the Los Angeles Regional Water Quality Control Board (LARWQCB). Water Quality Standards provide for the reasonable protection and enhancement of surface and groundwater and consist of beneficial uses and water quality objectives as mandated by the California Water Code (§13241). The Water Board developed twenty-four defined beneficial uses, all of which are compiled in the *Basin Plan for the Coastal Watersheds of Los Angeles and Ventura County* (Basin Plan). Water quality objectives protect public health and groundwater's beneficial uses by maintaining or enhancing existing or potential beneficial uses of water.

The Basin Plan specifies Ventura County's numerical Water Quality Standards for groundwater and incorporates Title 22, California Code of Regulations standards for groundwater by reference. These are referred to as Primary Maximum Contaminant Levels (MCLs). Primary MCL's are the highest level of a contaminant allowed in drinking water that can be present without any adverse health effects. Primary MCL's developed by the State meet or exceed the United States Environmental Protection Agency (EPA) standards and are legally enforceable standards.

State MCL's for inorganic chemicals (Title 22 Metals) and their potential health effects are listed in **Table 4-1**. State and EPA Primary MCLs for radionuclides are listed in **Table 4-2**.

The Basin Plan also states that groundwater shall not contain "taste or odor-producing substances" that "cause nuisance or adversely affect beneficial uses." These are known as Secondary Maximum Contaminant Levels (SMCLs) (**Table 4-3**). SMCLs do not pose a threat to human health and are set to a level at which most people will notice their presence in drinking water. SMCLs assist in managing drinking water for aesthetic considerations (taste, odor, and color) and are enforceable standards in California.

Table 4-1: Primary Maximum Contaminant Levels for Title 22 Metals.

Primary Contaminants	Chemical Formula	EPA MCL[1] (mg/L)[2]	CCR, Title 22 MCL (mg/L)	Potential Health Effects
Aluminum	Al	not established	1.0	Unknown. Some studies show exposure to high levels may cause Alzheimer's, but other studies show this not to be true.
Antimony	Sb	0.006	0.006	Increase in blood cholesterol; decrease in blood sugar
Arsenic	As	0.01	0.01	Skin damage or problems with circulatory systems, and may have increased risk of getting cancer.
Asbestos	various	7 MFL[3]	7 MFL	Increased risk of developing benign intestinal polyps.
Barium	Ba	2	1	Increase in blood pressure.
Beryllium	Be	0.004	0.004	Intestinal lesions.
Cadmium	Cd	0.005	0.005	Kidney damage.
Chromium	Cr	0.1	0.05	Allergic dermatitis.
Copper	Cu	1.3	1.3	Short term exposure: Gastrointestinal distress. Long term exposure: Liver or kidney damage
Cyanide (as free cyanide)	CN^-	0.2	0.15	Nerve damage or thyroid problems.
Fluoride	F^-	4	2	Bone disease (pain and tenderness of the bones); Children may get mottled teeth.
Lead[4]	Pb	0.015	0.015	Infants and children: Delays in physical or mental development; children could show slight deficits in attention span and learning abilities. Adults: Kidney problems; high blood pressure.
Mercury	Hg	0.002	0.002	Kidney damage.
Nickel	Ni	not established	0.1	Allergic contact dermatitis most common.
Nitrate (as Nitrogen) NO_3^-	N	10	10	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.

Primary Contaminants	Chemical Formula	EPA MCL[1] (mg/L)[2]	CCR, Title 22 MCL (mg/L)	Potential Health Effects
Nitrate[5]	NO_3^-	Listed as Nitrate-N	45	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.
Nitrite (as Nitrogen) NO_2^-	N	1	1	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.
Selenium	Se	0.05	0.05	Hair or fingernail loss; numbness in fingers or toes; circulatory problems.
Thallium	Tl	0.002	0.002	Hair loss; changes in blood; kidney, intestine, or liver problems.

[1] MCL = Maximum Contaminant Level.

[2] mg/L = milligrams per liter.

[3] MFL = Million fibers per liter, with fiber length >10 microns.

[4] Regulatory action level.

[5] CCR, Title 22 standard for Nitrate reported as NO_3

Table 4-2: Primary Maximum Contaminant Levels for Radionuclides.

Radionuclide	Chemical Formula	CCR, Title 22 MCL [1]	EPA MCL	Potential Health Effects
Gross Alpha particle activity (excluding radon and uranium)	none	15 pCi/L	15 pCi/L [2]	Toxic kidney effects, risk of cancer.
Gross Beta particle activity	none	50 pCi/L 4 millirem/yr	4 millirem/yr [3]	
Radium-226	Ra-226	5 pCi/L	5 pCi/L [4]	
Radium-228	Ra-228	5 pCi/L	combined with Radium-226	
Strontium-90	Sr	8 pCi/L	covered under gross beta	
Tritium	3H	20,000 pCi/L	covered under gross beta	
Uranium	U	20 pCi/L	30 µg/L [5] (~20 pCi/L)	

[1] MCL = Maximum Contaminant Level.

[2] pCi/L = picocurie per liter. One pCI is one trillionth of a Curie, 0.037 disintegrations per second, or 2.22 disintegrations per minute.

[3] Gross beta MCL is 4 millirems/year annual dose equivalent to the total body or any internal organ; Sr-90 MCL = 4 millirem/year to bone marrow; tritium MCL = 4 millirem/year to total body.

[4] EPA MCLs combine radium-226 and radium-228.

[5] µg/L = micrograms per liter, can be converted to pCi/L by multiplying by 0.67

Table 4-3: Secondary Maximum Contaminant Levels.

Secondary Contaminants	**Chemical Formula**	**EPA MCL[1] (mg/L)[2]**	**CCR, Title 22 MCL (mg/L)**	**Noticeable Effects**
Aluminum	Al	0.5 to 0.2	0.2	Colored water.
Chloride	Cl^-	250	250	Salty taste.
Color[3]	--	15	15	Visible tint.
Copper	Cu	1.0	15	Metallic taste; blue-green staining.
Corrosivity	--		not established	Metallic taste; corroded pipes/ fixtures staining.
Fluoride	F^-	2.0	not established	Tooth discoloration
Foaming Agents	--	0.5	0.5	Frothy, cloudy; bitter taste; odor.
Iron	Fe	0.3	0.3	Rusty color; sediment; metallic taste; reddish or orange staining.
Manganese	Mn	0.05	0.05	Black to brown color; black staining; bitter metallic taste.
Odor[4]	--	3 TON	3 TON	"Rotten-egg" smell, musty or chemical smell.
pH	--	6.5-8.5	not established	Low pH: bitter metallic taste; corrosion. High pH: slippery feel; soda taste; deposits.
Silver	Ag	0.1	0.1	Skin discoloration; graying of the white part of the eye.
Specific Conductance[5]	--	not established	900	Unpleasant taste or odor; gastrointestinal distress.
Sulfate	SO_4^{2-}	250	250	"Rotten-egg" smell, iron and steel corrosion or "black water"; can discolor silver, copper and brass utensils.
Total Dissolved Solids (TDS)	--	500	200	Hardness; deposits; colored water; staining; salty taste.
Zinc	Zn	5.0	5.0	Metallic taste.

[1] MCL = Maximum Contaminant Level.
[2] mg/L = milligrams per liter.
[3] Units are in color numbers.
[4] Units are in TON = Threshold Odor Number
[5] Units are in Siemens per centimeter = S/cm.

4.4 Current Sampling Results by Basin

General interpretations of the groundwater quality data for each groundwater basin sampled this year are in this section. The Annual Report includes a summary table of water quality analyses for nitrate, TDS, sulfate, chloride, and boron for each basin. Presentation of the data in this format allows for ease of comparison with the numerical mineral quality objectives outlined in the Basin Plan.

Table 4-4: Example of summary table.

Criteria	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
Primary MCL	45	none	none	none	none
Secondary MCL	none	500	250	250	none

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL.

The piper diagram (**Figure E-1**) shows water quality for all wells sampled in the County. Countywide there is moderate variation in water quality of the wells sampled with calcium as the dominant cation and sulfate as the dominant anion. The most common water type is calcium-sulfate.

Basin sampling results are presented in alphabetical order by basin name.

4.4.1 Arroyo Santa Rosa Basin

The water bearing units of the Arroyo Santa Rosa Basin occupy almost the entire area beneath the Santa Rosa Valley, but the area west of the Bailey Fault is generally considered hydrogeologically separate from the area east of the fault, although some leakage across the fault does occur (Camrosa, 2013). The location of the fault is inferred primarily from water well data (Camrosa, 2013). Depth to water bearing material is approximately 50 feet below ground surface (bgs). The water bearing units west of the fault are confined and those located east of the fault are unconfined. The main water-bearing units in the basin are alluvium and parts of the San Pedro Formation, which can reach a thickness of up to 700 feet on the eastern portion. The degree of groundwater movement across the fault is not clearly understood. The major hydrologic features are the Conejo Creek and its tributary, Arroyo Santa Rosa, which drain the surface waters westward toward the Pacific Ocean.

The basin is dominated by an east-trending syncline that folds the San Pedro and Santa Barbara Formations, directing water into the more permeable San Pedro Formation. The Santa Rosa fault zone places the less permeable Sespe and Topanga Formations against the San Pedro Formation, creating a barrier to groundwater flow into the basin from the north and is likely responsible for the difference in water levels in the western part of the basin (CSWRB, 1956).

The Arroyo Santa Rosa Basin has a large area dedicated to agricultural use and a high number of individual septic systems, two of the main sources of nitrate to the groundwater. A large portion of recharge to the basin is discharge from the Thousand Oaks Hill Canyon Wastewater Treatment Plant. There are 91 water supply wells in the Arroyo Santa Rosa Basin of which 42 are active.

The piper diagram in **Figure E-2** shows moderate variation in water quality of the wells sampled this year. There is no dominant cation, but the samples plot closely to the magnesium cation type. Bicarbonate is the dominant anion for one of the samples and there is no dominant anion for the remainder. One of the water samples is magnesium-bicarbonate type and the remainder are magnesium-sulfate type.

Selected water quality results are presented in **Table 4-5**. Water from five of the six wells sampled this year have nitrate concentrations higher than the primary MCL for drinking water. All six wells have TDS concentrations above the SMCL; ranging from 700 to 1,040 mg/L. Chloride concentrations in four of the wells are above the impairment level of agricultural beneficial uses for sensitive plants but are not above the primary MCL for drinking water. Three water samples were analyzed for Title 22 metals. None of the Title 22 metals were above the primary MCL for drinking water. The piper diagram in **Figure E-3** shows a comparison of groundwater chemistry between Tierra Rejada Basin and the Arroyo Santa Rosa Basin. The water chemistry is similar but with more variation in the Tierra Rejada samples. **Figure 4-7** shows approximate well locations and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled in the Arroyo Santa Rosa Basin.

Table 4-5: Selected water quality results for the Arroyo Santa Rosa Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
19P02	11/29/17	**70.2**	**700**	114	107	0.2
20L01	09/27/17	**81.1**	**910**	168	137	0.2
23G03	09/27/17	**72.8**	**790**	92.1	168	0.1
23R01	09/27/17	**104**	**970**	192	194	0.4
25C06	11/29/17	23	**720**	166	153	0.4
26C02	09/27/17	**78.9**	**1,040**	218	176	0.4

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

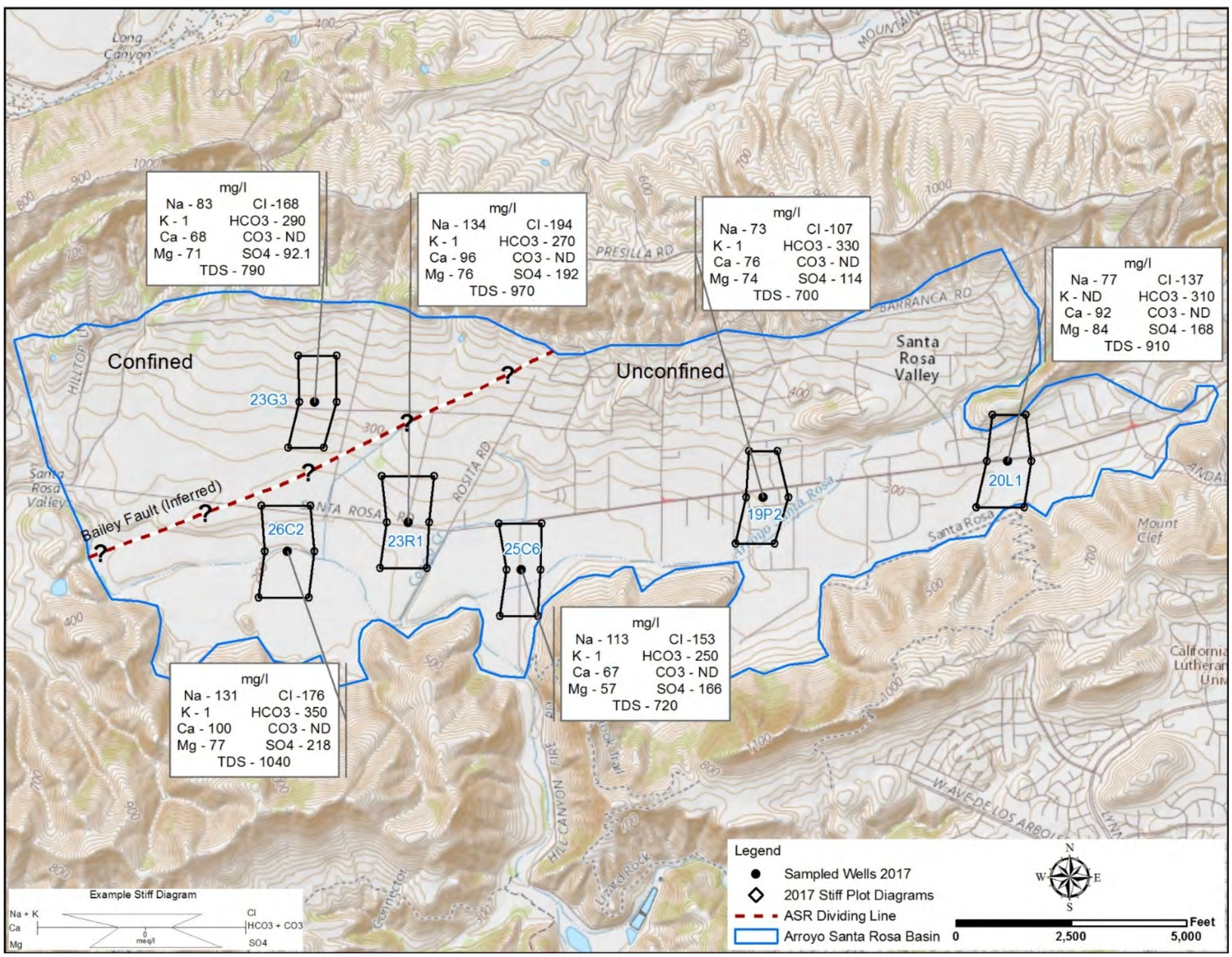


Figure 4-7: Arroyo Santa Rosa Basin wells sampled with stiff diagram and selected inorganic constituents.

Figure 4-8 shows the geographic distribution of the wells sampled, with graduated symbols representing nitrate concentrations for 2017. **Figure 4-9** shows nitrate results for 2008 through 2017 in the same manner. The Arroyo Santa Rosa Basin has been nitrate-impacted for many years. Management practices in the Ventura County Non-Coastal Zoning Ordinance were established to mitigate nitrate impacts. These include limiting the number of large animals kept and restricting septic systems. Current sampling results exceed the state MCL of 45 mg/L in five of the six wells sampled. No groundwater samples collected this year had a nitrate (NO_3^-) concentration above 82 mg/L, less than historic concentrations as high as 292 mg/L.

ARROYO SANTA ROSA BASIN
2017 Nitrate Concentrations

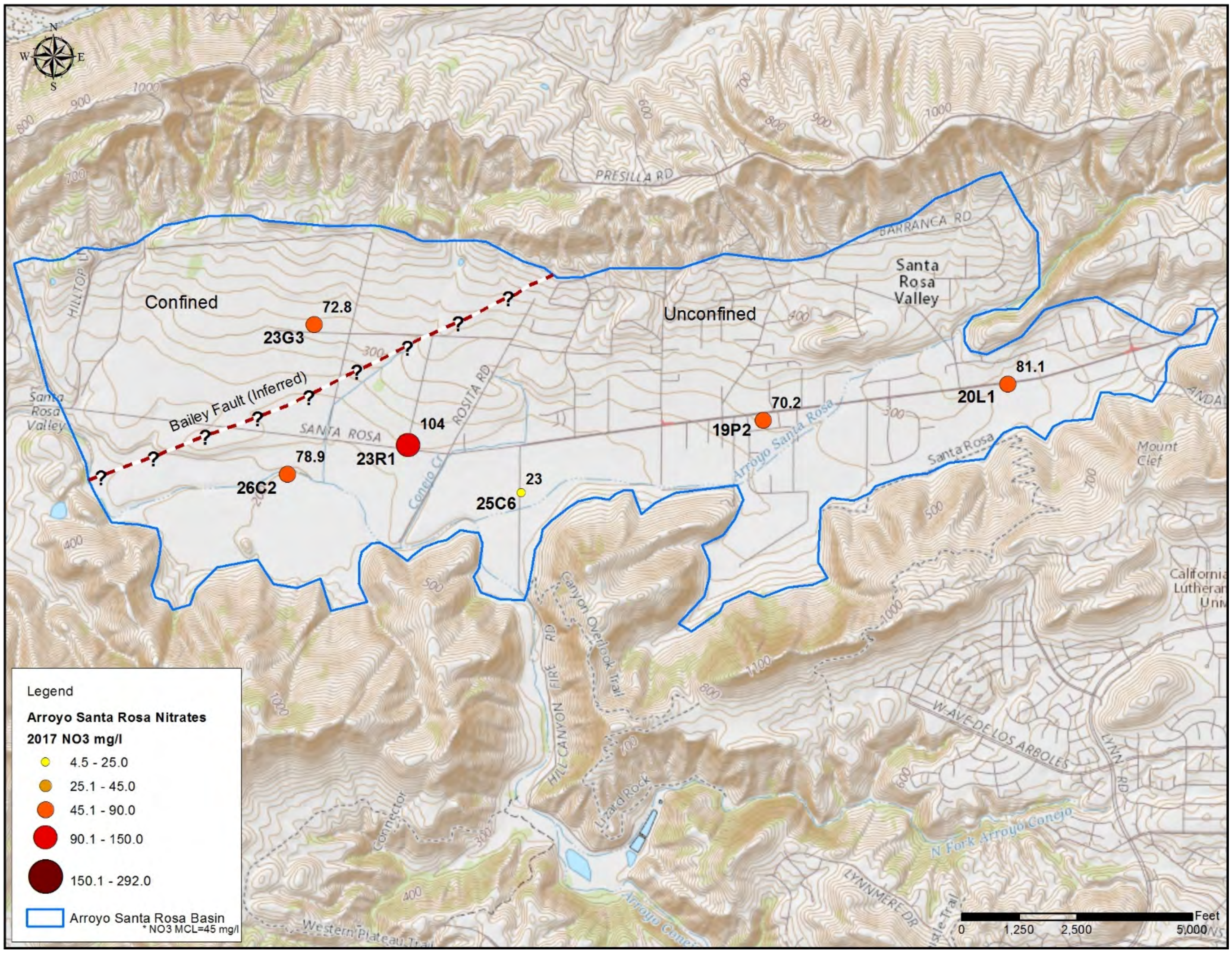


Figure 4-8: Arroyo Santa Rosa Basin nitrate concentrations for 2017.

ARROYO SANTA ROSA BASIN
2008 – 2017 Nitrate Concentrations

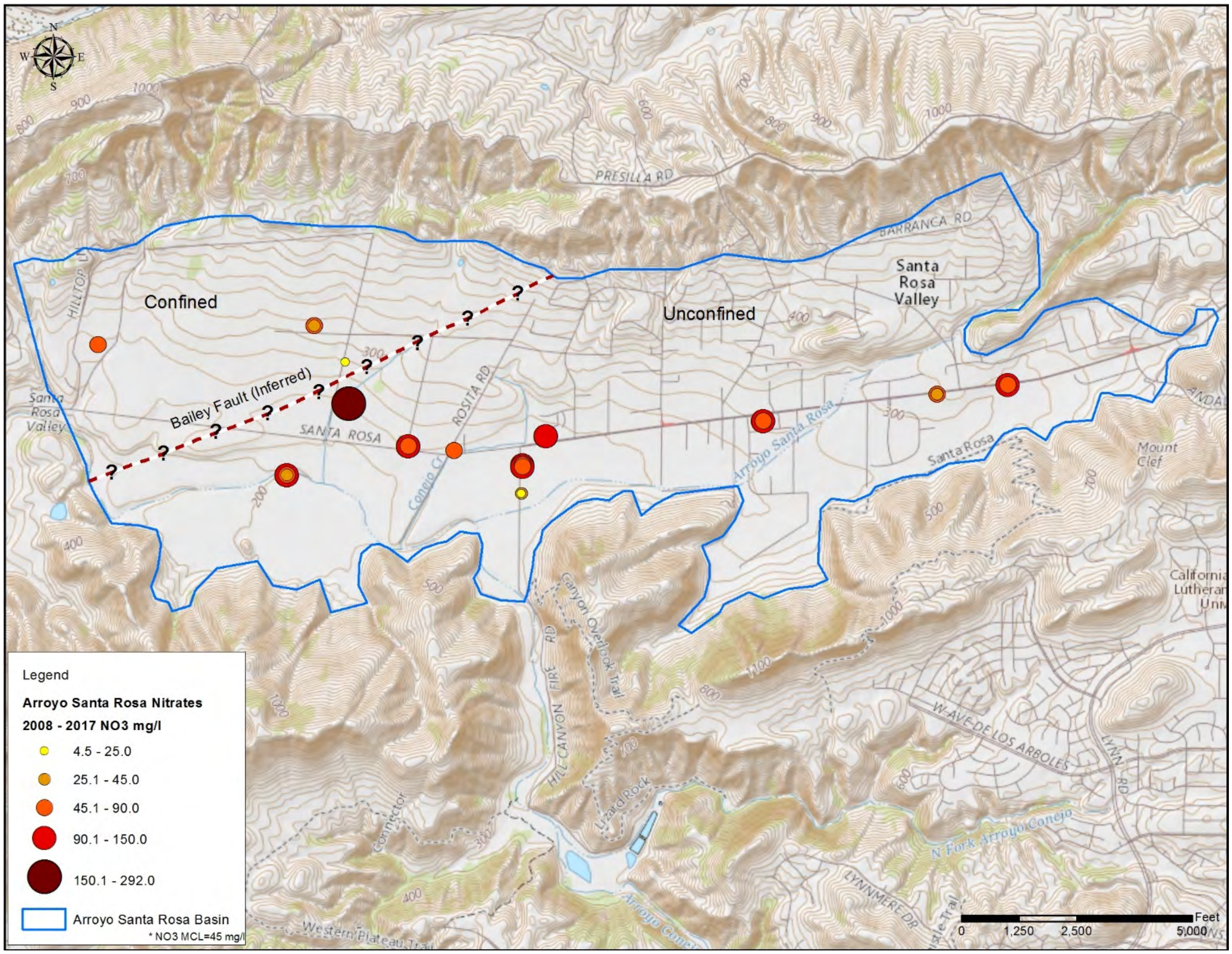


Figure 4-9: Arroyo Santa Rosa nitrate concentrations for 2008 – 2017.

4.4.2 Conejo Valley Basin

The Conejo Valley Basin has few active water wells available for sampling. The depth to groundwater averages about 50 feet bgs. There are approximately 167 wells in the Conejo Valley Basin and 11 active water supply wells. One well located at the northwest corner of the basin was sampled this year. The piper diagram in **Figure E-4** shows the water quality of the well sampled in 2018. Magnesium is the dominant cation and bicarbonate is the dominant anion. The water is magnesium-bicarbonate type. TDS concentration is above the SMCL for drinking water as shown in **Figure 4-10** and **Table 4-6**.

Table 4-6: Selected water quality results for the Conejo Valley Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
03J01	11/14/17	12.6	**680**	115	74	0.2

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

Figure 4-10 shows the approximate well location and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled in the Conejo Valley Basin.

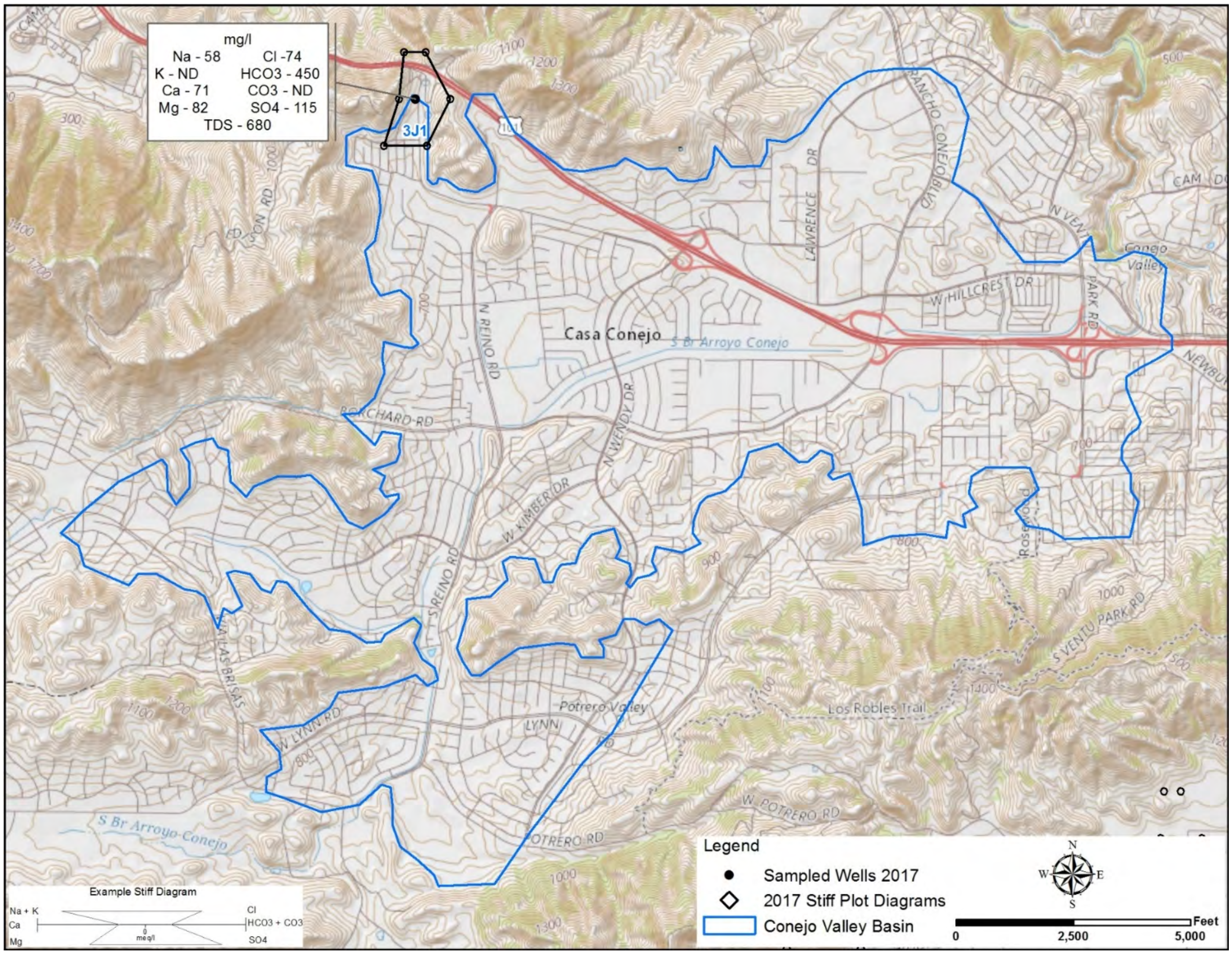


Figure 4-10: Conejo Valley Basin wells sampled with stiff diagram and selected inorganic constituents.

4.4.3 Cuyama Valley Basin

The Cuyama Valley Basin is in a remote area in northwestern Ventura County. The map in **Figure 4-11** shows only the portion of the basin that is in Ventura County. There are approximately 152 water supply wells in the Cuyama Valley Basin and 113 active wells. Depth to the main water bearing unit varies between 40 to 170 feet bgs. The piper diagram in **Figure E-5** shows low variability in water quality of the wells sampled this year. Sodium is the dominant cation in both samples and there is no dominant anion. Both samples are sodium-sulfate type. **Table 4-7** shows both wells sampled this year have TDS above the SMCL for drinking water and one sample exceeds the MCL for chloride. No other constituent was detected above the MCL. Water samples from both wells were analyzed for Title 22 metals. DWR Groundwater Bulletin No. 118 indicates groundwater quality has been deteriorating in some areas because of cycling and evaporation of irrigation water. Both wells sampled have good water quality and are in the northern part of the basin where there is not as much irrigation. **Figure 4-12** shows approximate well locations and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled in the Cuyama Valley Basin.

Table 4-7: Selected water quality results for the Cuyama Valley Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
17G02	11/15/17	ND	**740**	190	113	0.4
30E05	11/15/17	5.2	**980**	185	**221**	0.6

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

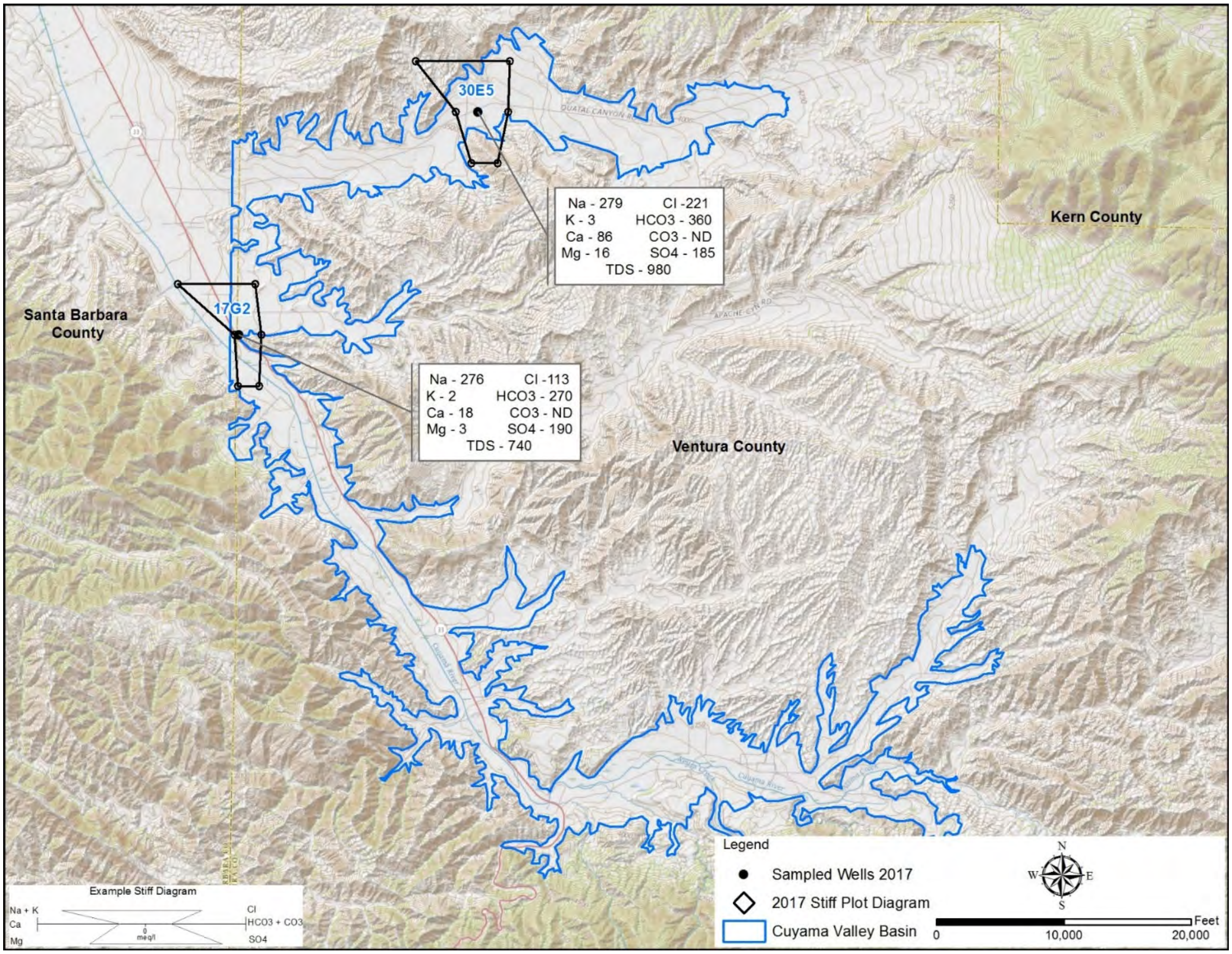


Figure 4-11: Cuyama Valley Basin wells sampled with stiff diagram and selected inorganic constituents (in mg/L).

4.4.4 Fillmore Basin

The Fillmore Basin, though small in geographic area, has a total aquifer thickness of almost 8,000 feet in some places. Despite the depth of the basin, County records indicate that water wells are generally no deeper than approximately 950 feet. Water quality can vary greatly depending on depth of the well. Shallow groundwater is generally younger and recharged by river flows. Deeper groundwater is older and has acquired chemistry through dissolution of constituents from the surrounding sediments. There are approximately 650 water supply wells in the Fillmore Basin and 465 active wells. Historically, nitrate concentrations have been elevated, but only one out of eight wells sampled showed elevated nitrate concentration relative to the primary MCL for drinking water (**Table 4-8**). The piper diagram in **Figure E-7** shows moderate variability in water quality of the wells sampled this year. The dominant cation in three samples is calcium and there is no dominant cation for the remainder of the samples. Data plots closest to a calcium cation type. Sulfate is the major anion for seven samples and bicarbonate is the major anion for one sample. The water is calcium-sulfate type in seven samples and calcium-bicarbonate in the remaining samples. TDS concentrations from all eight wells ranges from 640 to 2,340 mg/L and exceed the SMCL for drinking water. Seven of the samples exceed the sulfate concentration for the SMCL for drinking water and water from one well is above the manganese SMCL. Water samples from two wells were analyzed for Title 22 metals. All constituents are below the primary MCL for drinking water except for an elevated nitrate concentration in one sample. Water quality tends to degrade in the southeast portion of the basin in the vicinity of the Oak Ridge fault. **Figure 4-12** shows approximate well locations and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled in the Fillmore Basin. Water samples from all the wells sampled in the Fillmore, Santa Paula and Piru Basins were compared in a piper diagram in **Figure E-21**. The piper diagram shows moderate variability and the data from the three basins show little variation. The water type for one well is calcium-bicarbonate and the remaining samples are calcium-sulfate type.

Table 4-8: Selected water quality results for the Fillmore Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
01F05	10/26/17	12.9	**1,020**	**416**	58	0.6
02R05	11/02/17	38.7	**2,340**	**1010**	200	1.4
01P08	10/26/17	**55.5**	**1,020**	**369**	56	0.3
31F01	10/26/17	9.4	**970**	**407**	65	0.7
31H04	11/09/17	13.8	**640**	201	14	0.1
32R03	11/02/17	35.8	**980**	**400**	52	0.5
36D07	10/30/17	12	**1,130**	**482**	67	0.7
36P04	10/26/17	27	**1,100**	**448**	59	0.6

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

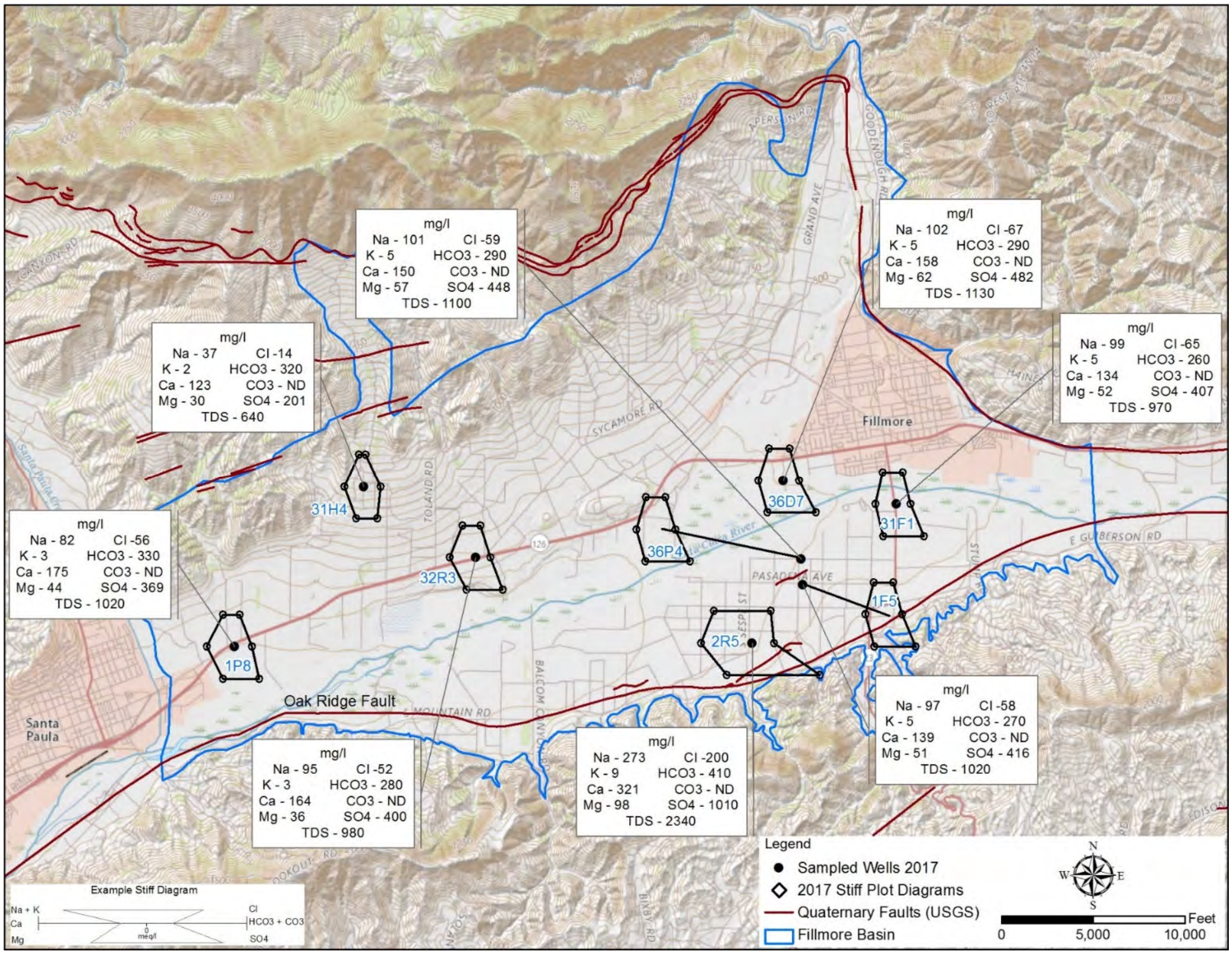


Figure 4-12: Fillmore Basin wells sampled with stiff diagram and selected inorganic constituents.

4.4.5 Las Posas Basin - East

Water bearing material of the East Las Posas Basin consists of Quaternary and Pleistocene alluvial deposits of varying thickness. Water bearing material consists primarily of sand or a mixture of sand and gravel identified as the Fox Canyon Aquifer in this basin and is the basal member of the Pleistocene age, San Pedro Formation (Stokes, 1971). The Fox Canyon Aquifer is generally considered to be confined in the East Las Posas Basin. The Fox Canyon Aquifer receives recharge from leakage from overlying aquifers (FCGMA 2007 Basin Management Plan). The exact hydrogeologic connectivity is not well understood. Depth to the upper water bearing unit is approximately 120 to 150 feet and 530 to 580 feet bgs to the lower water bearing unit. There are approximately 250 water supply wells in the East Las Posas Basin and 153 active wells.

The piper diagram in **Figure E-6** shows moderate variability in water quality of the ten wells sampled this year. Calcium is the dominant cation for five of the wells sampled and there is no dominant cation for the other five wells. Sulfate is the dominant anion for three of the wells, bicarbonate is the dominant anion in three of the wells sampled, and four wells have no dominant anion. The water in six of the wells sampled is calcium-sulfate type and four of the wells are calcium-bicarbonate type. Of the ten wells sampled in the East Las Posas Basin, two wells located in the southwest portion of the basin near the Arroyo Las Posas have very different water chemistry. TDS and sulfate are above the SMCL for drinking water in the southwestern most wells. Chloride levels for the two southwestern wells do not exceed the drinking water MCL but they are above the impairments level of agricultural beneficial uses for sensitive plants. The remainder of the wells have good water quality with TDS ranging between 290 and 1,560 mg/L (**Table 4-9**).

The piper diagram in **Figure E-31** shows a comparison between the East, West and South Las Posas water chemistry. There is moderate variability in the water quality of the combined basins. The South Las Posas Basin has less variability, but fewer wells were sampled in that basin. Most of the water samples from all three basins is in two main groups, those with sulfate as the dominant anion, calcium-sulfate type and those with no dominant anion but which plot near bicarbonate as calcium-bicarbonate type water. The water chemistry of East and West Las Posas Basins is similar, However, based on the distinct difference in water levels between the East Las Posas and West Las Posas basins, the degree of hydrogeologic connection appears to be limited. **Figure 4-13** shows approximate well locations and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate of the East Las Posas Basin.

Table 4-9: Selected water quality results for the East Las Posas Valley Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
04B01	11/14/17	ND	420	144	14	ND
04R03	10/02/17	ND	**1,350**	**584**	157	0.4
09Q07	09/28/17	24.6	**1,560**	**667**	199	0.7
16B06	11/16/17	ND	**1,360**	**538**	175	0.7
29K06	10/02/17	**79.3**	380	32.7	48	ND
29K08	10/02/17	17.3	460	128	29	0.1
26R03	11/21/17	ND	**630**	**277**	14	ND
28J04	11/21/17	**52.6**	**550**	124	42	0.2
34G01	11/21/17	ND	380	129	12	ND
36P01	11/27/17	24.4	290	39.8	20	ND

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

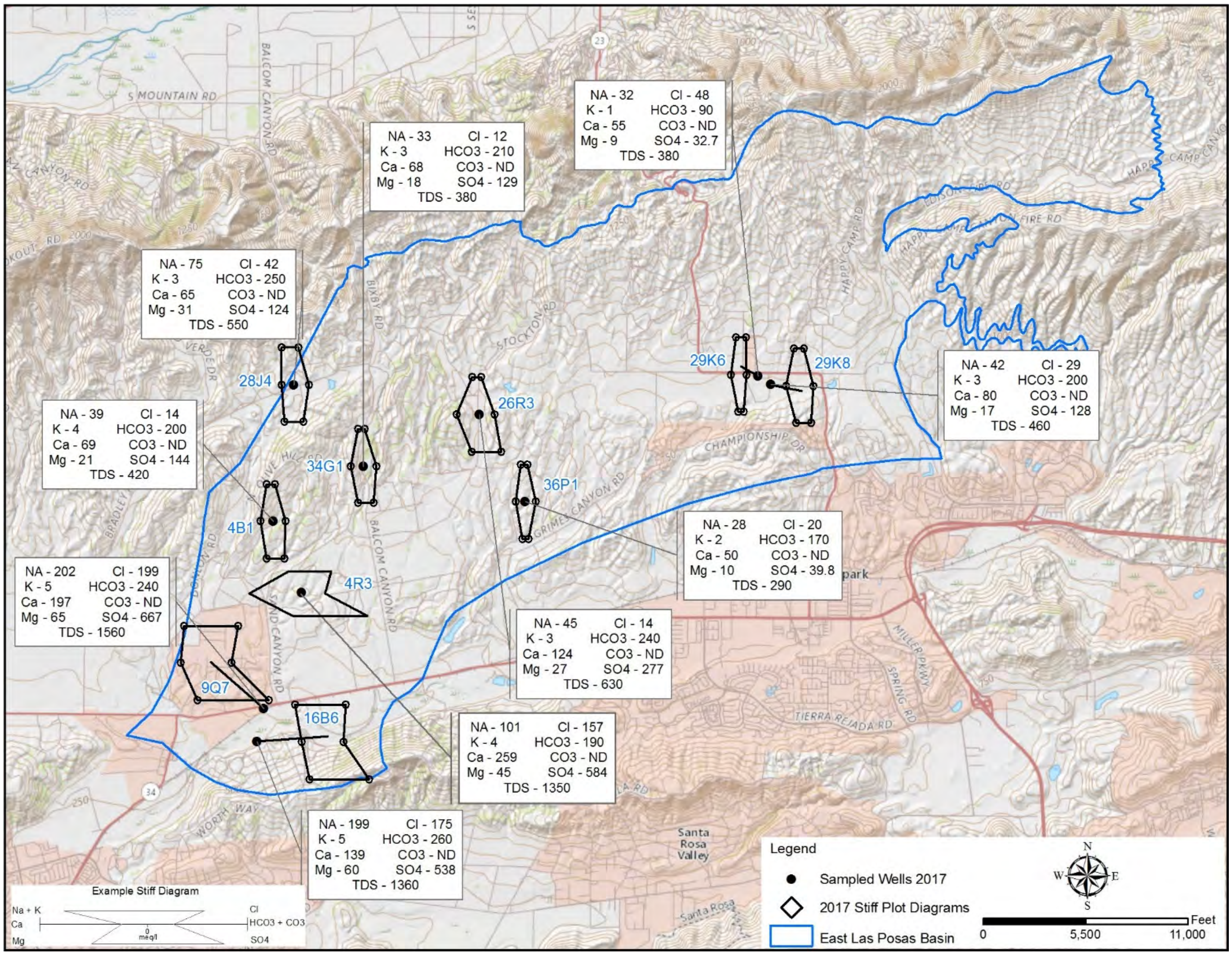


Figure 4-13: Las Posas Valley Basin – East, sampled wells with stiff diagram and selected inorganic constituents (in mg/L).

4.4.6 Las Posas Basin- South

The upper water bearing unit in the South Las Posas Basin is approximately 25 to 50 feet bgs and the lower is at approximately 350 to 500 feet bgs. Generally, deeper wells perforated in the Fox Canyon Aquifer tend to have better water quality than the upper unit. Well 7B2 is perforated much deeper than the other two wells sampled but the water chemistry is similar to the shallower wells sampled. There are approximately 172 water supply wells in the South Las Posas Basin and 30 are active. The Piper diagram in **Figure E-24** shows low variability in water quality of the wells sampled this year. The dominant cation for one well is sodium. The other two samples have no dominant cation, but one plots closest to calcium type and one plots closest to the sodium type. Sulfate is the dominant anion in all three samples. The water type of two wells is calcium-sulfate and the third is sodium-sulfate. Water Quality in the South Las Posas Basin has not changed significantly over the past year. TDS and sulfate concentrations in all three wells sampled are above the SMCL for drinking water. All water samples have chloride concentrations high enough to be detrimental for some agricultural uses, but do not exceed the SMCL for drinking water. One sample was analyzed for Title 22 metals and all constituents were below the MCLs for drinking water.

Water chemistry in the South Las Posas Basin is consistent across the basin. A comparison of the East, West, and South Las Posas Basins is shown in the piper diagram in **Figure E-31**. The water chemistry in the East Las Posas and West Las Posas samples are more similar to each other than to the South Las Posas samples. There is moderate to high variation in the chemistry of all the basins. **Figure 4-14** shows approximate well locations and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled in the South Las Posas Basin.

Table 4-10: Selected water quality results for the South Las Posas Valley Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
07B02	11/08/17	5.4	**1,220**	**494**	157	1
01Q01	10/02/17	37.6	**1,200**	**423**	146	0.8
01Q02	11/21/17	17.7	**1,360**	**548**	165	1

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

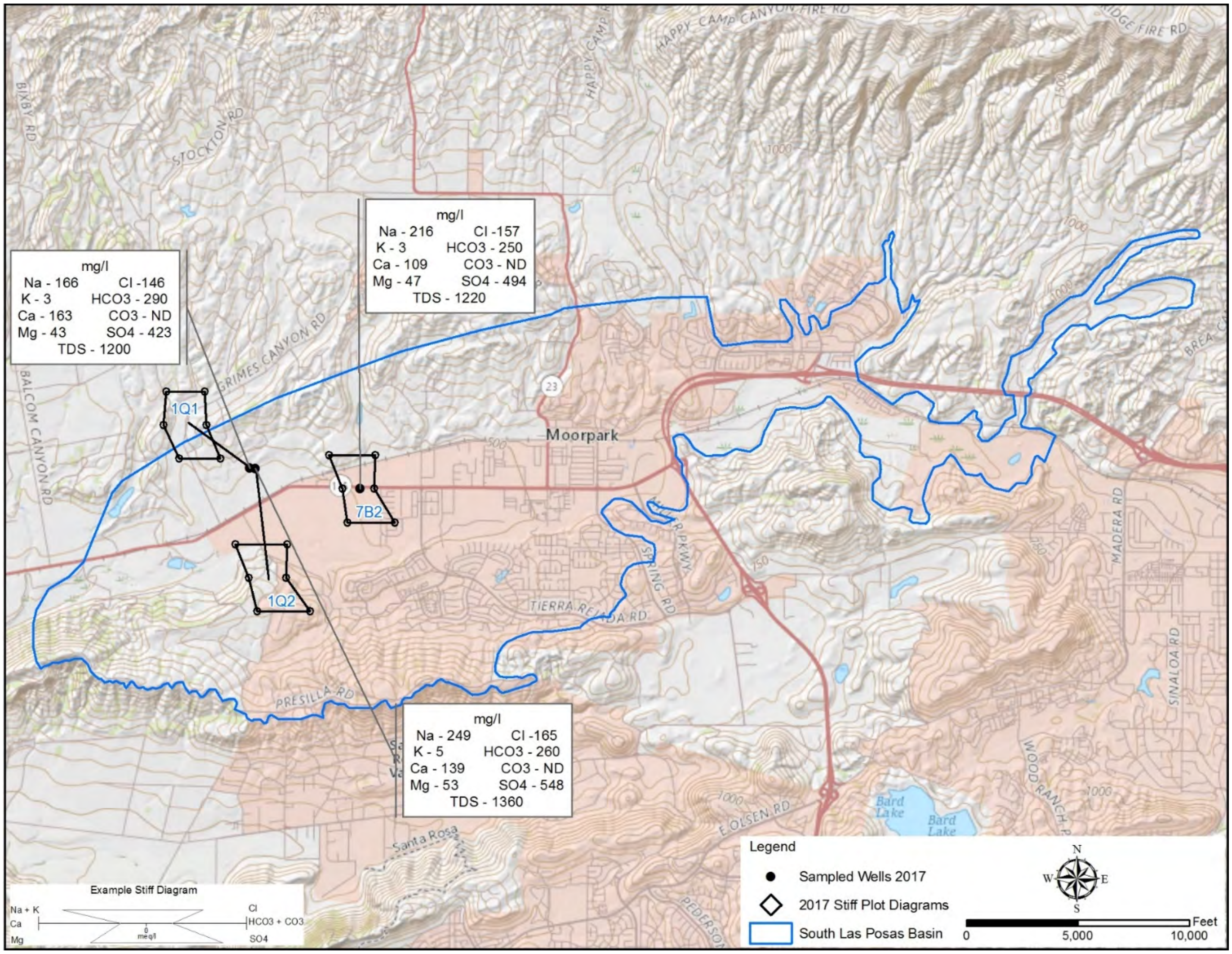


Figure 4-14: Las Posas Valley Basin – South, sampled wells with stiff diagram and selected inorganic constituents.

4.4.7 Las Posas Basin - West

There are approximately 119 water supply wells in the West Las Posas Basin and 65 of which are active wells. A total of 14 wells within this basin were sampled this year. Although well 13A01 plots just outside the basin boundary on our current map, it is included in this discussion because it has the same chemical characteristics and is within the DWR Bulletin 118 revised basin boundary. The piper diagram in **Figure E-30** shows moderate variability in water quality of the wells sampled this year. Calcium is the dominant cation for three of the samples, sodium is the dominant cation for one sample and there is no dominant cation for the remaining samples. Bicarbonate is the dominant anion for two of the wells sampled, sulfate is the dominant anion for six of the wells and there is no dominant anion for the remainder but plot closest to the bicarbonate anion type. The water in one well is calcium-bicarbonate type, one is sodium-bicarbonate type, and the remainder are calcium-sulfate type.

TDS is above the SMCL for drinking water in thirteen of the wells sampled in the West Las Posas Basin this year, ranging from 370 to 1,370 mg/L (**Table 4-11**). Four wells have nitrate concentrations above the primary MCL for drinking water. Five wells have sulfate concentrations above the SMCL, iron concentration is above the SMCL in two samples, seven have manganese concentrations above the MCL. The chemistry of well 13A1 is very similar to that of the wells inside the basin boundary. It is most similar to well 36Q1 to the northwest, which has a water level at approximately the same elevation. Water from three wells was analyzed for Title 22 metals and all constituents were below the MCLs for drinking water. **Figure 4-15** shows approximate well locations and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled.

Table 4-11: Selected water quality results for the West Las Posas Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
06J01	09/28/17	ND	**610**	219	17	0.1
07R03	09/28/17	ND	370	106	18	ND
04Q02	11/27/17	29.4	**540**	113	57	0.2
13A01	10/02/17	ND	450	159	14	0.1
08H03	09/28/17	17.1	**730**	230	68	0.3
09N01	09/28/17	ND	**560**	141	53	0.3
10G03	11/14/17	9.7	**580**	147	50	0.3
11A02	09/28/17	**198**	**1,370**	**439**	127	0.2
11A03	10/02/17	ND	**530**	143	36	0.2
12H01	11/08/17	18.1	**810**	**306**	72	0.2
15M04	09/28/17	**63.8**	**1,300**	**502**	103	0.4
17F05	09/28/17	ND	**1,060**	**443**	66	0.7

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
32H03	09/28/17	ND	**1,030**	**449**	24	0.2
35P02	11/16/17	**60.5**	**720**	181	77	0.2
36Q01	09/28/17	**69.6**	**720**	153	88	0.2

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

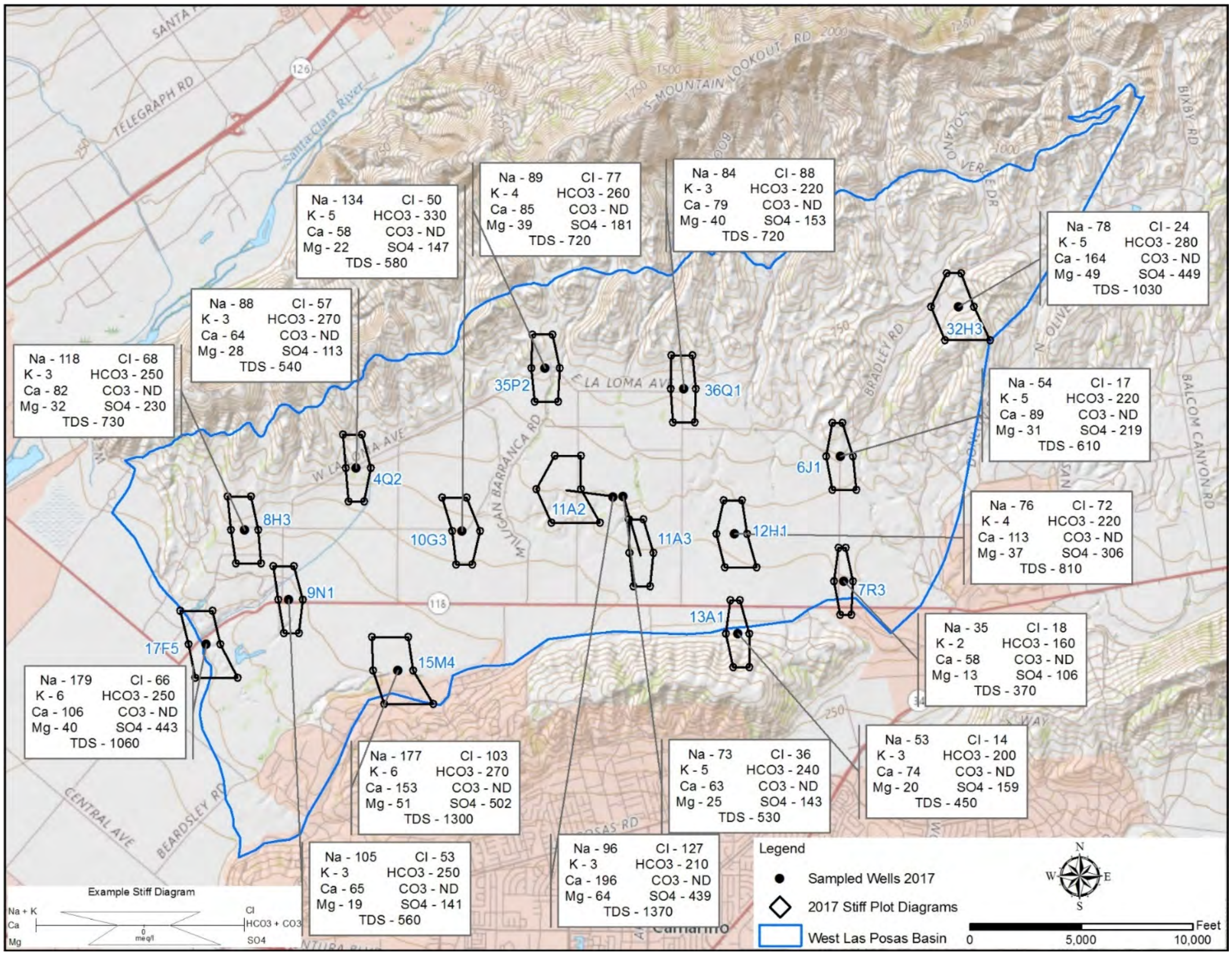


Figure 4-15: Las Posas Valley Basin – West, sampled wells with stiff diagram and selected inorganic constituents (in mg/L).

4.4.8 Little Cuddy Valley Basin

The Little Cuddy Valley Basin is in the northeastern part of Ventura County near the boundary with Kern County. Groundwater bearing layers consist of permeable sediment lenses in the Quaternary and Tertiary rocks and Holocene shallow alluvium with the syncline that makes up the valley floor. Depth to water bearing material is approximately 20 to 30 feet bgs.

Historically, groundwater quality has been considered very good. There are approximately 29 water supply wells in the Little Cuddy Valley Basin and 27 are active wells. One well was sampled in the basin this year. The piper diagram in **Figure E-32** shows the water quality of the well sampled this year. Calcium is the dominant cation and bicarbonate is the dominant anion in the sample. The water is calcium-bicarbonate type. No chemical constituent is above the MCL for drinking water (**Table 4-12**). The sample was analyzed for Title 22 metals and gross alpha particles. No constituent or radionuclide was above the MCL for drinking water. **Figure 4-16** shows the approximate well location and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the well sampled in the Little Cuddy Valley Basin.

Table 4-12: Selected water quality results for the Little Cuddy Valley Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
04N02	11/15/17	ND	310	12.8	14	0.2

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

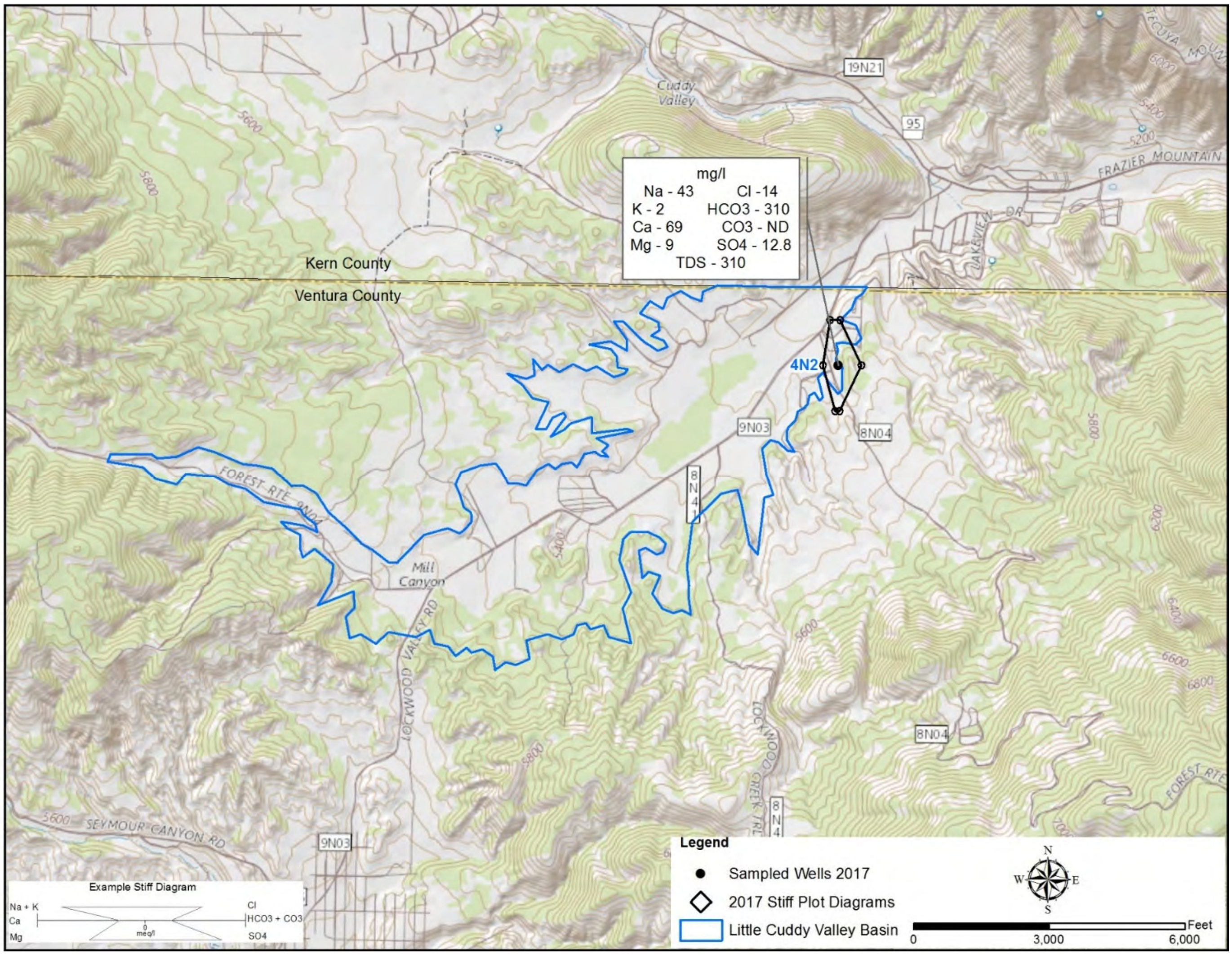


Figure 4-16: Little Cuddy Valley Basin sampled wells with stiff diagram and selected inorganic constituents.

4.4.9 Lockwood Valley Basin

The Lockwood Valley Basin groundwater quality ranges from good to poor. The basin covers a geographic area of 34.1 square miles. Depth to water bearing material ranges from 55 to 60 feet bgs. There are approximately 265 water supply wells in the Lockwood Valley Basin and 220 active wells. Two groundwater wells within this basin were sampled this year (**Figure 4-17**). **Figure E-9** shows high variation in groundwater chemistry of the wells sampled this year. Sodium is the dominant cation in one sample and calcium is the dominant cation in the other. Bicarbonate is the dominant anion in both samples. One sample is calcium-bicarbonate and one sample is sodium-bicarbonate type. Both wells sampled this year have TDS concentrations above the SMCL for drinking water (**Table 4-13**). No other constituent is above the primary or secondary MCL for drinking water. Neither well was analyzed for Title 22 metals.

Table 4-13: Selected water quality results for the Lockwood Valley Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
23Q10	11/15/17	2.7	**700**	147	8	11.4
33R03	11/15/17	9.5	**510**	176	18	0.8

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

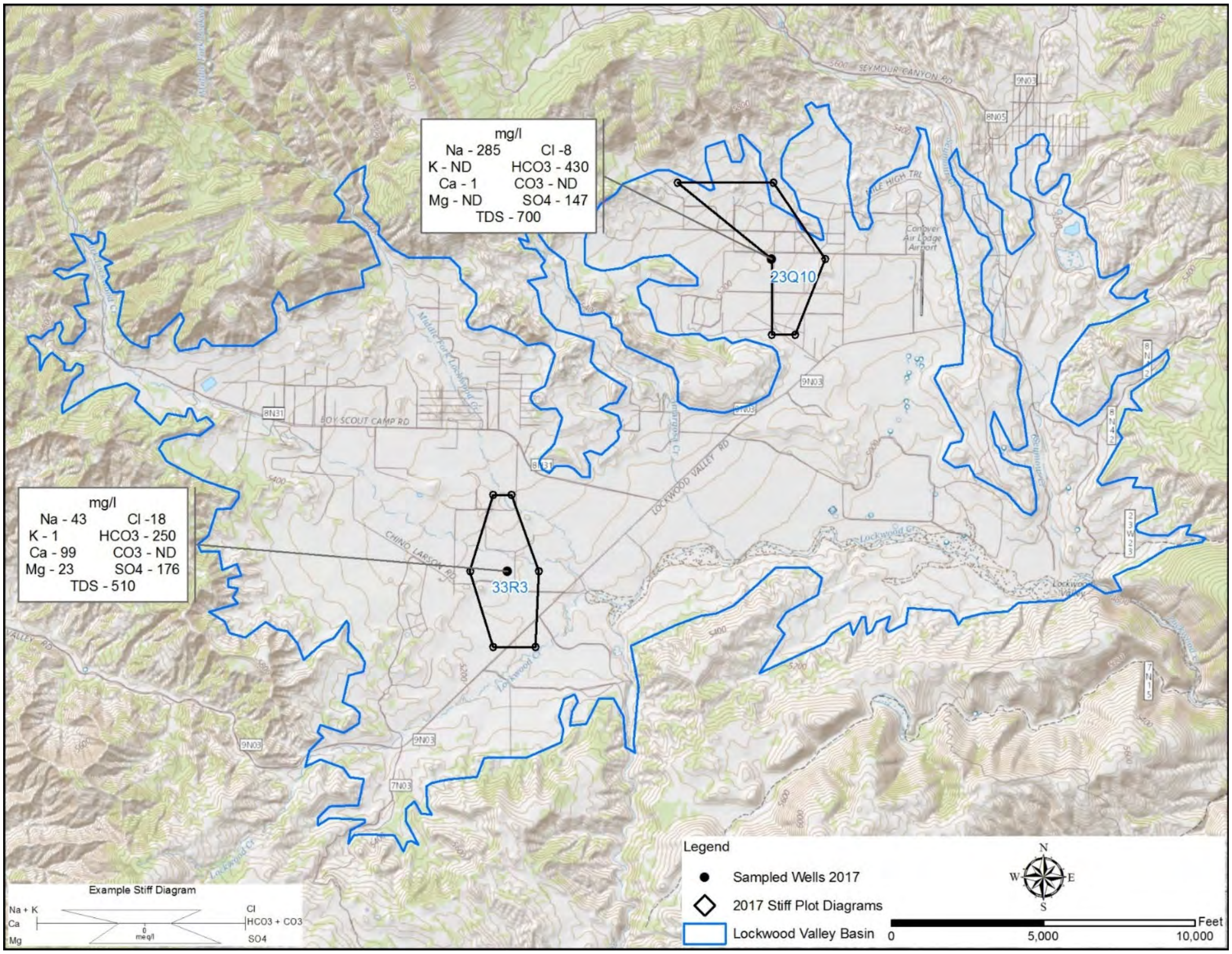


Figure 4-17: Lockwood Valley Basin sampled wells with stiff diagram and selected inorganic constituents.

4.4.10 Mound Basin

The Mound Basin water bearing units consist of Quaternary alluvium and the San Pedro Formation. These formations are divided into the Upper Aquifer System (UAS) and the Lower Aquifer System (LAS). The UAS consists of undifferentiated Holocene alluvium that make up the Oxnard aquifer and older Pleistocene alluvium that makes up the Mugu Aquifer. The alluvium consists of silts and clays with lenses of sand and gravel, with a maximum thickness of approximately 500 feet. The LAS predominantly consists of fine sands and gravels of the San Pedro Formation and extends as deep as 4,000 feet bgs. The upper part of the San Pedro Formation consists of variable amounts of clay, silty clay and sand. A series of inter-bedded water-bearing sands in this section are time equivalent to the Hueneme aquifer of the Oxnard Basin. The lower part of the San Pedro formation consists primarily of sand and gravel zones with layers of clay and silt and is known as the Fox Canyon Aquifer in the Oxnard plain. The Fox Canyon aquifer extends into the Mound Basin. Groundwater is generally unconfined in the alluvium and confined in the San Pedro Formation. Historic water quality data for the basin shows that water quality is generally better in the lower zone. However, samples collected this year show otherwise. Three of the five wells sampled this year are perforated in the LAS, much deeper than the other two. One of those wells has water quality that is significantly better than the other LAS wells. One of the shallow UAS wells has water quality that is similar to the deep wells and one of the UAS wells has significantly worse water quality.

There are 81 water supply wells in the Mound Basin and 31 are active wells. The piper diagram in **Figure E-11** shows low variability in water quality of all the wells sampled this year. There is no dominant cation for any of the water samples, but they plot closest to the calcium type. Sulfate is the dominant anion for all samples. All samples are calcium-sulfate type.

Nitrate is above the primary MCL for drinking water in two of the wells sampled (**Table 4-14**). TDS concentration for the wells sampled this year range from 1,070 to 3,040 mg/L and all above the SMCL for drinking water. Sulfate concentrations are greater than the SMCL for drinking water in all five wells sampled. Iron is above the SMCL in two of the wells and manganese is above the MCL in all five wells. **Figure 4-18** shows approximate well locations and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate and sulfate. Water from three wells was analyzed for Title 22 metals and the selenium concentration in one sample is above the MCL for drinking water. All other constituents were below the MCLs for drinking water.

Table 4-14: Selected water quality results for the Mound Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
07P01	10/27/17	**64.6**	**3,040**	**1,550**	138	0.7
09K01	12/27/17	8.4	**1,420**	**698**	76	0.6
09K07	12/27/17	ND	**1,070**	**492**	68	0.5
13F02	12/27/17	ND	**1,140**	**446**	67	0.6
13K03	12/27/17	**61.4**	**2,710**	**1,350**	134	0.7

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

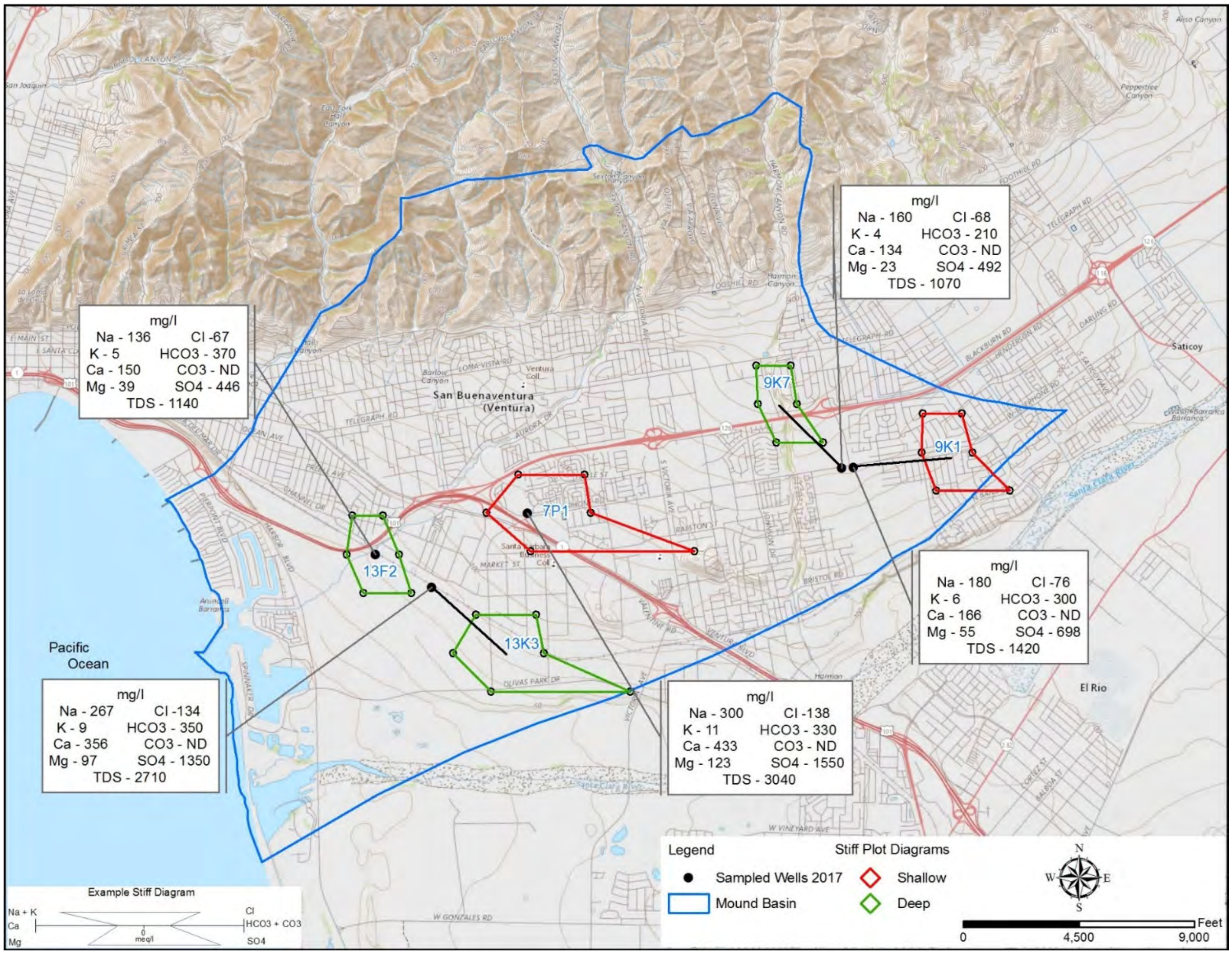


Figure 4-18: Mound Basin sampled wells with stiff diagram and selected inorganic constituents.

4.4.11 North Coast Basin

The North Coast Basin consists of narrow, thin strips of permeable sediments and marine terrace deposits along the coastline from Rincon Creek to just northwest of the Ventura River. The basin does not have well defined boundaries or areas of recharge and discharge. There are 26 water supply wells in the North Coast Basin and only 9 are active wells with the majority in the northwest portion along Rincon Creek. Water samples were collected from two wells at the northwest end of the basin. The piper diagram in **Figure E-12** shows little variation in the water quality of the wells sampled this year. Calcium is the dominant cation in one sample and there is no dominant cation in the other. Bicarbonate is the dominant anion in one sample and there is no dominant anion in the other, but it plots closest to sulfate. The water in one well is calcium-sulfate type and the other is calcium-bicarbonate.

Both samples have TDS and one has sulfate concentration above the SMCL (**Table 4-15**). **Figure 4-19** shows approximate well locations and concentrations of total dissolved solids, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled in the North Coast Basin.

Table 4-15: Selected water quality results for the North Coast Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
25N06	10/31/17	9.8	**1,140**	**397**	107	0.4
35G01	10/31/17	12.4	**530**	150	33	ND

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

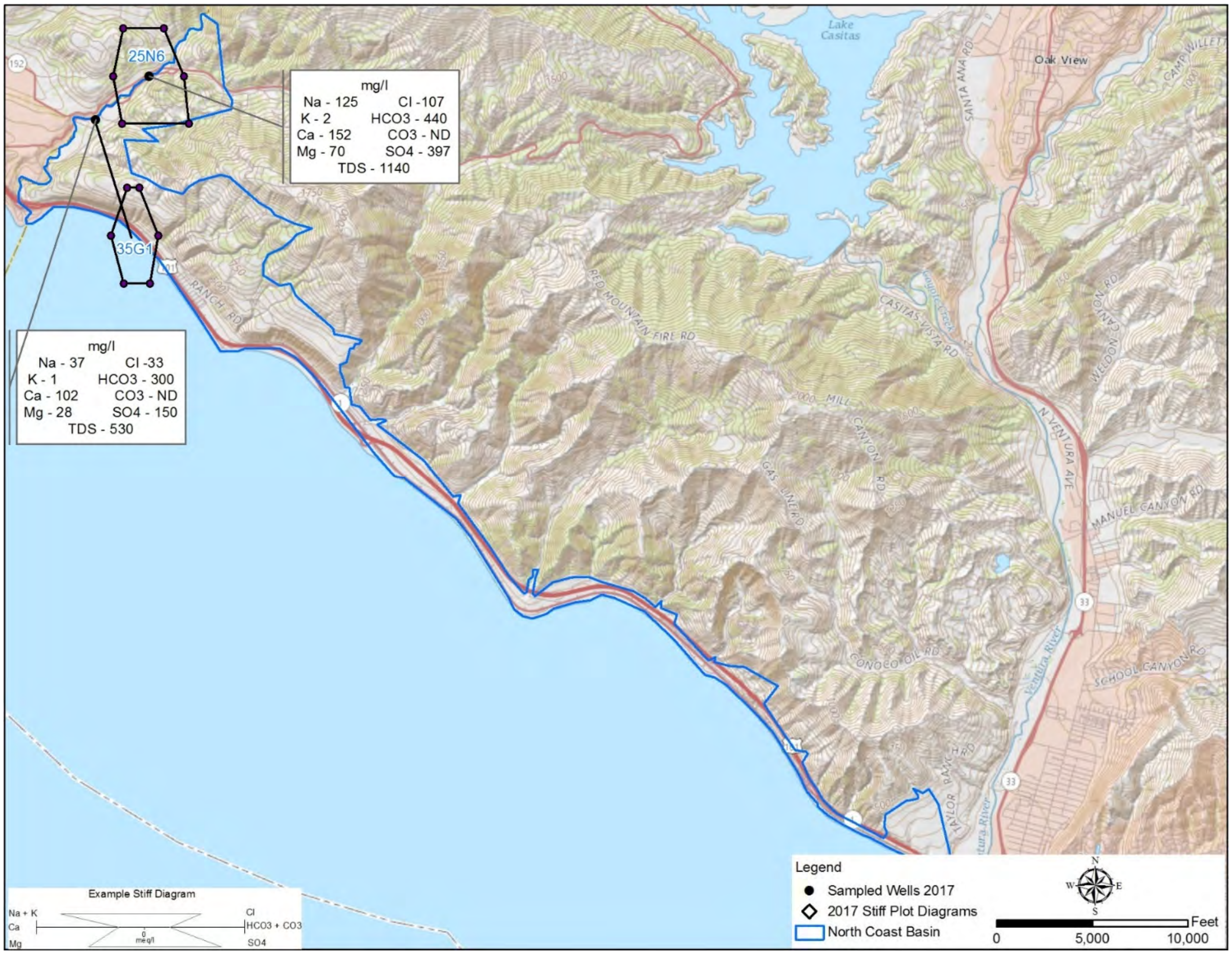


Figure 4-19: North Coast Basin sampled wells with stiff diagram and selected inorganic constituents.

4.4.12 Ojai Valley Basin

The aquifer system of the Ojai Valley Basin is considered unconfined except in the western end of the basin where a semi-confining to confining clay layer is present. The Ojai Valley Basin water quality is considered good. There are approximately 347 water supply wells in the Ojai Valley Basin and 196 are active wells. Depth to water bearing material is generally between 25 to 30 feet bgs. **Figure E-13** shows moderate variation of the water quality for the eight wells sampled this year. Calcium is the dominant cation for six of the samples; sodium is the dominant cation for one sample and one sample has no dominant cation. Sulfate is the dominant anion for one sample, bicarbonate is the dominant anion for two of the samples, and there is no dominant anion for five samples. One sample is calcium-bicarbonate type, six samples are calcium-sulfate type, and one sample is sodium-bicarbonate type.

All eight wells sampled have TDS concentrations above the SMCL for drinking water. TDS concentration ranges from 520 to 860 mg/L. Sulfate concentration in two wells and manganese concentration in three wells exceeds the SMCL for drinking water. Water samples from three wells were analyzed for Title 22 metals. None of the constituents were above the primary MCL for drinking water. **Figure 4-20** shows approximate well locations and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled in the Ojai Valley Basin.

Table 4-16: Selected water quality results for the Ojai Valley Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
04P05	12/27/17	44.1	**680**	216	29	ND
04Q01	11/28/17	42.8	**620**	215	27	ND
06J09	11/28/17	39.9	**590**	205	26	0.1
06K10	11/28/17	20.3	**760**	211	95	0.2
01J03	11/28/17	1.3	**560**	165	24	0.1
12B03	12/27/17	ND	**520**	83.4	25	ND
32K02	11/28/17	4.6	**860**	**299**	76	0.2
33J01	11/28/17	18.4	**820**	**315**	36	ND

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

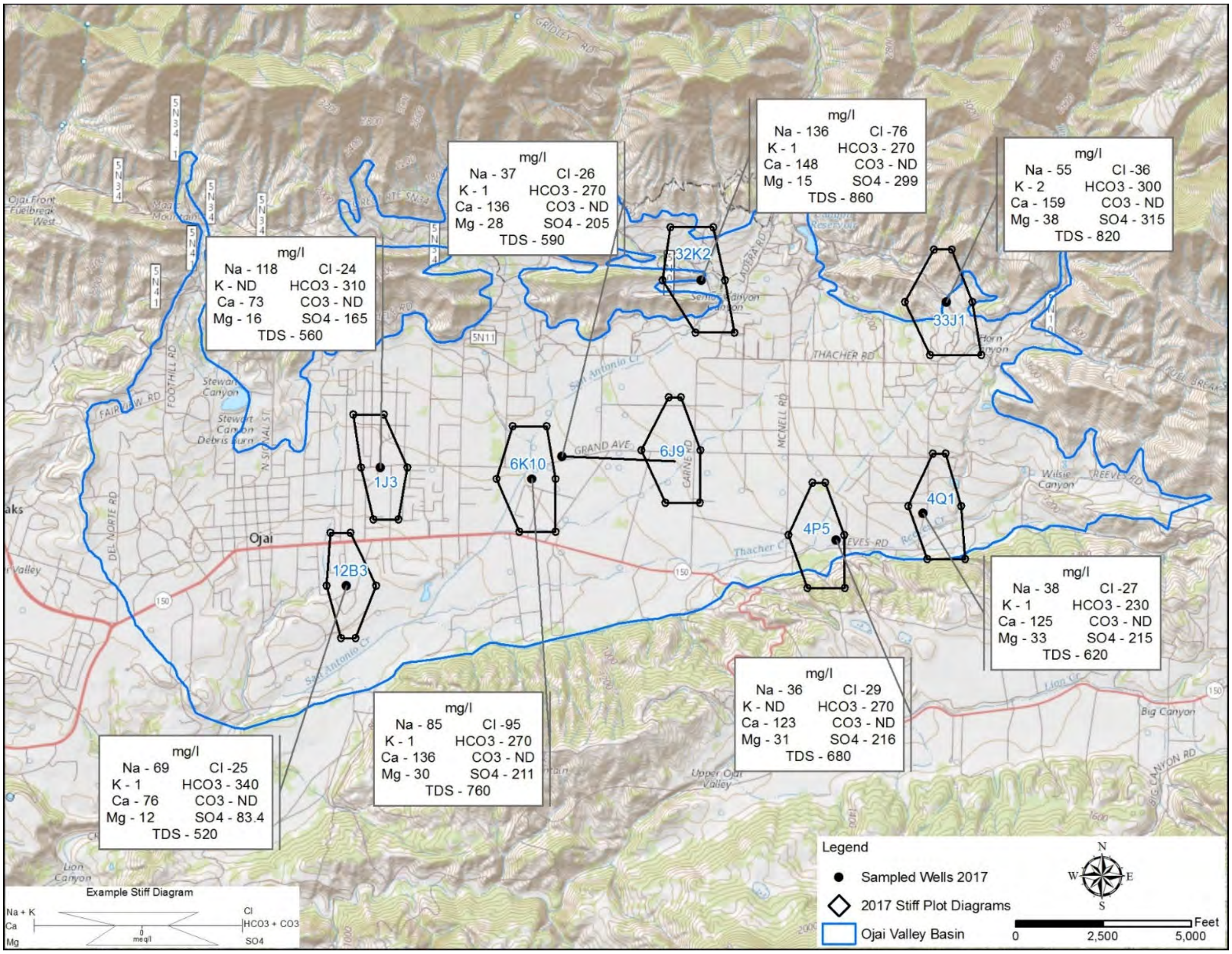


Figure 4-20: Ojai Valley Basin sampled wells with stiff diagram and selected inorganic constituents.

4.4.13 Oxnard Plain Forebay

The Oxnard Plain Forebay is the principal recharge area for the Upper and Lower Aquifer Systems of the Oxnard Plain Pressure Basin. Depth to the water bearing unit is generally 25 to 50 feet bgs. There are approximately 312 water supply wells in the Oxnard Plain Forebay and 110 are active. The Oxnard Plain Forebay generally has acceptable water quality except in the southern portion where high nitrate concentrations are common. The area to the north is predominantly agricultural with a few residential areas that still rely on individual septic systems. Two wells in the Oxnard Plain Forebay were sampled, one in the Upper Aquifer System (UAS) and one in the Lower Aquifer System (LAS). **Figure 4-21** shows low variability in water quality. The piper diagram in **Figure E-8** shows there is little difference between the upper and lower Forebay aquifers. Calcium is the dominant cation for the UAS sample. There is no dominant cation type for the LAS, but it plots close to the calcium type and sulfate is the dominant anion for both. The water in both samples is calcium-sulfate type. **Figure E-15** shows that the wells sampled have very similar chemistry to that of the UAS of the Oxnard Plain Pressure Basin.

Both wells sampled have TDS and sulfate concentrations above the SMCL for drinking water and one had manganese and iron concentration above the MCL. The UAS well sampled this year has a nitrate concentration above the MCL for drinking water. Water from one well was analyzed for Title 22 metals. Selenium was above the primary MCL for drinking water. No other constituent was above the primary MCL. **Figure 4-21** shows approximate well locations and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled in the Oxnard Plain Forebay.

Table 4-17: Selected water quality results for the Oxnard Plain Forebay.

Well No.	Date Sampled	Aquifer	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
23H07	11/27/17	Oxnard / Mugu	**129**	**2,190**	**1,060**	86	1
07P04	10/27/17	Hueneme / Fox Canyon / Grimes	ND	**1,170**	**527**	67	0.6

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

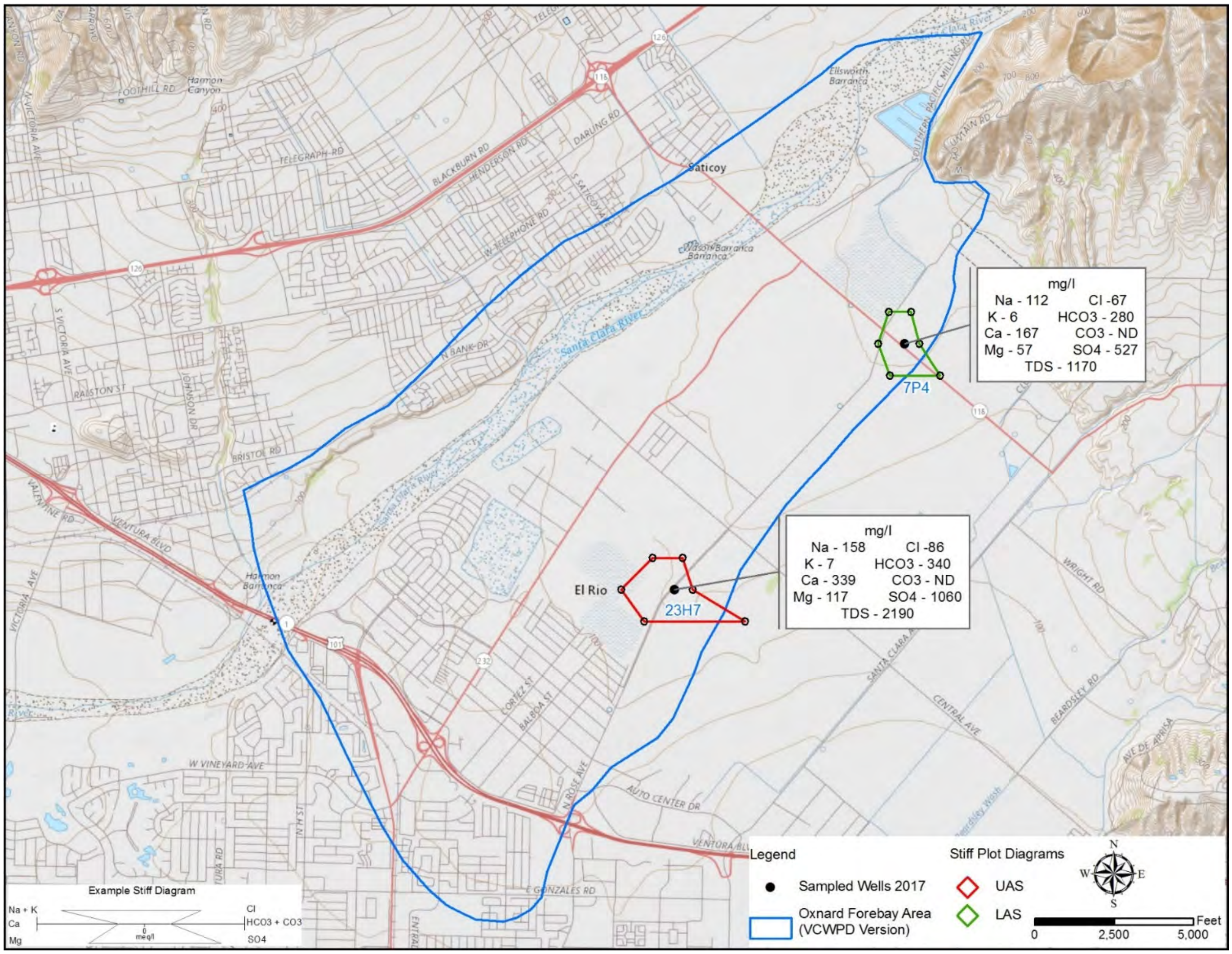


Figure 4-21: Oxnard Plain Forebay sampled wells with stiff diagram and selected inorganic constituents.

4.4.14 Oxnard Plain Pressure Basin

The Oxnard Plain Pressure Basin consists of two major aquifer systems. From shallowest to deepest, the UAS consists of the Perched/Semi Perched, Oxnard and Mugu aquifers. Only the Oxnard and Mugu aquifers are sampled in the UAS for water quality.

The LAS consists of the Hueneme, Fox Canyon and Grimes Canyon aquifers. There are approximately 912 water supply wells in the Oxnard Plain Pressure Basin and 380 are active. There are no wells perforated solely in the Grimes Canyon Aquifer so it cannot be sampled.

Figure 4-22 shows approximate well locations and concentrations of TDS, sodium, potassium, calcium magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled in the UAS. **Figure 4-23** shows the same information for wells sampled in the LAS.

4.4.14.1 Upper Aquifer System (UAS)

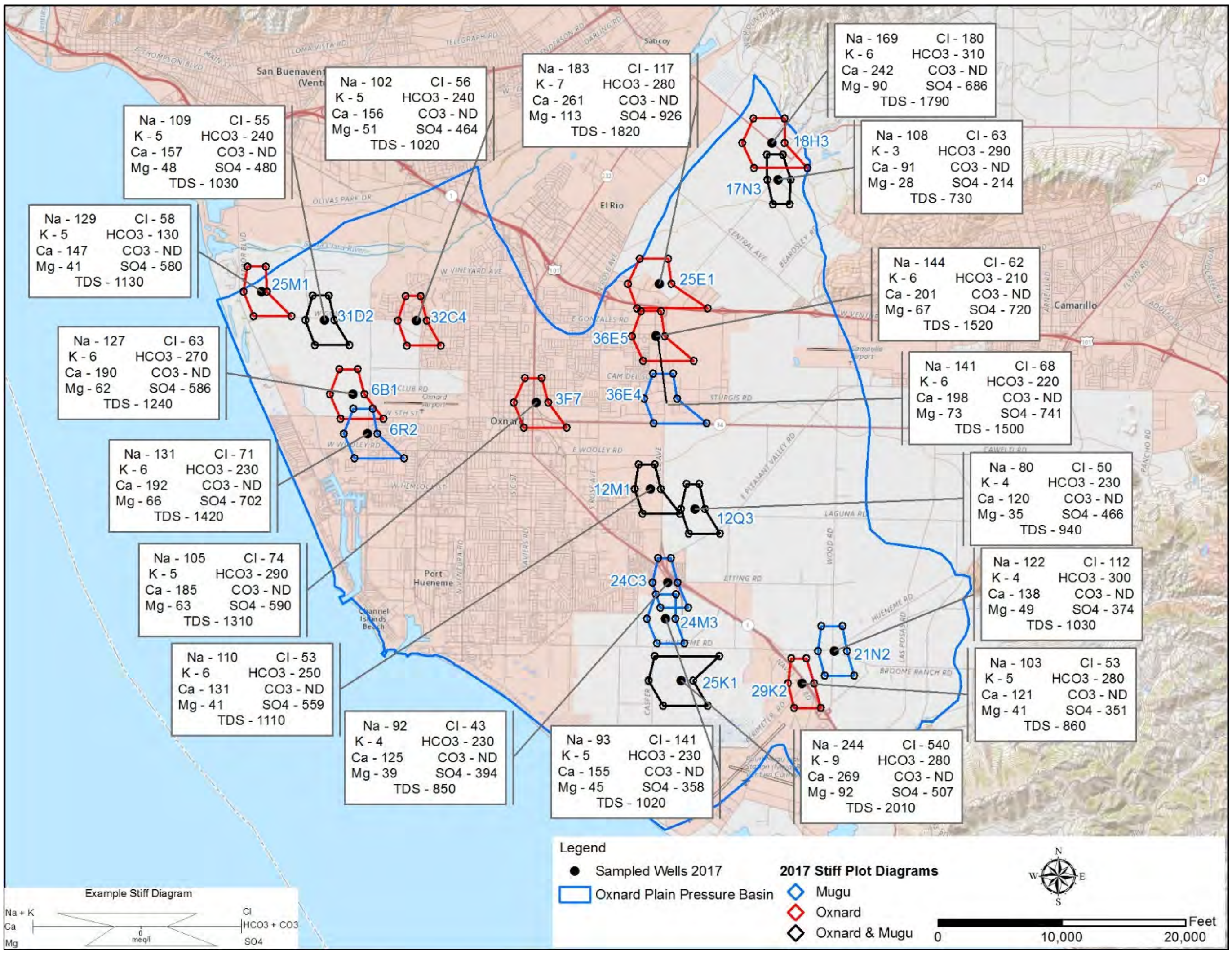


Figure 4-22: Oxnard Plain Pressure Basin UAS sampled wells with stiff diagram and selected inorganic constituents.

Oxnard Aquifer

The Oxnard Aquifer is the shallowest of the confined aquifers and the most developed aquifer based on the number of wells. Average depth to the main water bearing material is 80 feet bgs.

Water from two of the wells have manganese concentrations above the SMCL for drinking water. Samples from all eight of the wells have TDS concentrations and sulfate concentrations above the SMCL for drinking water. Sulfate concentrations range from 351 to 926 mg/L and TDS ranged from 860 to 1,820 mg/L. Water from two of the wells sampled have nitrate concentrations above the primary MCL for drinking water. Samples from two wells were analyzed for Title 22 metals. The concentrations of all constituents were below the MCL for drinking water.

Table 4-18: Selected water quality results for wells screened in the Oxnard Aquifer.

Well No.	Date Sampled	Aquifer	Aquifer System	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
29K02	11/21/17	Oxnard	Upper	ND	**860**	**351**	53	0.7
03F07	09/06/17	Oxnard	Upper	17.6	**1,310**	**590**	74	0.7
06B01	09/11/17	Oxnard	Upper	11.9	**1,240**	**586**	63	1
18H03	10/27/17	Oxnard	Upper	**121**	**1,790**	**686**	180	0.6
25E01	11/22/17	Oxnard	Upper	27.7	**1,820**	**926**	117	1.1
32C04	09/11/17	Oxnard	Upper	29.4	**1,020**	**464**	56	0.7
36E05	09/06/17	Oxnard	Upper	**55.1**	**1,500**	**741**	68	0.9
25M01	11/02/17	Oxnard	Upper	5.1	**1,130**	**580**	58	0.6

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

Groundwater plumes with elevated nitrate concentrations are common in the northern portion of the basin. Nitrate sources include nitrogen-based fertilizers in agricultural areas and septic systems in residential areas.

Mugu Aquifer

The Mugu Aquifer is the lowest layer of the UAS and has similar physical and chemical characteristics to the Oxnard Aquifer, but has slightly better water quality because with increasing depth contaminants are generally less likely to infiltrate. Average depth to the main water bearing material is 200 feet bgs. Five wells perforated solely in the Mugu Aquifer were sampled this year. All wells sampled in the Mugu Aquifer have sulfate and TDS concentrations above the MCL for drinking water. TDS ranges from 850 to 1,520 mg/L and three wells have manganese concentrations above the secondary MCL. No water samples from wells perforated solely in the Mugu were analyzed for Title 22 metals.

Table 4-19: Select water quality results for wells screened in the Mugu Aquifer.

Well No.	Date Sampled	Aquifer	Aquifer System	Nitrate as NO3 (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Boron (mg/L)
21N02	11/21/17	Mugu	Upper	ND	112	**374**	**1,030**	0.5
06R02	09/13/17	Mugu	Upper	8.1	71	**702**	**1,420**	0.9
24C03	11/21/17	Mugu	Upper	ND	43	**394**	**850**	0.7
24M03	11/02/17	Mugu	Upper	ND	141	**358**	**1,020**	0.7
36E04	09/06/17	Mugu	Upper	**61**	62	**720**	**1,520**	0.9

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

Oxnard & Mugu Aquifers

The piper diagram in **Figure E-15** shows water chemistry of UAS wells that are screened in both the Oxnard and Mugu aquifers. It shows moderate water quality variability in the five wells sampled this year. Calcium is the dominant cation in one sample and there is no dominant cation in the remainder but the data plots closest to the calcium cation type. Sulfate is the dominant anion in three of the samples, chloride is the dominant anion in one sample, and there is no dominant anion for one sample but the data plots close to the sulfate anion type. The water is calcium sulfate type.

TDS concentrations for all samples exceeded the SMCL, ranging from 730 to 2,010 mg/L (**Table 4-20**). All samples exceed the SMCL's for manganese and four exceeded the MCL for sulfate. One sample has a chloride concentration that is two times the MCL for drinking water. One water sample was analyzed for Title 22 metals. The concentrations of all other constituents were below the MCL for drinking water.

Table 4-20: Select water quality results for wells screened in the Oxnard & Mugu Aquifers.

Well No.	Date Sampled	Aquifer	Aquifer System	Nitrate as NO3 (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Boron (mg/L)
12M01	11/30/17	Oxnard & Mugu	Upper	ND	53	**559**	**1,110**	0.6
25K01	11/02/17	Oxnard & Mugu	Upper	ND	**540**	**507**	**2,010**	0.7
17N03	10/27/17	Oxnard & Mugu	Upper	9.3	63	214	**730**	0.4
31D02	09/11/17	Oxnard & Mugu	Upper	21.7	55	**480**	**1,030**	0.7
12Q03	11/30/17	Oxnard & Mugu	Upper	ND	50	**466**	**940**	0.6

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

The piper diagram in **Figure E-15** shows a comparison of all the wells sampled in the UAS, those perforated in the Oxnard Aquifer, the Mugu Aquifer and in both aquifers. There is no dominant cation but data plots closest to a calcium cation type. Four samples have no dominant anion but three plot close to the sulfate type and one plots close to the chloride type and sulfate is the dominant anion for the remaining samples. The water in the UAS is best classified as a calcium-sulfate type.

4.4.14.2 Lower Aquifer System (LAS)

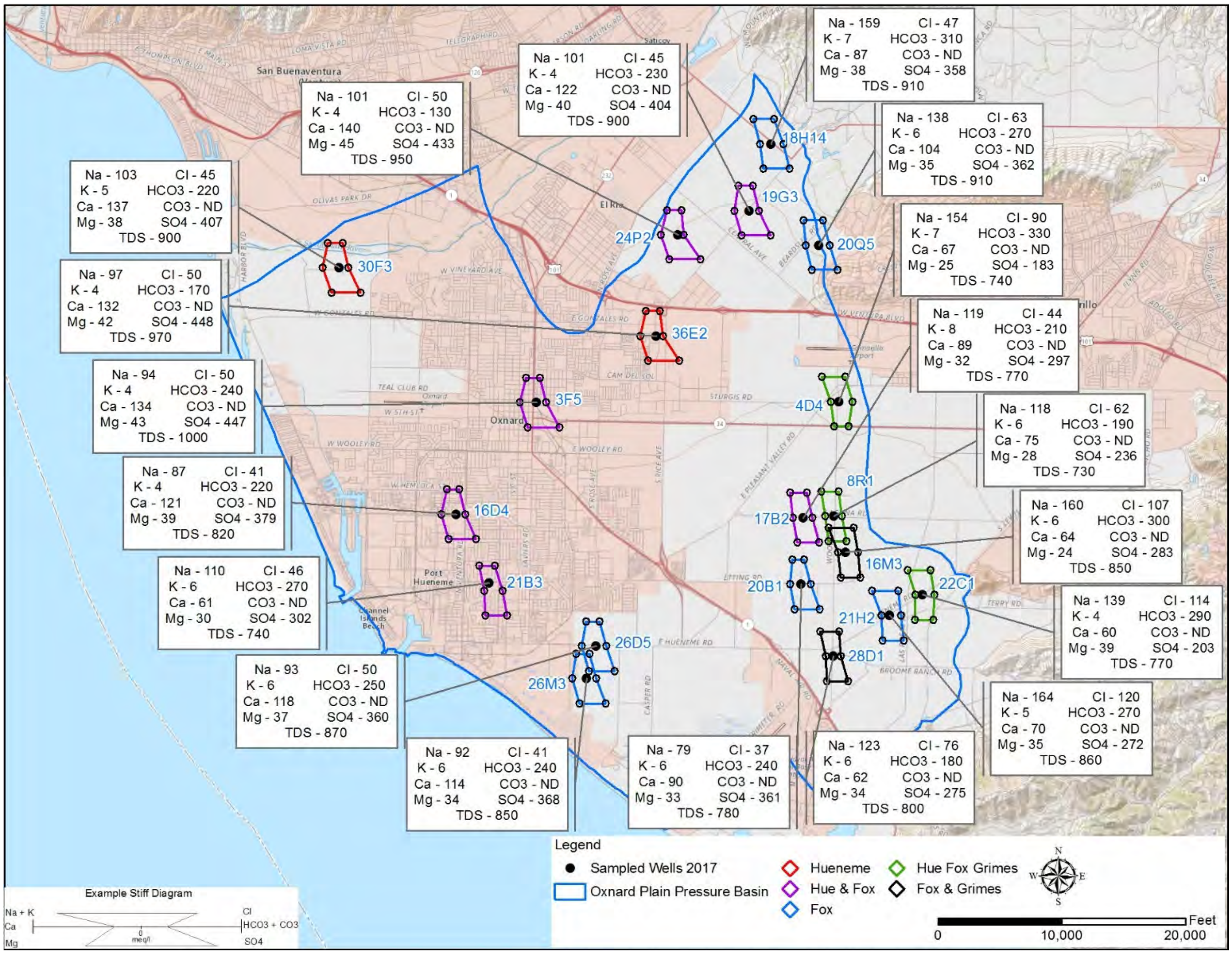


Figure 4-23 Oxnard Plain Pressure Basin LAS sampled wells with stiff diagram and selected inorganic constituents.

Hueneme Aquifer

The Hueneme Aquifer is the shallowest of the LAS aquifers with depth to the main water bearing material approximately 375 feet bgs. Few wells are perforated exclusively in the Hueneme Aquifer making water quality determination for the aquifer difficult. Two wells screened solely in the Hueneme Aquifer were sampled this year (**Figure 4-23**). Both wells sampled have elevated TDS and sulfate concentrations compared to the SMCL for drinking water. One sample has manganese concentration above the MCL for drinking water. One sample was analyzed for Title 22 metals. None of the constituents were above the MCL for drinking water. Overall, water quality has not changed significantly since the previous round of sampling.

Table 4-21: Select water quality results for wells screened in the Hueneme Aquifer.

Well No.	Date Sampled	Aquifer	Aquifer System	Nitrate as NO3 (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Boron (mg/L)
30F03	09/11/17	Hueneme	Lower	ND	45	**407**	**900**	0.7
36E02	09/06/17	Hueneme	Lower	9.4	50	**448**	**970**	0.6

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

Fox Canyon Aquifer

The Fox Canyon Aquifer is the second most developed production zone in the Oxnard Plain Pressure Basin based on the number of wells and depth of perforations. Five wells perforated solely in the Fox Canyon Aquifer were sampled this year (**Figure 4-23**). Depth to the main water bearing material is approximately 580 feet bgs. The Fox Canyon Aquifer generally has excellent water quality and high yield rates but is subject to seawater intrusion near Point Mugu and the Hueneme Submarine Canyon. Extractions are monitored and allocated by the FCGMA to mitigate aquifer overdraft and reduce seawater intrusion.

Sulfate and TDS concentrations in all five wells exceed the SMCL for drinking water. TDS ranged from 850 to 910 mg/L. SMCL concentrations for drinking water were exceeded in three samples for manganese. One sample was analyzed for Title 22 metals and none of the constituents were above the MCLs for drinking water.

Table 4-22: Select water quality results for wells screened in the Fox Canyon Aquifer.

Well No.	Date Sampled	Aquifer	Aquifer System	Nitrate as NO3 (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Boron (mg/L)
26D05	11/02/17	Fox Canyon	Lower	ND	50	**360**	**870**	0.5
26M03	11/02/17	Fox Canyon	Lower	1.9	41	**368**	**850**	0.5
18H14	10/27/17	Fox Canyon	Lower	ND	47	**358**	**910**	0.4
20Q05	10/27/17	Fox Canyon	Lower	ND	63	**362**	**910**	0.6

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

Hueneme & Fox Canyon Aquifers

Six of the Oxnard Plain Pressure Basin wells that were sampled this year are perforated across both the Hueneme and Fox Canyon Aquifers and will be referred to as LAS wells. Results for those wells are included in **Appendix D** and shown on the map of the LAS (**Figure 4-23**). SMCL concentrations for drinking water were exceeded in three samples for manganese. All five have sulfate and TDS concentrations above the SMCL for drinking water. TDS concentration from these wells varies between 820 and 1,000 mg/L. Water samples from two of the Hueneme/Fox wells were analyzed for Title 22 metals and all constituents were below the primary MCL for drinking water.

Table 4-23: Select water quality results for wells screened in the Hueneme & Fox Canyon Aquifers.

Well No.	Date Sampled	Aquifer	Aquifer System	Nitrate as NO3 (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Boron (mg/L)
17B02	09/11/17	Hueneme & Fox Canyon	Lower	ND	44	**297**	**770**	0.4
03F05	09/06/17	Hueneme & Fox Canyon	Lower	16.6	50	**447**	**1,000**	0.7
16D04	11/22/17	Hueneme & Fox Canyon	Lower	ND	41	**379**	**820**	0.7
19G03	10/27/17	Hueneme & Fox Canyon	Lower	ND	45	**404**	**900**	0.6
24P02	09/11/17	Hueneme & Fox Canyon	Lower	8.6	50	**433**	**950**	0.7
21B03	43069	Hueneme & Fox Canyon	Lower	ND	46	**302**	**740**	0.3

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

Fox Canyon & Grimes Aquifers

Four of the Oxnard Plain Pressure Basin wells sampled this year are perforated in both the Fox Canyon and Grimes Canyon Aquifers. They are also referred to as LAS wells. Results for those wells are included in **Appendix D** and shown on the map of **Figure 4-23**. Sulfate is the dominant anion in one of the samples and there is no dominant anion in the remaining samples. Two water samples are sodium-sulfate type and one is calcium-sulfate. One well exceeded the manganese SMCL concentrations for drinking water. All three wells have sulfate and TDS concentrations above the SMCL for drinking water. TDS concentration of water from these wells varies between 780 and 860 mg/L.

Table 4-24: Select water quality results for wells in the Fox Canyon & Grimes Aquifers.

Well No.	Date Sampled	Aquifer	Aquifer System	Nitrate as NO3 (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Boron (mg/L)
16M03	11/30/17	Fox Canyon & Grimes	Lower	ND	107	**283**	**850**	0.5
20B01	11/30/17	Fox Canyon & Grimes	Lower	ND	37	**361**	**780**	0.5
21H02	09/13/17	Fox Canyon & Grimes	Lower	ND	120	**272**	**860**	0.5
28D01	09/12/17	Fox Canyon & Grimes	Lower	ND	76	**275**	**800**	0.4

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

Hueneme, Fox Canyon & Grimes Aquifers

Three of the Oxnard Plain Pressure Basin wells that were sampled this year are perforated across the Hueneme, Fox Canyon and Grimes Canyon Aquifers. They are also referred to as LAS wells. Results for those wells are included in **Appendix D** and shown on the map of **Figure 4-23**. The piper diagram in **Figure E-17** shows moderate variability in water quality of the wells sampled this year. Sodium is the dominant cation in one sample with no dominant cation in the remaining three samples, but they plot closest to the calcium type. Sulfate is the dominant anion in one of the samples with no dominant anion in the remaining samples. Three water samples are calcium-sulfate type and the remaining sample is sodium-sulfate type.

TDS concentration from these wells varies between 730 and 770 mg/L. Samples from three wells have manganese and TDS concentrations above the SMCL for drinking water. Water samples from one of the Fox/Hueneme/Grimes wells were analyzed for Title 22 metals and all constituents were well below the primary MCL for drinking water.

Table 4-25: Select water quality results for wells screened in the Hueneme, Fox Canyon & Grimes Aquifers.

Well No.	Date Sampled	Aquifer	Aquifer System	Nitrate as NO3 (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)	Boron (mg/L)
04D04	11/02/17	Hueneme, Fox Canyon, Grimes	Lower	ND	90	183	**740**	0.5
08R01	09/12/17	Hueneme, Fox Canyon, Grimes	Lower	ND	62	236	**730**	0.3
22C01	09/13/17	Hueneme, Fox Canyon, Grimes	Lower	ND	114	203	**770**	0.4

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

The piper diagram in **Figure E-17** shows moderate variability in water quality of the all the wells sampled in the LAS. Sodium is the dominant cation in three samples and the remainder have no dominant cation but about half plot closest to the sodium type and half plot closest to the calcium type. Four samples have no dominant anion and sulfate is the dominant anion for the remainder. Three water samples are sodium-sulfate type and the remainder are calcium-sulfate type.

The piper diagram in **Figure E-16** shows water quality of four wells that are perforated in both the UAS and the LAS. None of the samples has a dominant cation. One sample has sulfate as the dominant anion and three have no dominant anion. All four samples are calcium-sulfate type.

The piper diagram in **Figure E-14** shows moderate variation between all wells sampled in the Oxnard Plain Pressure Basin. Three wells have sodium as the dominant cation and the remainder have no dominant cation. Eleven samples have no dominant anion and sulfate is the dominant anion in the remainder. Three wells are sodium sulfate type and the remainder are calcium-sulfate type.

4.4.15 Piru Basin

The Piru Basin groundwater recharge is principally from precipitation, water releases from Lake Piru by UWCD, and infiltration to the Santa Clara River. Flow from the Santa Clara River enters the basin from the east and carries discharges from wastewater treatment plants and urban and stormwater runoff from Los Angeles County. There are approximately 193 water supply wells in the Piru Basin and 152 are active. Depth to the main water bearing material is approximately 30 to 90 feet bgs. On April 6, 2010, the LARWQCB adopted a Basin Plan Amendment that includes a Total Maximum Daily Load (TMDL) of 117 mg/L for chloride in surface water and 150 mg/L in groundwater for the stretch of the Santa Clara River in Ventura County east of Piru Creek.

Five wells were sampled in the Piru Basin. None of the groundwater sampled has a chloride concentration above the TMDL. The piper diagram in **Figure E-18** shows low variability in water quality of the wells sampled this year. There is no dominant cation for any of the samples but the data plots closest to the calcium cation type. Sulfate is the dominant anion for all the samples. The water is calcium-sulfate type. Nitrate concentration is over five times the primary MCL for drinking water in one water sample (**Table 4-26**). The TDS concentrations exceed the SMCL for drinking water in all wells and vary from 860 to 2,320 mg/L. Two wells have TDS concentrations above 1,500 mg/L. Sulfate concentrations exceed the SMCL for drinking water in all five wells and two have manganese concentrations greater than the SMCL. **Figure 4-24** shows approximate well locations and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate.

Water samples from three wells were analyzed for Title 22 metals. All constituents were well below the primary MCL for drinking water.

Table 4-26: Selected water quality results for the Piru Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
30J04	10/26/17	15.7	**1,020**	**368**	108	0.6
25M03	10/26/17	31.2	**2,320**	**1,130**	65	0.8
26H01	10/26/17	20.4	**1,140**	**416**	109	0.7
26J02	11/09/17	11.3	**860**	**418**	28	0.5
34J04	11/02/17	**244**	**1,630**	**558**	90	0.7

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

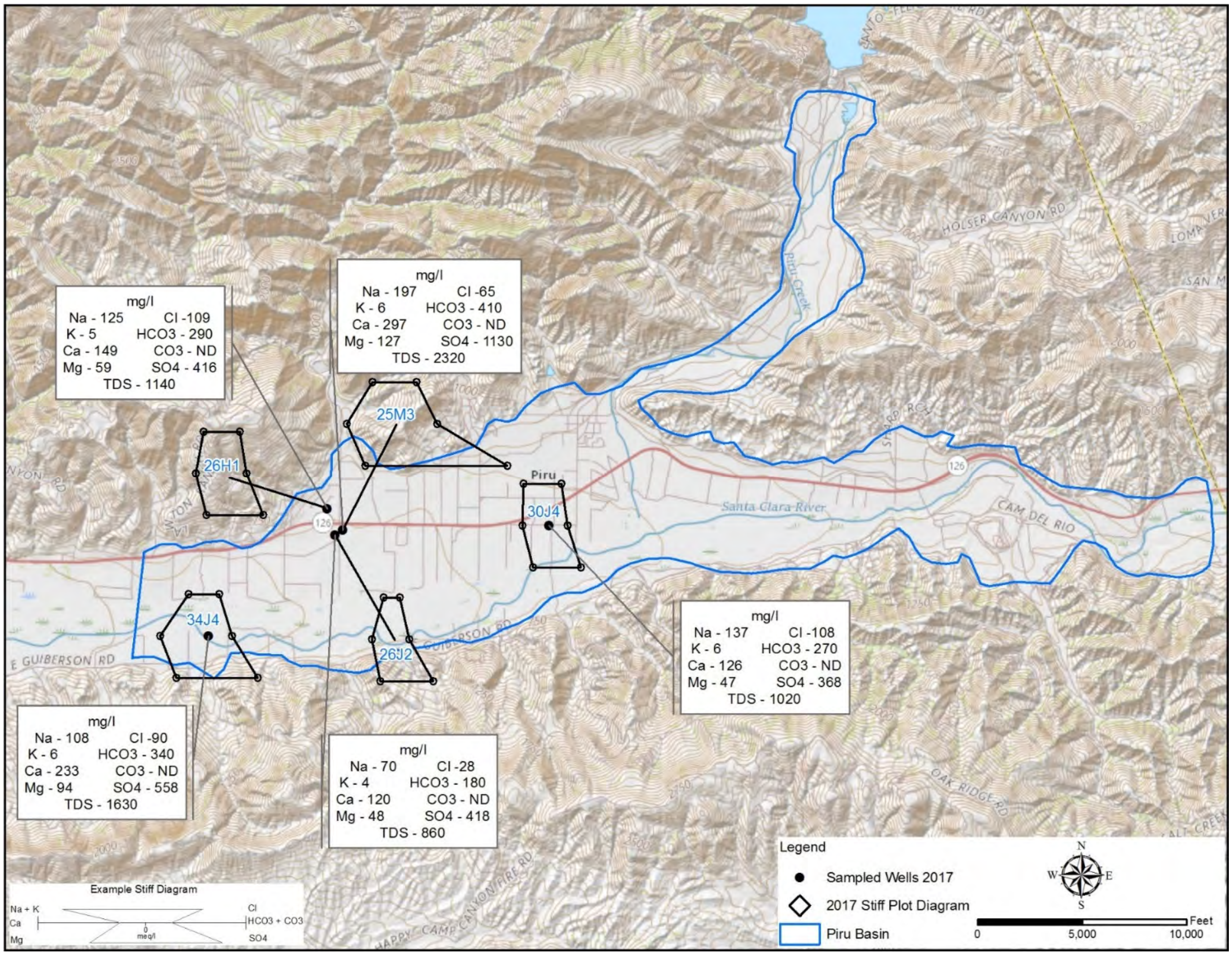


Figure 4-24: Piru Basin sampled wells with stiff diagram and selected inorganic constituents.

4.4.16 Pleasant Valley Basin

In the Pleasant Valley Basin groundwater quality can vary greatly throughout the basin. The upper-most groundwater bearing unit at 35 to 60 feet bgs is not used because the water quality is very poor. Permeable lenses of alluvial sands, gravels, silts, and clays of recent to Upper Pleistocene age that vary in thickness from a few feet to several hundred feet are equivalent to but not connected with the Oxnard Aquifer and are referred to here as the Upper Zone. Depth to the main water bearing unit is approximately 400 to 500 feet bgs. This deeper zone is referred to in this section as the Lower Zone. It is made up of marine sands and gravels of the lower-most member of the early Pleistocene San Pedro Formation and is known as the Fox Canyon Aquifer. The Grimes Canyon aquifer underlies the Fox Canyon aquifer at depths below 1000 feet bgs and is perforated by only the deepest wells. There are approximately 344 water supply wells in the Pleasant Valley Basin and 93 are active. Sixteen wells were sampled, three perforated in the Upper Zone and 13 perforated in the Lower Zone.

The piper diagram in **Figure E-19** shows a comparison of the wells perforated in the Upper Zone with those perforated in the Lower Zone. Wells perforated in the Upper Zone tend to have higher concentrations of sulfate than those in the Lower Zone but in general the Upper and Lower Aquifer Systems show similar water quality. The piper diagram shows moderate variability in water quality. Calcium is the dominant cation for one sample, sodium is the dominant cation for another sample and the remaining two samples have no dominant cation but plot closest the calcium. Sulfate is the dominant anion in nine samples and there is no dominant anion for the remaining samples. Most of the data plots closest to the sulfate type. The water in one sample is sodium-sulfate type and the remainder are calcium-sulfate type.

TDS concentrations in all water samples (Upper and Lower Zones) vary from 710 to 4,650 mg/L. All fifteen wells sampled have TDS concentrations above the SMCL for drinking water. Twelve of the wells have sulfate concentrations above the SMCL for drinking water. One water sample has an iron concentration above the SMCL for drinking water and seven have manganese concentrations above the SMCL. Chloride concentrations are above the SMCL for drinking water in one well and nine are above a concentration that can impair agricultural beneficial uses. Water samples from four wells were analyzed for Title 22 metals. None of the analyses were above the primary MCL. **Figure 4-25** shows approximate well locations and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate.

Table 4-27: Selected water quality results for the Pleasant Valley Basin.

Well No.	Date Sampled	Aquifer System	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
01B05	09/06/17	Lower	ND	**770**	57.4	214	0.3
03D01	09/06/17	Lower	**51.6**	**1,030**	**395**	96	0.4
03K01	09/13/17	Lower	31.9	**1,180**	**489**	129	0.4
03R01	09/12/17	Lower	**45.8**	**1,760**	**677**	219	0.6
04K01	09/12/17	Lower	ND	**550**	158	60	0.3
10G01	09/12/17	Lower	8.3	**1,350**	**497**	186	0.4
15D02	09/12/17	Lower	1	**1,150**	**383**	180	0.6
17L01	09/27/17	Lower	23.9	**1,310**	**562**	176	0.6
19F04	11/08/17	Lower	ND	**1,390**	**591**	156	0.6
29B02	11/29/17	Lower	5.2	**740**	161	123	0.3
33R02	11/08/17	Lower	ND	**710**	209	87	0.3
34C01	11/08/17	Lower	ND	**760**	**261**	78	0.3
34G01	09/13/17	Lower	ND	**1,200**	**351**	198	0.8
10A02	09/06/17	Upper	**71.5**	**2,330**	**1,040**	**250**	0.5
12D01	09/06/17	Upper	17.3	**1,680**	**670**	241	0.6
15H01	09/06/17	Upper	0.4	**4,650**	**2,380**	**710**	1.8

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

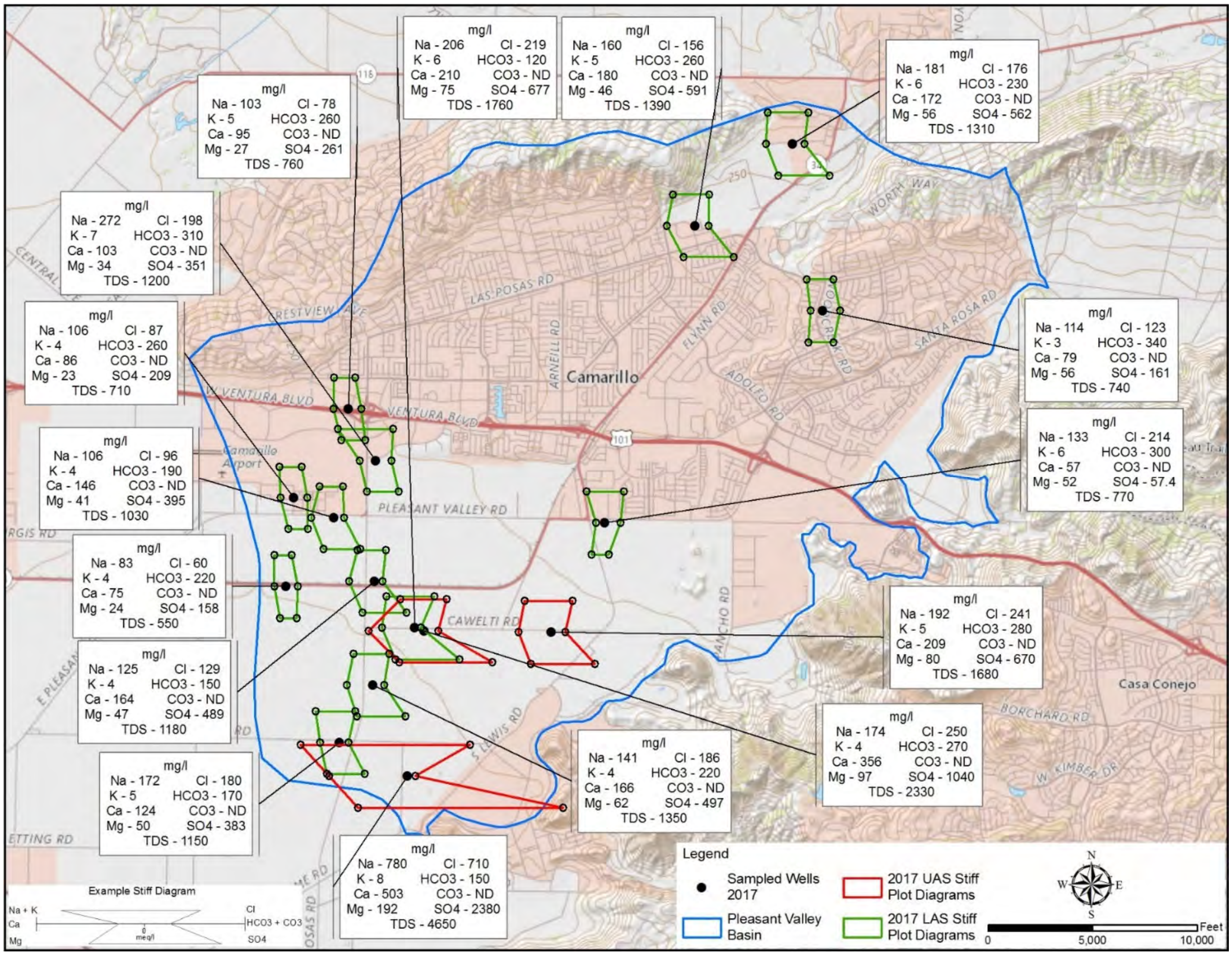


Figure 4-25: Pleasant Valley Basin sampled wells with stiff diagram and selected inorganic constituents.

4.4.17 Santa Paula Basin

The Santa Paula Basin is a court adjudicated groundwater basin. To prevent overdraft, a June 1991 judgment ordered the creation of the Santa Paula Basin Pumpers Association (SPBPA). The SPBPA regulates extractions in the Santa Paula Basin. The judgment stipulated an allotment of 27,000 acre-feet per year (AFY) could be pumped from the basin. Water quality in the basin has not changed substantially since 2007. The depth to the water bearing material is 65 to 160 feet bgs. There are approximately 282 water supply wells in the Santa Paula Basin and 152 are active. Water from five wells was analyzed. The piper diagram in **Figure E-20** shows no significant change in the water quality since the previous sampling round. Calcium is the dominant cation in one sample and the remaining four have no dominant cation. Sulfate is the dominant anion, and the water is calcium sulfate type. TDS concentrations in all five water samples are above the current SMCL for drinking water and TDS ranges from 950 to 2,560 mg/L. All five water samples have concentrations above the SMCL for sulfate and manganese. Two water samples were analyzed for Title 22 metals. One sample has a selenium concentration above the primary MCL for drinking water; all other constituents are below the MCL. **Figure 4-26** shows approximate well location and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate and sulfate for the wells sampled in the Santa Paula Basin.

Figure E-21 compares water samples from the up-gradient Piru and Fillmore Basins to the Santa Paula Basin. The piper diagram shows low variability in the samples, and they are all calcium sulfate water types.

Table 4-28: Selected water quality results for the Santa Paula Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
03E01	11/02/17	ND	**2,010**	**971**	109	0.6
09K04	10/24/17	ND	**950**	**392**	49	0.4
17Q01	12/27/17	25.9	**1,560**	**663**	79	0.7
35Q01	10/27/17	33.1	**2,560**	**1,250**	98	1.1
36K07	11/08/17	ND	**1,300**	**601**	71	0.4

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

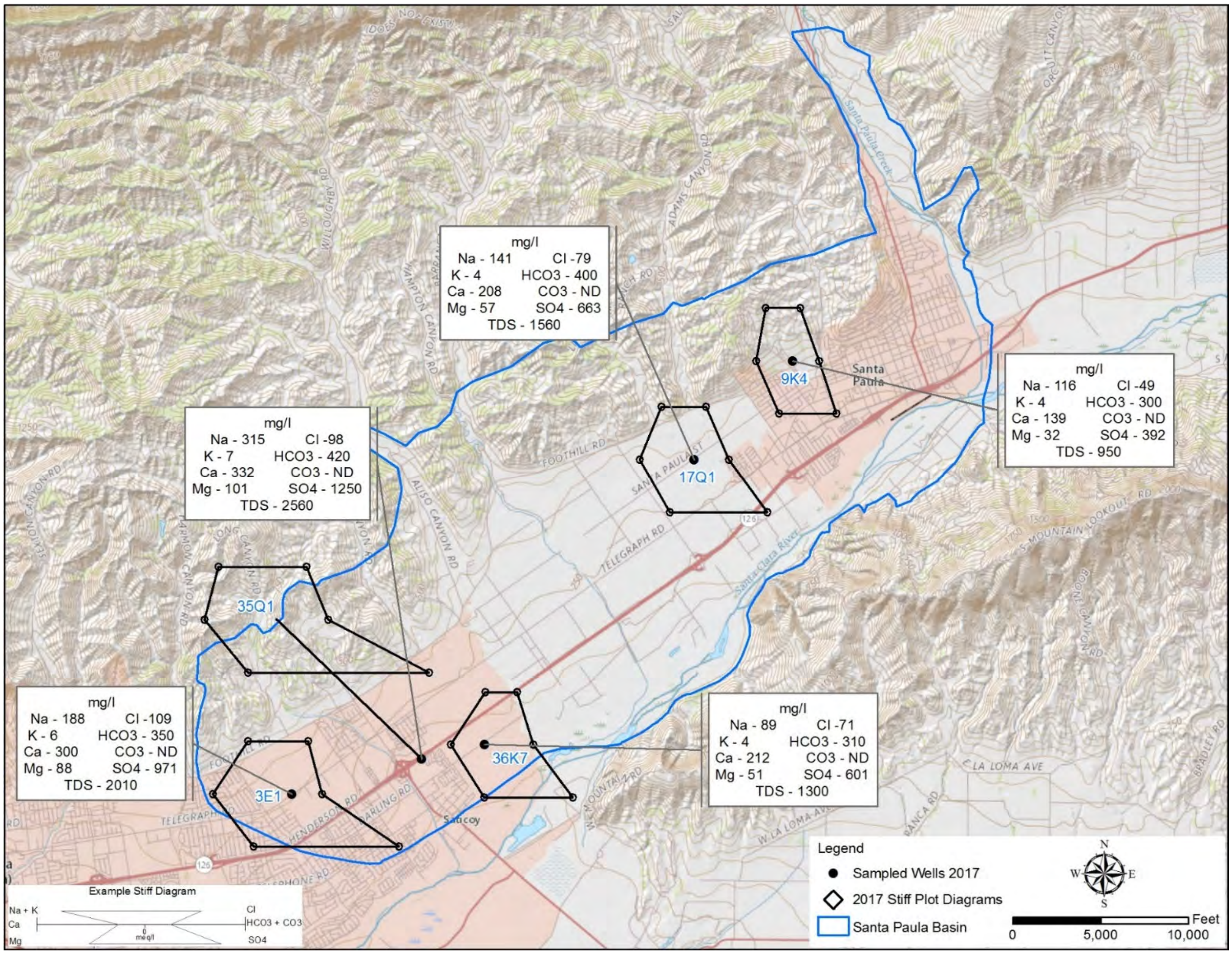


Figure 4-26: Santa Paula Basin sampled wells with stiff diagram and selected inorganic constituents.

4.4.18 Sherwood Basin

The Sherwood Basin consists mainly of fractured volcanic rock providing inconsistent groundwater supply throughout the basin because much of the water is stored in fractures. The water quality varies because of the heterogeneous nature of the aquifer. There are approximately 157 water supply wells in the Sherwood Basin and 101 are active. Four wells were sampled and analyzed this year. The piper diagram in **Figure E-22** shows the chemistry of the samples. Calcium is the dominant cation in two samples, sodium is the dominant cation in one sample and one sample has no dominant cation. Bicarbonate is the dominant anion in three samples and chloride is the dominant anion in one sample. The water is calcium-bicarbonate type in two sample, sodium-bicarbonate in one sample and calcium-chloride in the remaining sample.

Chloride is above the primary MCL for drinking water in one sample. TDS are above the SMCL in two samples and manganese is above in one sample. Two water samples were analyzed for Title 22 metals. All constituents are below the MCL for drinking water. **Figure 4-27** shows the approximate well location and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled in the Sherwood Basin.

Table 4-29: Selected water quality results for the Sherwood Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
19H03	11/14/17	ND	480	102	40	0.1
29E04	11/14/17	ND	**650**	155	58	ND
25C07	11/30/17	5.3	**1,500**	213	**445**	0.2
25F04	11/30/17	ND	330	30.8	32	0.1

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

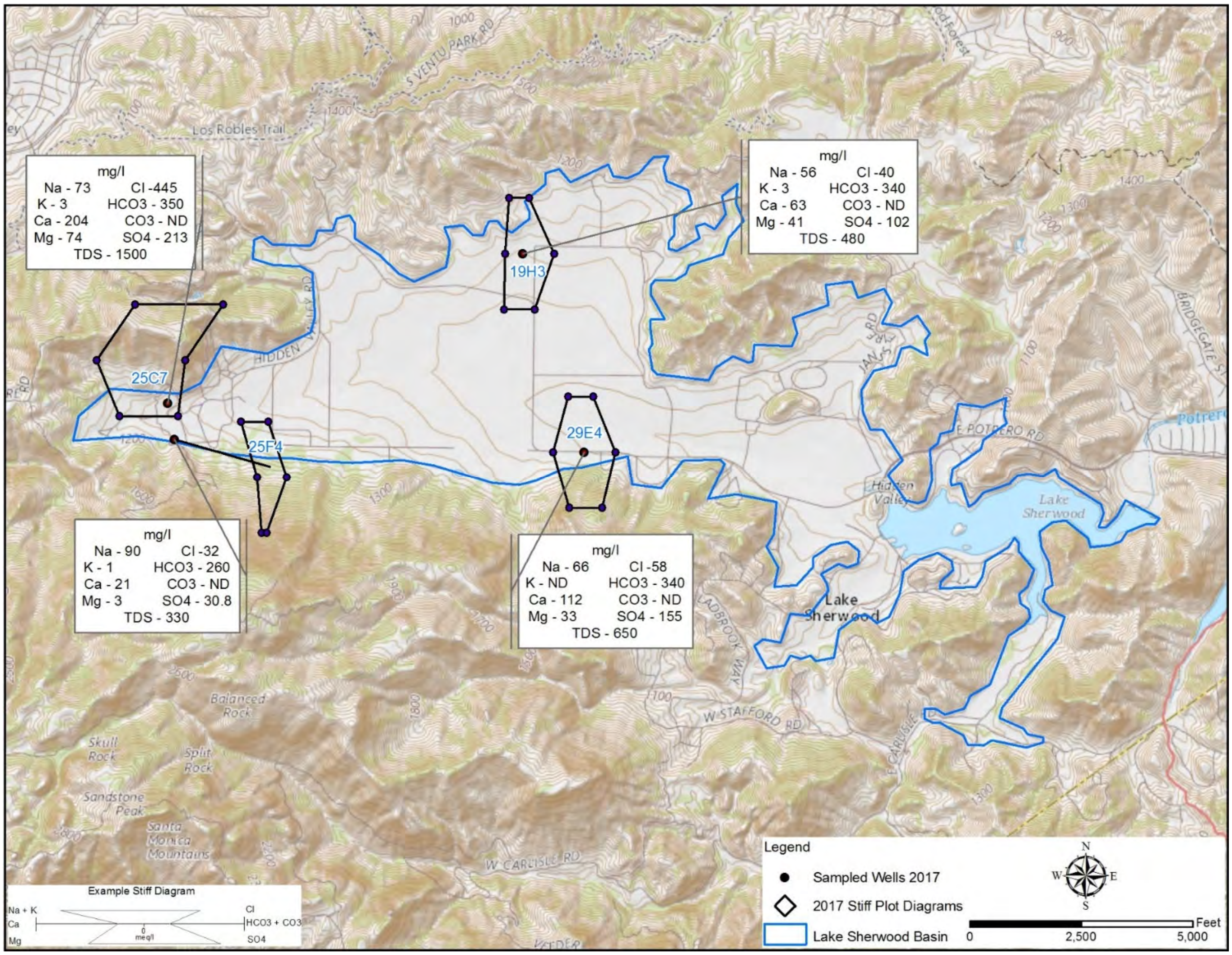


Figure 4-27: Sherwood Basin sampled wells with stiff diagram and selected inorganic constituents.

4.4.19 Simi Valley Basin

The Simi Valley Basin drains to the west and, historically, water quality becomes more enriched in salts and poorer in quality farther west in the basin. Three of the wells sampled are in the west end of the valley and the fourth is in the southeast end. The well at the southeast end of the basin has better water quality than the three western wells. There are approximately 191 water supply wells in the Simi Valley Basin and 43 are active wells. Depth to water-bearing material is approximately 5 to 25 feet bgs. The City of Simi Valley has a high-water table at the west end of the valley and several dewatering wells have been installed to pump down the water table when groundwater gets too high. The piper diagram in **Figure E-23** shows low variability in water quality of the wells sampled this year. There is no dominant cation, but all four samples plot close to the calcium cation type, and sulfate is the dominant anion in three samples with no dominant anion for the fourth. The water is calcium-sulfate type. TDS concentrations in all four wells are above the SMCL for drinking water, three samples have sulfate above the MCL and two well have manganese above the MCL. Three samples have chloride concentrations that exceed the level that could cause agricultural beneficial uses for sensitive plants to be impaired but are not above the primary MCL for drinking water. Water samples from two wells were analyzed for Title 22 metals and all constituents are below the MCL for drinking water. **Figure 4-28** shows approximate well locations and concentrations of TDS, sodium potassium, calcium, magnesium, chloride, bicarbonate, carbonate and sulfate for the wells sampled in the Simi Valley Basin.

Table 4-30: Selected water quality results for the Simi Valley Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
15E04	11/16/17	ND	**820**	238	71	ND
08D04	11/13/17	17	**1,800**	**782**	170	1.2
08K07	11/13/17	**54.1**	**2,010**	**964**	170	1
10A02	11/14/17	**58.8**	**1,900**	**822**	151	1.3

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

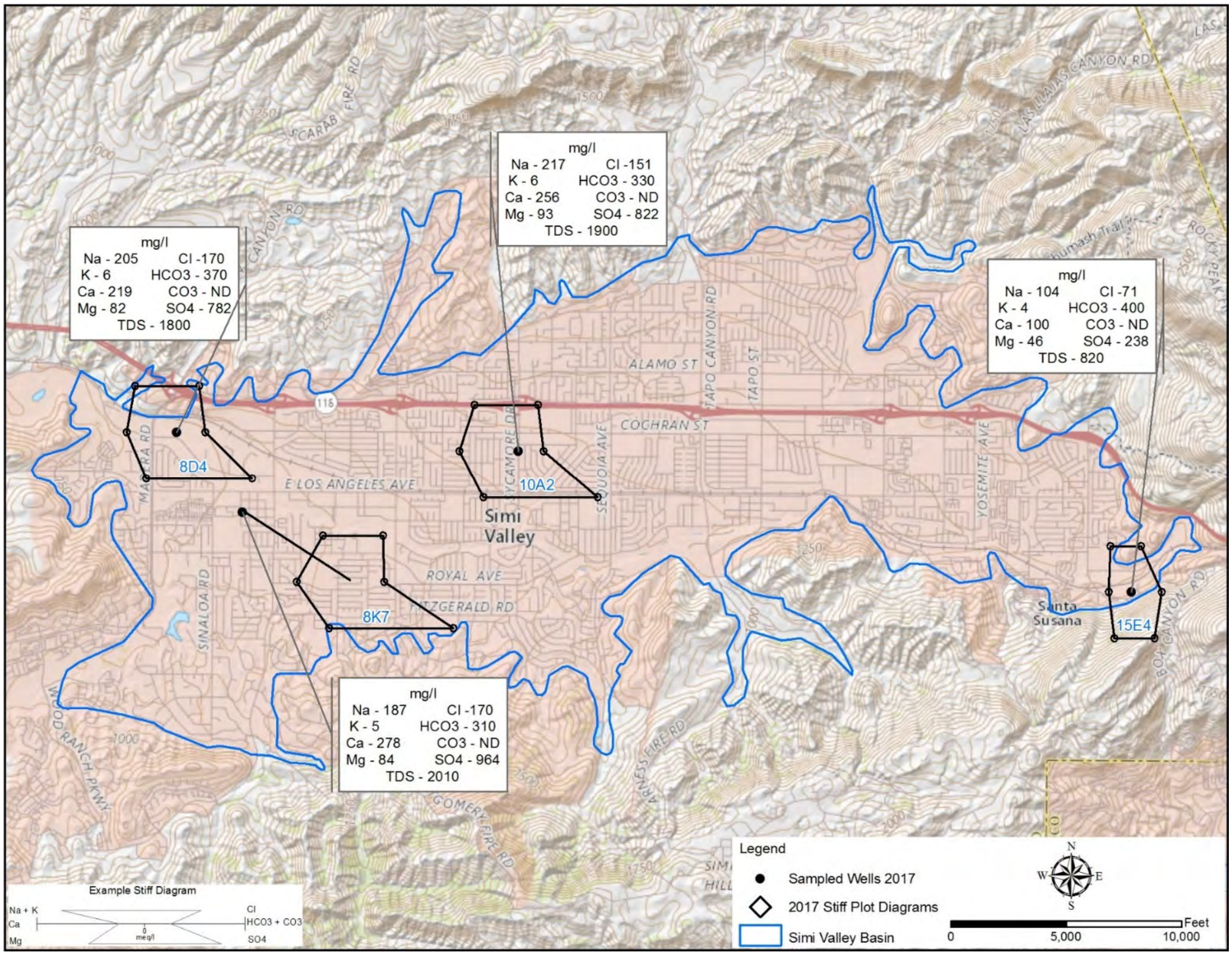


Figure 4-28: Simi Valley Basin sampled wells with stiff diagram and selected inorganic constituents.

4.4.20 Tapo/Gillibrand Basin

The Tapo/Gillibrand Basin is located to the north of Simi Valley. There are approximately 46 water supply wells in the Tapo/Gillibrand Basin and 42 are active wells. The City of Simi Valley operates several wells in the basin as a backup water supply. Two wells were sampled this year. The piper diagram in **Figure E-33** shows water quality of the wells sampled this year. Calcium is the dominant cation in both wells and sulfate is the dominant anion in one of the wells sampled. The water is calcium sulfate type. TDS and sulfate concentrations are above the SMCL for drinking water in both wells and iron and manganese are above the SMCL in one well. One well was analyzed for Title 22 metals and all constituents are below the MCL for drinking water. **Figure 4-29** shows approximate well location and concentration of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled in Tapo/Gillibrand Basin.

Table 4-31: Selected water quality results for the Tapo/Gillibrand Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
24C07	11/13/17	11	**820**	**322**	29	0.2
24H07	11/13/17	ND	**870**	**345**	29	0.3

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

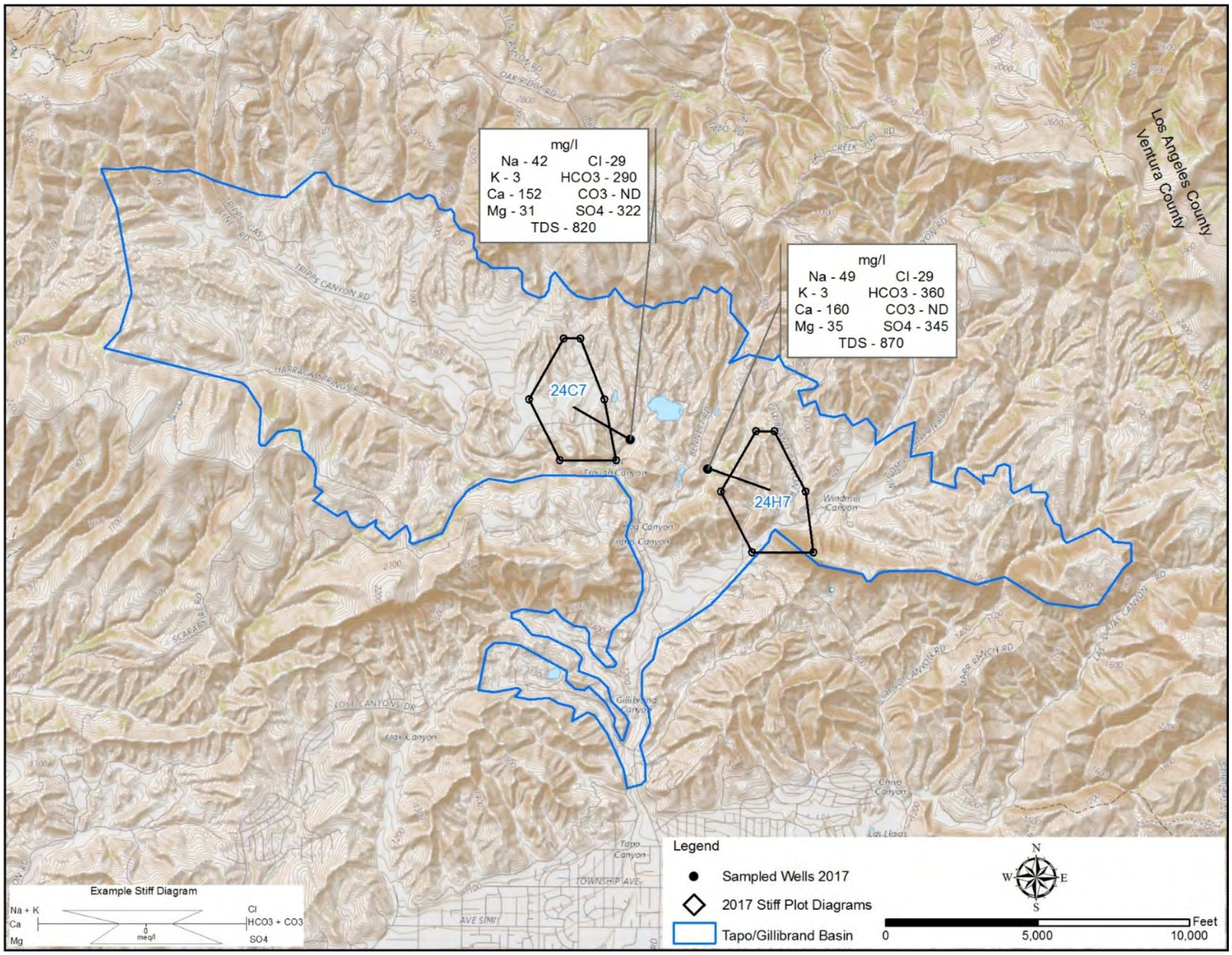


Figure 4-29: Tapo/Gillibrand Basin sampled wells with stiff diagram and selected inorganic constituents.

4.4.21 Thousand Oaks Basin

The Thousand Oaks Basin has very few active water wells available for sampling. The depth to the water bearing unit is approximately 25 to 30 feet bgs. There are approximately 195 water supply wells in the Thousand Oaks Basin and 19 are active wells. One well located at the west end of the basin was sampled this year. The piper diagram in **Figure E-25**, shows the water quality of the well. There is no dominant cation, but the water plots close to the magnesium type and sulfate is the dominant anion. The water is magnesium-sulfate type. Concentrations of manganese, sulfate, and TDS are above the SMCL for drinking water. The sample was analyzed for Title 22 metals and all constituents are below the MCL for drinking water. **Figure 4-30** shows the approximate well location and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled in Thousand Oaks Basin.

Table 4-32: Selected water quality results for the Thousand Oaks Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
08G02	11/14/17	ND	**1,330**	**492**	132	0.1

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

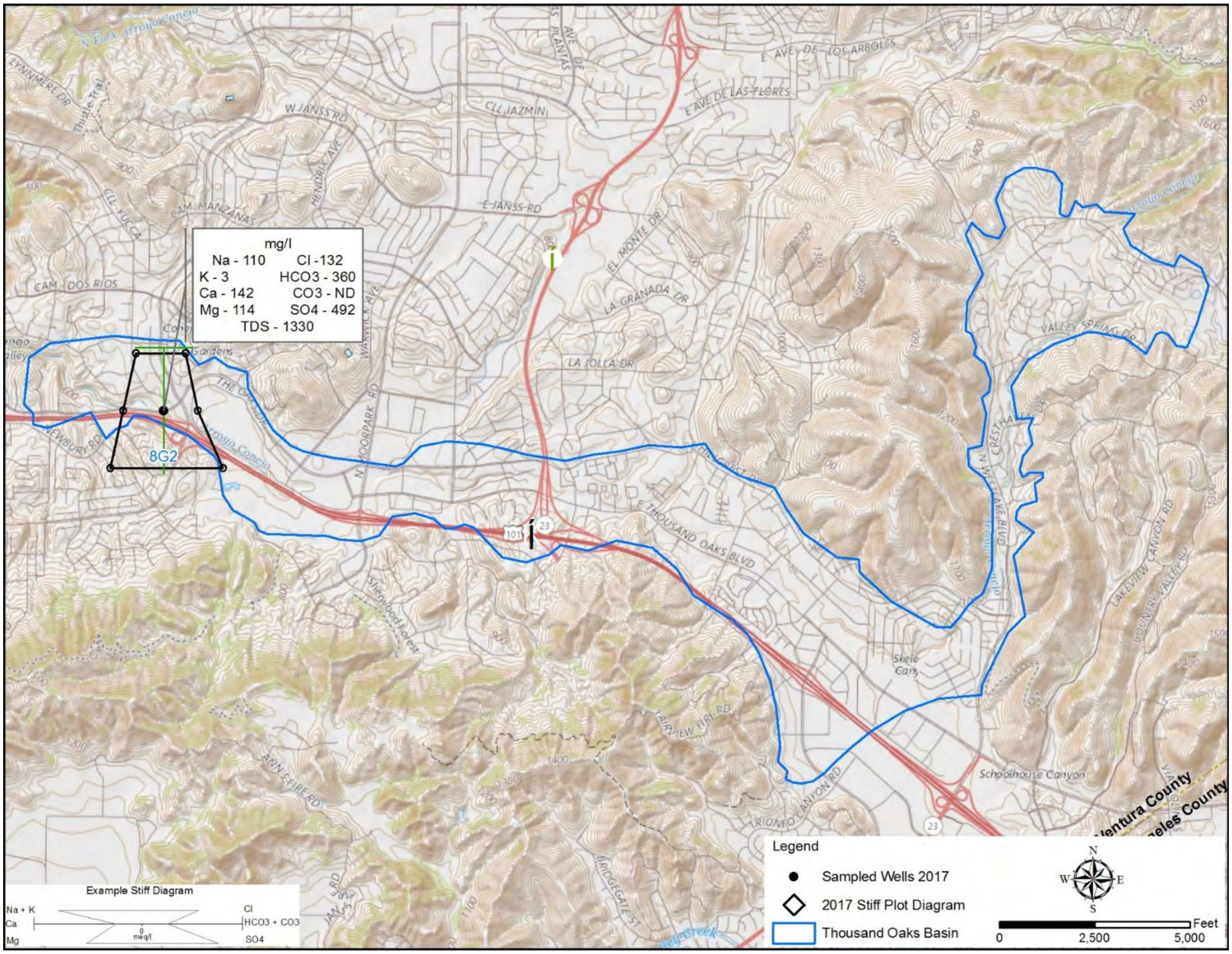


Figure 4-30: Thousand Oaks Basin sampled wells with stiff diagram and selected inorganic constituents.

4.4.22 Tierra Rejada Valley Basin

Depth to water bearing materials varies between 20 to 80 feet bgs. There are approximately 53 water supply wells in the Tierra Rejada Valley Basin and 34 are active. Six wells were sampled this year. The piper diagram in **Figure E-26** shows some variation in water quality. The dominant cation for one sample is magnesium and the remainder have no dominant cation but plot closest to the magnesium type. The dominant anion for one sample is bicarbonate and the remainder have no dominant anion. One well is magnesium-bicarbonate type and the remaining five are magnesium-sulfate type. Three wells have nitrate concentrations above the primary MCL for drinking water. All six wells have concentrations above the SMCL for TDS ranging from 600 to 1,070 mg/L. One well has manganese and one has sulfate above the SMCL for drinking water. One well in the basin was analyzed for Title 22 metals and all constituents were below the primary MCL for drinking water.

The piper diagram in **Figure E-3** shows a comparison of water chemistry between Tierra Rejada and Arroyo Santa Rosa Basins. Chemistry in the two basins is similar but there is more variation in Tierra Rejada with slightly higher magnesium, bicarbonate, and sulfate. **Figure 4-31** shows approximate well locations and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled.

Table 4-33: Selected water quality results for the Tierra Rejada Valley Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
10R02	11/13/17	8.2	**670**	176	75	0.2
11J03	11/13/17	23.7	**680**	168	68	0.2
14F01	11/13/17	**92**	**980**	165	159	0.1
14Q02	11/13/17	ND	**600**	142	58	0.1
15B01	11/27/17	**47.8**	**760**	163	117	0.1
15J02	11/13/17	**57.3**	**1,070**	**268**	163	0.2

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

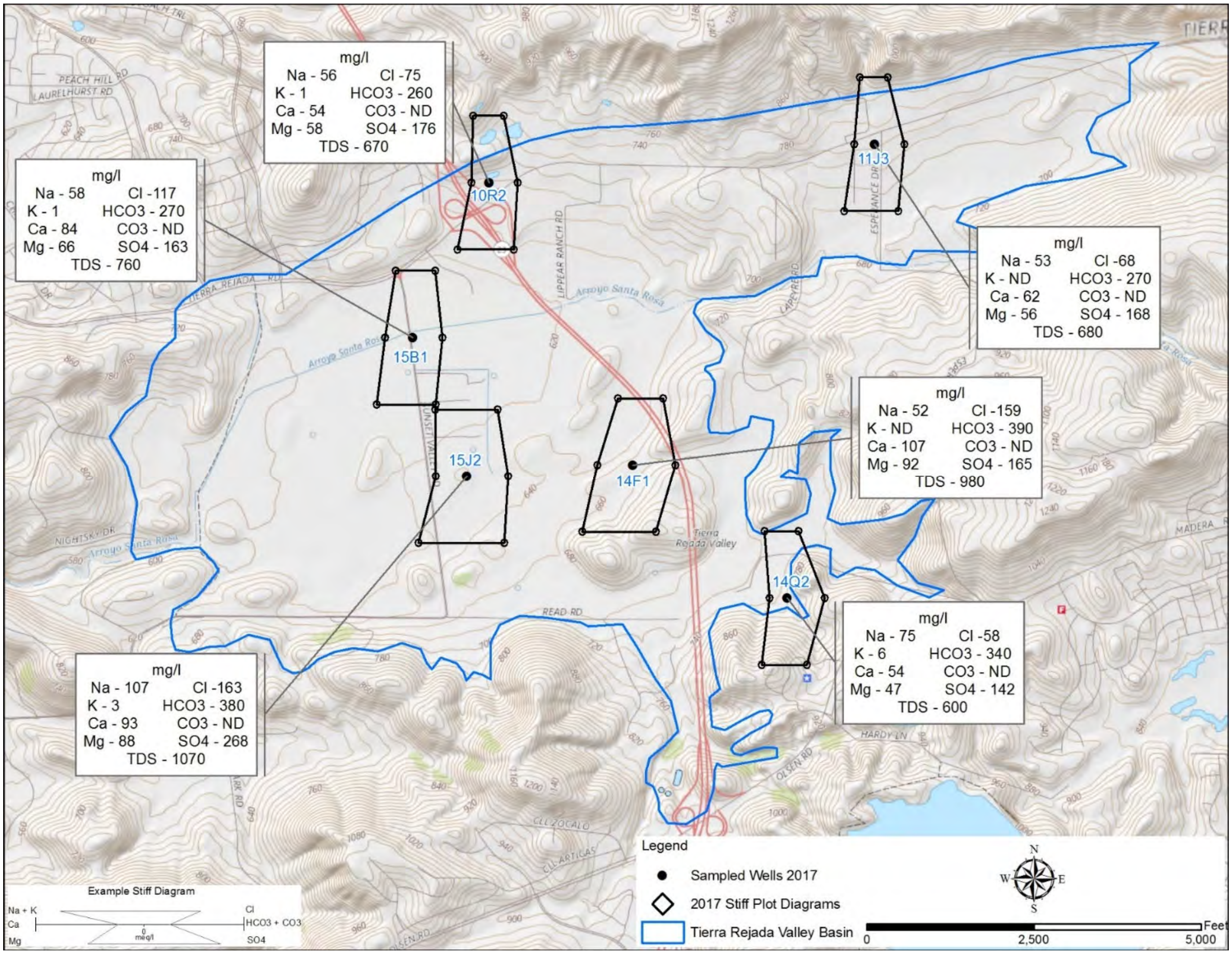


Figure 4-31: Tierra Rejada Basin sampled wells with stiff diagram and selected inorganic constituents.

Figure 4-32 shows nitrate concentrations for wells sampled in Tierra Rejada Basin in 2017. Groundwater from two of the wells sampled this year has a nitrate concentration that exceeds the primary MCL for drinking water. Other wells previously sampled with elevated nitrate concentrations were not available for sampling during this sampling event.

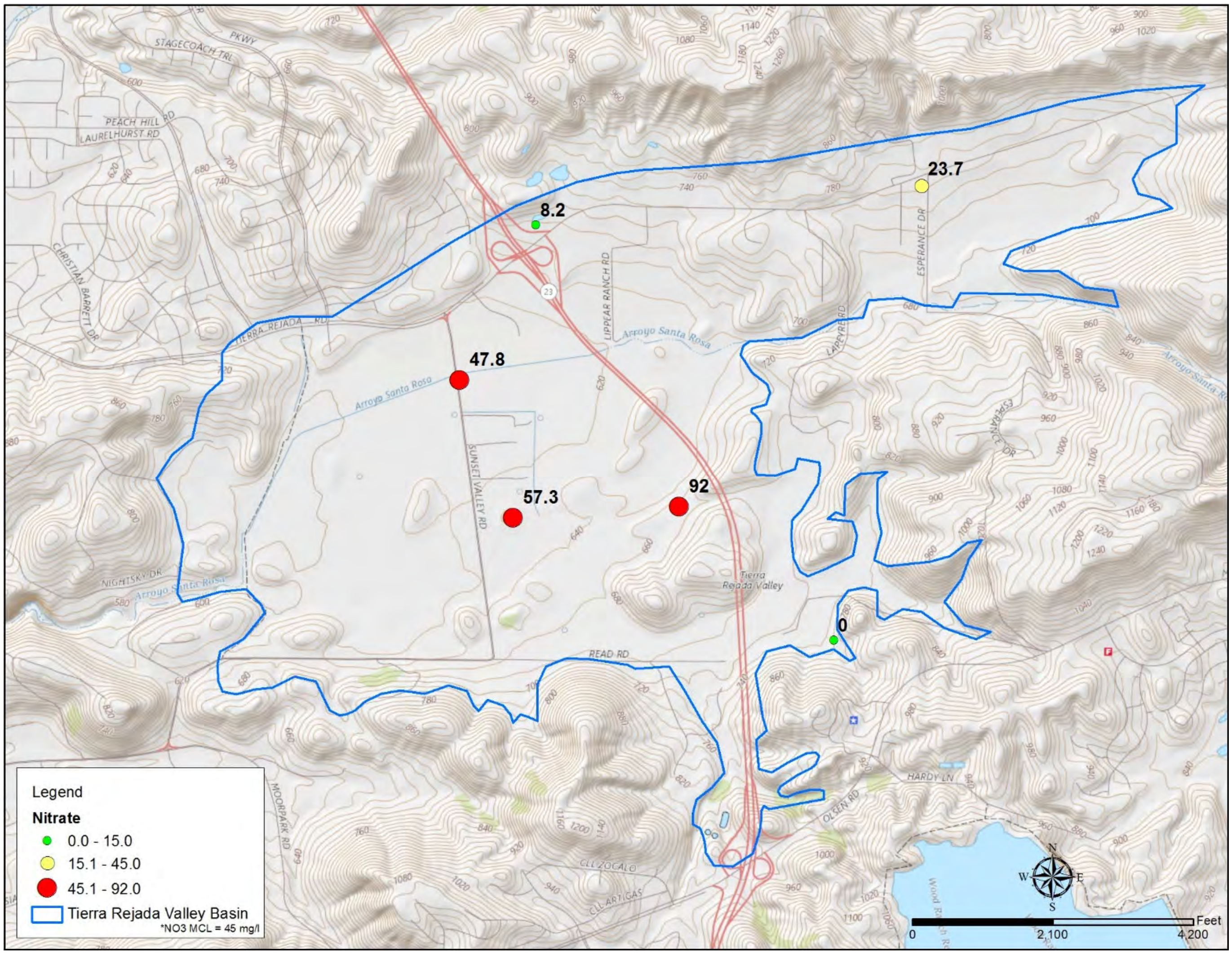


Figure 4-32: Tierra Rejada Basin location of sampled wells and nitrate concentrations (in mg/L).

4.4.23 Upper Ojai Basin

The Upper Ojai Basin is a small, linear valley southeast of and at a higher elevation than the Ojai Valley Basin. The average thickness of water bearing deposits is approximately 60 feet and is encountered approximately 45 to 60 feet bgs. Groundwater quality is considered good but varies seasonally and usually has better quality during winter months. There are approximately 152 water supply wells in the Upper Ojai Basin and 110 active wells. Two wells were sampled this year. The piper diagram in **Figure E-27** shows little variation in the water quality of the wells sampled this year. Calcium is the dominant cation in one sample and there is no dominant cation in the remaining sample, but it plots closest to the calcium cation type. Bicarbonate is the dominant anion, and the water is calcium-bicarbonate type in both samples.

TDS and manganese are above the SMCL for drinking water in one well. One well has nitrate concentration above the primary MCL for drinking water. One water sample was analyzed for Title 22 metals and all constituents were below the primary MCL for drinking water. **Figure 4-33** shows approximate well locations and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled.

Table 4-34: Selected water quality results for the Upper Ojai Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
10K05	10/24/17	2.3	**680**	92.5	83	0.2
11J01	10/24/17	**46.5**	420	75.5	33	ND

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

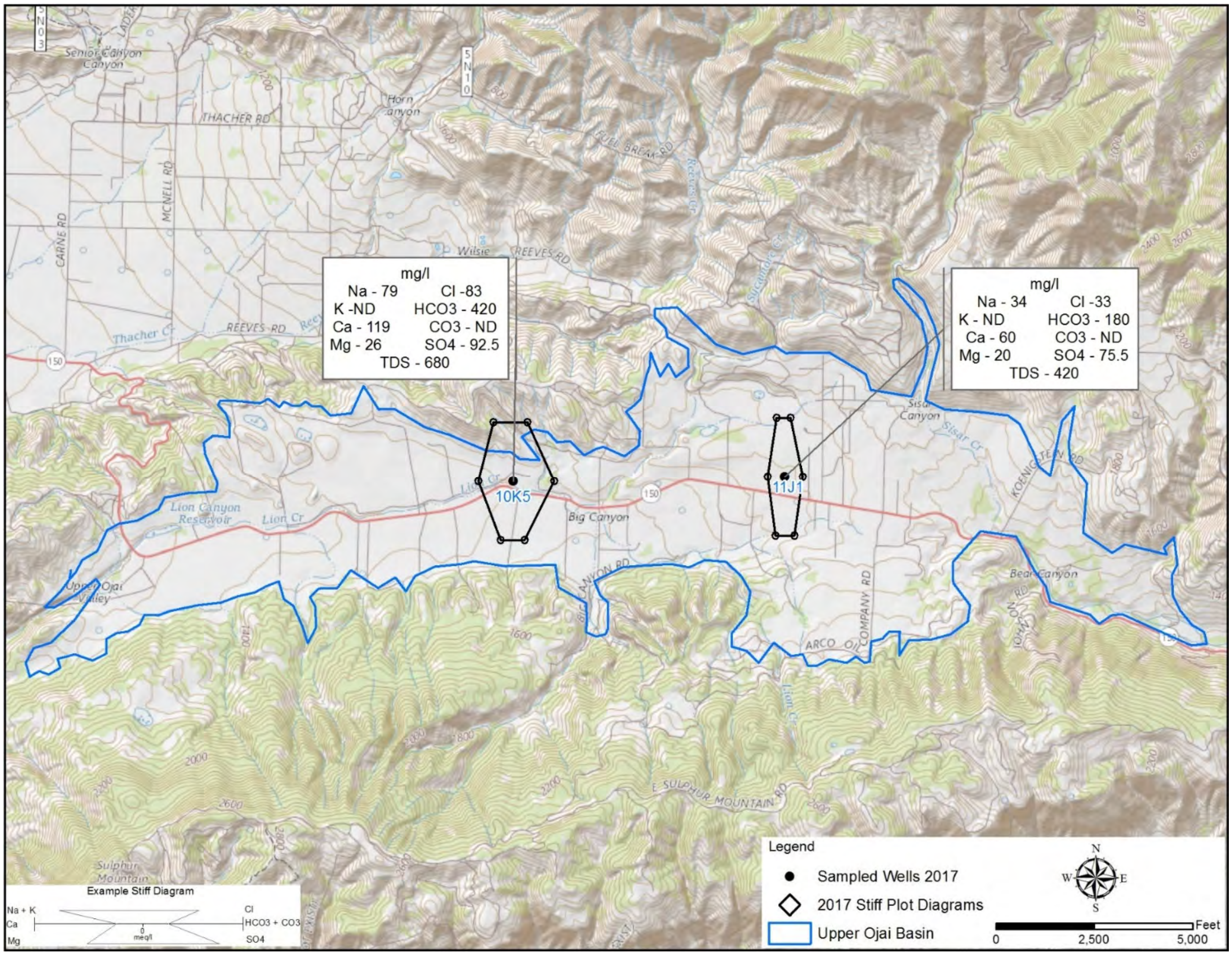


Figure 4-33: Upper Ojai Basin sampled wells with stiff diagram and selected inorganic constituents.

4.4.24 Ventura River Basin - Lower

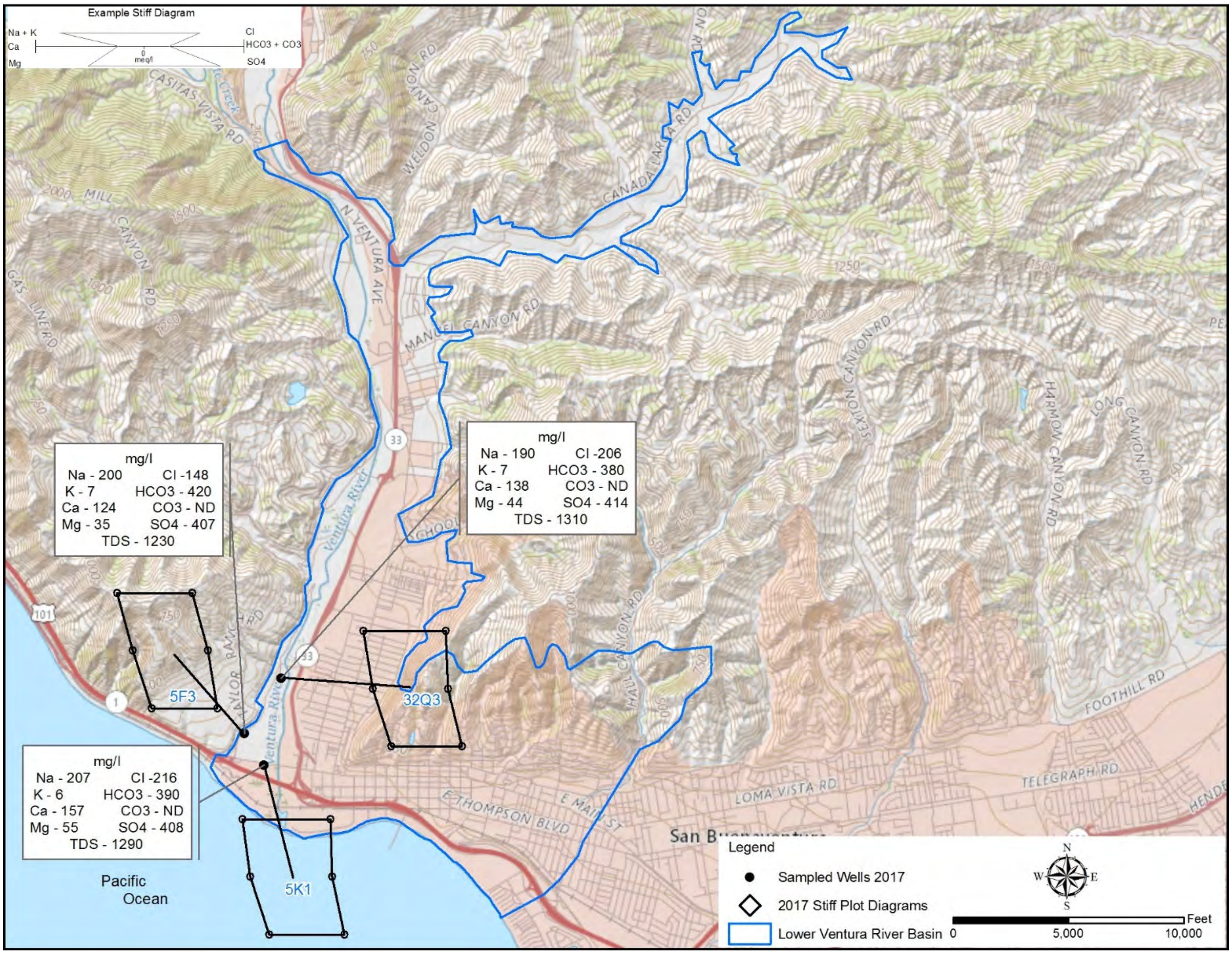
The Lower Ventura River Basin has few remaining active water wells available for sampling. Depth to the water bearing unit is 3 to 13 feet bgs in the floodplain and deeper as the ground surface elevation increases towards the edges of the basin. There are approximately 32 water supply wells in the Lower Ventura River Basin and 17 are active. The piper diagram in **Figure E-10** shows the water quality of the three wells sampled this year. Sodium is the dominant cation in one sample and there is no dominant cation for two samples, but they plot closest to the sodium type. There is no dominant anion but the samples plot near the sulfate type. The water in two wells is calcium-sulfate type and one is sodium-sulfate type. The wells sampled this year are in river alluvium near the coast.

TDS, sulfate, and manganese concentrations are above the SMCL for drinking water in all three wells. Chloride concentration is above the level that can impair agricultural beneficial uses for sensitive plants in two wells but is not above the MCL for drinking water. One water sample was analyzed for Title 22 metals and all constituents were below the primary MCL for drinking water**. Figure 4-34** shows the approximate well locations and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled in the Lower Ventura River Basin. The piper diagram in **Figure E-29** shows a comparison of the chemistry between Upper and Lower Ventura River Basins.

Table 4-35: Selected water quality results for the Lower Ventura River Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
05F02	12/01/17	ND	**1,230**	**407**	148	0.5
05K01	10/31/17	ND	**1,290**	**408**	216	0.9
32Q03	12/01/17	ND	**1,310**	**414**	206	0.9

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL



<u>Figure 4-34:</u> Ventura River Basin – Lower: sampled wells with stiff diagram and selected inorganic constituents.

4.4.25 Ventura River Basin - Upper

The Upper Ventura River Basin is mainly composed of thin alluvial deposits. There are approximately 307 water supply wells in the Upper Ventura River Basin and 178 are active. The piper diagram in **Figure E-28** shows low variation in water quality among the samples collected. The dominant cation in the Upper Ventura River is calcium and there is no dominant anion. The water is calcium-sulfate type.

Water samples from both wells have TDS and sulfate concentrations that exceed the SMCL for drinking water. One water sample was analyzed for Title 22 metals and none of the constituents exceeded the primary MCL for drinking water. Piper diagram in **Figure E-29** shows a comparison of the water chemistry for the Upper and Lower Ventura River Basins. The Upper Ventura River Basin has higher calcium concentrations, and the Lower Ventura River Basin has higher sodium concentrations. Even though both basins have the same water types, there is a distinct difference in the chemistry. The samples do not overlap on the center field of the piper diagram. **Figure 4-35** shows approximate well locations and concentrations of TDS, sodium, potassium, calcium, magnesium, chloride, bicarbonate, carbonate, and sulfate for the wells sampled.

Table 4-36: Selected water quality results for the Upper Ventura River Basin.

Well No.	Date Sampled	Nitrate as NO3 (mg/L)	TDS (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Boron (mg/L)
04H01	10/31/17	17.2	**760**	**269**	50	1
09G03	10/31/17	34.9	**810**	197	83	0.4

Notes:
1. mg/L = milligrams per liter
2. ND = not detected
3. Bold numbers indicate concentration above primary or secondary MCL

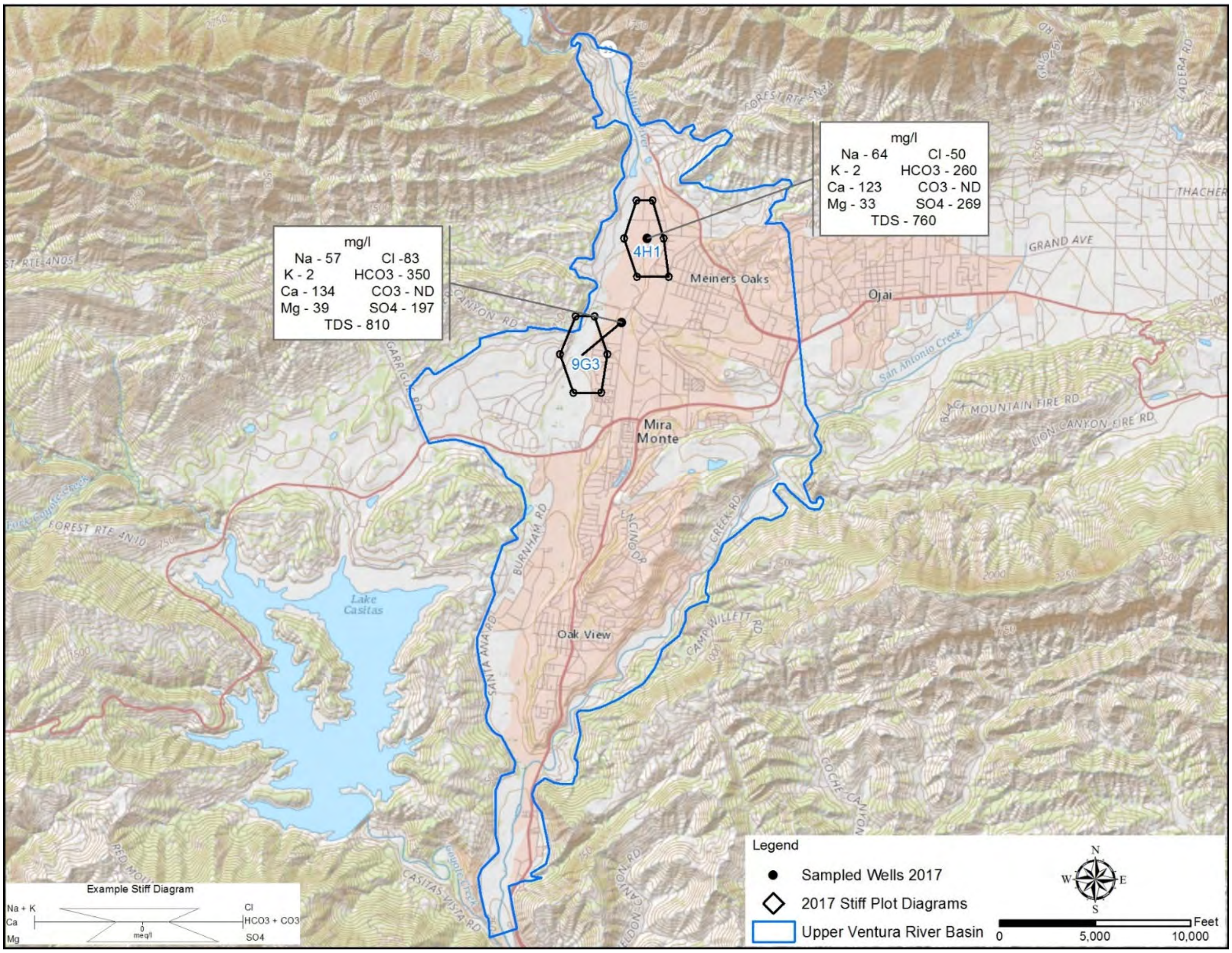


Figure 4-35: Ventura River Basin – Upper: sampled wells with stiff diagram and selected inorganic constituents.

5.0 Groundwater Elevations

Groundwater elevations are measured in production and monitoring wells throughout the County. Water levels are tracked to determine change in storage and trends in groundwater extraction and recharge. Elevation data is shared with other organizations and agencies. The data is also used to generate groundwater elevation maps to determine the direction of groundwater movement. Collected data is publicly available.

In 2017 approximately 200 wells were gauged (**Figures 5-1** and **5-2**), including seventeen wells designated as "key" wells, considered to represent groundwater elevations over a broad area of a groundwater basin. Key wells[6] were chosen based on their location in the basin, availability of construction information and historical water level data. Water levels are measured quarterly in the southern half of the County and biannually in the northern half.

The gauged wells include wells that are not in operation and active wells that were not pumping for at least 24 hours prior to water level gauging. Same wells are consistently gauged. However, alternative wells are substituted when primary wells cannot be gauged.

[6] Appendix B includes the location of key wells, water level changes, and hydrographs.

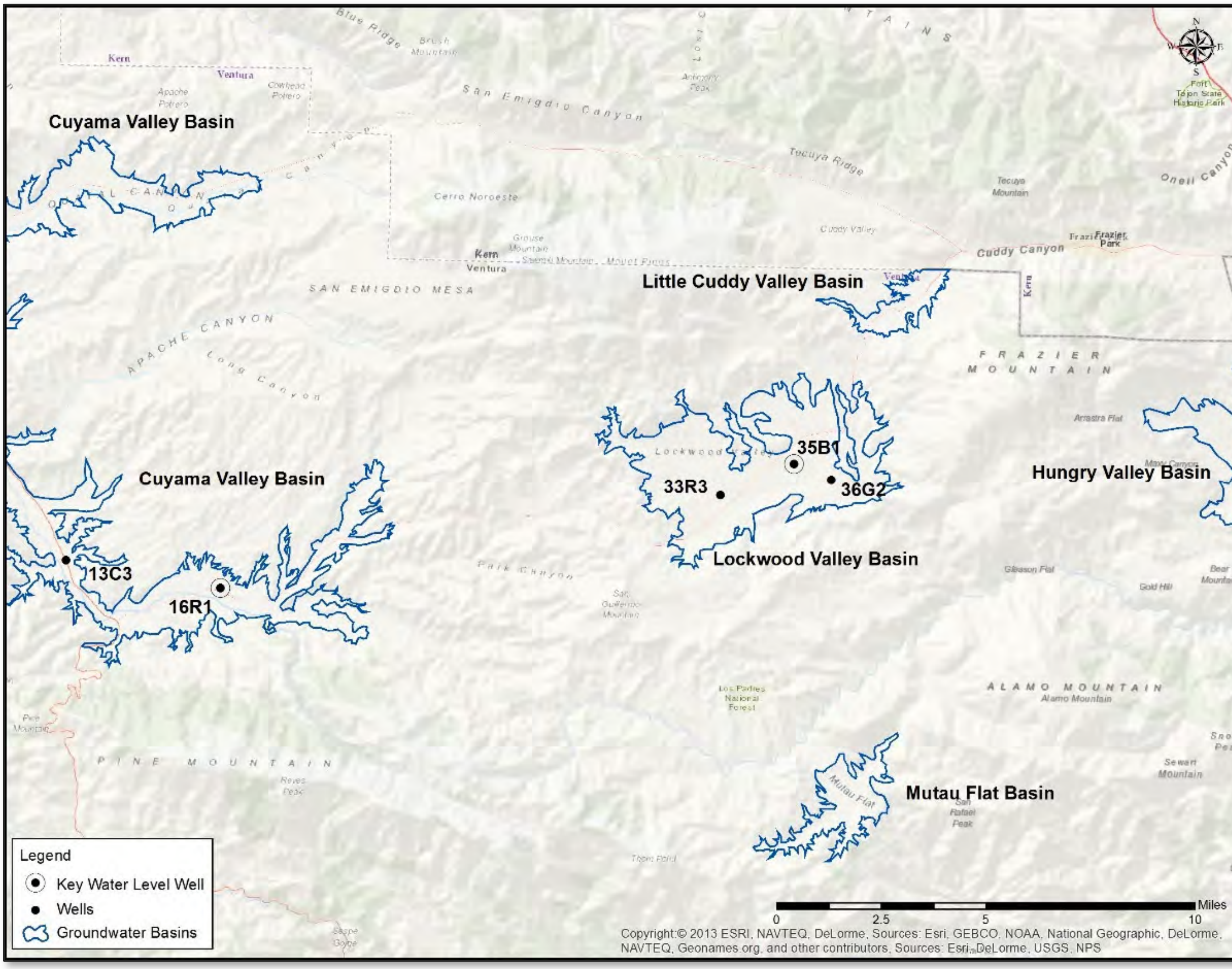


Figure 5-1: Water level wells measured in the northern half of the County.

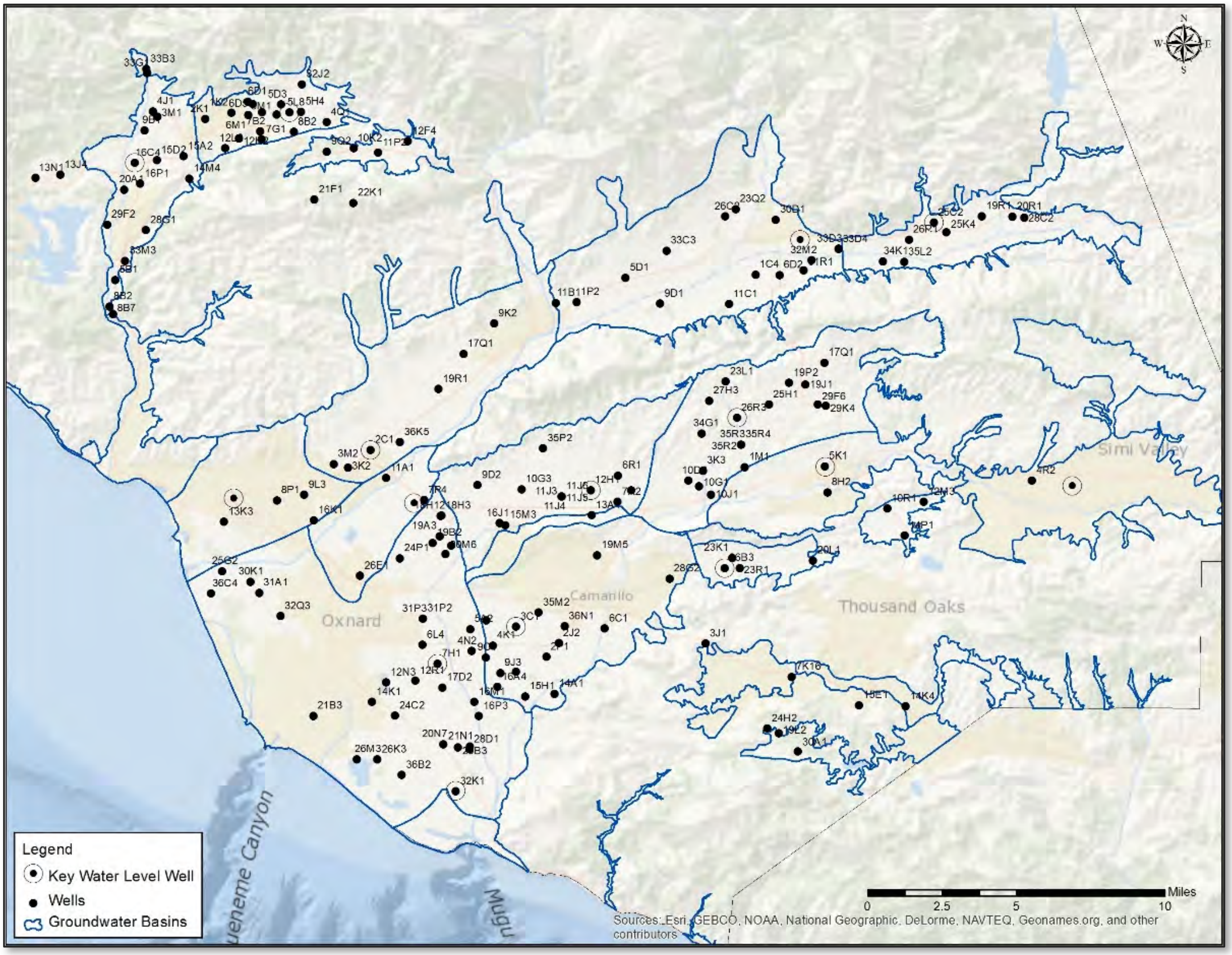
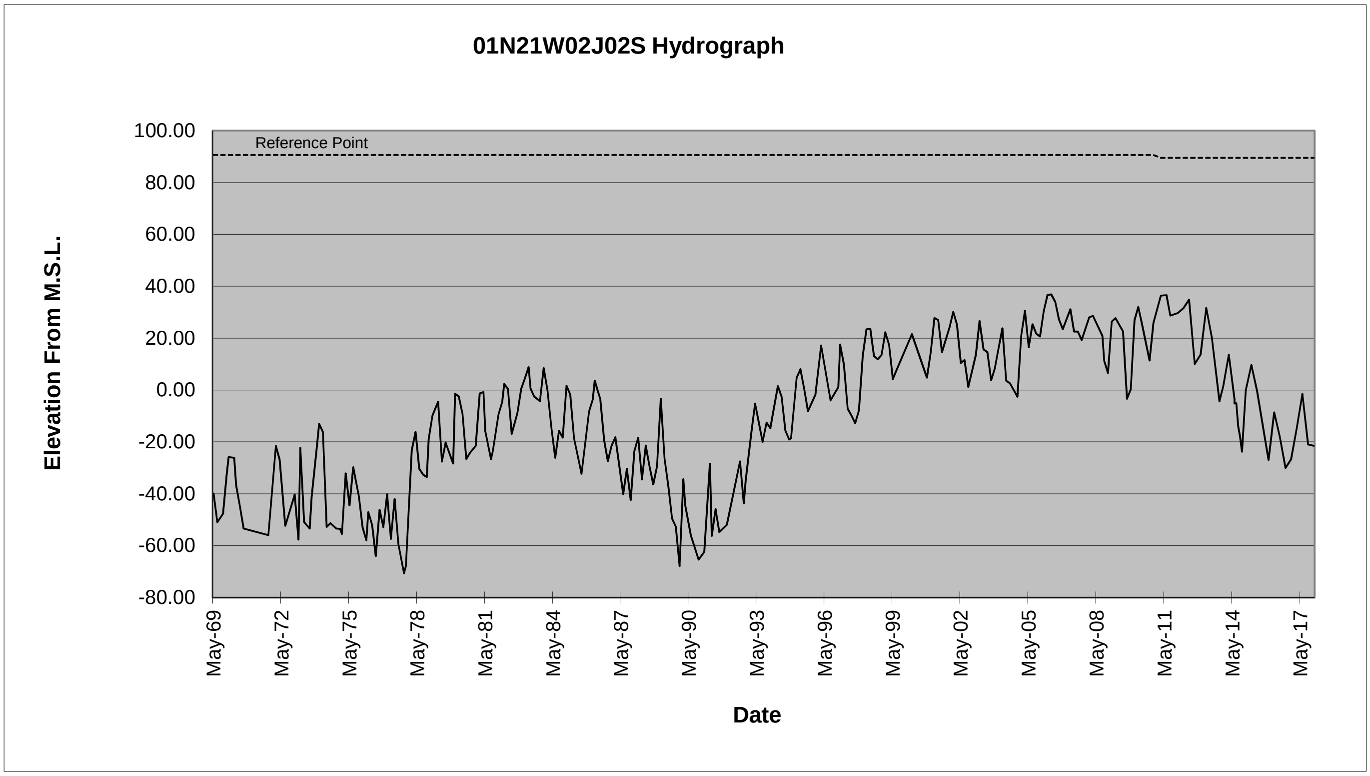


Figure 5-2: Water level wells measured in the southern half of the County.

5.1 Water Level Hydrographs

Groundwater elevations from gauged wells are used to produce hydrographs for wells displaying groundwater elevations over time. This data along with climate, stream flow, groundwater recharge, groundwater quality and pumping data are used to evaluate groundwater conditions. Hydrographs for all “key” water level wells are shown in **Appendix B**. An example hydrograph for State Well No. (SWN) 01N21W02J02S is shown in **Figure 5-3**.



<u>Figure 5-3:</u> Water level hydrograph for SWN 01N21W02J02S located in the Pleasant Valley Basin.

5.2 Spring Groundwater Elevation Changes in Key Wells

Locations of each key well are shown in **Figure 5-4**. Key water level changes for the largest groundwater basins are summarized in **Table 5-1**. Spring measurements are used for comparison since this period is typically at the end of the seasonal rainfall year when groundwater basins are typically most full. The measurements in **Table 5-1** are static water level measurements obtained after a water pump has been off a minimum of 24 hours prior to gauging. In general, groundwater levels show a decreasing trend due to exceptional drought conditions and increased reliance on groundwater extraction.

Hydrographs (line graphs) of individual key wells are presented in **Appendix B**. Hydrographs show changes in groundwater levels (WLs) measured in relation to the ground surface or a specific reference point (RP) elevation in feet mean see level (msl), typically the magnetic north top of the well casing or the concrete slab at the wellhead. The hydrographs are accompanied by up/down bar graphs to track changes from the previous Spring.

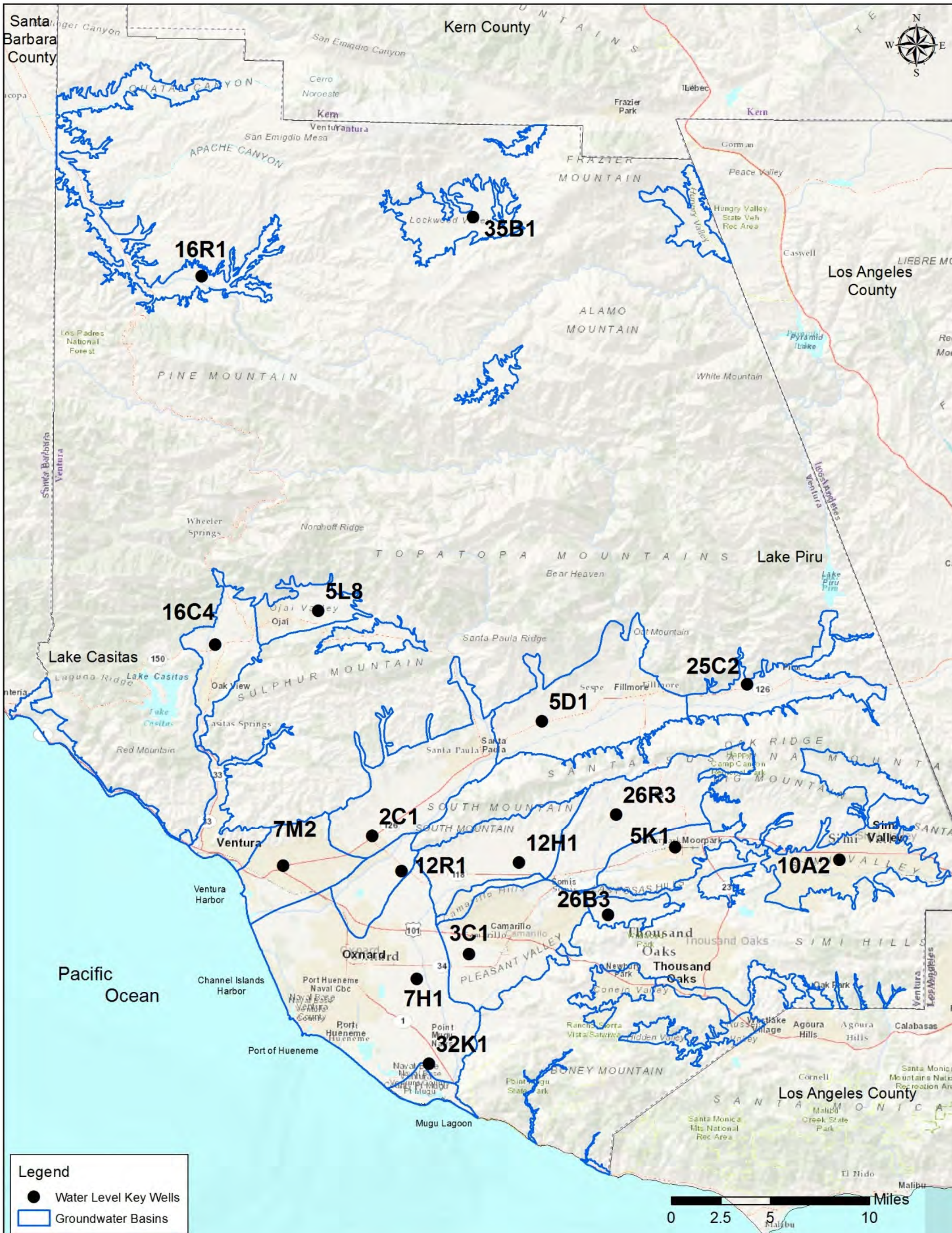


Figure 5-4: Key water level wells in Ventura County.

Table 5-1: Key water level changes for 2017.

DEPTH TO GROUND WATER LEVEL CHANGES AT KEY WELLS IN VENTURA COUNTY								
		HISTORIC		DEPTH TO WATER BELOW GROUND SURFACE			
Groundwater Basin	**STATE WELL NUMBER**	**RECORD HIGH (ft.)**	**RECORD LOW (ft.)**	**LEVEL (ft.)**	**LEVEL (ft.)**	**LEVEL (ft.)**	**Change From Previous Year (ft.)**
	(Period of RECORD)	**(DATE)**	**(DATE)**	**(YEAR 2015)**	**(YEAR 2016)**	**(YEAR 2017)**	**(UP/DOWN)**
Oxnard Plain							
Oxnard Aquifer	01N21W07H01S	3.4	88.4	53.8	57.6	55.9	**UP 1.7**
	(Jan.1931-present)	(3/1999)	(9/1964)	(3/17)	(3/24)	(3/16)	
Fox Canyon Aquifer	01N21W32K01S	18	129	78.2	89.0	65.9	**UP 23.1**
	(Dec. 1972-present)	(4/1983)	(12/1990)	(3/9)	(3/14)	(3/27)	
Oxnard Plain Forebay (Measured By UWCD)	02N22W12R04S	16.2 ft.	Dry	Dry	Dry	117.14	**UP 7.9**
	(Mar 1996-present)	(5/2006)	(7/2014?)			(3/28)	
Pleasant Valley Lower System	01N21W03C01S	87.5	253.9	155.9	156.5	162.7	**DOWN 6.2**
	(Feb.1973-present)	(8/1995)	(11/1991)	(3/18)	(3/23)	(3/16)	
East Las Posas	03N20W26R03S	503	619.3	571.3	577.3	570.2	**UP 7.1**
	(1985-present)	(4/1986)	(9/2009)	(3/10)	(3/7)	(3/10)	
South Las Posas	02N19W05K01S	27.5	136.2	28.1	28.5	29.7	**DOWN 1.2**
	(Jun.1975-present)	(7/2006)	(6/1975)	(3/13)	(3/11)	(3/10)	
West Las Posas	02N21W11J04S	368.4	406.2	388.0	394.1	404.3	**DOWN 10.2**
	(Jan.1991 - Present)	(6/2006)	(9/2016)	(3/15)	(3/3)	(3/9)	
Santa Rosa Valley	02N20W26B03S	13.2	60.3	55.1	46.7	40.3	**UP 6.5**
	(Oct.1972-present)	(4/1979)	(11/2004)	(3/18)	(4/4)	(3/23)	
Simi Valley	02N18W10A02S	45	92	80.9	76.9	82.1	**DOWN 5.2**
	(Dec.1984-present)	(2/1998)	(6/1992)	(3/2)	(3/1)	(3/31)	
Ventura River (Upper)	04N23W16C04S	3.9	101	69.9	93.9	34.1	**UP 59.8**
	(July 1949-present)	(3/1983)	(2/1991)	(3/4)	(3/1)	(3/6)	
Ojai Valley	04N22W05L08S	38.2	312	231.3	255.1	234.1	**UP 21**
	(Oct.1949 - Present)	(4/1978)	(9/1951)	(3/5)	(3/9)	(3/8)	
Mound (Measured by UWCD)	02N22W07M02S	126.6	176.2	167.3	161.9	168.04	**DOWN 6.2**
	(Apr.1996-present)	(4/1998)	(4/1996)	(3/18)	(3/24)	(3/21)	
Santa Paula	02N22W02C01S	20.7	51.9	43.2	50	49.2	**UP 0.8**
	(Oct.1972-present)	(4/1983)	(12/1991)	(3/16)	(3/22)	(3/15)	
Fillmore	03N20W05D01S	107.8	163.7	143.3	148	143.2	**UP 4.9**
	(Oct.1972 - Present)	(2/1979)	(1219/77)	(3/16)	(3/21)	(3/15)	
Piru	04N19W25C02S	43.1	183.2	116.3	127.25	122.8	**UP 4.5**
	(Sep.1961-present)	(3/1993)	(10/1965)	(3/16)	(3/21)	(3/15)	
Lockwood Valley	08N21W33R03S	17.5 ft.	53.5 ft.	45.1	46.7	50	**DOWN 3.3**
	(April1966-present)	(9/1998)	(4/1974)	(3/27)	(4/13)	(3/29)	
Cuyama Valley	07N23W16R01S	15.0	47.5	56.1	57.7	40.8	**UP 16.9**
	(Mar.1972-present)	(4/1993)	(9/1990)	(3/27)	(4/13)	(3/29)	

Date prepared: 2/27/2018

The following summary is based on information gathered from key wells as shown in **Table 5-1**.

The Forebay Area of the Oxnard Basin responds quickly to seasonal and annual changes in precipitation and recharge. The Forebay Area key well (UWCD monitoring well) was dry for the Spring 2016 measurement. There was enough rainfall to have measurable water in this well for the Spring 2017 measurement. The water level in the well was 7.9 feet above the bottom of the well.

The water level elevation in the Oxnard Basin, Oxnard aquifer key well was up 1.7 feet from Spring 2016. The water level elevation in the Oxnard Basin, Fox Canyon aquifer key well was up 23.1 feet from Spring 2016.

In the Pleasant Valley LAS, the water level elevation in key well was down 6.2 feet from the Spring 2016.

In the Las Posas valley, the East Las Posas Basin key well water level elevation was up 7.1 feet from Spring 2016. The water level elevation in the South Las Posas key well was down 1.2 feet in Spring 2017. Since 1975, the depth to water in this well has risen from 136 feet to as high as 27 feet below ground surface. This trend is attributed to groundwater recharge by treated effluent from upstream wastewater treatment plant discharges and groundwater discharge to surface from the Simi Valley Basin. The key well for the West Las Posas Basin was down 10.2 feet from Spring 2016.

In the Santa Rosa Valley, the water level elevation was up 6.5 feet from Spring 2016. The water level elevation in the Simi Valley Basin key well was down 5.2 feet from Spring 2016. Minor fluctuations in depth over the past ten years have occurred in the Simi Valley Basin key well (<±10 feet).

In the northern end of the Upper Ventura River Basin, the water level elevation in key well SWN 04N23W16C04S was up 59.8 feet from the measurement in Spring 2016. In the Ojai Valley, the water level elevation in key well SWN 04N22W05L08S was up 21 feet from Spring 2016. The Ojai Valley Basin responds quickly to rainfall fluctuations, and it is not uncommon to see large drops in water level during dry periods and recovery during wet periods (see Hydrograph in **Appendix B**).

The basins that underlie the Santa Clara River Valley also respond quickly to fluctuations in annual rainfall. The water level elevation in the Piru Basin key well was up 4.5 feet from Spring 2016. The water level elevation in the Fillmore Basin key well was up 4.9 feet after being down 4.7 feet the previous Spring and in the Santa Paula Basin the water level elevation in the key well was up 0.8 feet from 2016. The Mound Basin water level elevation in key well No. 02N22W07M02S was down 6.2 feet from Spring 2016.

The Lockwood Valley Basin key well No. 08N21W33R03S was down 3.3 feet from Spring 2016. The water level elevation in the Cuyama Valley Basin key well SWN 07N23W16R01S was up 16.9 feet from Spring 2016.

5.3 Potentiometric Surface Maps

Potentiometric surface maps are used to visually represent groundwater elevations in specific geographic areas. Groundwater elevation data is taken for Spring and Fall periods from County-gauged wells and wells measured by other organizations/agencies. Generalized potentiometric surface maps created from 2017 groundwater level data include the Santa Clara River Valley, the UAS of the Oxnard and Pleasant Valley Basins, and the LAS of the Oxnard, Pleasant Valley and Las Posas Valley Basins.

Figures 5-5 thru **5-6** depict the Santa Clara River Valley area that encompasses the Mound, Santa Paula, Fillmore, and Piru Basins. Contours were created using data from the County, UWCD, other agencies, cities, and water companies. Basin areas were truncated to include only the alluvial area of the valley instead of the full basin boundaries.

Figures 5-7 thru **5-8** depict the UAS of the Oxnard and Pleasant Valley areas. The Oxnard Aquifer is not recognized in the Forebay area due to the absence of a confining clay cap as is present in the Oxnard Plain Pressure Basin.

The UAS is not typically present in the Pleasant Valley area. There are areas of shallow alluvial sediments similar to Oxnard and Mugu aquifer units from which groundwater is extracted. Data from the perched or semi-perched zone of the Oxnard Plain was not used as some water levels represent confined conditions.

Figures 5-9 thru **5-10** depict the LAS of the Oxnard, Pleasant Valley and Las Posas Valley area. The Moorpark anticline was used in previous Annual Reports as a boundary between the East and South Las Posas Basins. DWR Bulletin 118 does not divide the Las Posas Basin but there are indications of the presence of a significant groundwater flow barrier (fault) in that location. The potentiometric surface is mapped to reflect a “no-flow” barrier between the East Las Posas and the South Las Posas Basins. Data from wells perforated in the shallow sand and gravel zones of the Las Posas Valley were not used to generate these contours.

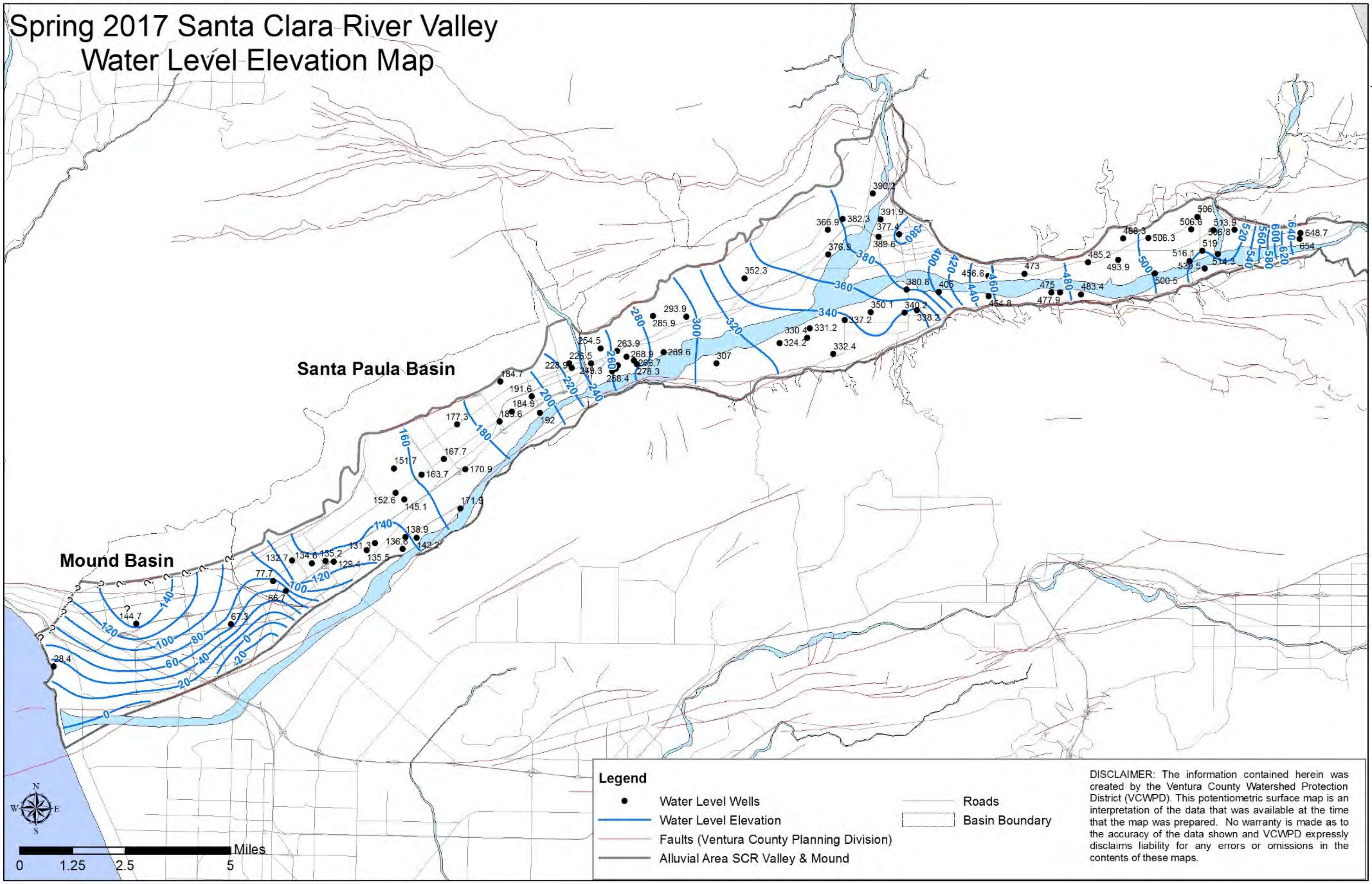


Figure 5-5: Water level surface elevation contours for the Santa Clara River Valley area for Spring 2017.

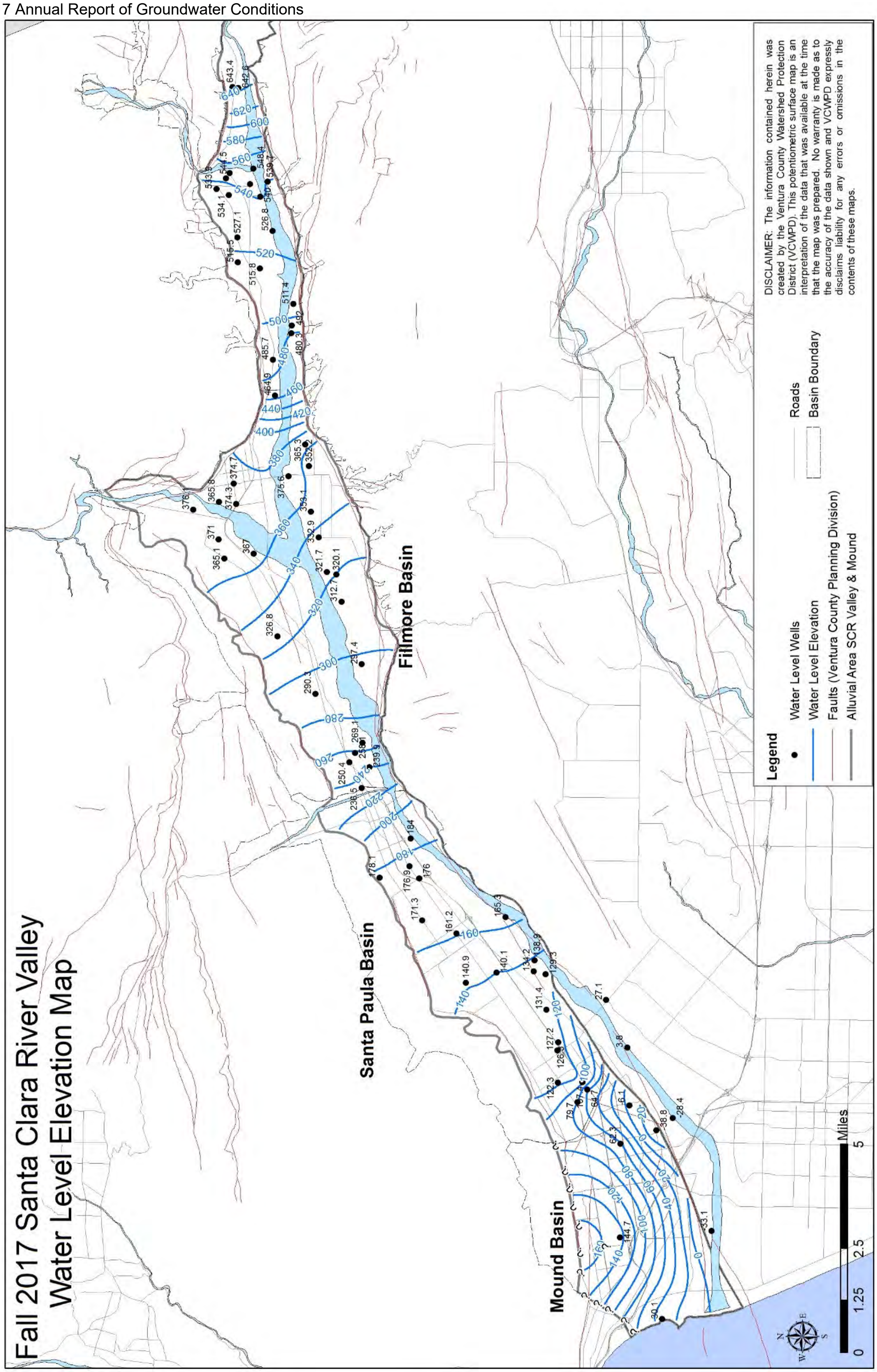


Figure 5-6: Water level surface elevation contours for the Santa Clara River Valley area for Fall 2017.

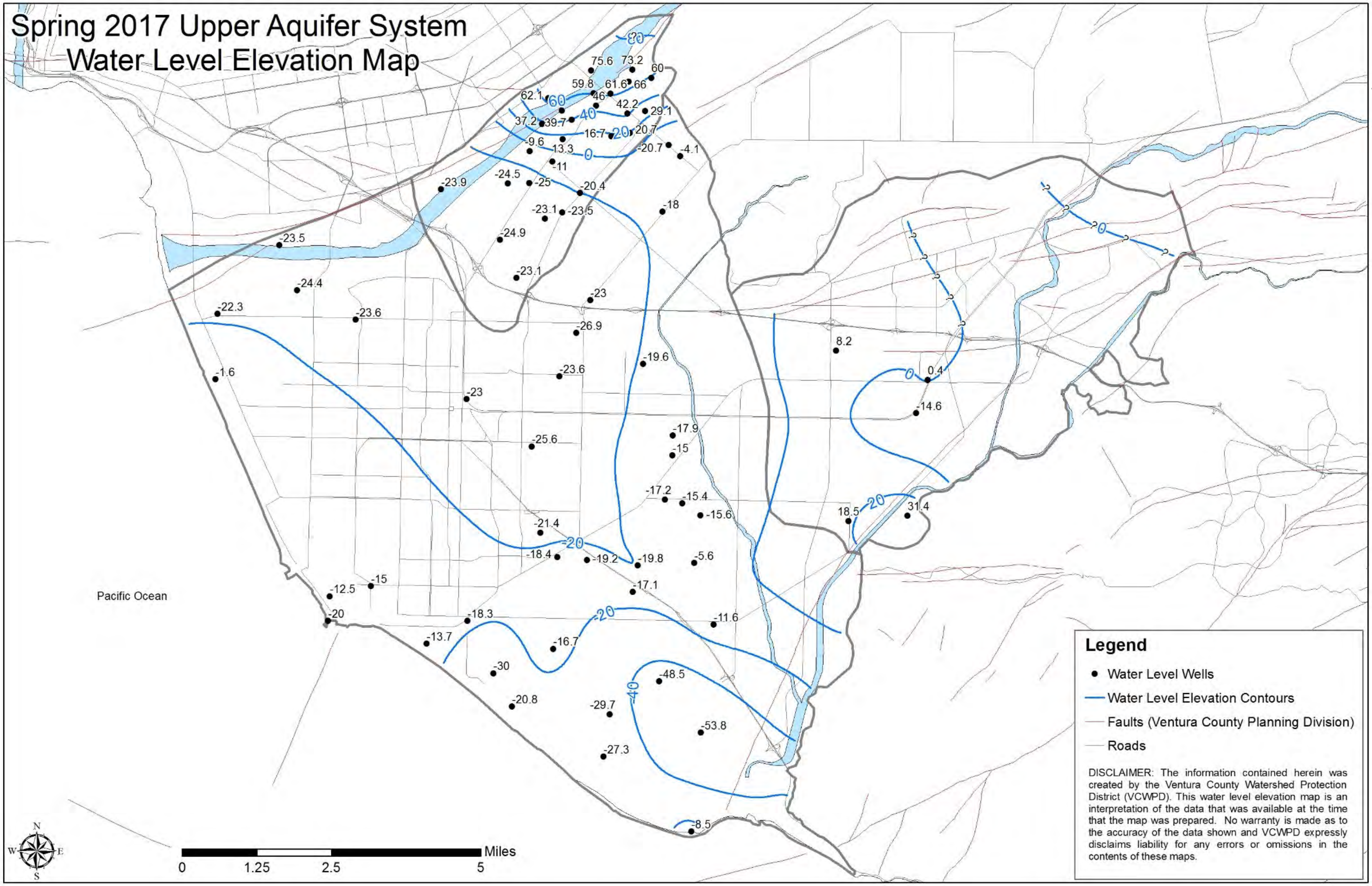


Figure 5-7: Water level surface elevation contours for the UAS for Spring 2017.

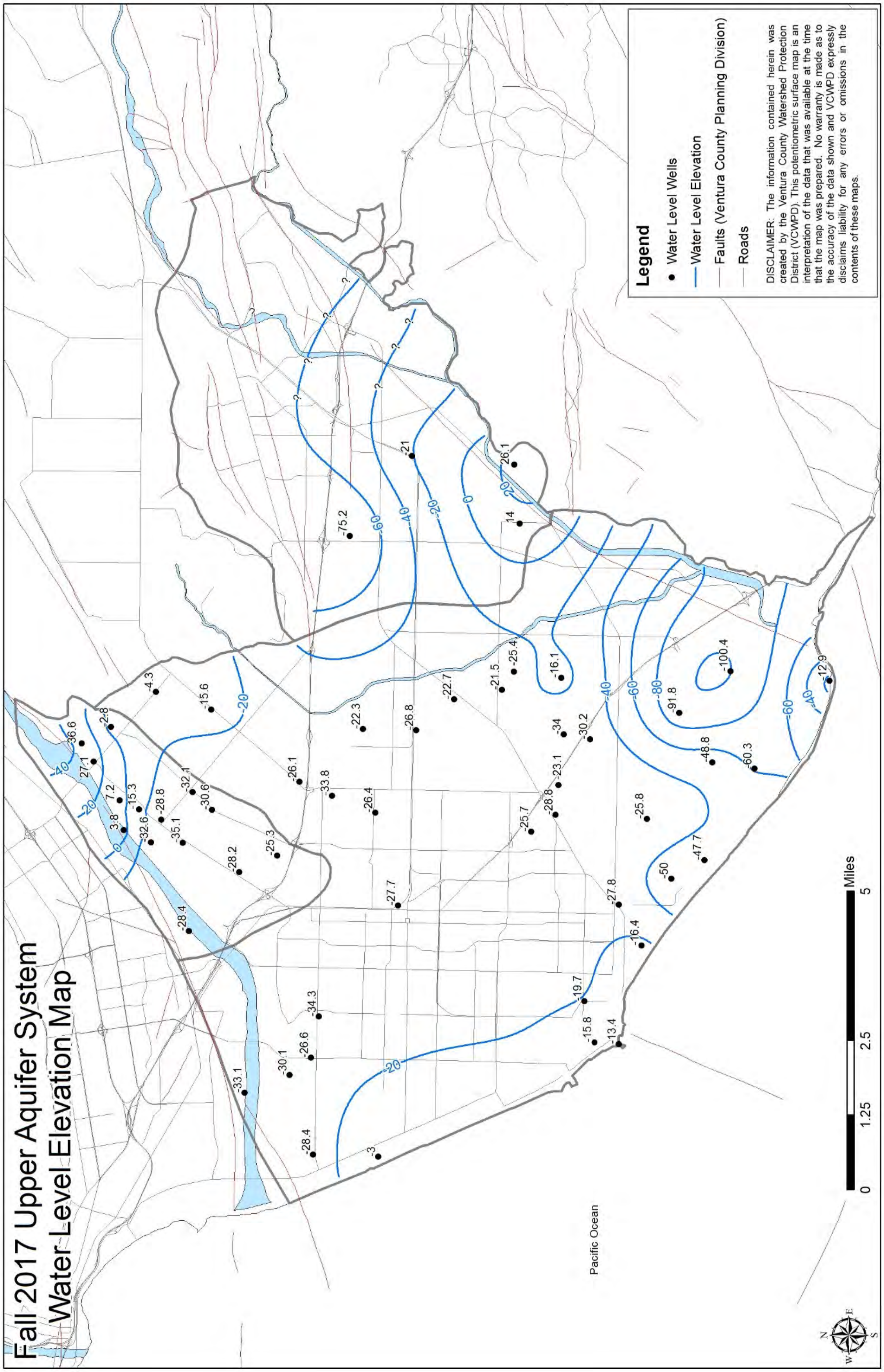


Figure 5-8: Water level surface elevation contours for the UAS for fall 2017.

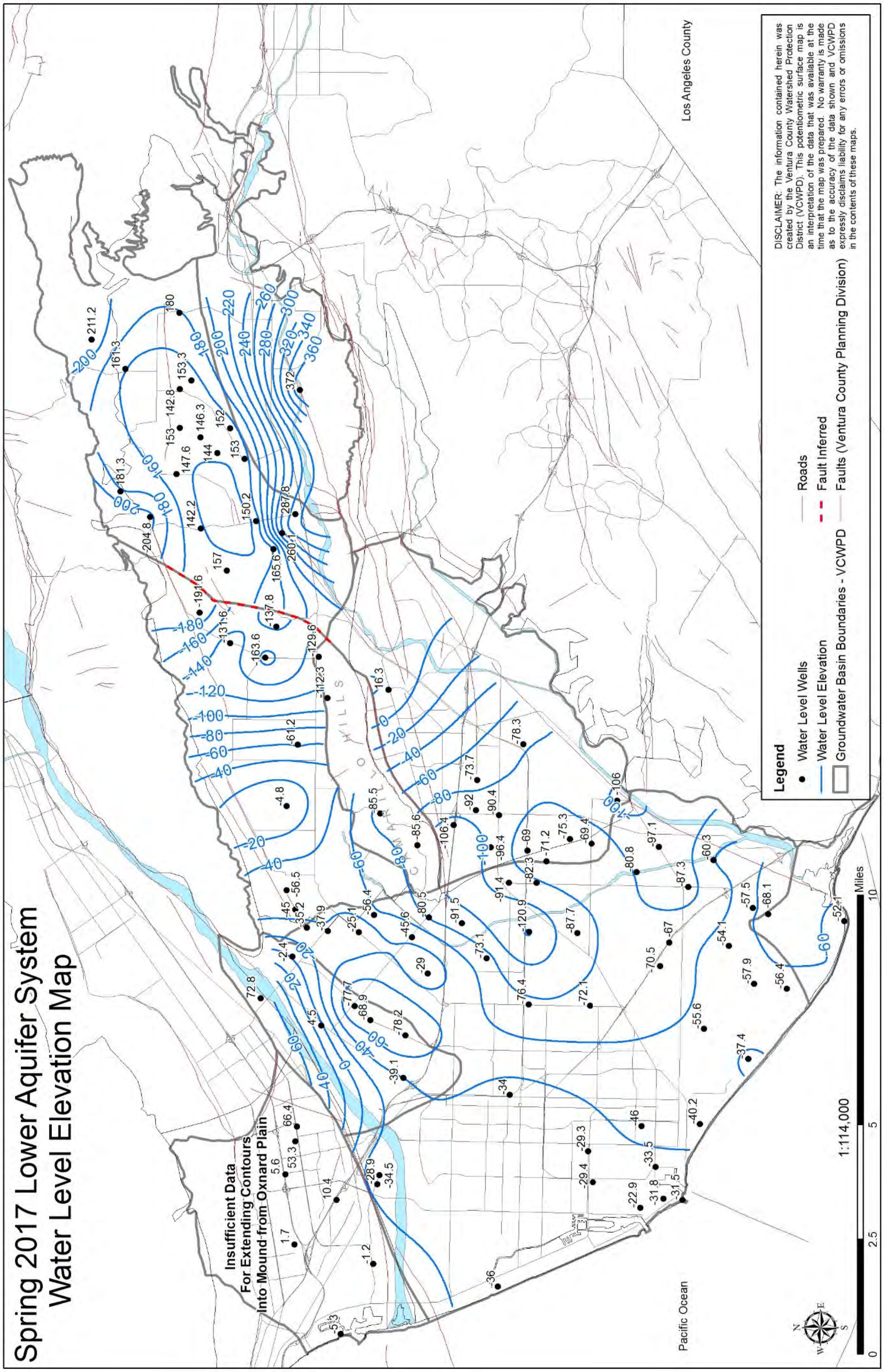


Figure 5-9: Water level surface elevation contours for the LAS for spring 2017.

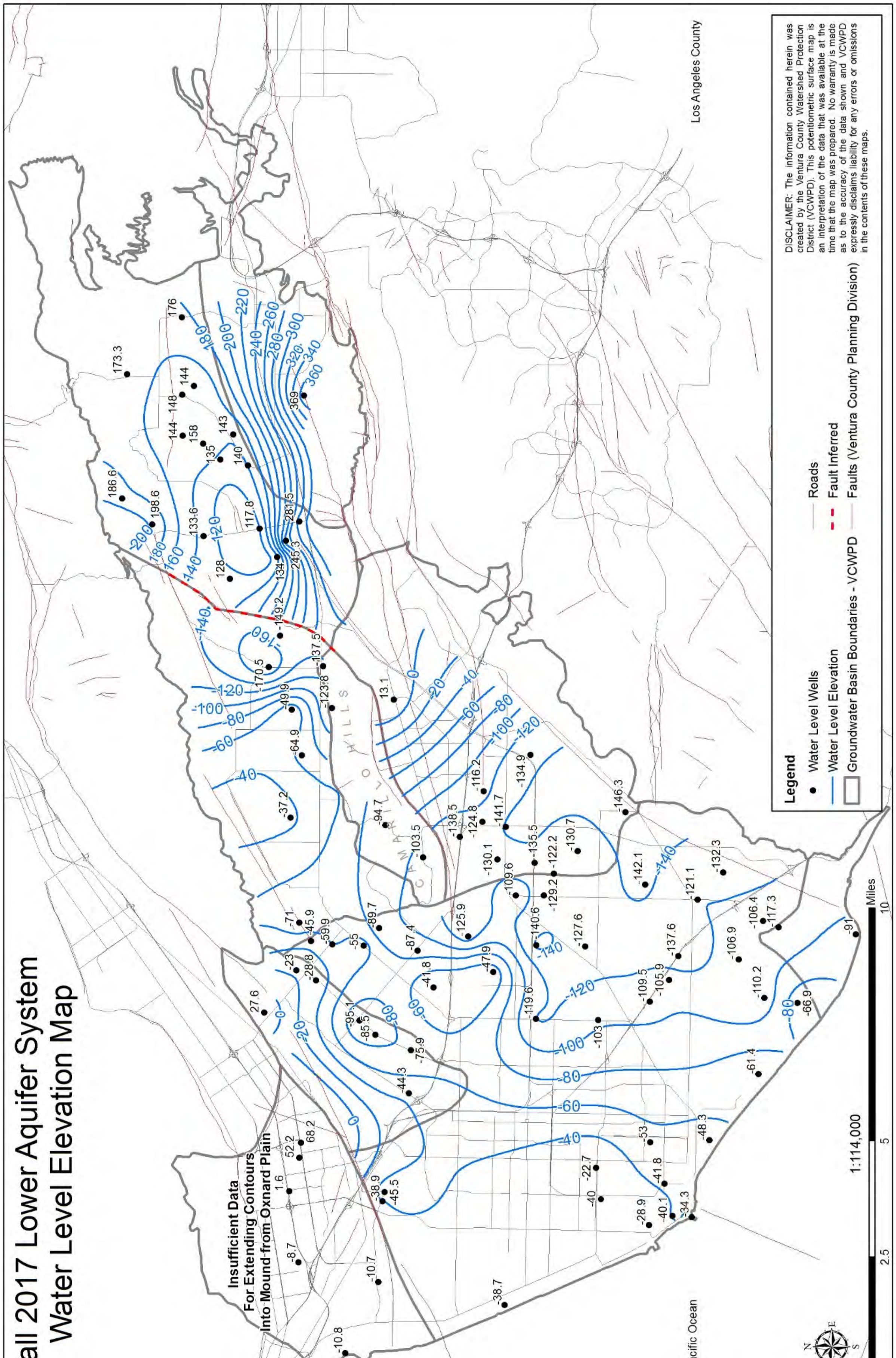


Figure 5-10: Water level surface elevation contours for the LAS area for fall 2017.

5.4 California Statewide Elevation Monitoring Program (CASGEM)

The CASGEM Program was developed by the DWR in response to the passing of Senate Bill Number 6 in November 2009. The law directs that groundwater elevations in all basins and subbasins in California be regularly and systematically monitored, preferably by local entities, with the goal of demonstrating seasonal and long-term trends in groundwater elevations. Resulting information is available from the DWR. The CASGEM program established a permanent, locally managed system to monitor groundwater elevation in California's alluvial groundwater basins and subbasins identified in DWR Bulletin No. 118. The CASGEM program relies and builds on locally established, long-term groundwater monitoring and management programs.

The VCWPD acts as the Umbrella Monitoring Entity for Ventura County by coordinating and reporting groundwater elevation data collected by multiple agencies within a basin. Groundwater level data is collected quarterly or semi-annually, depending on location.

6.0 Water Supplies

6.1 Groundwater Extractions

Three groundwater management agencies (GMAs) in Ventura County oversee groundwater extractions within their jurisdictional boundaries (**Figure 6-1**) and include the FCGMA, UWCD and OBGMA. Well owners and operators within the boundaries of a GMA are required to report their extractions to the respective agency. Owners of wells located outside of a GMA boundary are not required to report their extractions but are requested to report annual well usage to the County.

The FCGMA reports that approximately 60% of extracted groundwater is used for agricultural purposes with the remaining 40% for municipal, industrial, and domestic uses. **Table 6-1** compares extractions reported to the agencies for the years 2005 to 2017. Owners of wells located in agency boundary overlap areas must report extractions to all agencies.

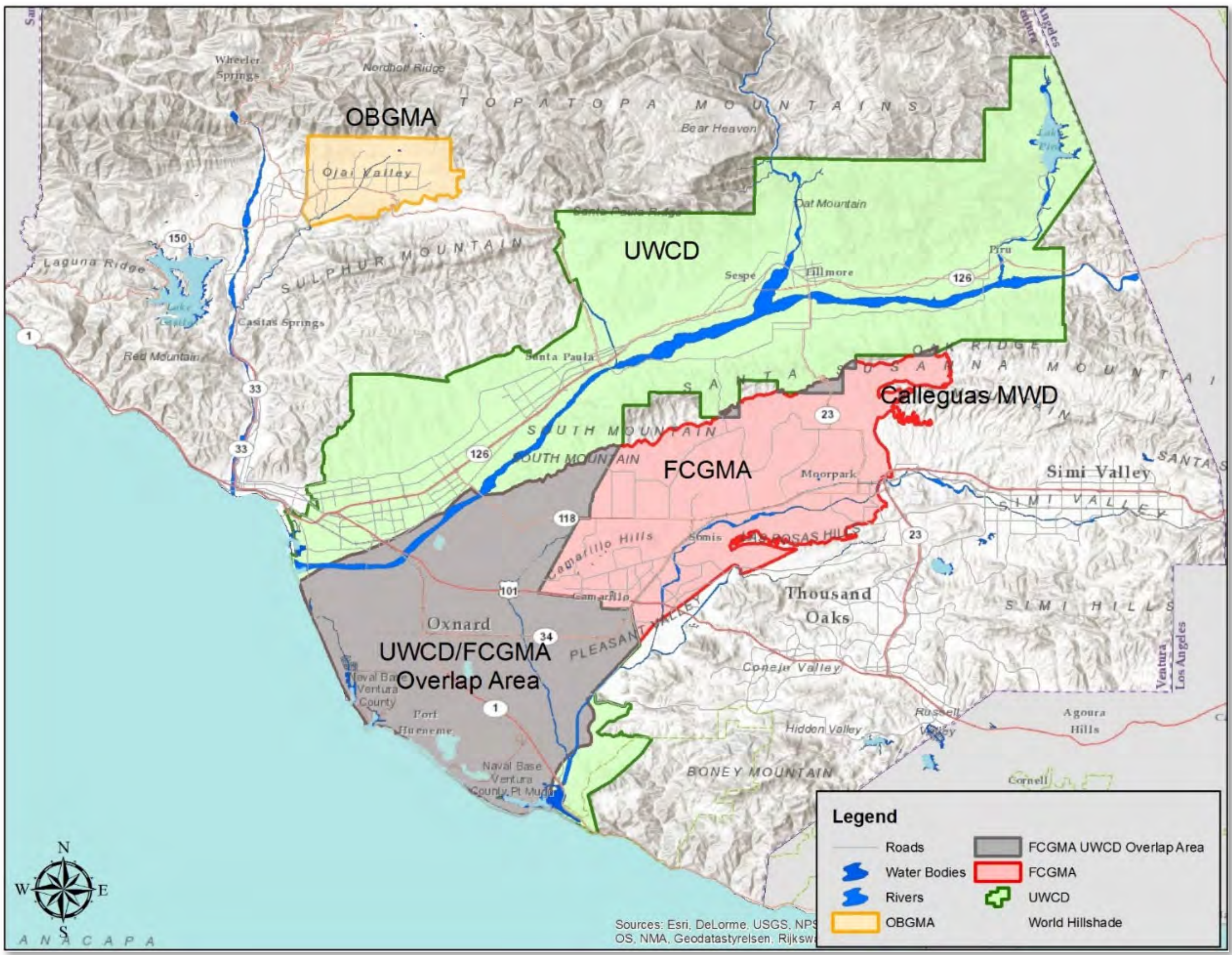


Figure 6-1: Groundwater Management Agencies within Ventura County.

Table 6-1: Agency reported extractions 2008-2018[7,8]

	Agency		
Reported Extractions (AF)	UWCD	FCGMA	OBGMA
2008-1	90,997.65	63,953.00	2,650.38
2008-2	102,106.68	75,717.99	2,590.30
Annual Total 2008	**193,104.33**	**139,670.99**	**5,240.68**
2009-1	82,505.37	63,328.20	2,553.48
2009-2	104,049.64	82,163.55	2,871.94
Annual Total 2009	**186,555.01**	**145,491.75**	**5,425.42**
2010-1	69,541.85	54,188.64	2,004.86
2010-2	89,558.90	69,827.92	3,001.11
Annual Total 2010	**159,100.75**	**124,016.56**	**5,005.97**
2011-1	72,940.07	54,357.81	2,050.00
2011-2	86,560.99	65,877.62	3,099.00
Annual Total 2011	**159,501.06**	**120,235.43**	**5,149.00**
2012-1	78,716.61	59,904.02	2,845.56
2012-2	99,285.26	75,327.91	2,559.40
Annual Total 2012	**178,001.87**	**135,231.94**	**5,404.96**
2013-1	87,336.86	64,751.13	2,805.76
2013-2	116,708.94	88,957.84	2663.216
Annual Total 2013	**204,045.80**	**153,708.97**	**5,468.97**
2014-1	101,577.29	85,233.43	2,232.15
2014-2	101,468.80	65,731.43	2,144.20
Annual Total 2014	**203,046.09**	**150,964.86**	**4,376.35**
2015-1	85,905.46	71,411.15	1,817.92
2015-2	107,590.82	70,810.82	1,901.51
Annual Total 2015*	**193,496.28**	**142,221.97**	**3,719.43**
2016-1*	82,315.09	69,823.38	1,461.22
2016-2*	100,801.24	64,323.08	1,424.93
Annual Total 2016*	**183,116.33**	**134,146.46**	**2,886.15**
2017-1**	69,850.25	58,467.95	1,659.09
2017-2**	114,001.54	72,062.56	2,855.32
Annual Total 2017**	**183,851.79**	**130,530.51**	**4,514.41**

*Reflects revised values for all agencies.

**Values are subject to change. *FCGMA as of 04/05/2018, UWCD as 04/11/2018.*

***Preliminary - Values do not reflect full reporting.

[7] Data courtesy of FCGMA.

[8] Data courtesy of OBGMA.

6.2 Wholesale Districts

Surface and imported water are supplied by three wholesale water districts including UWCD, Casitas Municipal Water District (CMWD) and Calleguas Municipal Water District (Calleguas) (**Figure 6-2**)

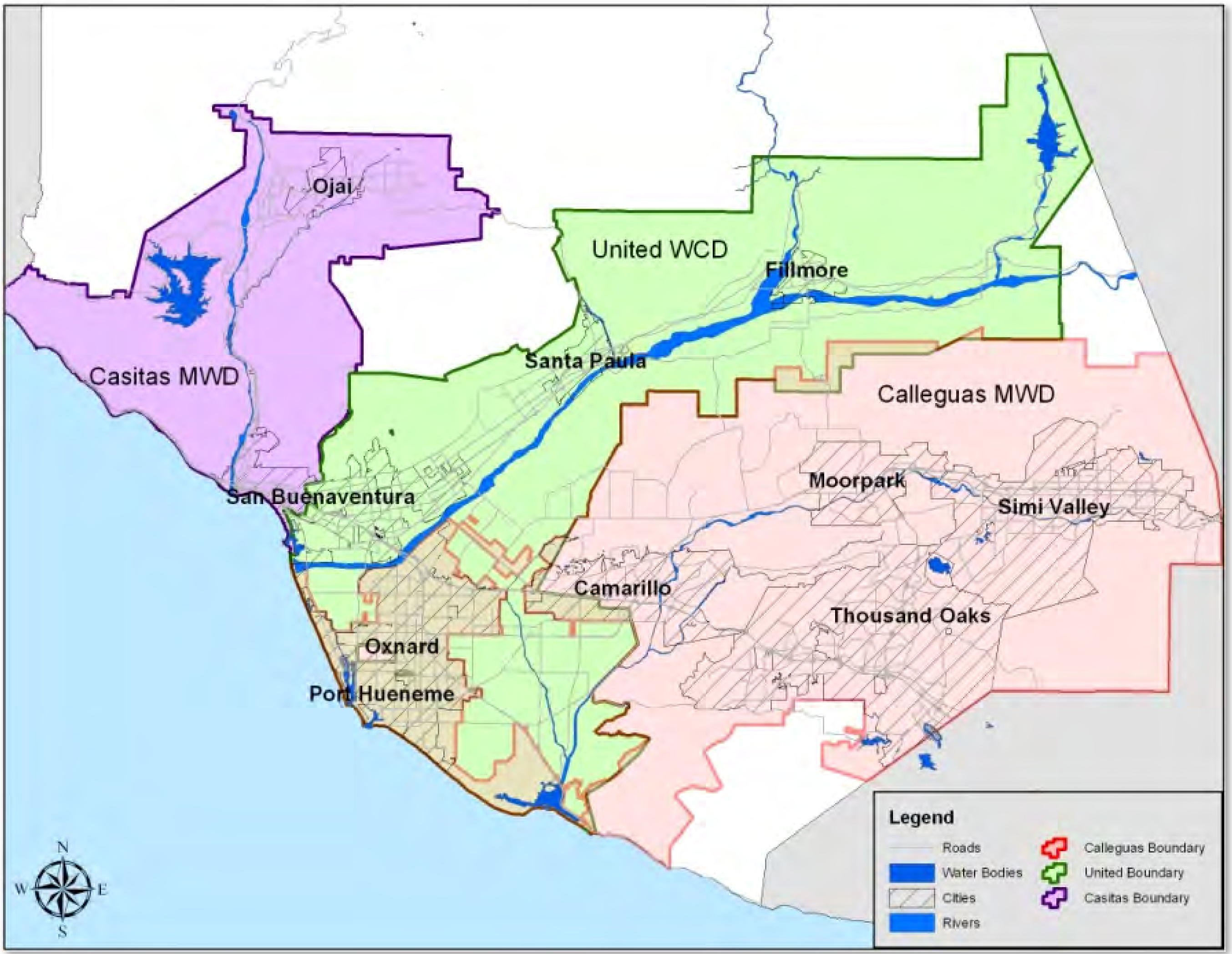


Figure 6-2: Wholesale water district boundary map.

Calleguas delivers the largest volume of water to retailers. Approximately 75% of the County population receives imported State Water Project (SWP) water from Calleguas. SWP water comes from Northern California via a water system owned and operated by the Metropolitan Water District (MWD) of Southern California, a regional wholesaler that supplies SWP water to Calleguas. Calleguas imported a total of 91,971.7 AF of treated SWP water in 2017. Calleguas delivered 89,666 AF of water to retailers in 2017 compared to 84,196 AF in 2016 and 89,045 AF in 2015. Production from the Calleguas Aquifer Storage and Recovery (ASR) wellfield was less than 1 AF in 2017. Imported water is also injected in the East Las Posas Basin through the Las Posas ASR Project. In the ASR wellfield 2,581 AF of water was injected in 2017. Up to 11,000 AF of water can be stored by Calleguas in Lake Bard and can supply demand for short periods of time. The end of year volume of water in storage in Lake Bard was 9,975 AF[9]. The Las Posas

[9] Data provided courtesy of Calleguas MWD.

Basin ASR wellfield currently has 18 wells and is operated by Calleguas. The wells are 800 to 1,200 feet deep and perforated in the Fox Canyon Aquifer (Calleguas 2007).

UWCD delivered 16,613 AF of water to retailers and end-users in 2017, a slight decrease from 16,757 AF in 2016. UWCD can store up to 87,000 AF of water in Lake Piru. At the end of 2017 there was 12,736 AF of stored water in Lake Piru. UWCD released 27,052 *(preliminary data)* AF of water from the Lake in 2017. UWCD imported 12,678 AF of SWP water from Pyramid Lake in 2017. Water released from Lake Piru flows down Piru Creek to the Santa Clara River where it is ultimately diverted downstream at the Freeman Diversion Dam. UWCD operates spreading basins in the Oxnard Forebay for groundwater recharge. Some of the water diverted from the Santa Clara River at the Freeman Diversion is sent to the spreading basins in Saticoy and El Rio and the remainder is sent through the Pleasant Valley Pipeline (PVP) and the Pumping Trough Pipeline (PTP). **Table 6-2** and **Figure 6-4** compare the volume of water diverted and sent to spreading grounds by UWCD[10]. Annual precipitation for the period of 1998 to 2017 is listed. Recharge to basins is also a function of SWP deliveries and restrictions from other agencies.

Table 6-2: Precipitation versus UWCD recharge water volume by Calendar Year.

Calendar Year	Precipitation El Rio Spreading Grounds Gage 239 (in.)	Saticoy Recharge (AF)	El Rio Recharge (AF)	Noble Pit (AF)
1998	30.88	56,934.95	43,027.00	18,710.00
1999	9.39	16,538.51	17,992.00	1,285.00
2000	15.59	28,620.11	23,173.00	0.00
2001	22.40	26,918.00	39,434.00	8,824.00
2002	8.97	5,291.00	14,886.00	32.00
2003	14.79	7,158.00	26,909.00	44.00
2004	16.13	8,105.00	15,061.00	0.00
2005	24.43	46,872.00	52,267.00	19,490.00
2006	15.29	29,005.00	40,840.00	10,709.00
2007	7.77	11,404.00	18,200.00	99.00
2008	14.07	28,631.00	19,631.00	8,562.00
2009	10.86	9,215.00	13,223.00	0.00
2010	22.07	15,108	30,125.00	995.00
2011	10.95	23,435.00	37,845.00	10,679.00
2012	8.79	3,985.00	16,293.00	538.00
2013	2.97	34.00	2,389.00	263
2014	9.50	387.00	1,935.00	578
2015	5.09	1,231.00	1,285.00	0.00
2016	10.00	1,784.20	806.00	59.00
2017	15.22	3,100.00	6,043.00	1,036

[10] Data provided courtesy of UWCD is preliminary and subject to change per UWCD. Freeman diversion data from UWCD operations logs.

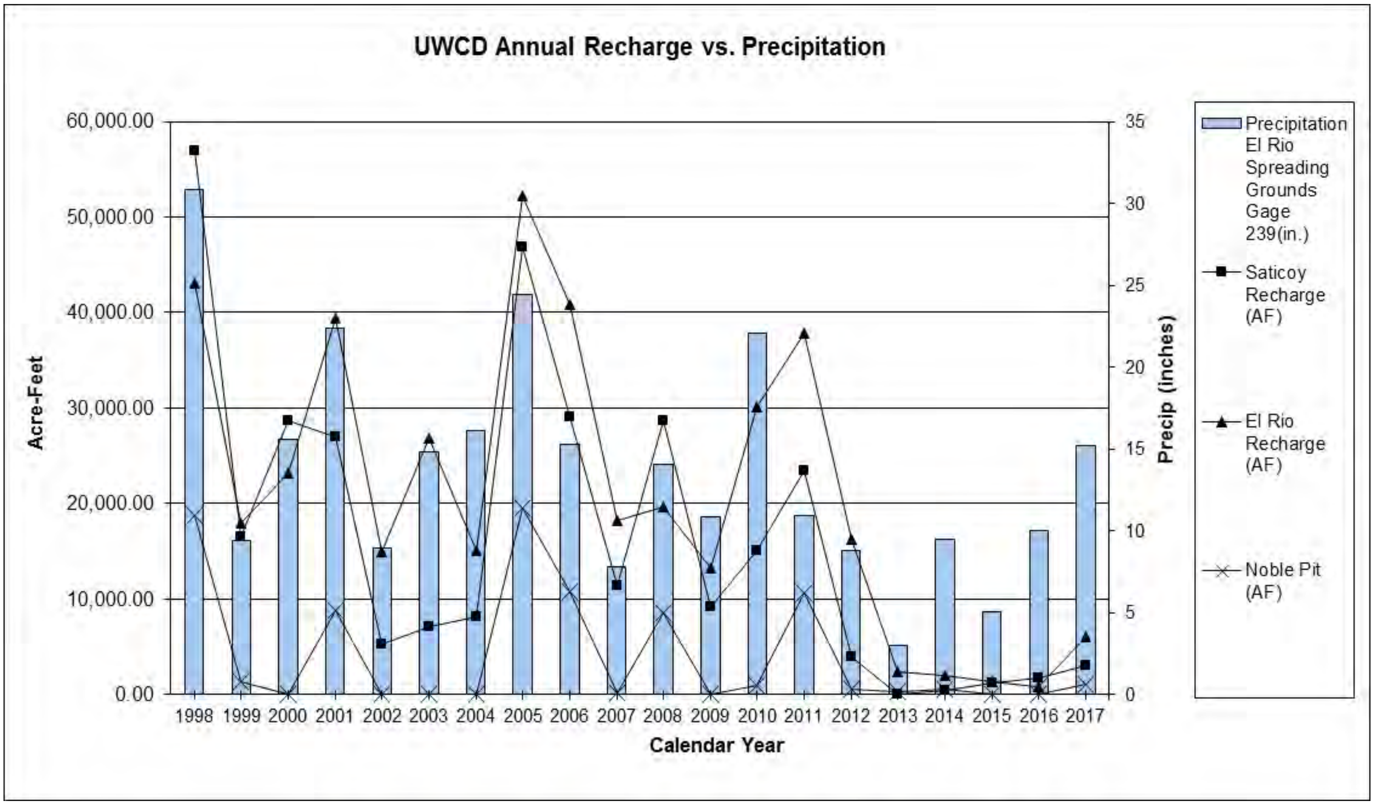


Figure 6-3: Precipitation versus UWCD recharge.

CMWD delivered approximately 12,166 AF in 2017 with 2,741 AF sold to retail water purveyors. Water is provided to residential and agricultural customers and some of the 23 water purveyors located within the district boundaries. Annual water deliveries can vary from 13,000 to 23,000 AF. CMWD provides a blend of groundwater and surface water to its customers. Surface water is stored in Lake Casitas which has an overall capacity of 254,000 AF. At the end of 2017 there was 83,062 AF of water was stored. Ventura River water is diverted at the Robles Diversion facility which diverts high flows from rainstorms and operates on average only 53 days per year. CMWD diverts, on average 31% of flow, with 10% of that volume redirected downstream through the Robles Diversion Fish Passage for the endangered steelhead trout and to enhance recovery of the Ventura River habitat[11].

[11] Data provided courtesy of Casitas MWD.

Table 6-3: Wholesale district water deliveries 2008-2017.

Total Water Deliveries in Acre Feet (AF)				
Year	**CMWD**	**Calleguas**	**UWCD**	**Annual Total**
2008	16,498	125,368	39,904	181,769
2009	15,736	108,726	41,478	165,940
2010	13,497	94,864	34,076	142,437
2011	13,439	97,218	31,868	142,525
2012	15,268	104,104	32,638	152,010
2013	18,270	111,283	24,358	153,911
2014	18,336	106,293	17,492	142,121
2015	16,272	89,045	16,293	121,609
2016	12,793	87,542	16,757	117,092
2017	12,166	89,666	16,613	118,445
Period Total	**152,276**	**1,014,108**	**271,476**	**1,437,861**

6.3 Surface Water

Surface water resources are commonly hydrologically and hydrogeolically linked to groundwater resources. Surface water and groundwater connectivity is typically understood through the recharge of aquifers from surface water (losing streams) and discharge of groundwater to surface water (gaining streams). Agricultural surface water diversions serve as an alternative to extracted groundwater. Conversely, surface water is used to artificially recharge groundwater.

Figure 6-4 shows the volume of surface water in storage and the water diverted. UWCD released approximately 27,052 AF of water from Lake Piru in 2017, including a fish passage requirement of 5 cubic feet per second (cfs) per day. UWCD diverted 10,245 AF from the Santa Clara River at the Freeman Diversion Dam with 3,100 AF sent to the Saticoy Spreading Grounds, 6,043 AF sent to the El Rio Spreading Grounds and 1,036 AF sent to the Noble Pit, with some surface water also going to agricultural customers through the PTP and the PVP. At the end of 2017 there was 12,736 AF of water in storage in Lake Piru, 83,062 AF in Lake Casitas and 9,975 AF in Lake Bard. CMWD releases 3,200 AF per year from Lake Casitas for the Robles Diversion Fish Passage.

In 2017 there were reduced diversions of surface water in the Oxnard Plain for direct agricultural use and groundwater recharge. The reductions were a function of drought conditions and regulatory constraints on releases of surface water from Lake Piru.

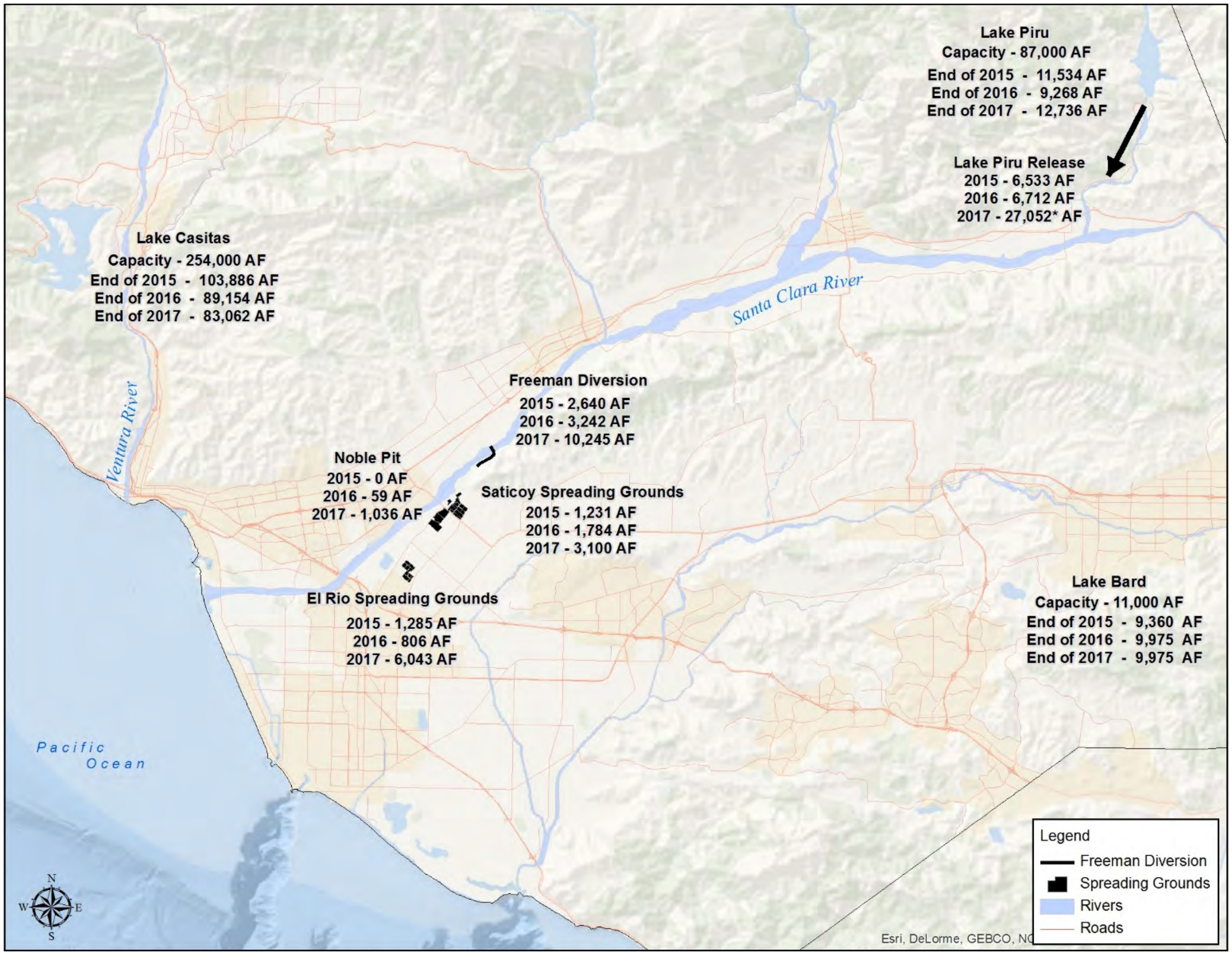


Figure 6-4: Surface water storage and diversion[12, 13, 14].

6.4 Surface & Imported Water Demands

Of the ten incorporated cities within Ventura County only Santa Paula and Fillmore do not rely on water supplied by the three major wholesale districts.

The cities of Ventura and Oxnard use a blend of imported water, groundwater and treated surface water to meet demands. Ventura receives treated water diverted from the Ventura River, groundwater extracted from City wells and surface water from Lake Casitas delivered by CMWD. Oxnard receives water from UWCD, imported water from Calleguas and groundwater from its own well fields.

The cities of Simi Valley, Moorpark and Thousand Oaks as well as the unincorporated areas of Bell Canyon, Newbury Park, Hidden Valley, Lake Sherwood, Oak Park, and part of Westlake Village rely mainly on water imported by Calleguas.

Simi Valley residents receive water from Ventura County Water Works District 8 (VCWWD8). VCWWD8 extracts groundwater from three wells in the Tapo Canyon. Shallow groundwater is also extracted from several dewatering wells at the west end of the city. The dewatered groundwater is discharged to the Arroyo Simi. The Tapo Canyon Water Treatment Plant (WTP) utilizes the three Tapo Canyon wells to provide water to approximately 500 homes. Golden State Water Company (GSWC) in Simi Valley extracts groundwater from one well and blends it with imported water from Calleguas (10% groundwater, 90% imported water)[12]. VCWWD8 serves 68% of demand or approximately 23,000 AF of water while GSWC serves the remaining 32%, approximately 8,500 AF[13]. In 2017 Calleguas delivered 19,398 AF to VCWWD8 and 5,094 AF to GSWC.

Moorpark residents receive water from Ventura County Water Works District 1 (VCWWD1). Approximately 75-80% of VCWWD1's water is imported from Calleguas. In 2017 Calleguas delivered 7,947 AF to VCWWD1. Moorpark also extracts groundwater from two wells that are used for park irrigation.

The City of Thousand Oaks extracts groundwater for median irrigation on Hillcrest Avenue and golf course irrigation at the Los Robles Golf Course. California Water Service and California American Water along with the City of Thousand Oaks Water Department provide water imported from Calleguas in the Thousand Oaks, Newbury Park and Westlake Village area. According to the City of Thousand Oaks 2015 Urban Water Management Plan (UWMP), the City supplies water to approximately 36% of water users, California American Water supplies 48% and California Water Service Company supplies 16%. In 2017 these three water purveyors received 31,378 AF of water from Calleguas.

The City of Camarillo relies on groundwater and imported water from Calleguas. The City extracts groundwater from four wells that supply approximately 40-50% of water demand with the remainder supplied by imported water. Groundwater extraction volume is kept below the groundwater extraction allocation from FCGMA. Calleguas delivered 4,420 AF of water to the City of Camarillo in 2017. Water for some residents is supplied by Pleasant Valley Mutual Water Company (groundwater and imported water), Crestview Mutual (groundwater and imported water), California American Water Company (imported water) and Camrosa Water District (groundwater and imported water).

The Port Hueneme Water Agency (PHWA) receives and treats UWCD water and blends it with water from Calleguas for the City of Port Hueneme, Channel Islands Beach Services Community District (CIBSC) and Naval Base Ventura County.

The City of Ojai and the communities of Casitas Springs, Meiners Oaks and Oak View rely on a mixture of groundwater extracted by local purveyors and wholesale water from Lake Casitas delivered by the CMWD.

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[12] Golden State Water Company, 2015 Urban Water Management Plan – Simi Valley.

[13] Ventura County Waterworks District No. 8, City of Simi Valley, 2015 Urban Water Management Plan.

The City of Santa Paula relies on local groundwater (approximately 5,000 to 7,000 AFY as reported to UWCD). In addition, some surface water is diverted from Santa Paula Creek (approximately 500 AFY)[14] and is sent to Canyon Irrigation Company in exchange for extraction credits for the Santa Paula Basin. The City of Fillmore relies solely on groundwater extracted from its water wells (approximately 2,600 to 2,800 AFY as reported to UWCD). The unincorporated community of Piru relies on groundwater extracted and delivered by local water purveyors.

Residents of the Lockwood Valley area, the Santa Monica Mountains area and other areas without water service rely on private water wells. Water is extracted from alluvial groundwater basins or from fractured volcanic rock and bedrock in areas outside of a basin setting.

[14] Data from City of Santa Paula 2015 Urban Water Management Plan

7.0 Sustainable Groundwater Management Act (SGMA)

On January 1, 2015, the Sustainable Groundwater Management Act (SGMA) became effective. SGMA is a comprehensive three-bill package that establishes a new structure for local authorities to sustainably manage and protect groundwater basins with a limited role for state intervention to protect the resource. The legislation lays out a process and timeline for local authorities to achieve sustainable management of groundwater basins with deadlines to take the necessary steps to achieve the goal. The Act requires the formation of local groundwater sustainability agencies (GSAs) that must assess conditions in local groundwater basins and adopt groundwater sustainability plans (GSPs).

DWR Bulletin 118 basins designated as high- or medium-priority and critically-overdrafted must be managed under a GSP by January 31, 2020. All other high- and medium-priority basins must be managed under a GSP by January 31, 2022. GSAs have 20 years to fully implement GSPs and achieve the sustainability goal. SGMA protects existing surface water and groundwater rights and does not impact current drought response measures.

7.1 Critically Overdrafted Basins

SGMA states a basin is subject to critical overdraft "when continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts." Conditions of critical overdraft result from undesirable impacts which can include seawater intrusion, land subsidence, groundwater depletion, and/or chronic lowering of groundwater levels. SGMA directed the DWR to identify groundwater basins and subbasins in conditions of critical overdraft. DWR identified a statewide base period from 1989 to 2009 for evaluation including wet and dry periods. One or more undesirable impacts within a basin places the basin in critical overdraft. DWR compiled a list of 21 basins and subbasins as critically-overdrafted in January 2016, with three located in Ventura County (**Figure 7-1**), including the Cuyama Valley basin (DWR Bulletin 118 Basin No. 3-13), the Pleasant Valley Basin (DWR Bulletin 118 Basin No. 4-06) and the Oxnard Subbasin (DWR Bulletin 118 Basin No. 4-4.02).

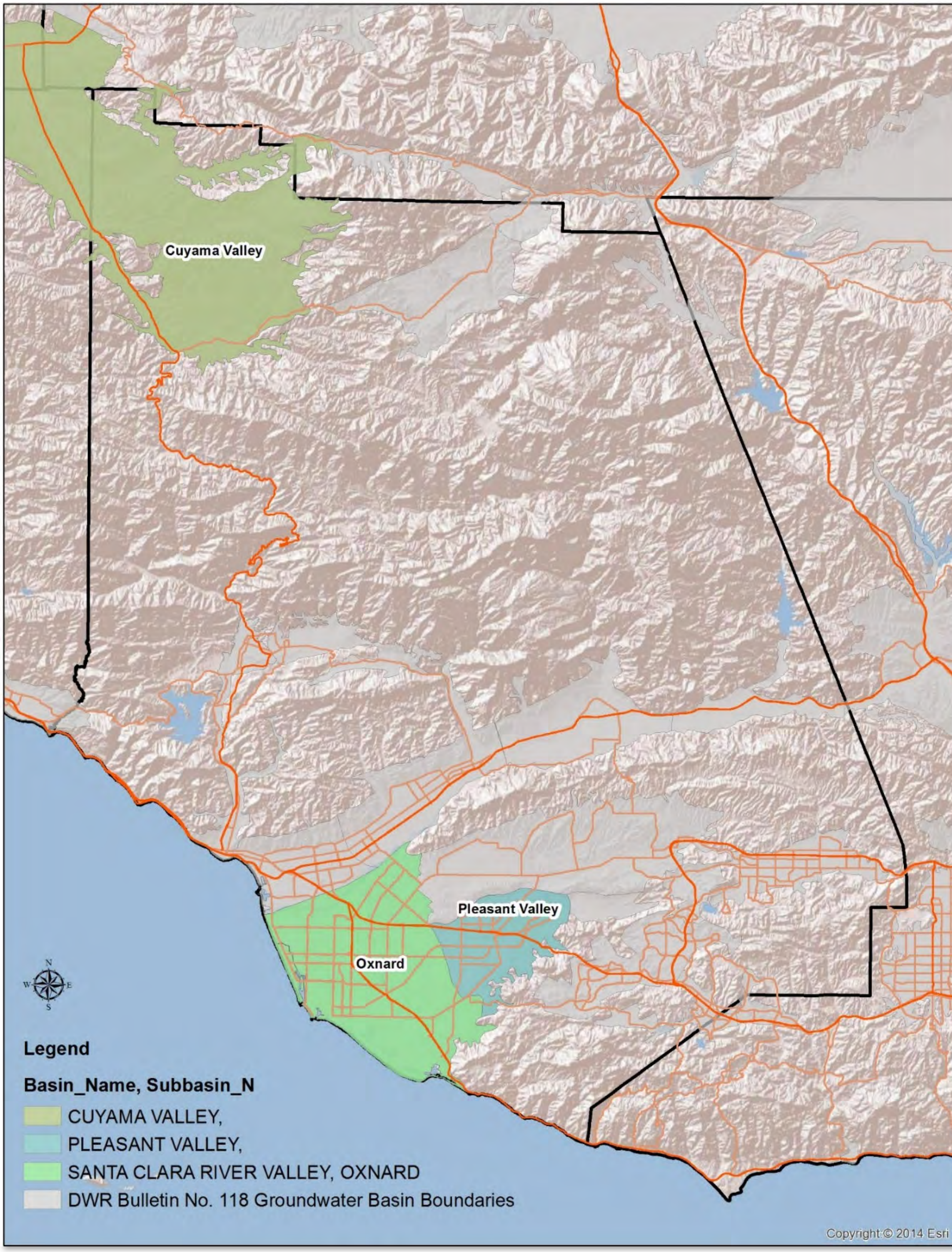

Figure 7-1: Critically-overdrafted basins in Ventura County.

7.2 High & Medium Priority Basins

DWR implemented the CASGEM program in response to legislation enacted in the California Water Code as part of California's 2009 Comprehensive Water package. The purpose of CASGEM is to establish a permanent, locally managed program of groundwater level monitoring to track seasonal and long-term groundwater elevation trends. The DWR prioritized 517 groundwater basins to identify the need for additional monitoring. The CASGEM basin prioritization is a statewide ranking of groundwater basin importance.to meet urban and agricultural demands of the overlying population.

As of May 2014, 127 of the 517 basins were ranked as medium- and high-priority basins. Those 127 medium and high priority basins account for 96 percent of California's annual groundwater extraction. Ventura County has a total of 4 high-priority and 7 medium-priority basins shown in **Figure 7-2**.

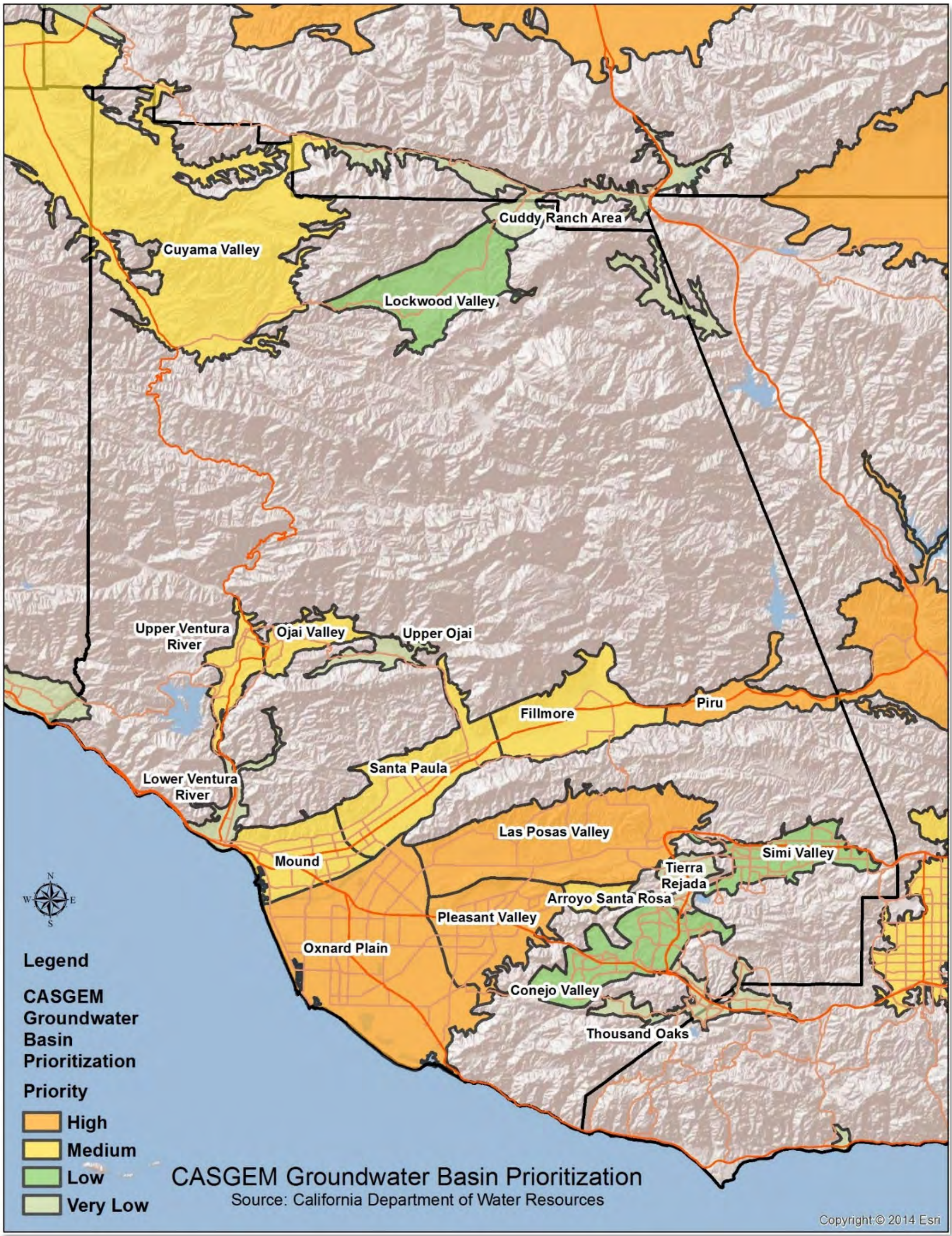

Figure 7-2: CASGEM basin prioritization in Ventura County.

7.3 Adjudicated Basins

Santa Paula Basin

The Santa Paula Basin (Bulletin 118 Basin No. 4-04.04) is the only adjudicated basin in Ventura County. Adjudicated basins do not need a GSA, but must still provide groundwater measurements to the DWR.

Santa Paula Basin's groundwater rights were adjudicated in 1996 in a stipulated judgement to establish pumping allocations and a management plan for the basin. The judgement awarded 27,500 AF of groundwater rights to the SPBPA to be held in trust for the benefit of its members. Each member is entitled to an "Individual Party Allocation" (IPA) that establishes a maximum quantity of water that can be extracted from the basin. The judgement also includes cut back provisions that can be implemented as necessary to balance total production within the basin's safe yield.

A Watermaster is usually appointed by the court to ensure the basin is managed in accordance with the court's decree. A Technical Advisory Committee (TAC) acts as the Watermaster for the Santa Paula Basin with equal representation from UWCD, the SPBPA, and the City of Ventura. The TAC also determines the safe yield of the basin, along with the development and implementation of a basin management plan. Annual reports of the monitoring program are submitted to the TAC for review and approval. The primary groundwater management objective in the Santa Paula Basin is to ensure that production does not exceed the long-term sustainable yield of quality groundwater for current and future uses.

7.4 Groundwater Sustainability Agencies (GSA's)

GSAs are responsible for developing and implementing a GSP to ensure the basin meets its sustainability goal by operating within its sustainable yield without creating undesirable results. Before the DWR will accept and review submitted GSPs, a basin must be managed under a GSA or multiple GSAs. GSAs for all medium- and high-priority basins in Ventura County are formed and with no "unmanaged areas.[15]"

Arroyo Santa Rosa Basin GSA

The County of Ventura and Camrosa entered into a Joint Exercise of Powers Agreement (JPA) to manage the portion of the Arroyo Santa Rosa basin outside of the FCGMA boundary. The JPA was approved by the Ventura County Board of Supervisors on October 4, 2016, officially forming the Arroyo Santa Rosa Basin GSA. The western area of the Arroyo Santa Rosa basin will be managed by the FCGMA and the eastern portion by the Arroyo Santa Rosa Basin GSA.

Camrosa Las Posas Basin GSA

The majority of the Las Posas Basin (Bulletin 118 Basin No. 4-008) fall under the jurisdiction of the FCGMA. A 4.5-mile section along the southern border is outside of the FCGMA boundaries and will be managed by Camrosa. Camrosa delivers potable and non-potable water to residential and agricultural customers in that area and filed to act as the GSA for that portion of the basin on June 28, 2017.

Camrosa OPV Management Area GSA

Camrosa also filed to act as the GSA for the portions of the Oxnard Subbasin and Pleasant Valley Basin (Bulletin 118 Basins No. 4-04.02 and No. 4-06) outside of the FCGMA boundary on June 28, 2017. Camrosa will be the GSA for areas that lie within their service area and are outside of the FCGMA boundary. The Oxnard and Pleasant Valley Basins were identified as high-priority basins in 2014 through the CASGEM prioritization process.

Cuyama Basin GSA (CBGSA)

The Cuyama Basin (Bulletin 118 Basin No. 3-13) underlies Santa Barbara, Kern and Ventura Counties. On June 12, 2017, the CBGSA posted notice to act as the GSA for the entire basin. The CBGSA is a joint powers authority comprised of six local agencies including the Cuyama Basin Water District, Cuyama Community Services District, Santa Barbara County Water Agency, San Luis Obispo County, Ventura County and Kern County. These six agencies collectively carry water management, water supply and land use responsibilities across the entire basin.

Fillmore and Piru Basins GSA

The Fillmore and Piru Basins (Bulletin 118 Basins No. 4-04.05 and No. 4-04.06) lie along the eastern portion of the Santa Clara River. On June 28, 2017, the Fillmore and Piru Basins GSA posted notice to act as the GSA for both basins. The Fillmore and Piru Basins GSA is a joint powers authority comprised of UWCD, Ventura County and City of Fillmore. UWCD is authorized to conduct water resource investigations, acquire water rights, build water storage, and recharge facilities, construct wells and pipelines for water deliveries, commence actions involving water rights and water use, and prevent interference with or diminution of stream/river flows. The County exercises water management and land use authority including the Fillmore and Piru Basins. The City of Fillmore exercises water supply, water management, and land use authority within its boundaries.

Mound Basin GSA (MBGSA)

The MBGSA posted notice with the DWR on June 29, 2017, to be the GSA for the Mound Basin (Bulletin 118 Basin No. 4-04.03). MBGSA is a joint powers authority comprised of the City of Ventura, Ventura (County and UWCD. The City of Ventura exercises water supply, water management and land use

[15] Unmanaged areas are areas in high or medium priority basins in which a local agency has not filed to become a GSA and are not within the service area of another GSA.

authority within its boundaries. The County exercises water management and land use authority in unincorporated land overlying the Basin. UWCD is authorized to replenish but not extract groundwater.

Fox Canyon Groundwater Management Agency

On February 11, 2015, the FCGMA notified the DWR of their intent to become the exclusive GSA for the Arroyo Santa Rosa Basin (Bulletin 118 Basin No. 4-07), Oxnard Subbasin (Bulletin 118 Basin No. 4-04.02), the Pleasant Valley Basin (Bulletin 118 Basin No. 4-06) and the Las Posas Valley Basin (Bulletin 118 Basin No. 4-08). The FCGMA's authority is limited to basin portions that lie within the FCGMA boundary. The FCGMA is the exclusive GSA for those basins within the agency's statutory boundaries.

Ojai Basin Groundwater Management Agency

The OBGMA filed a notice of intent to become the exclusive GSA for the Ojai Valley Basin (Bulletin 118 Basin No. 4-02) on December 6, 2014. The OBGMA submitted an analysis of their basin conditions as an alternative and in lieu of preparing a GSP plan on December 22, 2016.

Upper Ventura River Groundwater Agency

The UVRGA filed a notice of intent to become the GSA for the Ventura River Valley, Upper Ventura River Basin (Bulletin 118 Basin No. 4-03.01) on April 21, 2017. The UVRGA is a joint powers authority comprised of CMWD, the City of Ventura, Ventura County, Meiners Oaks Water District, and the Ventura River Water District. Prior to GSA formation, the Upper Ventura River Basin boundary was modified reducing the area.

The County of Ventura

On June 28, 2017, the County notified DWR of their intent to become the GSA for all areas in basins outside of the management of a GSA. The notice was filed to prevent a basin from being designated as a "probationary basin" if unmanaged areas existed after June 30, 2017. There are no unmanaged basin areas within the County.

References

American Geological Institute, Alexandria Virginia, Robert L. Bates & Julia A. Jackson, 1987, Glossary of Geology

Calleguas Municipal Water District, Las Posas Basin Aquifer Storage and Recovery Project, http://www.calleguas.com/projects/lpbroc.pdf, 2007

California Department of Water Resources, August 1978, Water Well Standards Ventura County Bulletin No. 74-9

California Department of Water Resources, October 2003, California's Groundwater, Bulletin 118

California Department of Water Resources, December 2016, California's Groundwater, Bulletin 118, Interim Update 2016.

California Regional Water Quality Control Board, Los Angeles Region, June 1994, Water Quality Control Plan, Los Angeles Region

California State Water Resources Board (CSWRB). 1956. Ventura County Investigation. Bulletin 12. Two Volumes.

Camrosa Water District, August 2013, Santa Rosa Basin Groundwater Management Plan, Prepared by MWH, Arcadia, CA 91007

Camrosa Water District, Santa Rosa Mutual Water Company, Property Owners, April 1997, Santa Rosa Basin Management Plan, For areas within the Arroyo Santa Rosa Portion of the Santa Rosa Groundwater Basin not within the boundaries of the Fox Canyon Groundwater Management Agency

City of Thousand Oaks 2010 Urban Water Management Plan, Ventura County, California, June 2011, RBF Consulting County of Ventura Public Works Agency, Flood Control and Water Resources, December 1986, Quadrennial Report of Hydrologic Data 1981-84

County of Ventura Board of Supervisors, December 16, 2014, County of Ventura Ordinance 4468, An ordinance of the County of Ventura repealing and reenacting Ventura County Ordinance Code Section 4811 et seq. relating to groundwater conservation.

County of Ventura Public Works Agency, Flood Control District, June 1971, Hydrologic Analysis Zone 4 1971

County of Ventura Public Works Agency, Flood Control and Water Resources Department, April 1978, North Half Area Hydrologic Balance Study

County of Ventura, Public Works Agency, Watershed Protection District, 2013 Water Supply and Demand, January 2015

Fetter, C.W., 1988, Applied Hydrogeology, Second Edition

Fox Canyon Groundwater Management Agency, May 2007, 2007 Update to the Fox Canyon Groundwater Management Agency Groundwater Management Plan

Fox Canyon Groundwater Management Agency, 2013, Calendar Year 2012 Annual Report Ventura County Watershed Protection District, Water & Environmental Resources Division, Groundwater Section, January 2007, Groundwater Quality Report 2005-2006

State Water Resources Control Board, Title 22 California Code of Regulations Related to Drinking Water, June 2016

Ventura County Department of Public Works, Flood Control District, Las Posas Area Groundwater Quality and Quantity Investigation, August 1971

Ventura County Watershed Protection District, Water & Environmental Resources Division, Groundwater Section, Hydrologic and Geologic Data, (Field and other data in Groundwater Section files).

United Water Conservation District, Santa Paula Basin 2005 Annual Report, Ventura County, California. November 2007.

United Water Conservation District, Hydrogeologic Assessment of the Mound Basin, Open File Report 2012-01, May 2012

Appendices

Appendix A – Glossary of Groundwater Terms

Aquifer: A geologic formation or structure that yields water in sufficient quantities to supply pumping wells or springs.

Abandoned Well: Means any of the following:

(1) A water well used less than 8 hours in any twelve-month period. Failure to submit reports of well usage will result in a well being classified as abandoned.
(2) A monitoring well from which no monitoring data has been taken for a period of two years.
(3) A well which is in such a state of disrepair that it cannot be made functional for its original use or any other use.
(4) An open engineering test hole after 24 hours has elapsed after construction and testing work has been completed on the site.
(5) A cathodic protection well which is no longer used for its intended purpose.

Confined Aquifer: An aquifer separated from the surface by an aquiclude or an aquitard to the extent that pressure can be created in the lower reaches of the aquifer.

Contamination: Alteration of waters by waste, salt-water intrusion or other materials to a degree which creates a hazard to the public health through actual or potential poisoning or through actual or potential spreading of disease.

Department of Water Resources: (DWR) operates and maintains the State Water Project, including the California Aqueduct. The department also provides dam safety and flood control services, assists local water districts in water management and conservation activities, promotes recreational opportunities, and plans for future statewide water needs.

Fox Canyon Groundwater Management Agency (FCGMA): The Agency created when the California State Legislature enacted and passed State Assembly Bill No. 2995 on Sept. 13, 1982 creating the *Fox Canyon Groundwater Management Agency (GMA)*. This law, also referred to as AB2995, granted jurisdiction over all lands overlying the Fox Canyon aquifer zone to control seawater intrusion, protect water quality, and manage water resources.

Groundwater: Water beneath the surface of the earth within the zone below the water table in which the soil is completely saturated with water.

Groundwater Basin: A geologically and hydrologically defined area containing one or more aquifers, which store and transmit water yielding significant quantities of water to extraction facilities.

Lower Aquifer System (LAS): The area underlying the Oxnard Pressure Basin, which contains the Hueneme aquifer, the Fox Canyon Aquifer and the Grimes Canyon aquifer. The LAS is recharged from the Fox Canyon and Grimes Canyon Outcrops, the areas where the aquifers come to the surface exposing the permeable sands and gravels to recharge from rainfall and surface runoff.

Overdraft: The condition of a groundwater basin or aquifer where the average annual amount of water extracted exceeds the average annual supply of water to a basin or aquifer.

Perched or Semi-Perched Aquifer: The water bearing area that is located between the earth's surface and clay deposits that exist above an Aquifer.

Receiving Waters: All waters that are "Waters of the State" within the scope of the State Water Code, including but not limited to, natural streams, creeks, rivers, reservoirs, lakes, ponds, water in vernal pools, lagoons, estuaries, bays, the Pacific Ocean, and ground water.

Seawater Intrusion: The overdrafting of aquifers, which results in, the depletion of water supplies, lowering of water levels and degradation from seawater intrusion. Seawater intrusion results from the reversal of hydrostatic pressure allowing water flow to be onshore rather than offshore.

Total Dissolved Solids: (TDS) is a term that represents the amount of all of our natural minerals that is dissolved in water.

Total Maximum Daily Load (TMDL) is a number that represents the assimilative capacity of a receiving water to absorb a pollutant. The TMDL is the sum of the individual waste-load allocations for point sources, load allocations for nonpoint sources plus an allotment for natural background loading, and a margin of safety. TMDL's can be expressed in terms of mass per time (the traditional approach) or in other ways such as toxicity or a percentage reduction or other appropriate measure relating to a state water quality objective. A TMDL is implemented by reallocating the total allowable pollution among the different pollutant sources (through the permitting process or other regulatory means) to ensure that the water quality objectives are achieved.

United Water Conservation District (UWCD): The District administers a "basin management" program for the Santa Clara Valley and Oxnard Plain, utilizing the surface flow of the Santa Clara River and its tributaries for replenishment of groundwater. Originally established as the Santa Clara River Water Conservation District in 1927.

Upper Aquifer System (UAS): The area underlying the Oxnard Pressure Basin, which contains the perched and semi-perched zones, the Oxnard aquifer zone, and the Mugu aquifer. The UAS is recharged via the twenty-three square mile unconfined Oxnard Forebay Basin near El Rio.

Water Quality Standards: Defined as the beneficial uses (e.g., swimming, fishing, municipal drinking water supply, etc.) of water and the water quality objectives adopted by the State or the United States Environmental Protection Agency to protect those uses.

Water Well Ordinance No. 4468: The Ventura County Groundwater Conservation Ordinance which was originally adopted by the Board of Supervisors in October 1970 and revised in 1979, 1984, 1985, 1987, 1991, 1999 and most recently in December 2014. The purpose of the ordinance is to ensure that all new or modified water wells, cathodic protection wells and monitoring wells are drilled by licensed water well contractors and are properly sealed so that they cannot serve as conduits for the movement of poor quality or polluted waters into useable aquifers or be hazardous to people or animals.

Well Destruction: To fill a well (including both interior and annular spaces if the well is cased) completely in such a manner that it will not produce water or act as a conduit for the transmission of water between any water-bearing formations penetrated.

Well Owner: The owner of the land on which a well is located.

Appendix B – Key Water Level Hydrographs

Appendix B – Key Water Level Wells

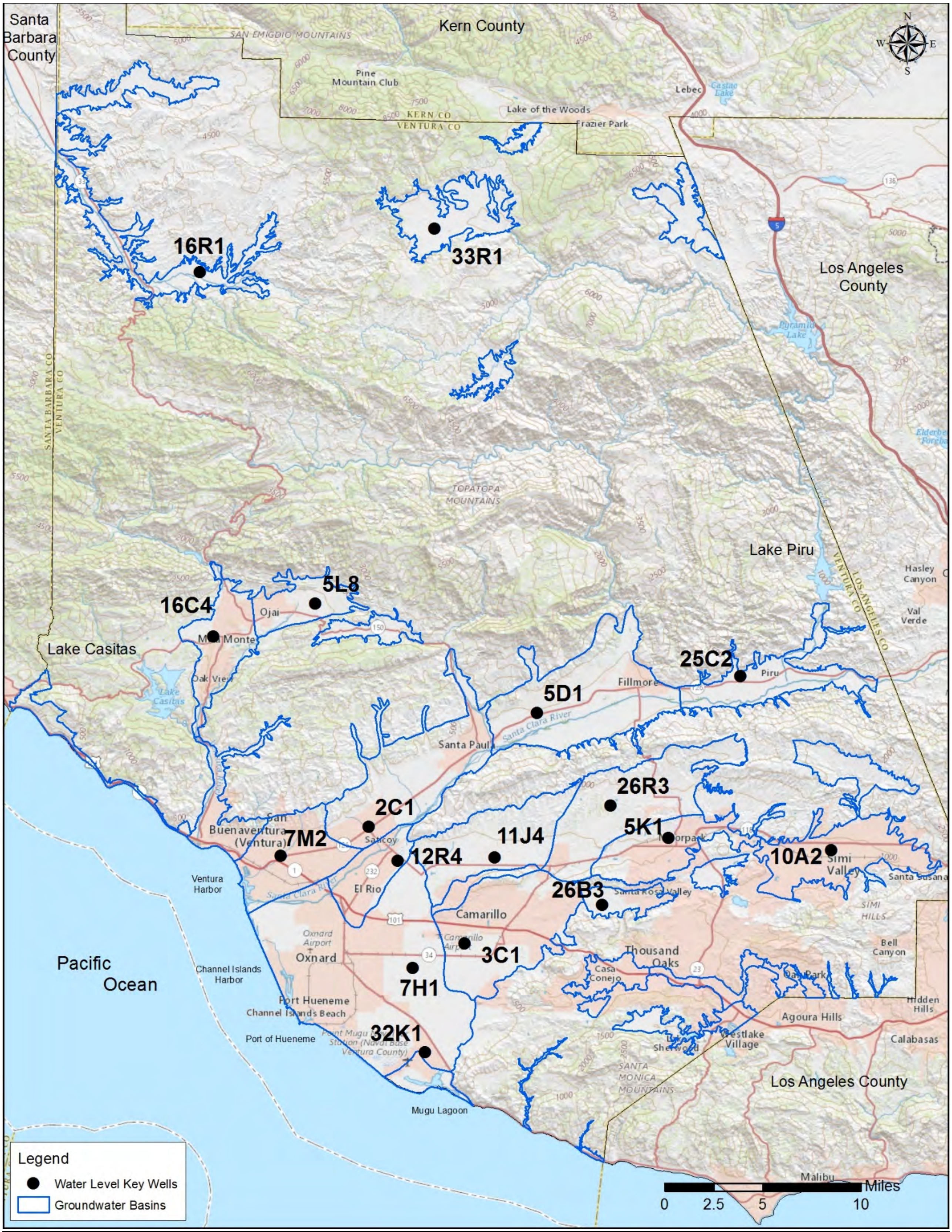

Figure B-1: Key water level wells in Ventura County.

Appendix B – Key Water Level Wells

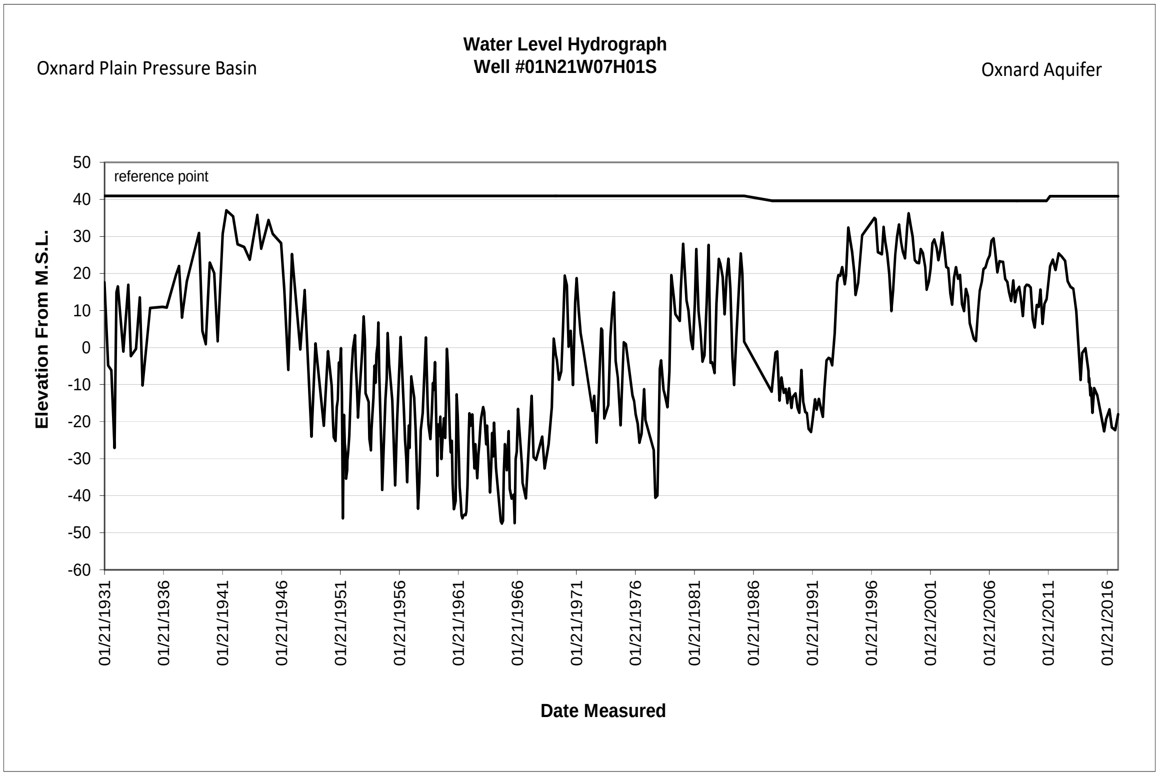

Figure B-2: Oxnard aquifer key well hydrograph.

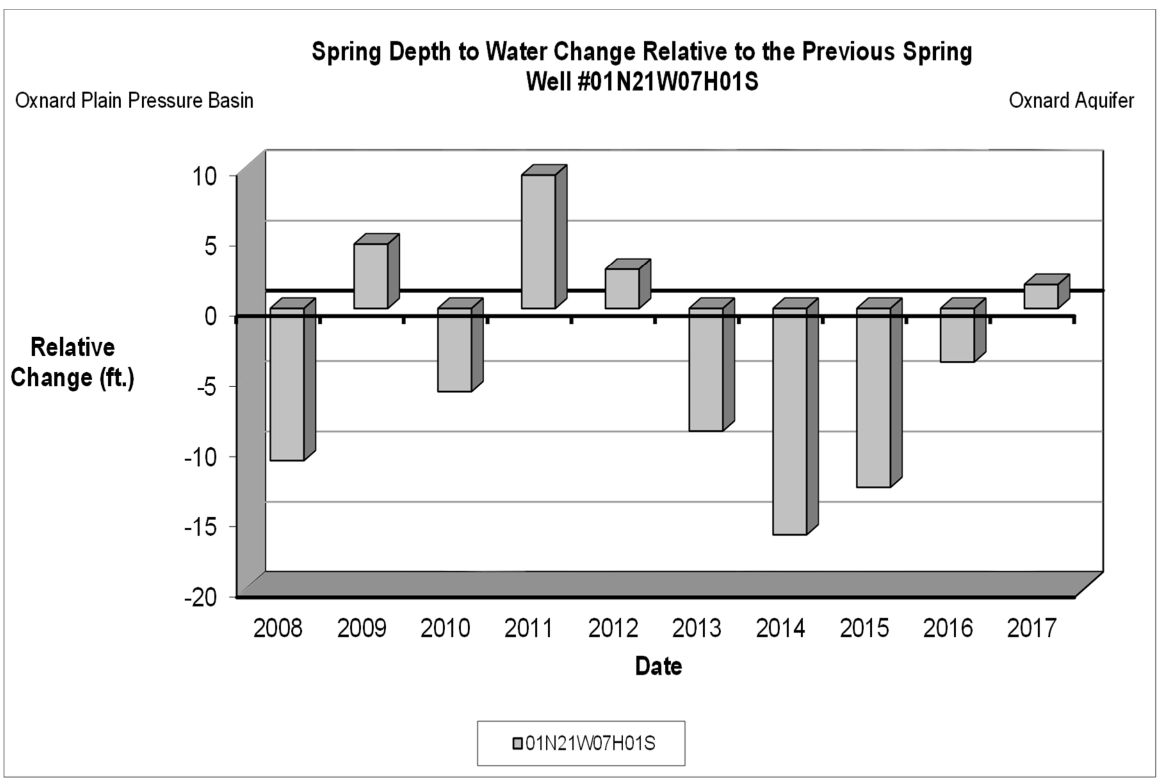

Figure B-3: Oxnard Aquifer 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

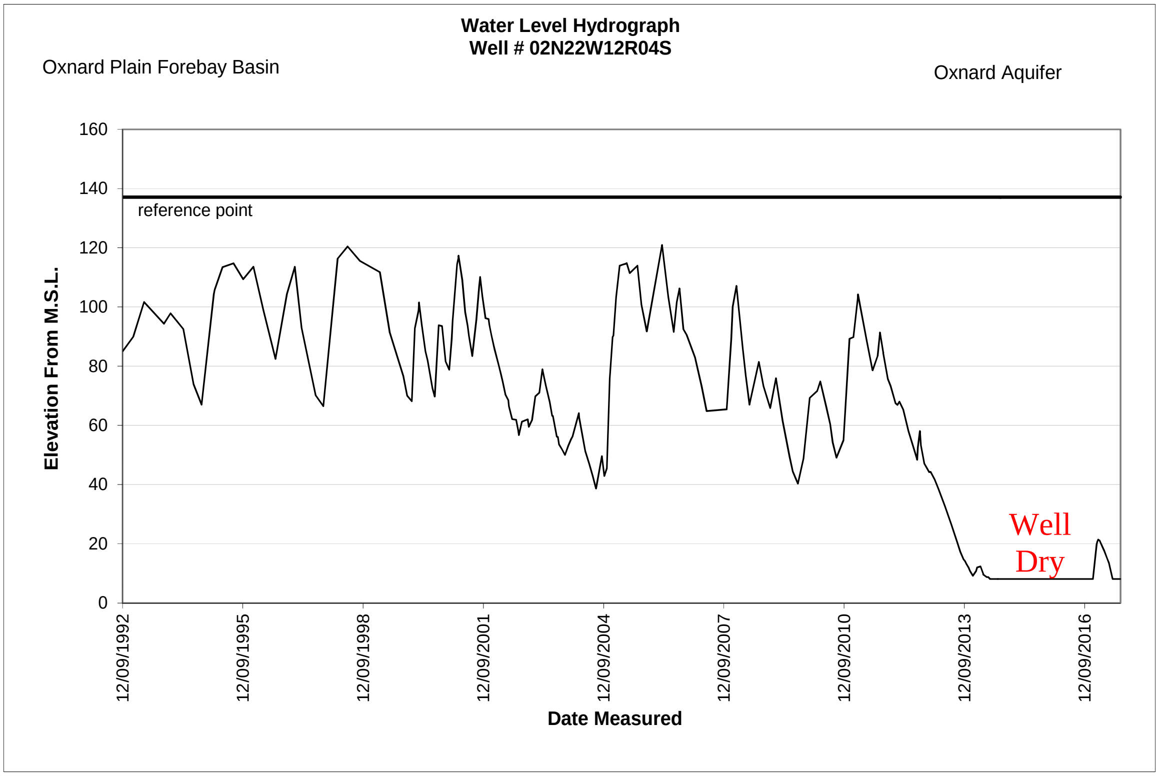

Figure B-4: Forebay Area key well hydrograph.

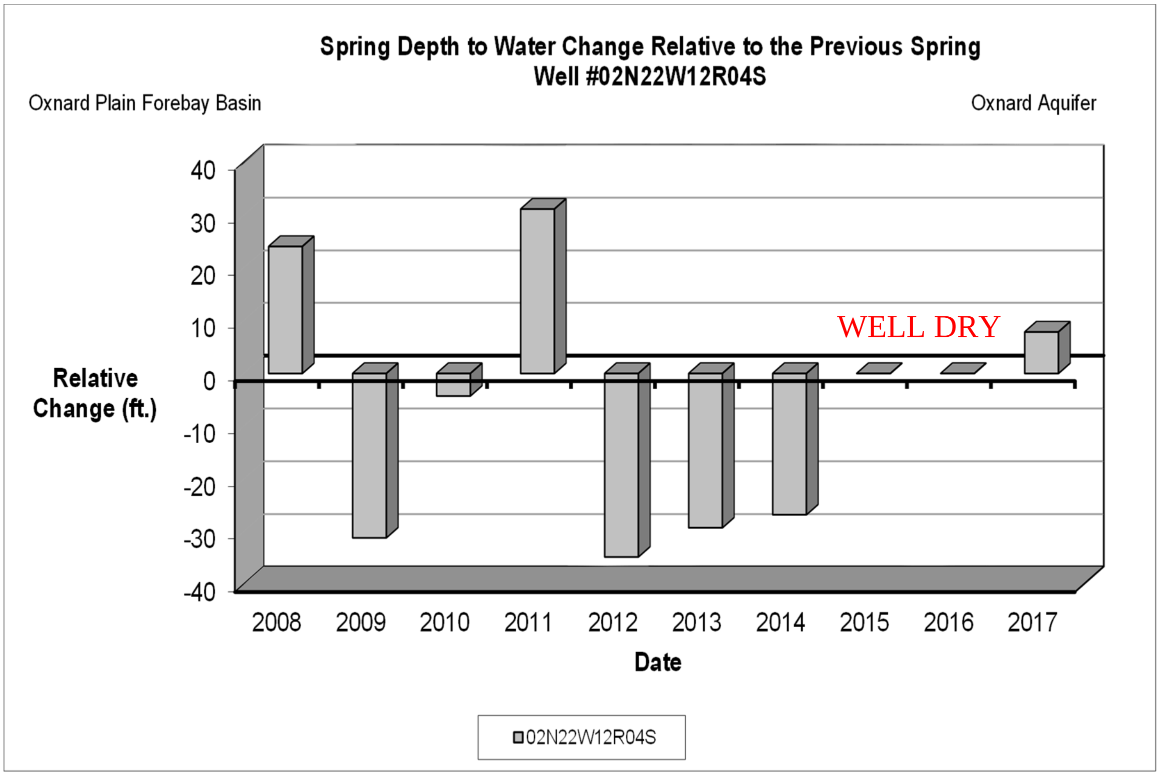

Figure B-5: Forebay Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

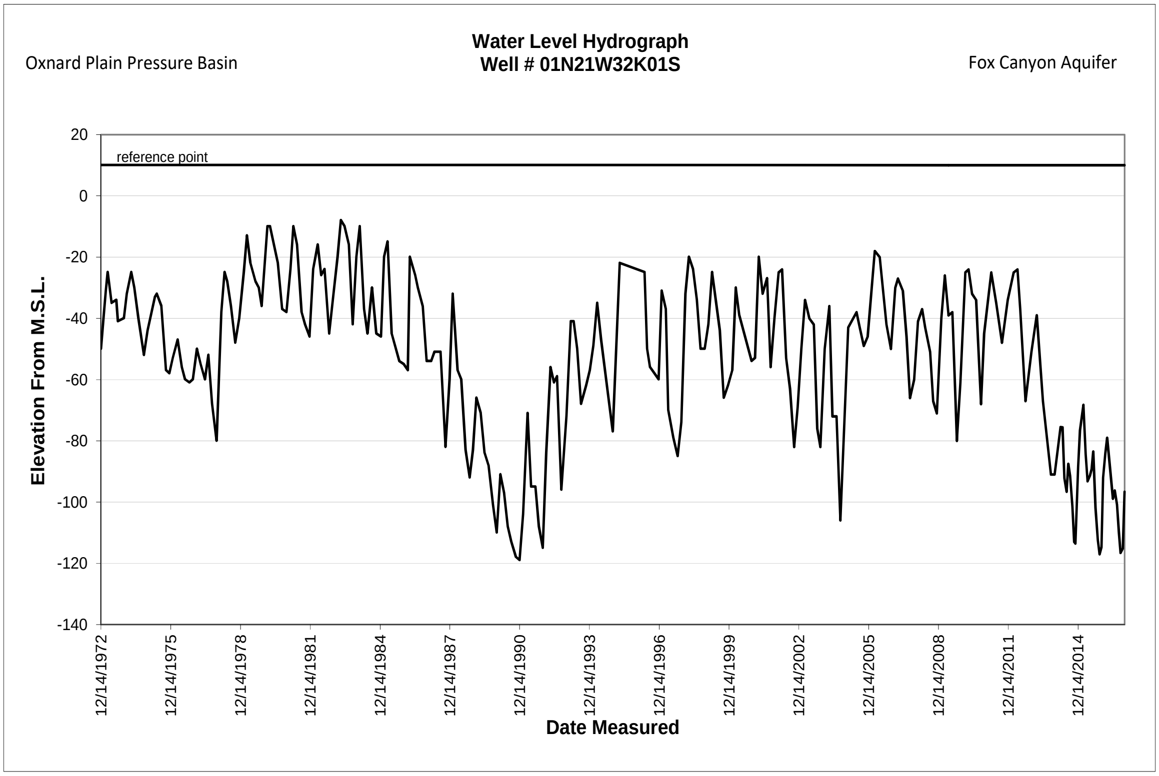

Figure B-6: Oxnard Plain Pressure Basin, Fox Canyon Aquifer key well hydrograph.

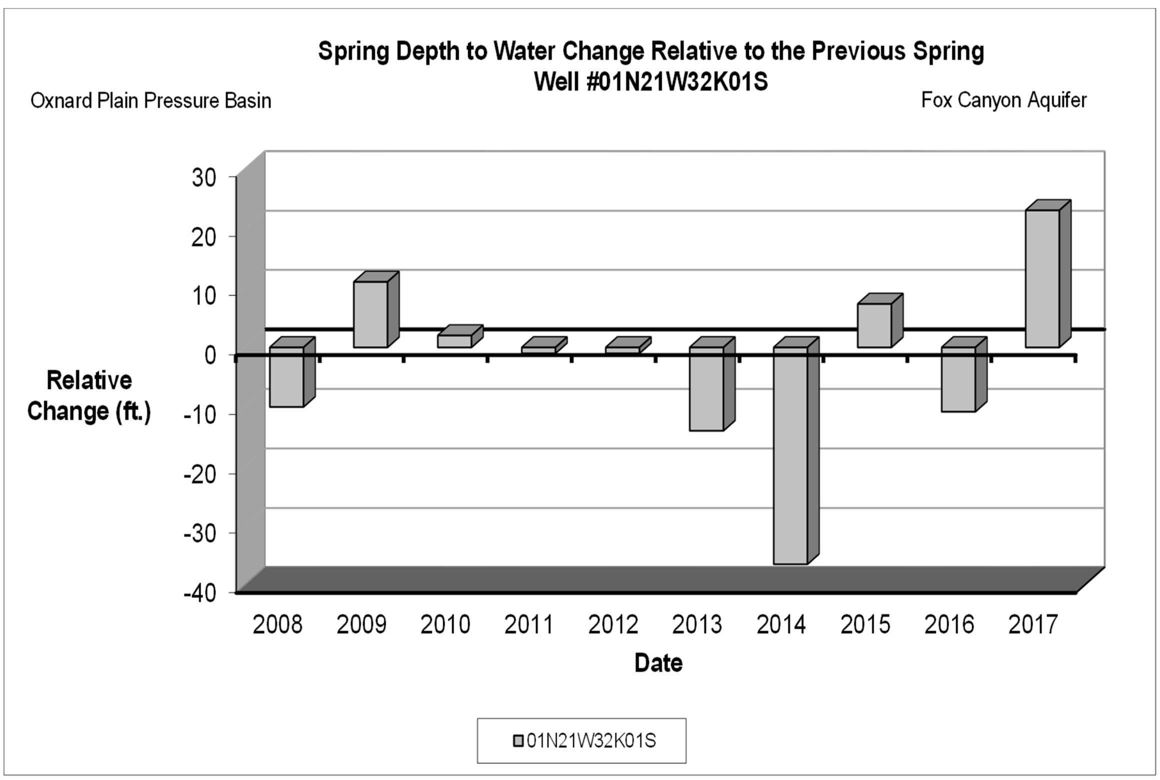

Figure B-7: Oxnard Plain Pressure Basin, Fox Canyon Aquifer 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

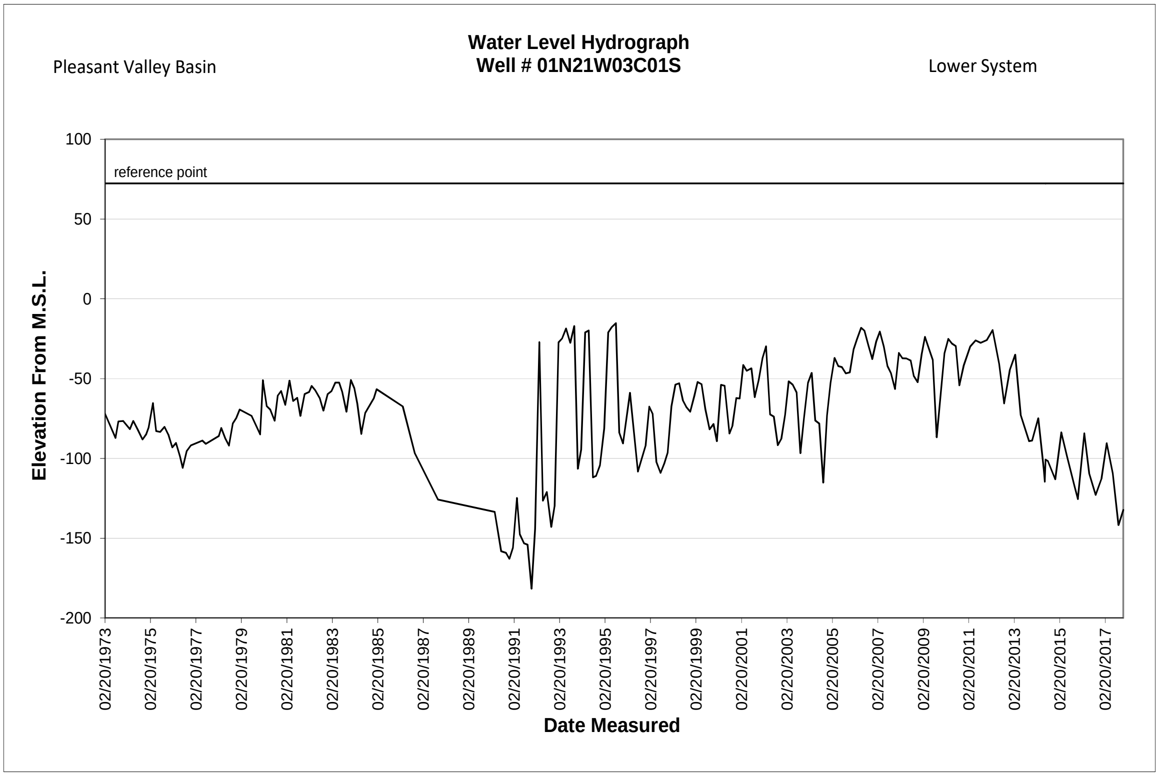

Figure B-8: Pleasant Valley Basin, Fox Canyon Aquifer key well hydrograph.

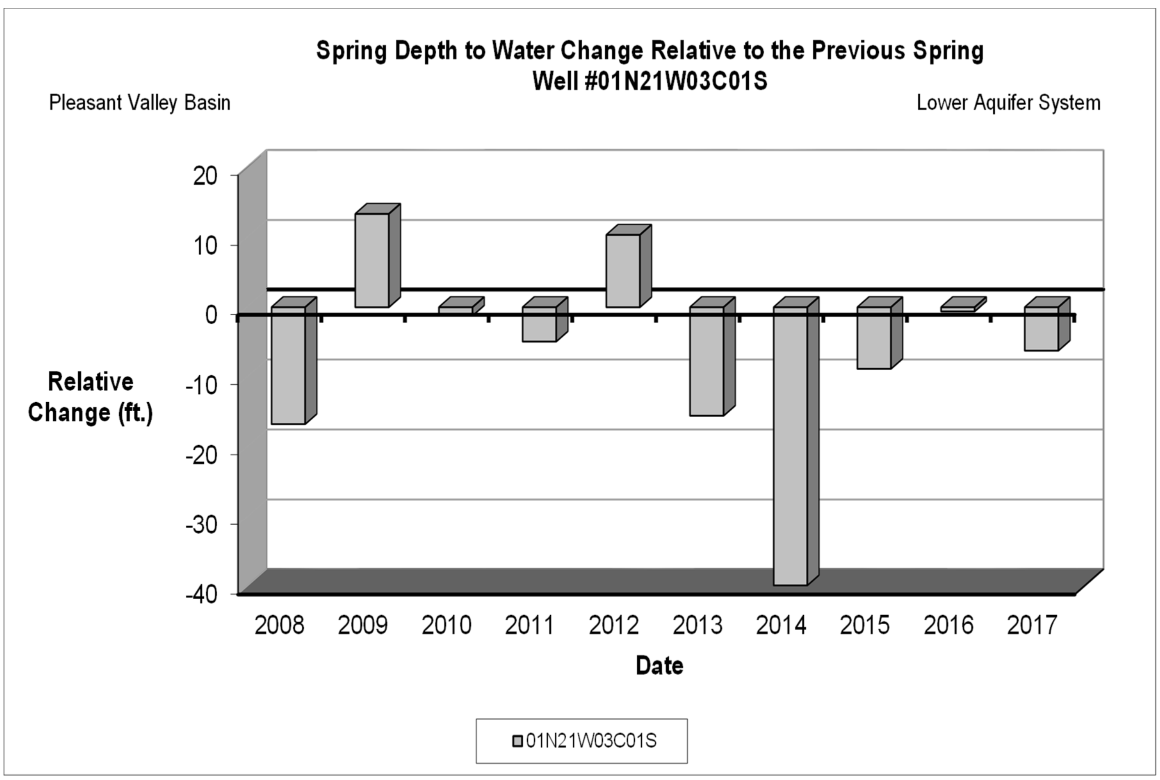

Figure B-9: Pleasant Valley Basin, Fox Canyon Aquifer 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

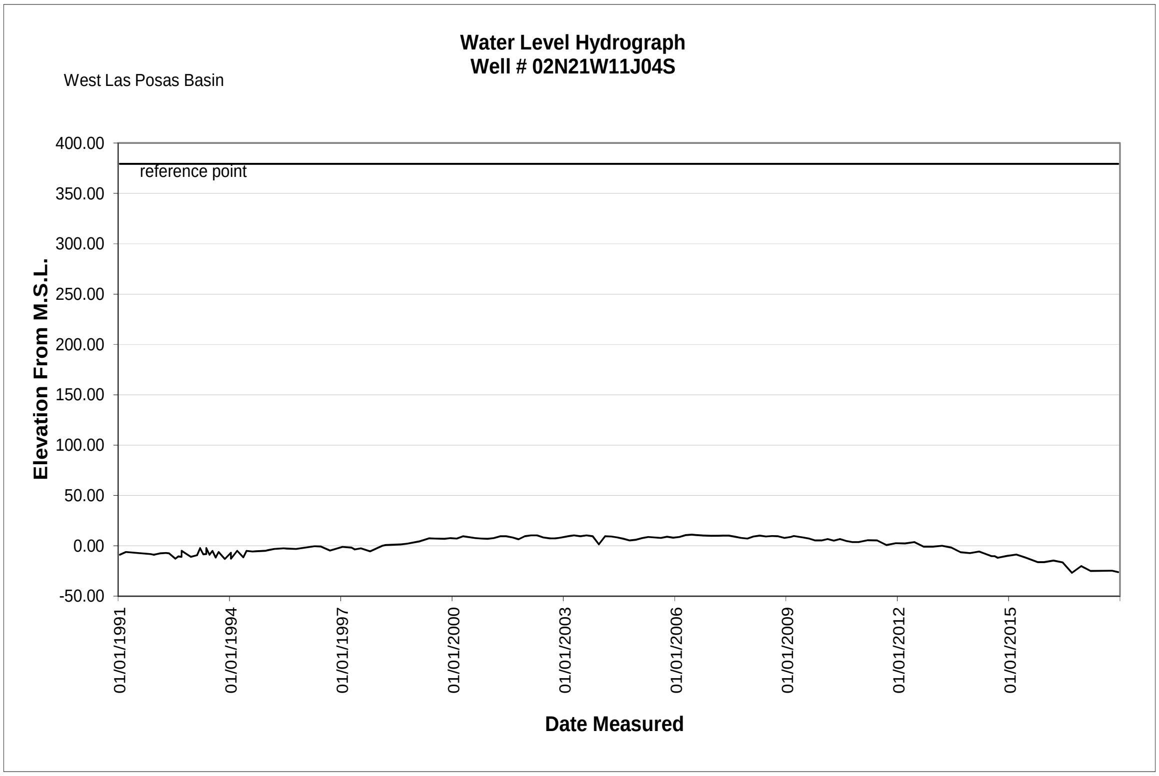

Figure B-10: West Las Posas Basin key well hydrograph.

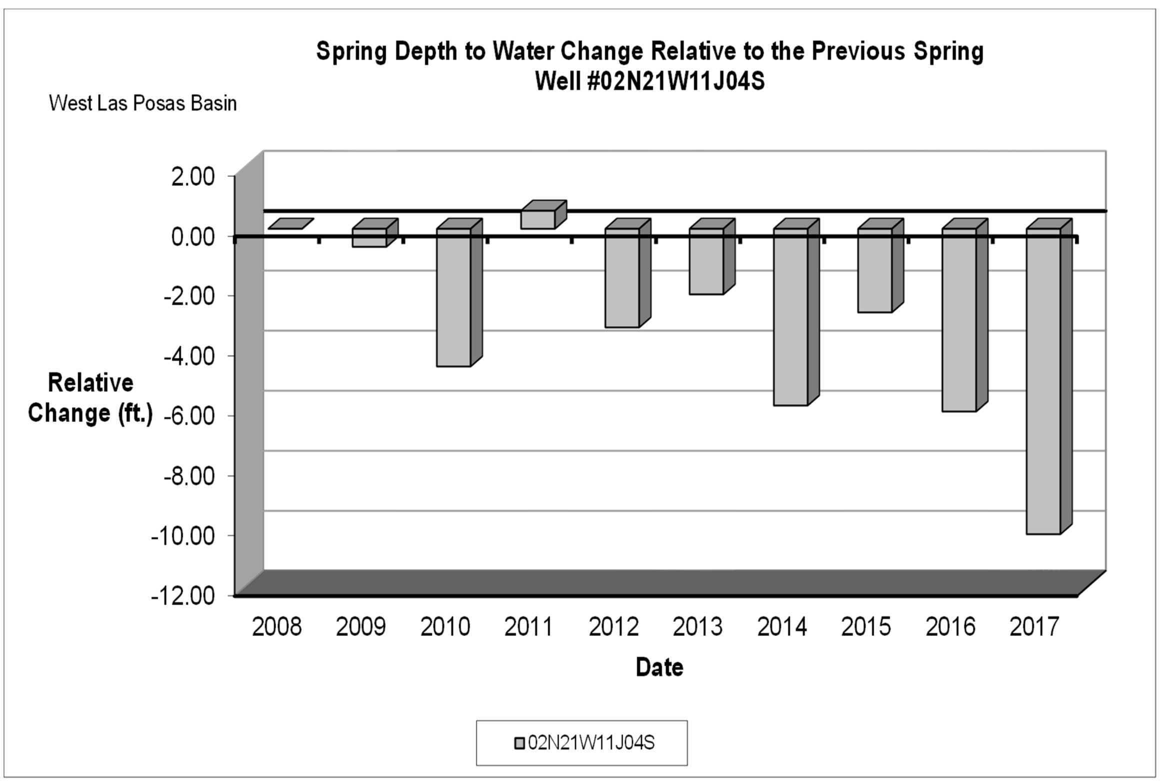

Figure B-11: West Las Posas Basin 10-year spring level change Up/Down graph.

Appendix B – Key Water Level Wells

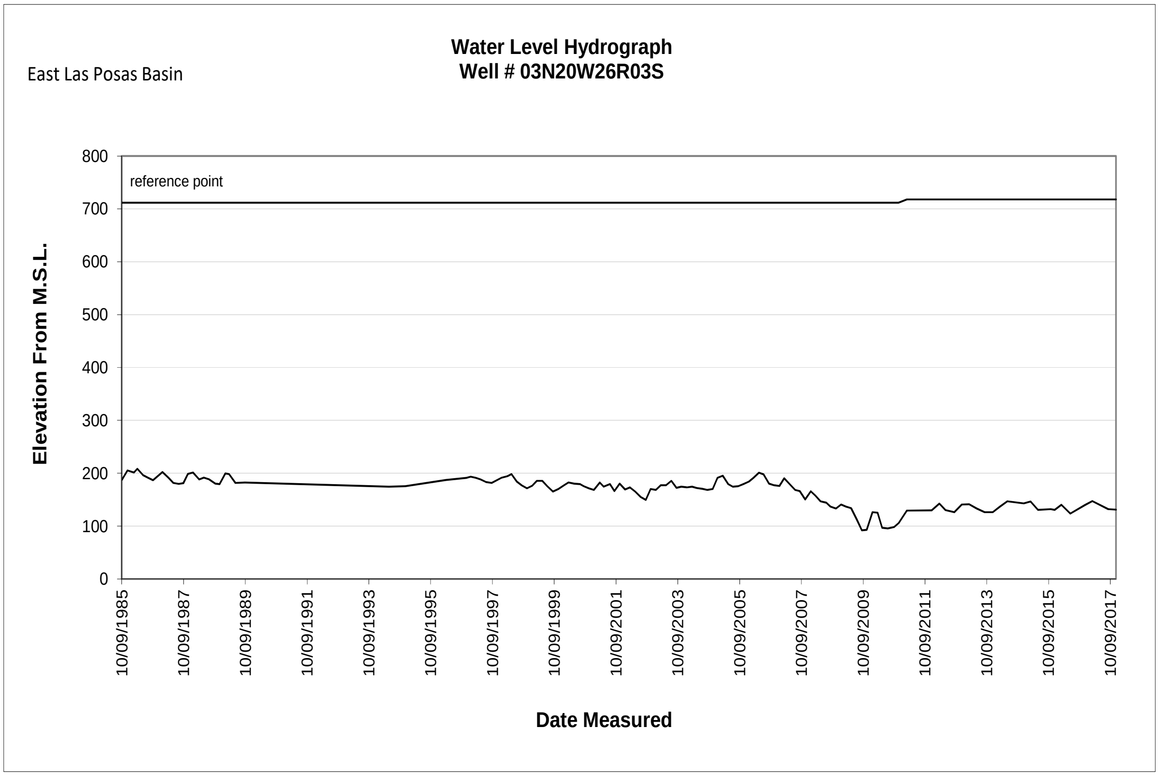

Figure B-12: East Las Posas key well hydrograph.

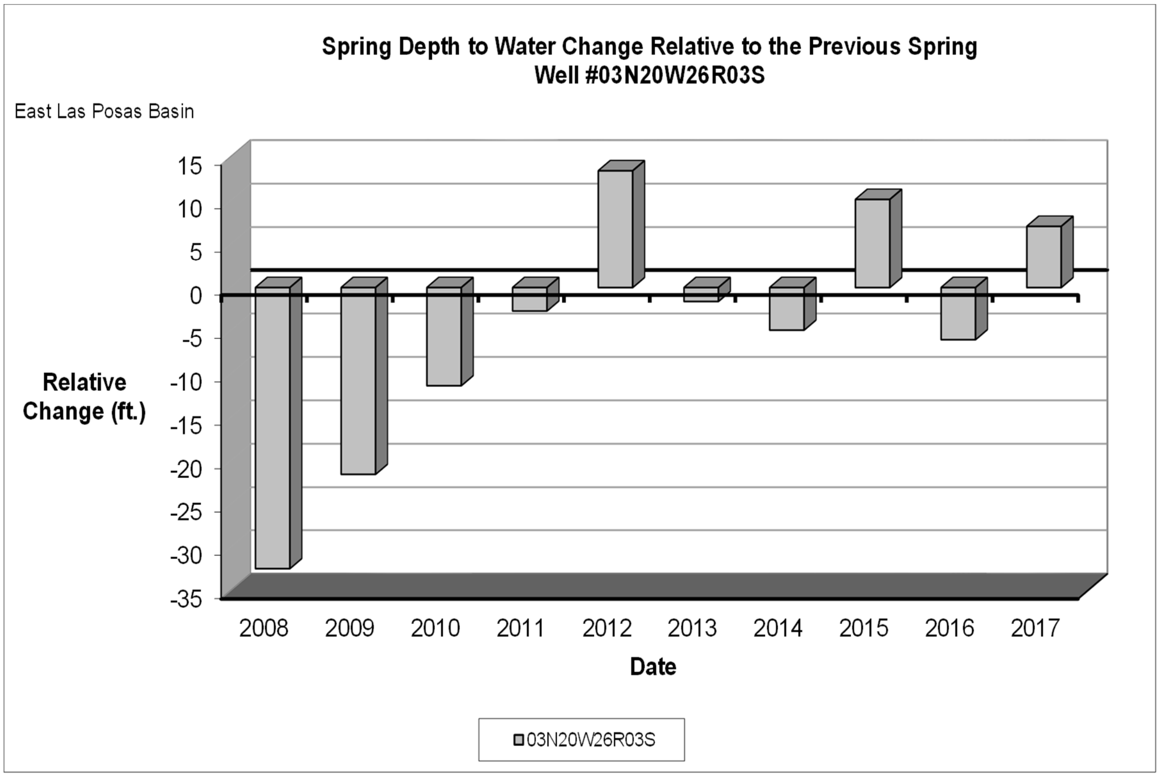

Figure B-13: East Las Posas Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

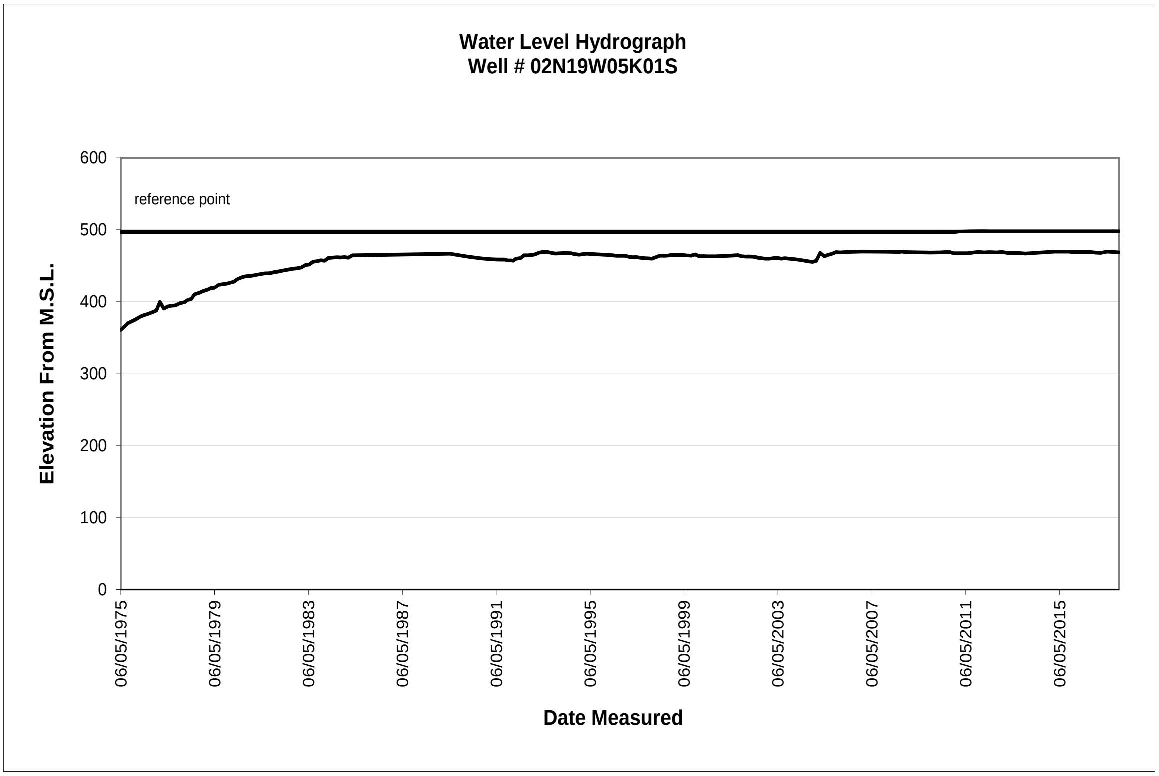

Figure B-14: South Las Posas Basin key well hydrograph.

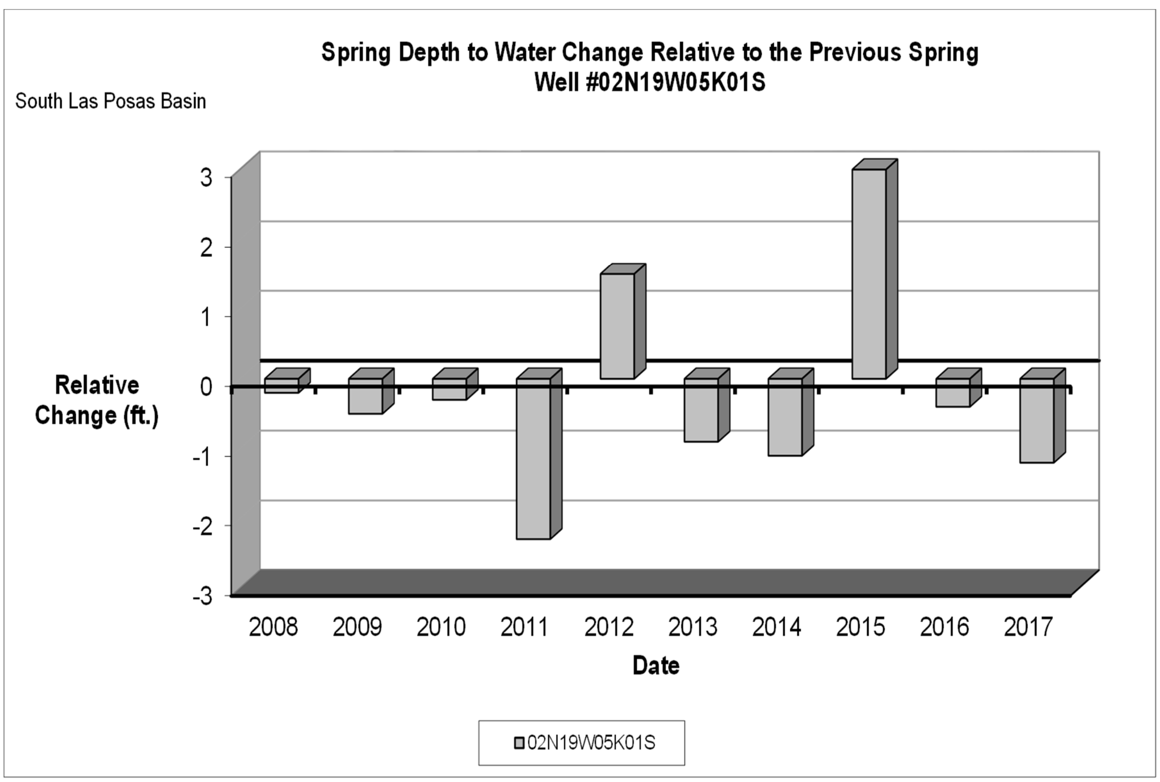

Figure B-15: South Las Posas Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

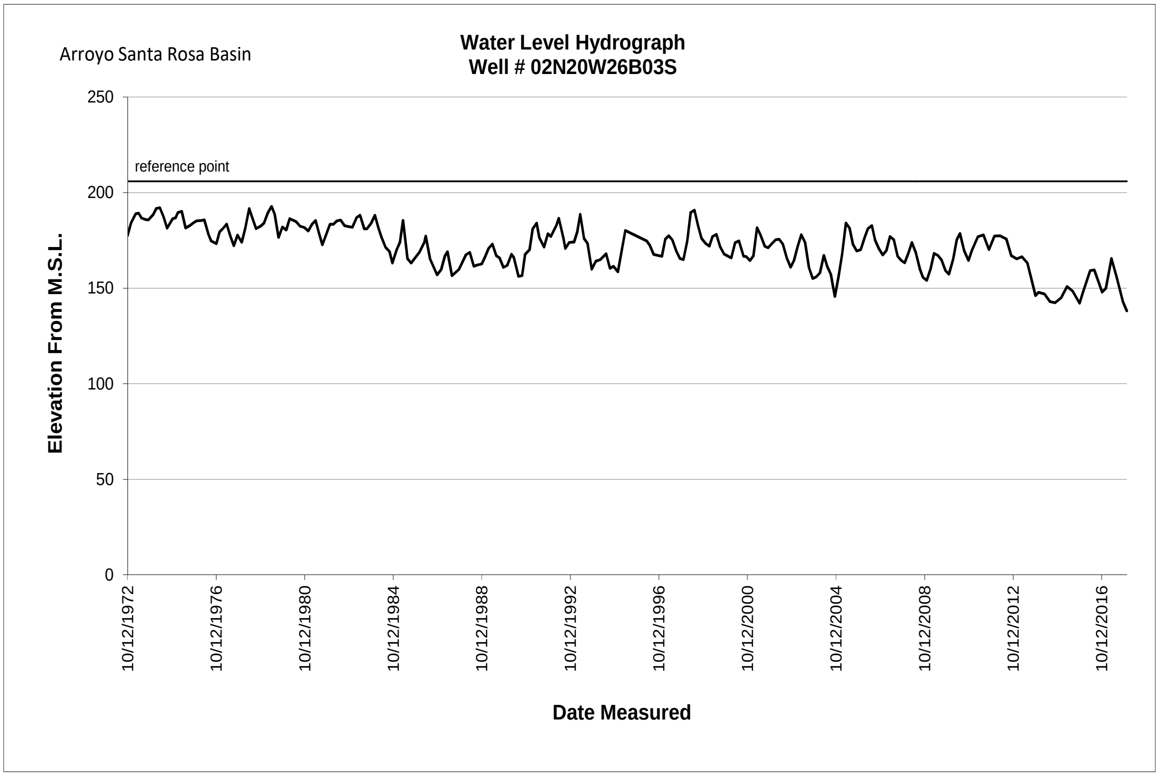

Figure B-16: Arroyo Santa Rosa Basin key well hydrograph.

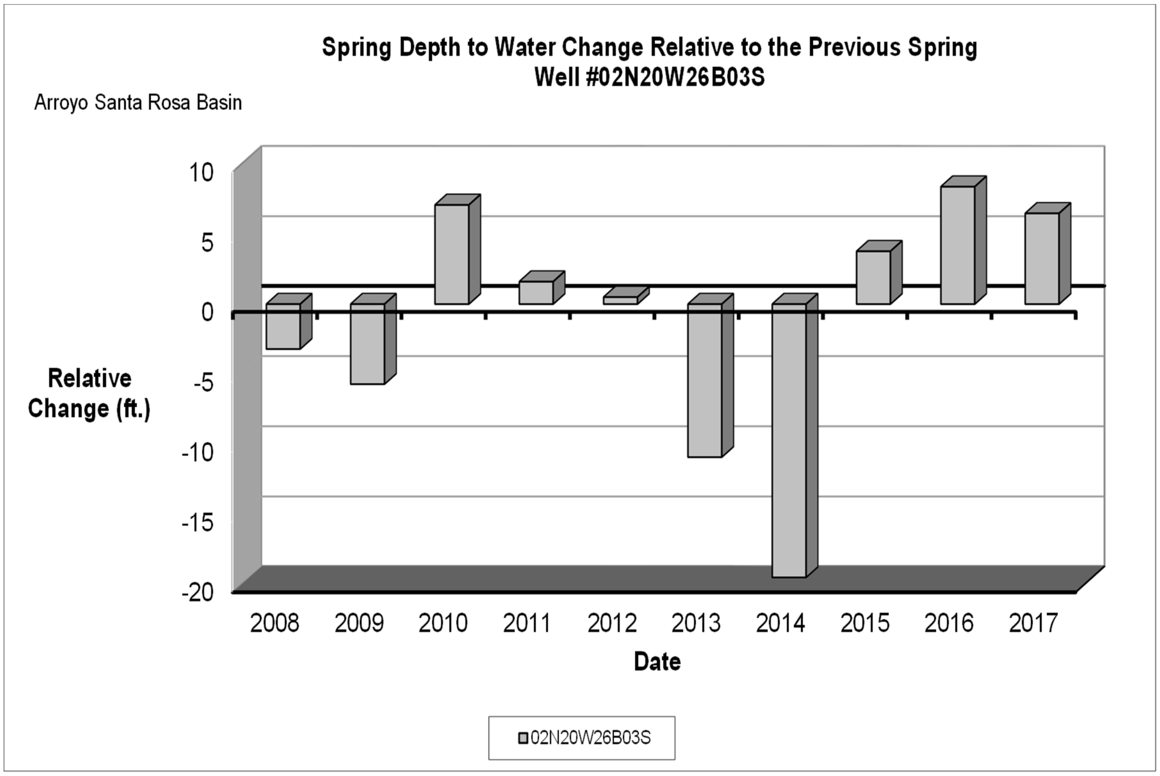

Figure B-17: Arroyo Santa Rosa Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

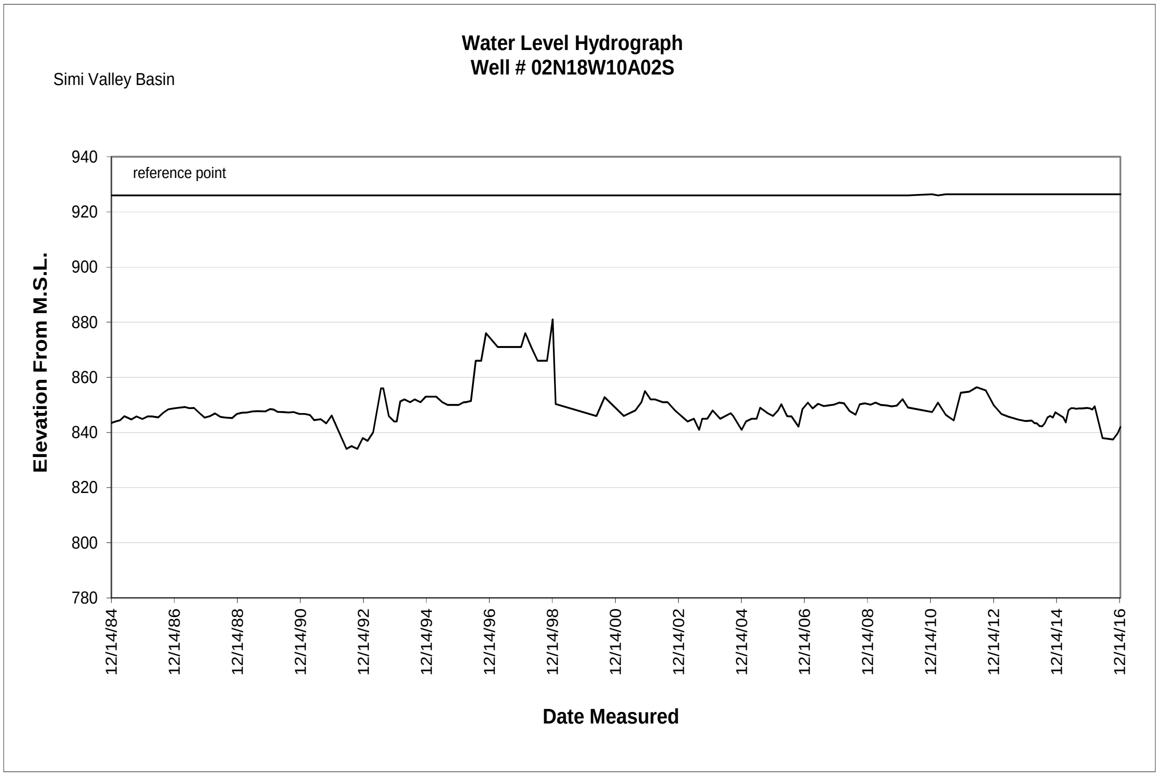

Figure B-18: Simi Valley Basin key well hydrograph.

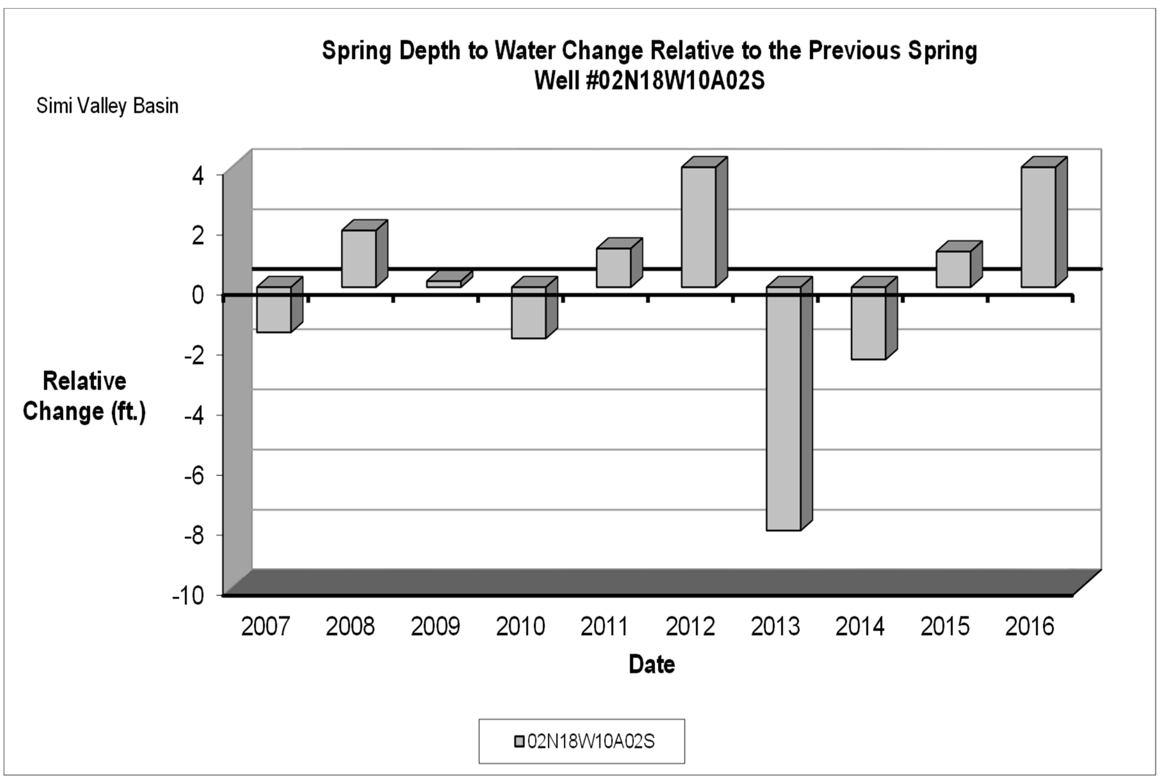

Figure B-19: Simi Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

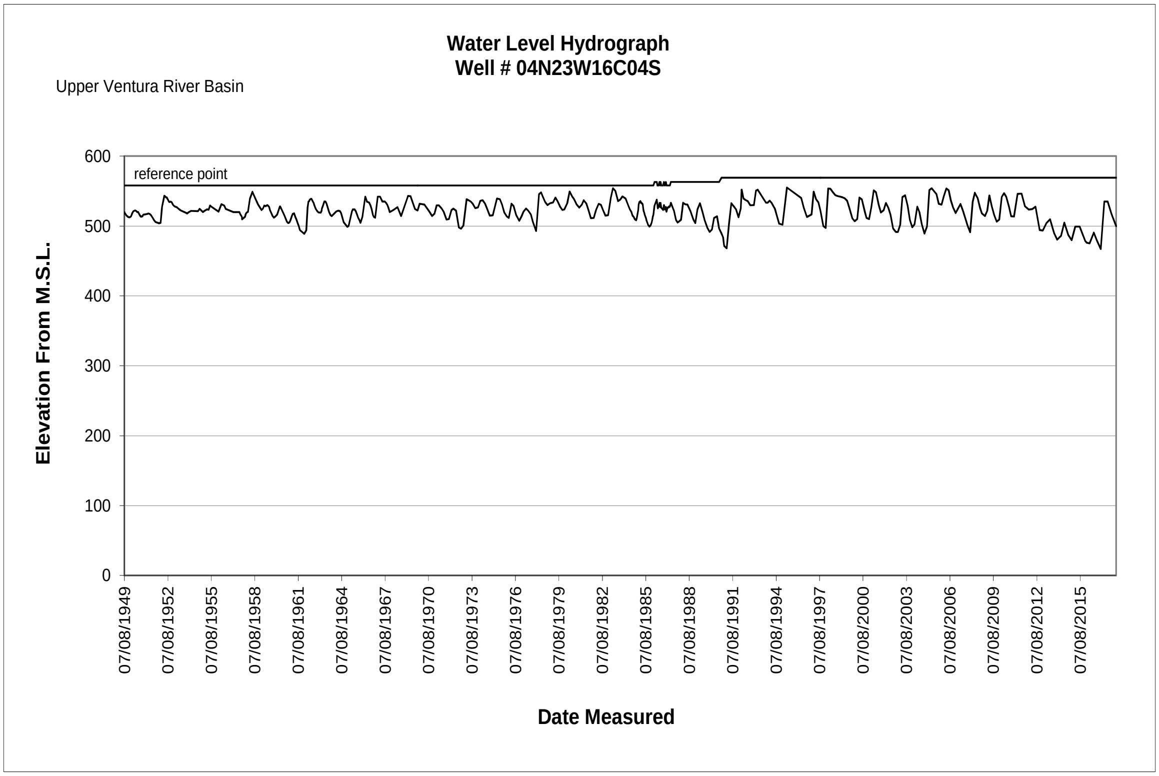

Figure B-20: Ventura River Basin key well hydrograph.

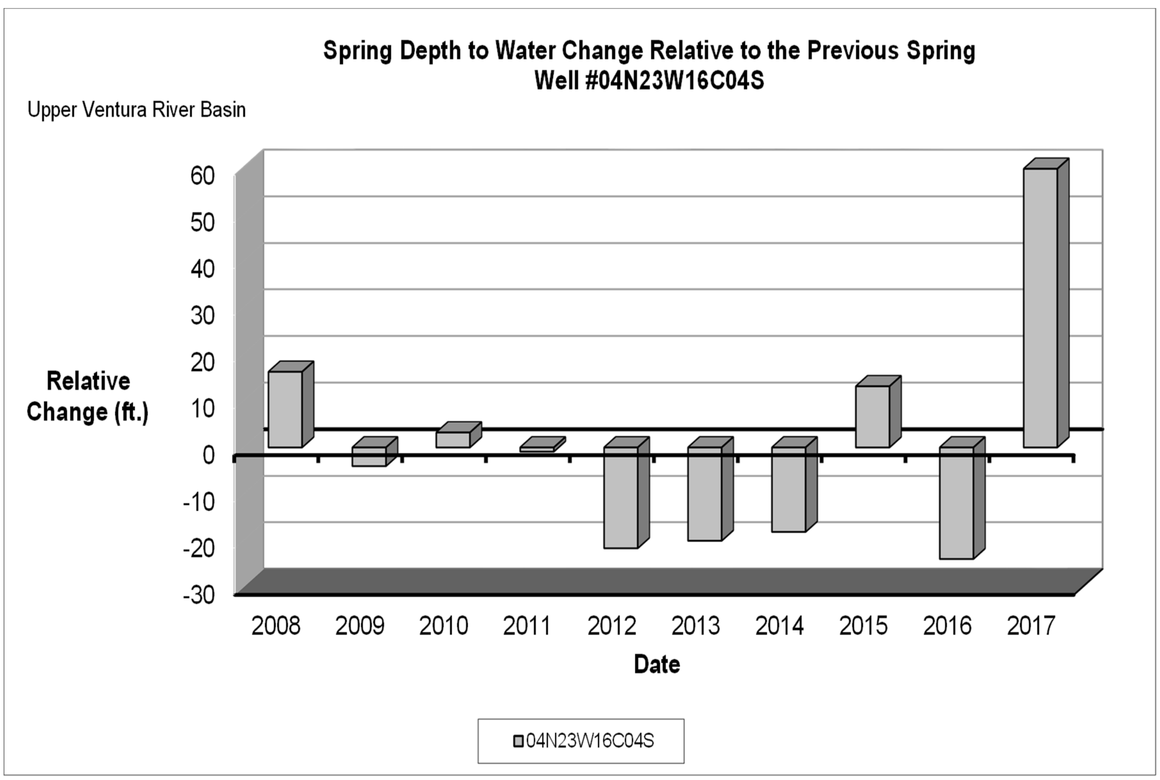

Figure B-21: Ventura River Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

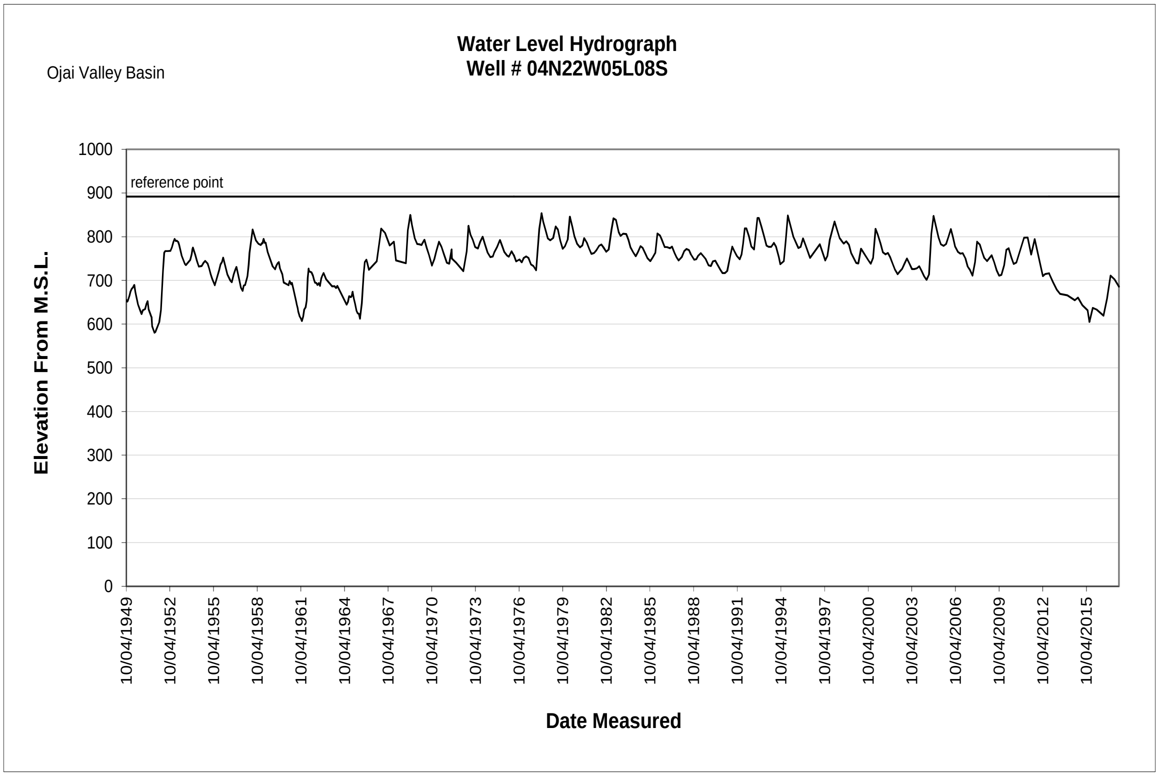

Figure B-22: Ojai Valley Basin key well hydrograph.

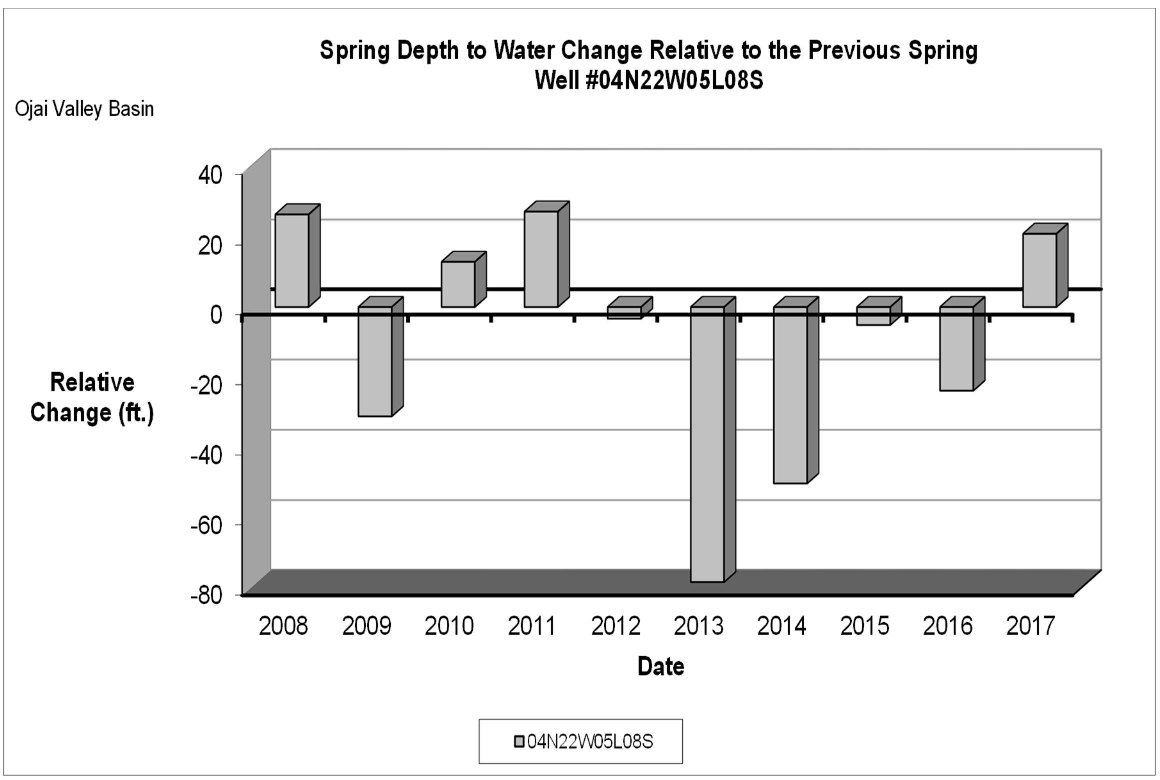

Figure B-23: Ojai Valley Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

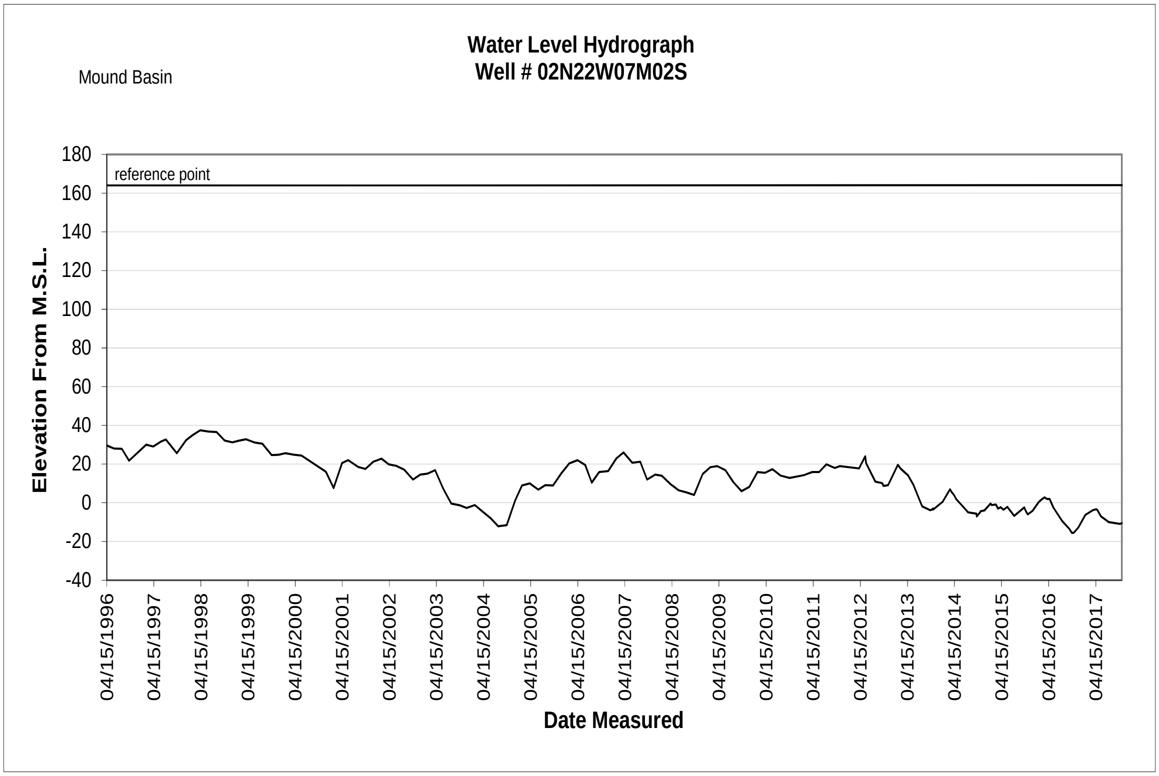

Figure B-24: Mound Basin key well hydrograph.

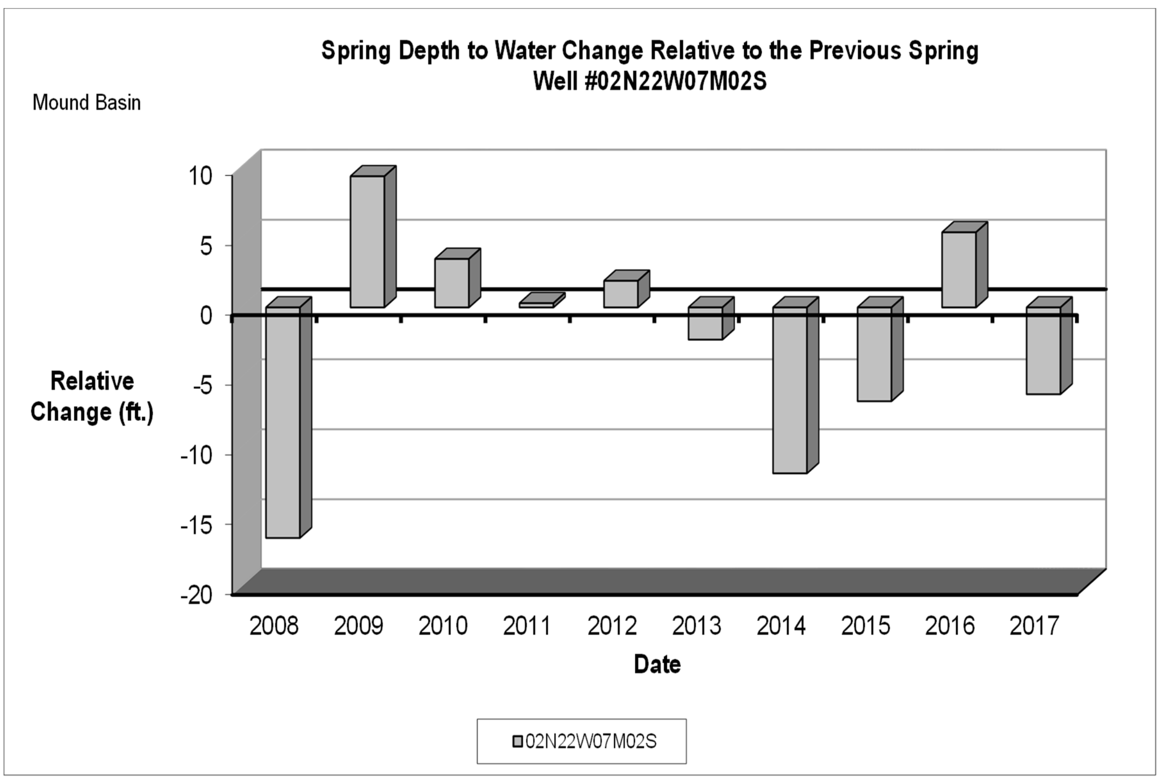

Figure B-25: Mound Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

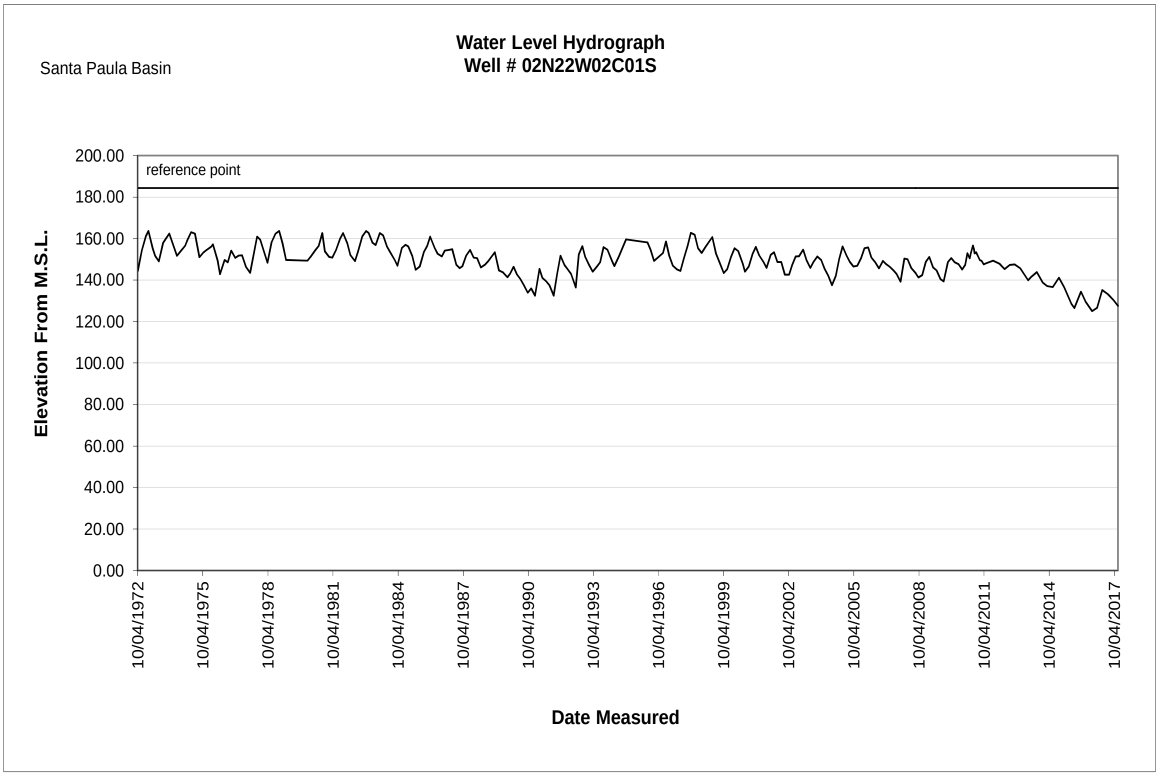

Figure B-26: Santa Paula Basin key well hydrograph.

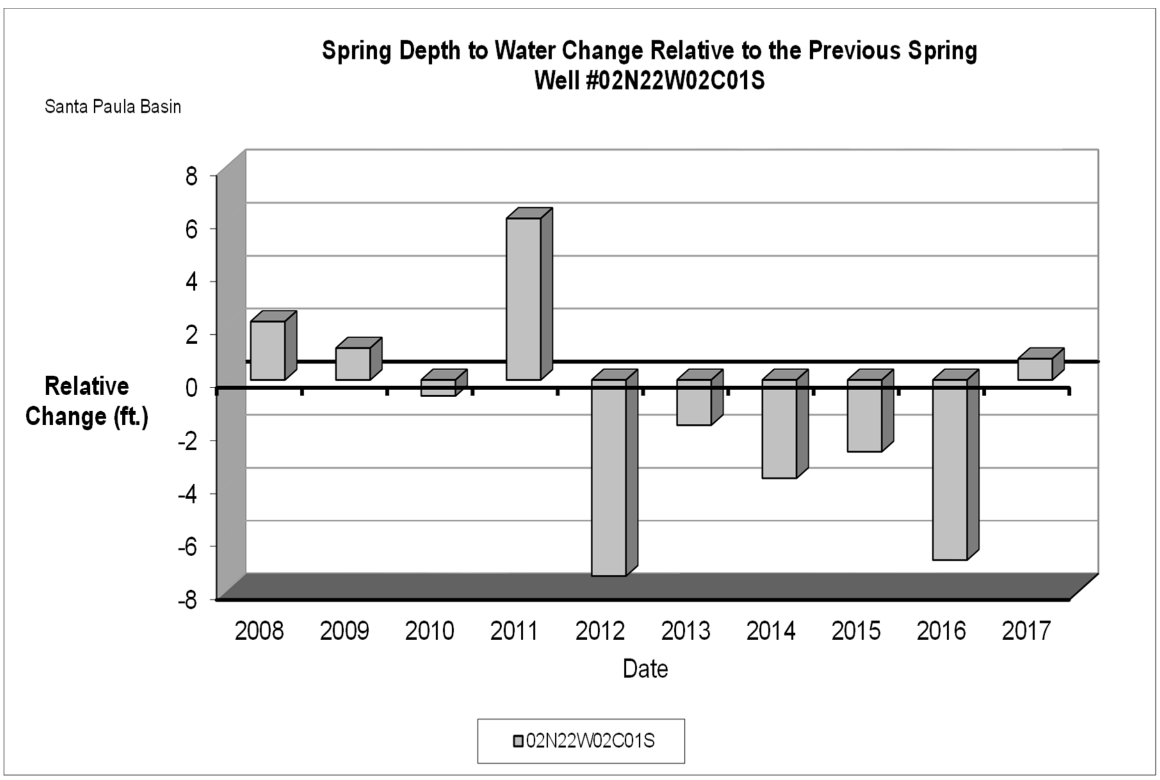

Figure B-27: Santa Paula Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

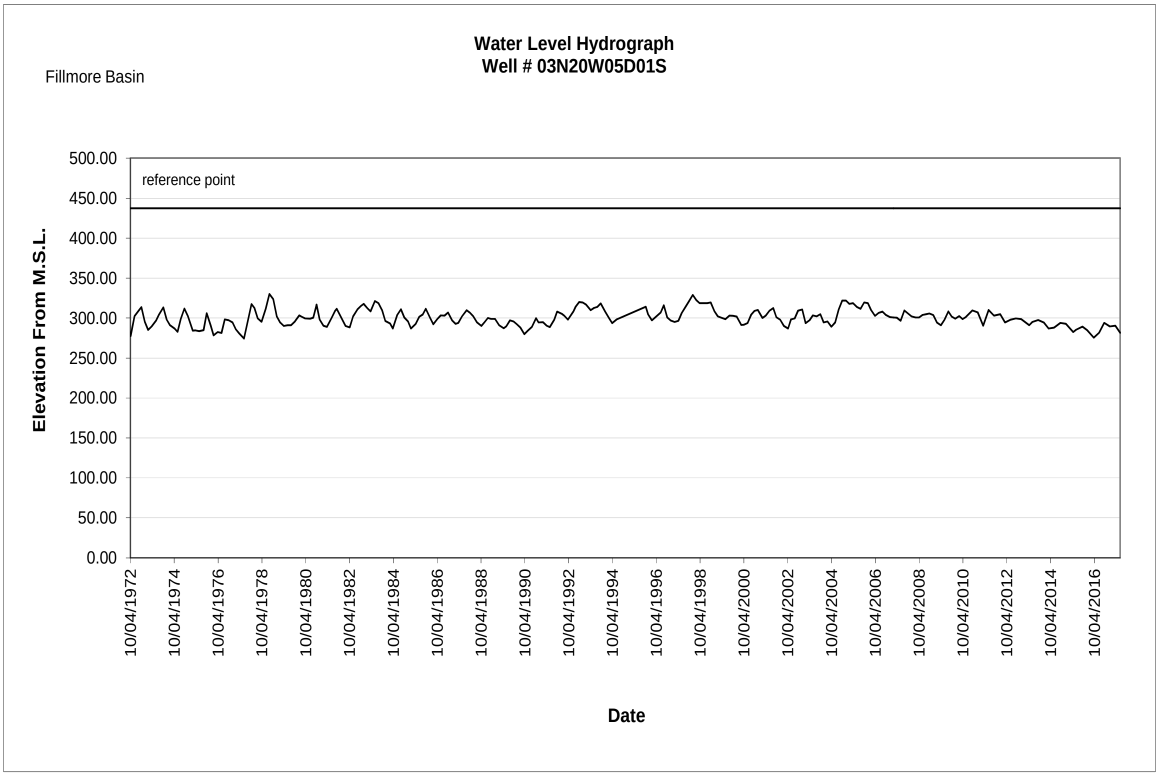

Figure B-28: Fillmore Basin key well hydrograph.

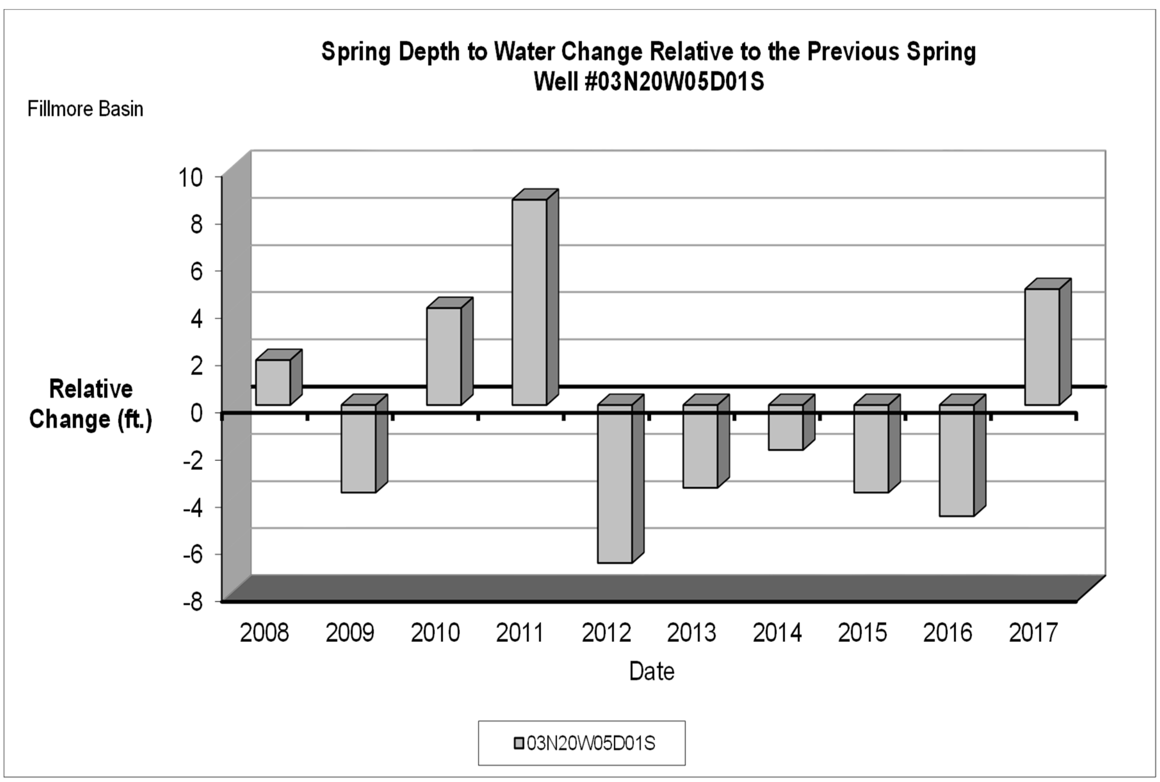

Figure B-29: Fillmore Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

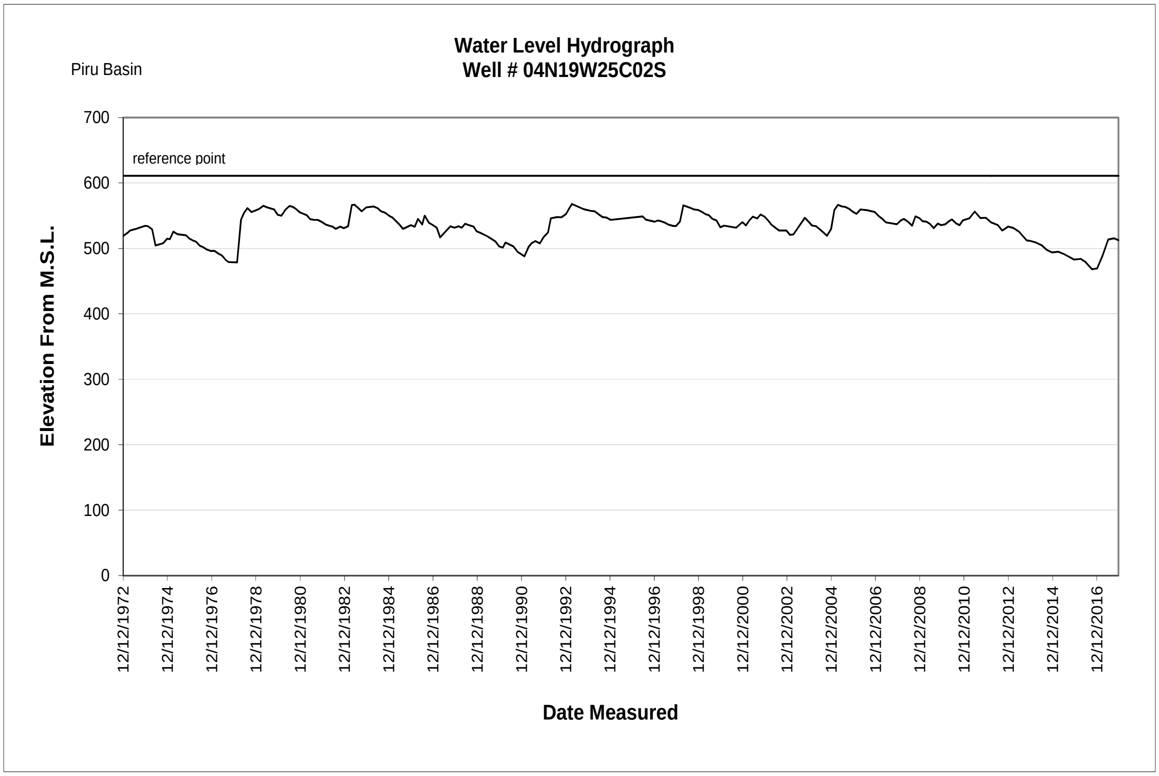

Figure B-30: Piru Basin key well hydrograph.

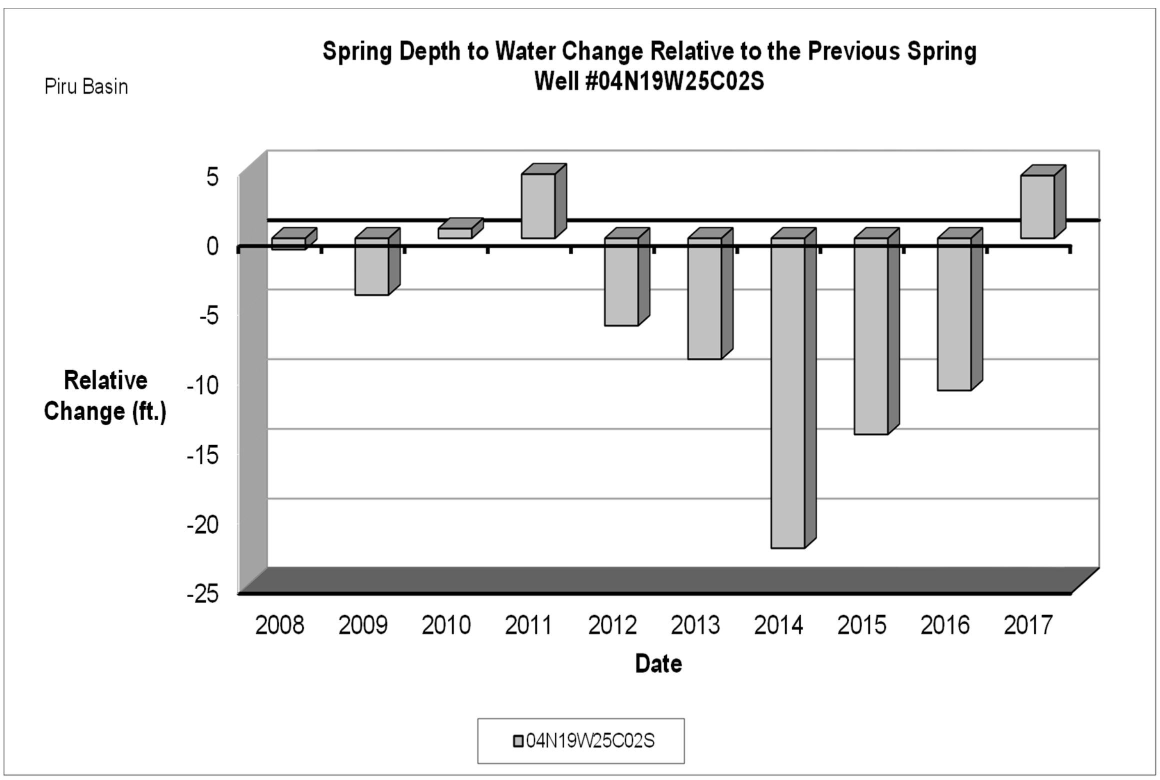

Figure B-31: Piru Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

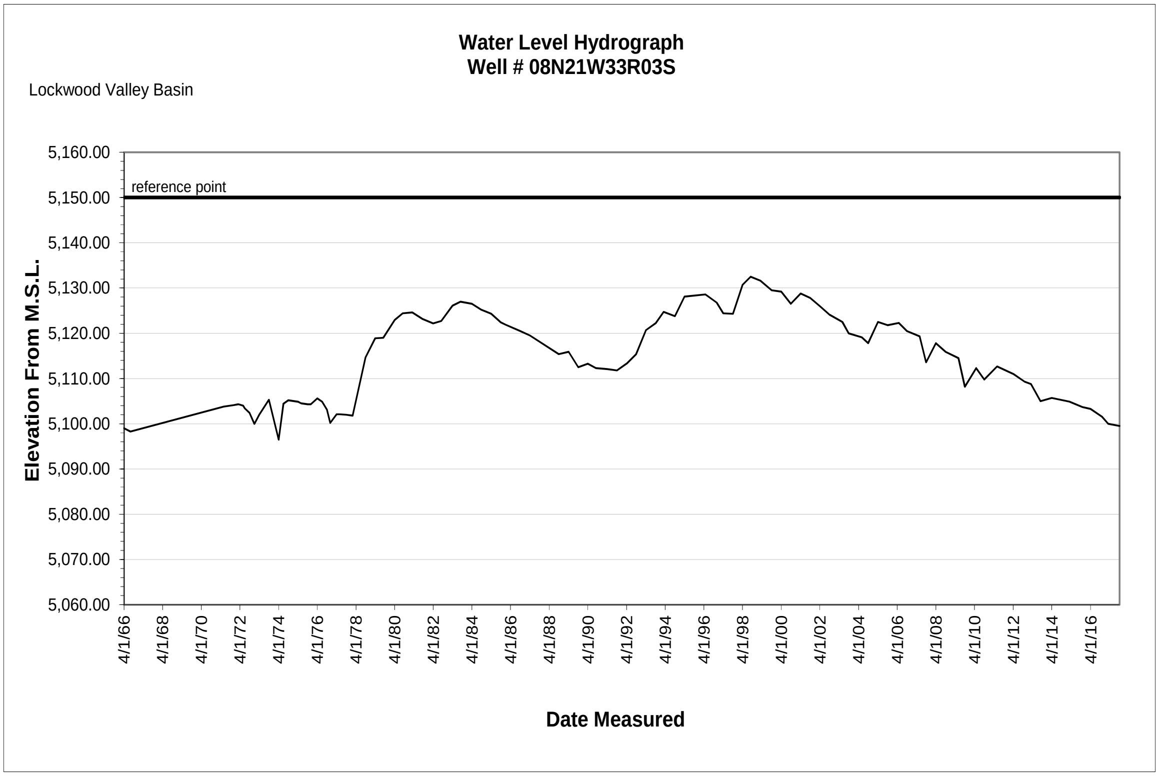

Figure B-32: Lockwood Valley Basin key well hydrograph.

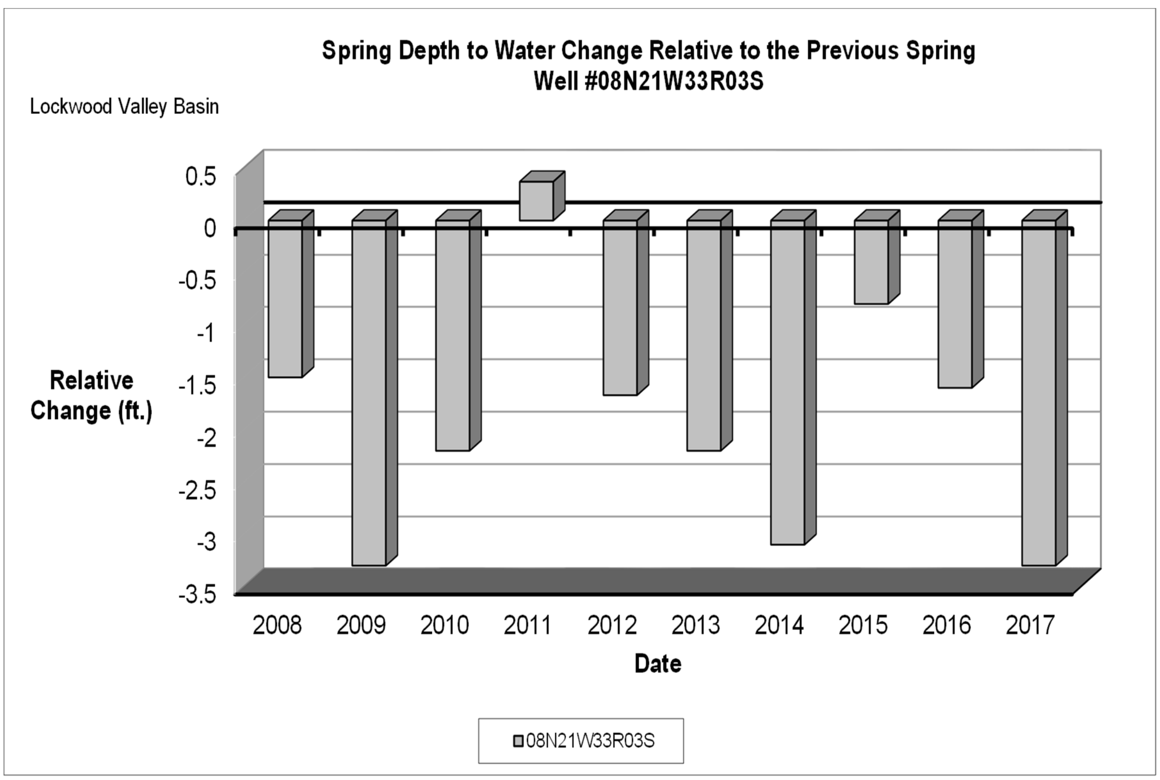

Figure B-33: Lockwood Valley Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

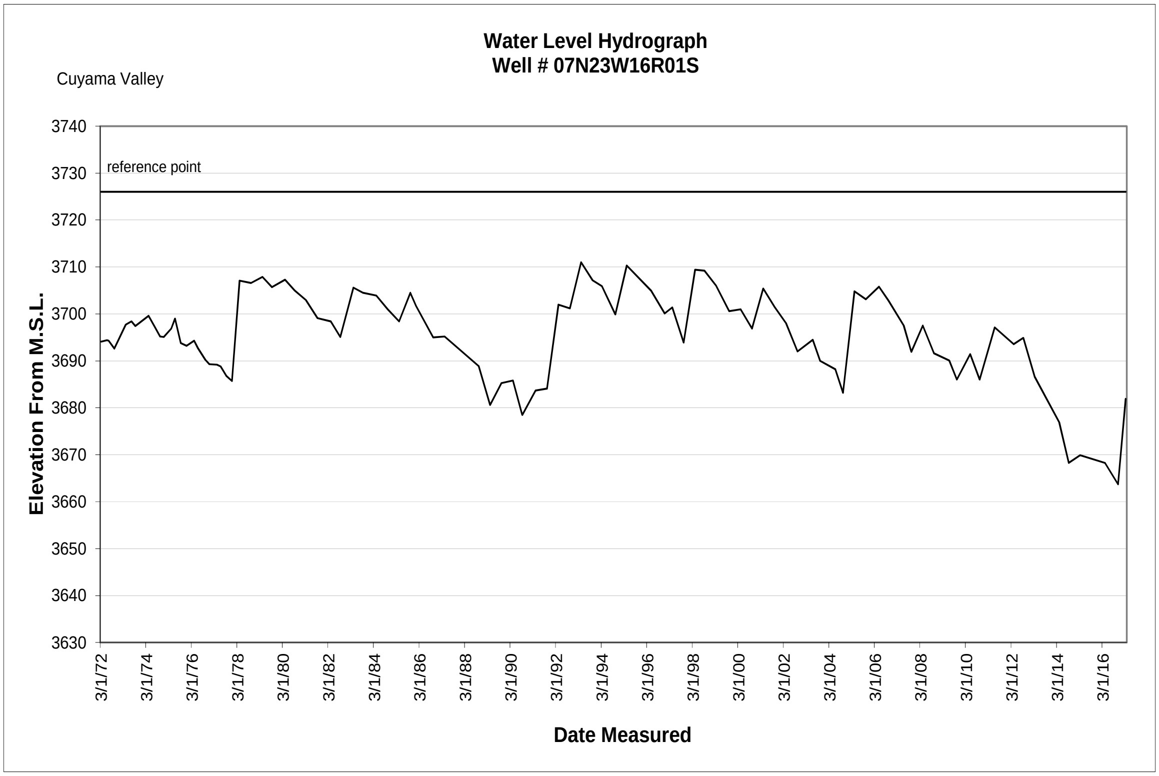

Figure B-34: Cuyama Valley Basin key well hydrograph.

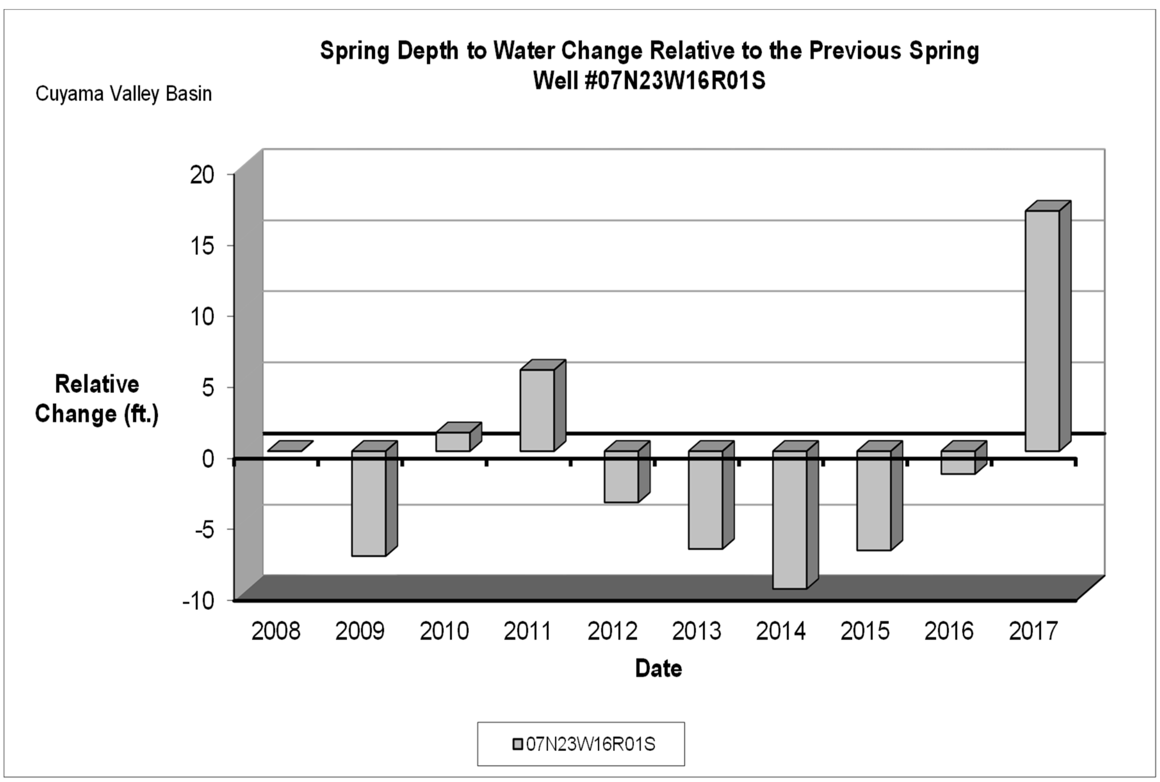

Figure B-35: Cuyama Valley Basin 10-year Spring level change Up/Down graph.

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Arroyo Santa Rosa	02N19W20L01S	03/20/2017	307.66	45.00	262.66	
		06/15/2017	307.66	----	----	Pumping
		09/21/2017	307.66	----	----	Pumping
		12/08/2017	307.66	----	----	Pumping
	02N20W23G01S	03/20/2017	370.80	282.63	88.17	
		06/15/2017	370.80	284.90	85.90	
		09/21/2017	370.80	287.94	82.86	
		12/08/2017	370.80	286.91	83.89	
	02N20W23K01S	03/20/2017	274.11	192.90	81.91	
		06/15/2017	274.11	203.28	70.83	
		09/21/2017	274.11	211.55	62.56	
		12/08/2017	274.11	208.05	66.06	
	02N20W23R01S	03/20/2017	235.21	----	----	Pumping
		06/15/2017	235.21	83.20	152.01	
		09/21/2017	235.21	----	----	Pumping
		12/08/2017	235.21	----	----	Pumping
	02N20W26B03S*	03/23/2017	205.87	40.30	165.57	
		06/15/2017	205.87	49.80	156.07	
		09/27/2017	205.87	63.00	142.87	
		11/29/2017	205.87	67.70	138.17	
Conejo Valley	01N19W07K16S	03/14/2017	635.46	2.60	632.86	
		06/08/2017	635.46	6.90	628.56	
		09/13/2017	635.46	7.60	627.86	
		12/19/2017	635.46	10.05	625.41	
	01N20W03J01S	03/14/2017	764.40	25.00	739.40	
		06/08/2017	764.40	34.00	730.40	
		09/13/2017	764.40	43.80	720.60	
		12/19/2017	764.40	52.60	711.80	
Cuyama Valley	07N23W16R01S*	03/29/2017	3,726.00	44.10	3,681.90	
		10/03/2017	3,726.00	----	----	Temporarily Inaccessible
	07N23W16R02S	03/29/2017	3,726.00	40.80	3,685.20	
		10/03/2017	3,726.00	42.1	3,683.90	
	07N24W13C03S	03/29/2017	3,435.00	50.90	3,384.10	
		10/03/2017	3,435.00	31.00	3,404.00	
	09N24W33J03S	03/29/2017	3,130.00	161.80	2,968.20	
		10/03/2017	3,130.00	162.50	2,967.50	
Fillmore	03N19W06D02S	03/15/2017	434.60	94.40	340.20	
		06/19/2017	434.60	81.55	353.05	
		09/18/2017	434.60	----	----	Pumping
		12/04/2017	434.60	----	----	Pumping
	03N20W01C04S	03/15/2017	404.58	54.50	350.08	
		06/19/2017	404.58	49.30	355.28	
		09/18/2017	404.58	51.49	353.09	
		12/04/2017	404.58	54.25	350.33	

* - Denotes basin key water level well.
** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Fillmore	03N20W05D01S*	03/15/2017	437.12	143.20	293.92	
		06/20/2017	437.12	147.65	289.47	
		09/18/2017	437.12	146.80	290.32	
		12/04/2017	437.12	155.50	281.62	
	03N20W09D01S	03/15/2017	325.20	----	----	Pumping
		06/19/2017	325.20	----	----	Pumping
		09/18/2017	325.20	----	----	Pumping
		12/04/2017	325.20	26.20	299.00	
	03N20W11C01S	03/15/2017	397.11	64.70	332.41	
		06/19/2017	397.11	61.50	335.61	
		09/18/2017	397.11	----	----	Pumping
		12/04/2017	397.11	67.27	329.84	
	03N21W01P02S	03/15/2017	301.85	38.00	263.85	
		06/19/2017	301.85	46.80	255.05	
		09/18/2017	301.85	51.42	250.43	
		12/04/2017	301.85	0.00	301.85	Pumping
	04N19W30D01S	03/15/2017	434.43	57.00	377.43	
		06/19/2017	434.43	----	----	Pumping
		09/18/2017	434.43	59.70	374.73	
		12/04/2017	434.43	----	----	Pumping
	04N19W31R01S	03/15/2017	442.00	37.00	405.00	
		03/15/2017	448.85	103.85	345.00	
		06/19/2017	448.85	88.80	360.05	
		09/18/2017	448.85	83.52	365.33	
	04N19W32M02S	12/04/2017	448.85	82.80	366.05	
		03/15/2017	449.46	----	----	Pumping
		06/19/2017	449.46	----	----	Pumping
		09/18/2017	449.46	----	----	Pumping
	04N19W33D03S	12/04/2017	449.46	----	----	Pumping
		03/15/2017	477.43	21.70	455.73	
		06/19/2017	477.43	----	----	Casing Wet
		09/18/2017	477.43	----	----	Pumping
	04N20W23Q02S	12/04/2017	477.43	11.42	466.01	
		03/15/2017	477.90	----	----	Pumping
		06/19/2017	477.90	----	----	Pumping
	04N20W26C02S	09/18/2017	477.90	13.05	464.85	
		12/04/2017	477.90	----	----	Pumping
		03/15/2017	513.88	131.60	382.28	
		06/20/2017	513.88	134.30	379.58	
	04N20W33C03S	09/18/2017	513.88	142.90	370.98	
		12/04/2017	513.88	146.15	367.73	
		03/15/2017	505.35	138.40	366.95	
		06/20/2017	505.35	----	----	Pumping

* - Denotes basin key water level well.
** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Las Posas - East	02N20W01M01S	03/13/2017	470.05	----	----	Inaccessible
		06/06/2017	470.05	----	----	Inaccessible
		09/11/2017	470.05	----	----	Inaccessible
		12/13/2017	470.05	----	----	Inaccessible
	02N20W03K03S	03/13/2017	485.50	----	----	Inaccessible
		06/06/2017	485.50	----	----	Inaccessible
		09/11/2017	485.50	----	----	Inaccessible
		12/13/2017	485.50	----	----	Inaccessible
	02N20W10D02S	03/09/2017	459.53	293.90	165.63	
		06/06/2017	459.53	312.00	147.53	
		09/13/2017	459.53	325.50	134.03	
		12/14/2017	459.53	326.70	132.83	
	02N20W10G01S	03/10/2017	415.47	155.40	260.07	
		06/16/2017	415.47	163.40	252.07	
		09/11/2017	415.47	170.20	245.27	
		12/26/2017	415.47	180.20	235.27	
	02N20W10J01S	03/10/2017	406.87	119.10	287.77	
		06/12/2017	406.87	121.10	285.77	
		09/12/2017	406.87	125.40	281.47	
		12/14/2017	406.87	127.80	279.07	
	03N19W17Q01S	03/30/2017	1,311.06	1,099.83	211.24	
		06/12/2017	1,311.06	----	----	Inaccessible
		09/12/2017	1,311.06	----	----	Pumping
		12/15/2017	1,311.06	----	----	Inaccessible
	03N19W19J01S	03/10/2017	1,026.90	865.60	161.30	
		06/12/2017	1,026.90	848.70	178.20	
		09/12/2017	1,026.90	853.60	173.30	
		12/14/2017	1,026.90	856.40	170.50	
	03N19W19P02S	03/13/2017	1,057.94	----	----	Inaccessible
		06/12/2017	1,057.94	----	----	Inaccessible
		09/12/2017	1,057.94	----	----	Inaccessible
		12/14/2017	1,057.94	----	----	Inaccessible
	03N19W29F06S	03/13/2017	855.20	252.50	602.70	
		06/12/2017	855.20	264.00	591.20	
		09/12/2017	855.20	270.50	584.70	
		12/14/2017	855.20	164.20	691.00	
	03N19W29K04S	03/30/2017	843.32	----	----	Inaccessible
		06/12/2017	843.32	----	----	Inaccessible
		09/12/2017	843.32	----	----	Inaccessible
		12/15/2017	843.32	----	----	Inaccessible
	03N20W23L01S	03/10/2017	970.30	788.97	181.33	
		06/14/2017	970.30	786.30	184.00	
		09/12/2017	970.30	----	----	Pumping
		12/14/2017	970.30	769.60	200.70	
	03N20W25H01S	03/13/2017	823.84	----	----	Pumping
		06/12/2017	823.84	----	----	Pumping
		09/12/2017	823.84	219.90	603.94	
		12/14/2017	823.84	223.60	600.24	

* - Denotes basin key water level well.
** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Las Posas - East	03N20W26R03S*	03/10/2017	717.81	570.17	147.64	
		06/12/2017	717.81	----	----	Pumping
		09/12/2017	717.81	585.60	132.21	
		12/14/2017	717.81	586.40	131.41	
	03N20W27H03S	03/10/2017	840.25	635.40	204.85	
		06/06/2017	840.25	635.30	204.95	
		09/12/2017	840.25	641.70	198.55	
		12/13/2017	840.25	647.10	193.15	
	03N20W34G01S	03/10/2017	680.48	538.30	142.18	
		06/12/2017	680.48	539.40	141.08	
		09/11/2017	680.48	546.90	133.58	
		12/13/2017	680.48	554.20	126.28	
	03N20W35R02S	03/10/2017	572.67	421.90	150.77	
		06/12/2017	572.67	417.40	155.27	
		09/12/2017	572.67	----	----	Transducer in way
		12/13/2017	572.67	----	----	Transducer in way
	03N20W35R03S	03/10/2017	572.67	422.00	150.67	
		06/12/2017	572.67	417.00	155.67	
		09/12/2017	572.67	429.30	143.37	
		12/13/2017	572.67	430.20	142.47	
	03N20W35R04S	03/10/2017	572.67	309.57	263.10	
		06/12/2017	572.67	309.80	262.87	
		09/12/2017	572.67	310.70	261.97	
		12/13/2017	572.67	307.30	265.37	
Las Posas - South	02N19W05K01S*	03/10/2017	497.80	29.70	468.10	
		06/12/2017	497.80	28.30	469.50	
		09/12/2017	497.80	28.60	469.20	
		12/14/2017	497.80	29.10	468.70	
	02N19W08H02S	03/10/2017	494.87	24.90	469.97	
		09/12/2017	494.87	----	----	Pumping
		12/15/2017	494.87	25.70	469.17	
		03/10/2017	497.80	29.70	468.10	
Las Posas - West	02N20W05D01S	03/23/2017	569.00	700.55	-131.55	
		09/12/2017	569.00	----	----	Inaccessible
		12/14/2017	569.00	605.60	-36.60	
	02N20W06R01S	03/09/2017	461.19	591.90	-130.71	
		06/12/2017	461.19	598.10	-136.91	
		09/11/2017	461.19	----	----	Pumping
		12/13/2017	461.19	608.20	-147.01	
	02N20W07R03S	03/13/2017	395.00	543.90	-148.90	
		06/12/2017	395.00	540.30	-145.30	
		09/11/2017	395.00	----	----	Pumping
		12/13/2017	395.00	540.30	-145.30	
	02N21W08H03S	03/13/2017	334.21	390.70	-56.49	
		06/06/2017	334.21	398.10	-63.89	
		09/11/2017	334.21	----	----	Pumping
		12/26/2017	334.21	436.60	-102.39	

* - Denotes basin key water level well.
** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Las Posas - West	02N21W09D02S	03/13/2017	323.75	219.00	104.75	
		06/06/2017	323.75	236.00	87.75	
		09/11/2017	323.75	252.20	71.55	
		12/19/2017	323.75	252.21	71.54	
	02N21W10G03S	03/09/2017	381.01	385.80	-4.79	
		06/06/2017	381.01	412.40	-31.39	
		09/11/2017	381.01	418.20	-37.19	
		12/13/2017	381.01	----	----	Pumping
	02N21W11J03S	03/09/2017	379.39	440.60	-61.21	
		06/06/2017	379.39	442.30	-62.91	
		10/01/2017	379.39	444.30	-64.91	
		12/13/2017	379.39	453.30	-73.91	
	02N21W11J04S	03/09/2017	379.39	404.33	-24.94	
		06/06/2017	379.39	----	----	Can’t get cap off
		10/01/2017	379.39	404.10	-24.71	
		12/13/2017	379.39	405.50	-26.11	
	02N21W11J05S	03/09/2017	379.39	207.60	171.79	
		06/06/2017	379.39	210.60	168.79	
		10/01/2017	379.39	216.30	163.09	
		12/13/2017	379.39	218.90	160.49	
	02N21W11J06S	03/09/2017	379.39	183.50	195.89	
		06/06/2017	379.39	180.00	199.39	
		10/01/2017	379.39	182.90	196.49	
		12/13/2017	379.39	184.30	195.09	
	02N21W12H01S*	03/23/2017	417.89	499.80	-81.91	
		06/12/2017	417.89	----	----	Inaccessible
		09/28/2017	417.89	----	----	Inaccessible
		12/15/2017	417.89	----	----	Inaccessible
	02N21W15M03S	03/09/2017	263.87	314.20	-50.33	
		06/06/2017	263.87	313.70	-49.83	
		09/11/2017	263.87	329.90	-66.03	
		12/13/2017	263.87	332.10	-68.23	
	02N21W16J01S	03/09/2017	259.90	13.70	246.20	
		06/06/2017	259.90	16.80	243.10	
		09/08/2017	259.90	16.40	243.50	
		12/13/2017	259.90	16.90	243.00	
	03N20W32H03S	03/10/2017	673.00	864.60	-191.60	
		06/06/2017	673.00	----	----	Pumping
		09/11/2017	673.00	----	----	Pumping
		12/13/2017	673.00	881.40	-208.40	
	03N21W35P02S	03/09/2017	564.11	508.30	55.81	
		06/06/2017	564.11	515.40	48.71	
		09/11/2017	564.11	525.80	38.31	
		12/13/2017	564.11	532.00	32.11	
Little Cuddy Valley	08N20W08B01S	03/29/2017	5,300.00	11.10	5,288.90	
		10/03/2017	5,300.00	14.70	5,285.30	

* - Denotes basin key water level well.
** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Lockwood Valley	08N21W33R03S	03/29/2017	5,150.00	50.00	5,100.00	
		10/03/2017	5,150.00	50.50	5,099.50	
	08N21W35B01S*	03/29/2017	5,029.20	----	----	Inaccessible
		10/03/2017	5,029.20	----	----	Inaccessible
	08N21W36G02S	03/29/2017	4,922.00	----	----	Inaccessible
		10/03/2017	4,922.00	33.50	4,888.50	
Mound	02N22W08P01S	03/15/2017	213.79	----	----	Inaccessible
		06/20/2017	213.79	----	----	Inaccessible
		09/19/2017	213.79	----	----	Inaccessible
		12/11/2017	213.79	----	----	Inaccessible
	02N22W09L03S	03/15/2017	251.25	197.85	53.40	
		06/20/2017	251.25	198.00	53.25	
		09/19/2017	251.25	199.05	52.20	
		12/04/2017	251.25	200.07	51.18	
	02N22W09L04S	03/15/2017	251.25	183.83	67.42	
		06/20/2017	251.25	189.20	62.05	
		09/19/2017	251.25	189.00	62.25	
		12/04/2017	251.25	192.60	58.65	
	02N22W16K01S	03/15/2017	149.37	181.96	-32.59	
		06/20/2017	149.37	183.70	-34.33	
		09/19/2017	149.37	188.19	-38.82	
		12/04/2017	149.37	189.63	-40.26	
	02N23W13K03S	03/15/2017	68.71	----	----	Inaccessible
		06/20/2017	68.71	----	----	Pumping
		09/20/2017	68.71	----	----	Pumping
		12/11/2017	68.71	----	----	Pumping
Ojai Valley	04N22W04Q01S	03/08/2017	1,045.50	66.90	978.60	
		06/05/2017	1,045.50	----	----	Pumping
		09/07/2017	1,045.50	----	----	Pumping
		12/28/2017	1,045.50	----	----	Pumping
	04N22W05D03S	03/08/2017	895.97	202.60	693.37	
		06/05/2017	895.97	188.70	707.27	
		09/14/2017	895.97	203.40	692.57	
		12/28/2017	895.97	214.99	680.98	
	04N22W05H04S	03/08/2017	950.22	293.60	656.62	
		06/05/2017	950.22	----	----	Tape Hung Up
		09/14/2017	950.22	----	----	Tape Hung Up
		12/18/2017	950.22	----	----	Tape Hung Up
	04N22W05L08S*	03/08/2017	892.09	234.10	657.99	
		06/02/2017	892.09	181.40	710.69	
		09/07/2017	892.09	189.50	702.59	
		12/28/2017	892.09	206.30	685.79	
	04N22W05M01S	03/08/2017	843.47	186.80	656.67	
		06/05/2017	843.47	139.90	703.57	
		09/14/2017	843.47	157.00	686.47	
		12/28/2017	843.47	168.20	675.27	

* - Denotes basin key water level well.
** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Ojai Valley	04N22W06D01S	03/07/2017	846.66	135.20	711.46	
		06/13/2017	846.66	111.70	734.96	
		09/06/2017	846.66	118.90	727.76	
		12/28/2017	846.66	131.00	715.66	
	04N22W06D05S	03/08/2017	853.21	129.50	723.71	
		06/05/2017	853.21	123.70	729.51	
		09/07/2017	853.21	----	----	Pumping
		12/29/2017	853.21	151.60	701.61	
	04N22W06K03S	01/20/2017	801.80	195.00	606.80	
		06/15/2017	801.80	142.20	659.60	
		08/30/2017	801.80	151.20	650.60	
		12/14/2017	801.80	160.40	641.40	
	04N22W06K12S	03/08/2017	812.70	161.60	651.10	
		06/07/2017	812.70	144.70	668.00	
		09/06/2017	812.70	163.80	648.90	
		12/28/2017	812.70	176.70	636.00	
	04N22W06M01S	03/07/2017	794.78	97.20	697.58	
		06/05/2017	794.78	86.80	707.98	
		09/06/2017	794.78	87.90	706.88	
		12/28/2017	794.78	91.10	703.68	
	04N22W07B02S	03/08/2017	773.77	126.00	647.77	
		06/01/2017	773.77	109.30	664.47	
		09/07/2017	773.77	110.90	662.87	
		12/28/2017	773.77	124.00	649.77	
	04N22W07G01S	03/07/2017	771.20	29.70	741.50	
		06/01/2017	771.20	31.10	740.10	
		09/05/2017	771.20	33.90	737.30	
		12/28/2017	771.20	35.80	735.40	
	04N22W08B02S	03/08/2017	870.57	189.40	681.17	
		06/13/2017	870.57	153.90	716.67	
		09/07/2017	870.57	161.00	709.57	
		12/28/2017	870.57	179.70	690.87	
	04N23W01K02S	03/07/2017	786.38	62.20	724.18	
		06/05/2017	786.38	60.60	725.78	
		09/06/2017	786.38	56.00	730.38	
		12/28/2017	786.38	55.10	731.28	
	04N23W02K01S	03/07/2017	869.49	1.90	867.59	
		06/13/2017	869.49	2.90	866.59	
		09/07/2017	869.49	3.70	865.79	
		12/18/2017	869.49	----	----	Inaccessible
	04N23W12H02S	03/07/2017	716.61	48.10	668.51	
		06/13/2017	716.61	43.20	673.41	
		09/07/2017	716.61	45.40	671.21	
		12/18/2017	716.61	----	----	Inaccessible

* - Denotes basin key water level well.
** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Ojai Valley	04N23W12L02S	03/07/2017	682.50	----	----	Inaccessible
		06/01/2017	682.50	----	----	Inaccessible
		09/05/2017	682.50	----	----	Inaccessible
		12/18/2017	682.50	----	----	Inaccessible
	05N22W32J02S	03/08/2017	1,139.80	53.50	1,086.30	
		06/02/2017	1,139.80	56.70	1,083.10	
		09/07/2017	1,139.80	58.50	1,081.30	
		12/28/2017	1,139.80	57.20	1,082.60	
Oxnard Plain Forebay	02N21W07P04S	03/14/2017	138.78	----	----	Pumping
		06/12/2017	138.78	----	----	Inaccessible
		09/11/2017	138.78	----	----	Inaccessible
		12/18/2017	138.78	----	----	Pumping
	02N22W26E01S	03/20/2017	86.96	110.05	-23.09	
		06/27/2017	86.96	110.10	-23.14	
		09/21/2017	86.96	112.26	-25.30	
		12/12/2017	86.96	115.35	-28.39	
Oxnard Plain Pressure	01N21W04N02S	03/16/2017	43.33	125.60	-82.27	
		06/21/2017	43.33	153.90	-110.57	
		09/19/2017	43.33	172.52	-129.19	
		12/08/2017	43.33	179.25	-135.92	
	01N21W06L04S	03/16/2017	47.85	----	----	Inaccessible
		06/22/2017	47.85	69.50	-21.65	
		09/20/2017	47.85	74.60	-26.75	
		12/08/2017	47.85	77.82	-29.97	
	01N21W07H01S*	03/16/2017	40.87	55.85	-14.98	
		06/22/2017	40.87	57.77	-16.90	
		09/20/2017	40.87	63.58	-22.71	
		12/08/2017	40.87	69.00	-28.13	
	01N21W08N03S	03/16/2017	31.50	104.36	-72.86	
		06/22/2017	31.50	137.67	-106.17	
		09/20/2017	31.50	158.33	-126.83	
		12/14/2017	31.50	167.33	-135.83	
	01N21W09C04S	03/16/2017	39.96	111.12	-71.16	
		06/21/2017	39.96	142.40	-102.44	
		09/19/2017	39.96	162.17	-122.21	
		12/08/2017	39.96	177.66	-137.70	
	01N21W16M01S	03/16/2017	22.79	97.60	-74.81	
		06/21/2017	22.79	132.08	-109.29	
		09/20/2017	22.79	161.81	-139.02	
		12/06/2017	22.79	162.83	-140.04	
	01N21W16P03S	03/16/2017	19.39	100.20	-80.81	
		06/21/2017	19.39	132.17	-112.78	
		09/20/2017	19.39	161.50	-142.11	
		12/06/2017	19.39	163.17	-143.78	

* - Denotes basin key water level well.
** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Oxnard Plain Pressure	01N21W17D02S	03/16/2017	28.21	43.60	-15.39	
		06/21/2017	28.21	47.50	-19.29	
		09/20/2017	28.21	49.75	-21.54	
		12/14/2017	28.21	52.75	-24.54	
	01N21W20N07S	03/16/2017	16.98	----	----	Inaccessible
		06/21/2017	16.98	----	----	Inaccessible
		09/20/2017	16.98	----	----	Inaccessible
		12/08/2017	16.98	----	----	Inaccessible
	01N21W21N01S	03/16/2017	15.74	64.52	-48.78	
		06/21/2017	15.74	89.47	-73.73	
		09/20/2017	15.74	107.60	-91.86	
		12/08/2017	15.74	122.76	-107.02	
	01N21W28D01S	03/16/2017	14.75	78.38	-63.63	
		06/23/2017	14.75	111.27	-96.52	
		09/20/2017	14.75	----	----	Pumping
		12/08/2017	14.75	----	----	Pumping
	01N21W29B03S	03/30/2017	18.19	29.75	-11.56	
		06/21/2017	18.19	----	----	Gate Locked
		09/20/2017	18.19	----	----	Pumping
		12/12/2017	18.19	40.18	-21.99	
	01N21W32K01S*	03/27/2017	10.00	65.90	-55.90	
		06/12/2017	10.00	94.60	-84.60	
		09/18/2017	10.00	116.40	-106.40	
	01N22W12N03S	03/17/2017	38.46	107.60	-69.14	
		06/22/2017	38.46	----	----	Pumping
		09/21/2017	38.46	126.08	-87.62	
		12/08/2017	38.46	136.75	-98.29	
	01N22W12R01S	03/16/2017	34.00	84.90	-50.90	
		06/22/2017	34.00	103.35	-69.35	
		09/20/2017	34.00	112.67	-78.67	
		12/08/2017	34.00	115.27	-81.27	
	01N22W14K01S	03/16/2017	33.97	55.33	-21.36	
		06/21/2017	33.97	55.27	-21.30	
		09/20/2017	33.97	59.70	-25.73	
		12/08/2017	33.97	----	----	Can't get tape in casing
	01N22W21B03S	03/16/2017	15.28	45.20	-29.92	
		06/21/2017	15.28	50.73	-35.45	
		09/20/2017	15.28	55.49	-40.21	
		12/11/2017	15.28	57.60	-42.32	
	01N22W24C02S	03/16/2017	29.10	48.27	-19.17	
		06/21/2017	29.10	43.67	-14.57	
		09/20/2017	29.10	47.67	-18.57	
		12/08/2017	29.10	53.25	-24.15	
	01N22W26K03S	03/16/2017	13.06	68.70	-55.64	
		06/21/2017	13.06	----	----	Pumping
		09/20/2017	13.06	----	----	Pumping
		12/08/2017	13.06	----	----	Pumping

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** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Oxnard Plain Pressure	01N22W26M03S	03/16/2017	13.00	66.42	-53.42	
		06/21/2017	13.00	----	----	Pumping
		09/20/2017	13.00	----	----	Pumping
		12/08/2017	13.00	----	----	Pumping
	01N22W36B02S	03/17/2017	11.50	72.95	-61.45	
		06/21/2017	11.50	----	----	Pumping
		09/20/2017	11.50	----	----	Pumping
		12/08/2017	11.50	----	----	Pumping
	02N21W18H03S	03/20/2017	118.41	122.50	-4.09	
		06/26/2017	118.41	125.10	-6.69	
		09/25/2017	118.41	122.70	-4.29	
		12/18/2017	118.41	125.50	-7.09	
	02N21W18H12S	03/20/2017	117.88	155.80	-37.92	
		06/26/2017	117.88	171.70	-53.82	
		09/25/2017	117.88	177.80	-59.92	
		12/18/2017	117.88	196.50	-78.62	
	02N21W19A03S	03/09/2017	102.70	127.80	-25.10	
		06/06/2017	102.70	144.30	-41.60	
		09/08/2017	102.70	157.70	-55.00	
		12/13/2017	102.70	169.30	-66.60	
	02N21W19B02S	03/17/2017	101.80	119.83	-18.03	
		06/22/2017	101.80	----	----	Pumping
		09/19/2017	101.80	117.42	-15.62	
		12/18/2017	101.80	119.33	-17.53	
	02N21W20F02S	03/09/2017	113.36	169.80	-56.44	
		06/06/2017	113.36	186.30	-72.94	
		09/11/2017	113.36	203.10	-89.74	
		12/18/2017	113.36	212.50	-99.14	
	02N21W20M06S	03/17/2017	96.00	165.83	-69.83	
		03/17/2017	92.09	----	----	Pumping
		06/22/2017	92.09	170.90	-78.81	
		09/19/2017	92.09	----	----	Pumping
	02N21W31P02S	12/06/2017	92.09	----	----	Pumping
		03/16/2017	57.75	77.30	-19.55	
		06/22/2017	57.75	77.82	-20.07	
		09/20/2017	57.75	80.00	-22.25	
	02N21W31P03S	12/08/2017	57.75	83.25	-25.50	
		03/16/2017	55.17	128.30	-73.13	
		06/22/2017	55.17	153.83	-98.66	
		09/20/2017	55.17	163.09	-107.92	
	02N22W24P01S	12/08/2017	55.17	170.08	-114.91	
		03/17/2017	94.30	----	----	Pumping
		06/22/2017	94.30	120.33	-26.03	
		09/19/2017	94.30	124.85	-30.55	
	02N22W30K01S	12/06/2017	94.30	129.67	-35.37	
		03/16/2017	42.38	66.80	-24.40	
		06/21/2017	42.38	70.33	-27.95	
		09/20/2017	42.38	72.50	-30.12	

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** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Oxnard Plain Pressure	02N22W31A01S	03/16/2017	42.30	0.00	42.30	Inaccessible
		06/21/2017	42.30	67.00	-24.70	
		09/20/2017	42.30	68.90	-26.60	
		12/11/2017	42.30	73.35	-31.05	
	02N22W32Q03S	03/16/2017	40.10	----	----	Pumping
		06/21/2017	40.10	66.00	-25.90	
		09/20/2017	40.10	0.00	40.10	Pumping
		12/11/2017	40.10	----	----	
	02N23W25G02S	03/16/2017	23.22	----	----	Inaccessible
		06/21/2017	23.22	----	----	Inaccessible
		09/20/2017	23.22	----	----	Inaccessible
		12/11/2017	23.22	----	----	Inaccessible
	02N23W36C04S	03/16/2017	27.73	50.00	-22.27	
		06/21/2017	27.73	54.03	-26.30	
		09/20/2017	27.73	56.17	-28.44	
		12/11/2017	27.73	57.00	-29.27	
Piru	04N18W19R01S	03/15/2017	655.63	149.00	506.63	
		06/19/2017	655.63	132.48	523.15	
		09/18/2017	655.63	121.50	534.13	
		12/04/2017	655.63	131.80	523.83	
	04N18W20R01S	03/15/2017	661.29	----	----	Inaccessible
		06/19/2017	661.29	----	----	Inaccessible
		09/18/2017	661.29	----	----	Inaccessible
		12/04/2017	661.29	----	----	Inaccessible
	04N18W28C02S	03/15/2017	676.44	----	----	Inaccessible
		06/19/2017	676.44	----	----	Inaccessible
		09/18/2017	676.44	----	----	Inaccessible
		12/04/2017	676.44	----	----	Inaccessible
	04N18W30J05S	03/15/2017	623.30	107.20	516.10	
		06/19/2017	623.30	86.50	536.80	
		09/18/2017	623.30	82.90	540.40	
		12/04/2017	623.30	87.47	535.83	
	04N19W25C02S*	03/15/2017	611.09	122.80	488.29	
		06/19/2017	611.09	97.30	513.79	
		09/18/2017	611.09	95.60	515.49	
		12/04/2017	611.09	98.50	512.59	
	04N19W25K04S	03/15/2017	593.97	45.20	548.77	
		06/19/2017	593.97	----	----	Pumping
		09/18/2017	593.97	46.00	547.97	
		12/04/2017	593.97	----	----	Pumping
	04N19W26P01S	03/15/2017	563.00	77.80	485.20	
		06/19/2017	563.00	----	----	Pumping
		09/18/2017	563.00	----	----	Pumping
		12/04/2017	563.00	----	----	Pumping
	04N19W34K01S	03/15/2017	519.51	44.50	475.01	
		06/19/2017	519.51	----	----	Temporarily Inaccessible
		09/18/2017	519.51	39.20	480.31	
		12/04/2017	519.51	----	----	Pumping
	04N19W35L02S	03/15/2017	541.08	57.64	483.44	
		06/19/2017	541.08	29.20	511.88	
		09/18/2017	541.08	29.65	511.43	
		12/04/2017	541.08	30.00	511.08	

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** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Pleasant Valley	01N21W01M02S	04/03/2017	96.17	174.50	-78.33	
		06/15/2017	96.17	149.00	-52.83	
		09/20/2017	96.17	231.10	-134.93	
		12/12/2017	96.17	252.29	-156.12	
	01N21W02J02S	03/16/2017	89.51	104.15	-14.64	
		06/15/2017	89.51	91.00	-1.49	
		09/20/2017	89.51	110.50	-20.99	
		12/06/2017	89.51	111.00	-21.49	
	01N21W02P01S	03/16/2017	67.98	110.30	-42.32	
		06/15/2017	67.98	130.83	-62.85	
		09/20/2017	67.98	154.33	-86.35	
		12/06/2017	67.98	158.07	-90.09	
	01N21W03C01S*	03/16/2017	72.28	162.70	-90.42	
		06/21/2017	72.28	181.58	-109.30	
		09/20/2017	72.28	214.00	-141.72	
		12/06/2017	72.28	204.50	-132.22	
	01N21W04K01S	03/16/2017	47.52	116.57	-69.05	
		06/21/2017	47.52	150.55	-103.03	
		09/20/2017	47.52	----	----	Pumping
		12/08/2017	47.52	----	----	Pumping
	01N21W09J03S	03/30/2017	30.56	105.90	-75.34	
		06/23/2017	30.56	134.20	-103.64	
		09/29/2017	30.56	161.30	-130.74	
		12/13/2017	30.56	174.00	-143.44	
	01N21W10G01S	03/16/2017	38.72	109.10	-70.38	
		06/21/2017	38.72	146.58	-107.86	
		09/20/2017	38.72	177.10	-138.38	
		12/08/2017	38.72	----	----	Pumping
	01N21W14A01S	03/17/2017	50.11	18.70	31.41	
		06/21/2017	50.11	21.83	28.28	
		09/19/2017	50.11	24.00	26.11	
		12/06/2017	50.11	25.48	24.63	
	01N21W15H01S	03/17/2017	33.17	14.67	18.50	
		06/21/2017	33.17	17.75	15.42	
		09/19/2017	33.17	19.17	14.00	
		12/06/2017	33.17	20.17	13.00	
	01N21W16A04S	03/16/2017	25.69	95.05	-69.36	
		06/21/2017	25.69	117.60	-91.91	
		09/20/2017	25.69	----	----	Pumping
		12/06/2017	25.69	----	----	Pumping
	02N20W19M05S	03/17/2017	200.47	184.20	16.27	
		06/15/2017	200.47	186.47	14.00	
		09/19/2017	200.47	187.35	13.12	
		12/06/2017	200.47	189.70	10.77	
	02N20W28G02S	03/16/2017	170.60	----	----	Inaccessible
		06/22/2017	170.60	----	----	Inaccessible
		09/20/2017	170.60	----	----	Inaccessible
		12/08/2017	170.60	----	----	Inaccessible

* - Denotes basin key water level well.
** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Pleasant Valley	02N21W33P02S	03/16/2017	64.63	101.25	-36.62	
		06/21/2017	64.63	0.00	64.63	Inaccessible
		09/20/2017	64.63	0.00	64.63	Inaccessible
		12/08/2017	64.63	0.00	64.63	Inaccessible
	02N21W35M02S	03/16/2017	90.60	164.30	-73.70	
		06/15/2017	90.60	191.05	-100.45	
		09/20/2017	90.60	206.76	-116.16	
		12/06/2017	90.60	210.82	-120.22	
	02N21W36N01S	03/16/2017	111.18	110.75	0.43	
		06/15/2017	111.18	102.46	8.72	
		09/20/2017	111.18	0.00	111.18	Pumping
		12/08/2017	111.18	119.65	-8.47	
Santa Paula	02N22W02C01S*	03/15/2017	184.38	49.20	135.18	
		06/20/2017	184.38	51.24	133.14	
		09/19/2017	184.38	54.05	130.33	
		12/04/2017	184.38	56.80	127.58	
	02N22W03K02S	03/15/2017	248.75	137.27	111.48	
		06/20/2017	248.75	136.25	112.50	
		09/19/2017	248.75	139.49	109.26	
		12/04/2017	248.75	143.62	105.13	
	02N22W03M02S	03/16/2017	291.50	214.60	76.90	
		06/20/2017	291.50	210.45	81.05	
		09/19/2017	291.50	211.83	79.67	
		12/12/2017	291.50	1,214.84	-923.34	
	03N21W09K02S	03/20/2017	362.18	177.52	184.66	
		06/20/2017	362.18	179.80	182.38	
		09/19/2017	362.18	184.08	178.10	
		12/04/2017	362.18	186.50	175.68	
	03N21W17Q01S	03/15/2017	283.35	106.00	177.35	
		06/20/2017	283.35	0.00	283.35	Pumping
		09/19/2017	283.35	112.00	171.35	
		12/12/2017	283.35	118.02	165.33	
	03N21W19R01S	03/15/2017	235.39	71.70	163.69	
		06/20/2017	235.39	0.00	235.39	Inaccessible
		09/19/2017	235.39	0.00	235.39	Pumping
		12/04/2017	235.39	0.00	235.39	Pumping
	03N21W30F01S	03/16/2017	221.21	76.15	145.06	Pumping
		06/20/2017	221.21	0.00	221.21	Pumping
		09/19/2017	221.21	81.08	140.13	
		12/04/2017	221.21	0.00	221.21	Pumping
	03N22W36K05S	03/15/2017	180.89	45.00	135.89	
		06/20/2017	180.89	46.95	133.94	
		09/19/2017	180.89	49.50	131.39	
		12/04/2017	180.89	51.52	129.37	

* - Denotes basin key water level well.
** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Sherwood	01N19W19L02S	03/14/2017	1,082.00	0.00	1,082.00	Tape Hung Up
		06/08/2017	1,082.00	292.90	789.10	
		09/13/2017	1,082.00	304.50	777.50	
		12/19/2017	1,082.00	0.00	1,082.00	Pumping
	01N19W30A01S	03/14/2017	999.98	49.50	950.48	
		06/08/2017	999.98	45.40	954.58	
		09/13/2017	999.98	50.20	949.78	
		12/19/2017	999.98	52.70	947.28	
Simi Valley	02N18W04R02S	03/20/2017	870.00	53.42	816.58	
		06/15/2017	870.00	49.95	820.05	
		09/21/2017	870.00	54.17	815.83	
		12/08/2017	870.00	53.04	816.96	
	02N18W10A02S	03/31/2017	926.40	82.10	844.30	
		06/30/2017	926.40	84.60	841.80	
		09/28/2017	926.40	89.30	837.10	
Thousand Oaks	01N19W14K04S	03/14/2017	908.79	22.20	886.59	
		06/08/2017	908.79	22.80	885.99	
		09/13/2017	908.79	24.10	884.69	
		12/19/2017	908.79	26.00	882.79	
Tierra Rejada Valley	02N19W10R01S	03/20/2017	619.29	133.35	485.94	
		06/15/2017	619.29	138.00	481.29	
		09/21/2017	619.29	140.42	478.87	
		12/12/2017	619.29	144.40	474.89	
	02N19W12M03S	03/20/2017	718.95	96.45	622.50	
		06/15/2017	718.95	96.50	622.45	
		09/21/2017	718.95	96.92	622.03	
		12/08/2017	718.95	112.50	606.45	
	02N19W14P01S	03/20/2017	678.12	27.95	650.17	
		06/15/2017	678.12	0.00	678.12	Pumping
		09/21/2017	678.12	31.25	646.87	
		12/08/2017	678.12	34.00	644.12	
U N D E F I N E D	01N19W02L01S	03/14/2017	945.42	48.60	896.82	
		06/08/2017	945.42	47.70	897.72	
		09/13/2017	945.42	47.20	898.22	
		12/19/2017	945.42	48.10	897.32	
	01N19W15E01S	03/14/2017	903.53	19.90	883.63	
		06/08/2017	903.53	21.40	882.13	
		09/13/2017	903.53	25.20	878.33	
		12/19/2017	903.53	26.60	876.93	
	01N20W24H02S	03/14/2017	1,126.54	123.60	1,002.94	
		06/08/2017	1,126.54	0.00	1,126.54	Tape Hung Up
		09/13/2017	1,126.54	0.00	1,126.54	Tape Hung Up
		12/19/2017	1,126.54	0.00	1,126.54	Tape Hung Up
	02N20W18A01S	03/09/2017	375.60	505.23	-129.63	
		06/12/2017	375.60	505.60	-130.00	
		09/13/2017	375.60	513.10	-137.50	
	02N21W13A01S	12/14/2017	375.60	514.90	-139.30	
		03/09/2017	440.00	552.30	-112.30	
		06/14/2017	440.00	559.20	-119.20	
		09/28/2017	440.00	563.80	-123.80	

* - Denotes basin key water level well.
** - feet msl

*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Upper Ojai	04N22W09Q02S	03/06/2017	1,278.80	10.30	1,268.50	
		06/02/2017	1,278.80	16.70	1,262.10	
		09/28/2017	1,278.80	19.80	1,259.00	
		12/18/2017	1,278.80	0.00	1,278.80	Inaccessible
	04N22W10K02S	03/06/2017	1,325.90	16.10	1,309.80	
		06/02/2017	1,325.90	21.30	1,304.60	
		09/28/2017	1,325.90	29.20	1,296.70	
		12/18/2017	1,325.90	0.00	1,325.90	Inaccessible
	04N22W11P02S	03/06/2017	1,420.60	11.10	1,409.50	
		06/05/2017	1,420.60	17.80	1,402.80	
		09/28/2017	1,420.60	23.80	1,396.80	
		12/18/2017	1,420.60	0.00	1,420.60	Inaccessible
	04N22W12F04S	03/02/2017	1,616.90	136.60	1,480.30	
		06/02/2017	1,616.90	137.80	1,479.10	
		09/28/2017	1,616.90	148.30	1,468.60	
		12/18/2017	1,616.90	0.00	1,616.90	Inaccessible
Ventura River - Lower	03N23W08B07S	03/06/2017	239.19	13.40	225.79	
		06/01/2017	239.19	13.80	225.39	
		09/05/2017	239.19	14.30	224.89	
		12/18/2017	239.19	0.00	239.19	Inaccessible
	03N23W32Q03S	03/08/2017	50.86	24.80	26.06	
		06/28/2017	50.86	30.00	20.86	
		09/28/2017	50.86	0.00	50.86	Pumping
		12/18/2017	50.86	0.00	50.86	Inaccessible
	03N23W32Q07S	03/08/2017	46.10	20.10	26.00	
		06/28/2017	46.10	27.10	19.00	
		09/28/2017	46.10	0.00	46.10	Pumping
		12/18/2017	46.10	0.00	46.10	Inaccessible
Ventura River - Upper	03N23W05B01S	03/06/2017	293.20	22.10	271.10	
		06/01/2017	293.20	23.30	269.90	
		09/05/2017	293.20	28.80	264.40	
		12/28/2017	293.20	40.40	252.80	
	03N23W08B02S	03/06/2017	249.30	0.00	249.30	Inaccessible
		06/01/2017	249.30	0.00	249.30	Inaccessible
		09/05/2017	249.30	0.00	249.30	Inaccessible
		12/18/2017	249.30	0.00	249.30	Inaccessible
	04N23W03M01S	03/07/2017	760.85	90.00	670.85	
		06/07/2017	760.85	93.10	667.75	
		09/06/2017	760.85	99.70	661.15	
		12/29/2017	760.85	104.60	656.25	
	04N23W04J01S	03/07/2017	713.04	34.10	678.94	
		06/07/2017	713.04	52.20	660.84	
		09/06/2017	713.04	69.90	643.14	
		12/18/2017	713.04	0.00	713.04	Inaccessible

* - Denotes basin key water level well.
** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Ventura River - Upper	04N23W09B01S	03/07/2017	662.30	13.10	649.20	
		06/07/2017	662.30	31.40	630.90	
		09/06/2017	662.30	62.20	600.10	
		12/29/2017	662.30	67.10	595.20	
	04N23W14M04S	03/07/2017	554.50	0.00	554.50	F
		06/05/2017	554.50	0.00	554.50	F
		09/05/2017	554.50	0.00	554.50	F
		12/18/2017	554.50	0.00	554.50	F
	04N23W15A02S	03/06/2017	680.90	94.05	586.85	
		06/01/2017	680.90	93.60	587.30	
		09/05/2017	680.90	96.80	584.10	
		12/28/2017	680.90	95.20	585.70	
	04N23W15D02S	03/06/2017	634.30	154.90	479.40	
		06/01/2017	634.30	119.10	515.20	
		09/05/2017	634.30	123.10	511.20	
		12/28/2017	634.30	136.20	498.10	
	04N23W16C04S	03/06/2017	569.10	34.10	535.00	
		06/01/2017	569.10	34.20	534.90	
		09/05/2017	569.10	51.90	517.20	
		12/29/2017	569.10	69.10	500.00	
	04N23W16P01S	03/06/2017	619.89	72.70	547.19	
		06/01/2017	619.89	72.10	547.79	
		09/05/2017	619.89	72.30	547.59	
		12/29/2017	619.89	72.70	547.19	
	04N23W20A01S	03/06/2017	488.89	7.60	481.29	
		06/01/2017	488.89	9.20	479.69	
		09/05/2017	488.89	25.10	463.79	
		12/18/2017	488.89	0.00	488.89	Inaccessible
	04N23W28G01S	03/07/2017	402.37	8.70	393.67	
		06/05/2017	402.37	17.90	384.47	
		09/07/2017	402.37	28.30	374.07	
		12/18/2017	402.37	0.00	402.37	Inaccessible
	04N23W29F02S	03/06/2017	396.58	11.00	385.58	
		06/01/2017	396.58	15.00	381.58	
		09/05/2017	396.58	29.30	367.28	
		12/29/2017	396.58	60.50	336.08	

* - Denotes basin key water level well.
** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Ventura River - Upper	04N23W33M03S	03/06/2017	331.80	12.10	319.70	
		06/01/2017	331.80	13.50	318.30	
		09/05/2017	331.80	20.20	311.60	
		12/28/2017	331.80	22.20	309.60	
	04N24W13J04S	03/07/2017	626.45	5.80	620.65	
		06/13/2017	626.45	6.50	619.95	
		09/07/2017	626.45	11.40	615.05	
		12/18/2017	626.45	0.00	626.45	Inaccessible
	04N24W13N01S	03/07/2017	642.12	0.00	642.12	Inaccessible
		06/13/2017	642.12	2.50	639.62	
		09/07/2017	642.12	4.30	637.82	
		12/18/2017	642.12	0.00	642.12	Inaccessible
	05N23W33B03S	03/07/2017	829.00	22.20	806.80	
		06/13/2017	829.00	24.50	804.50	
		09/06/2017	829.00	0.00	829.00	Pumping
		12/18/2017	829.00	0.00	829.00	Inaccessible
	05N23W33G01S	03/07/2017	816.21	19.00	797.21	
		06/13/2017	816.21	0.00	816.21	Pumping
		09/06/2017	816.21	0.00	816.21	Pumping
		12/18/2017	816.21	0.00	816.21	Inaccessible

* - Denotes basin key water level well.
** - feet msl
*** - feet bgs

Appendix D – Water Quality Section

TABLES | Page

General Minerals Table D-1			
Mineral	Abbreviation	Reported Units	Laboratory Analytical Method
Boron	B	mg/l	EPA 200.7
Bicarbonate	HCO_3^-	mg/l	SM23320B
Calcium	Ca	mg/l	EPA 200.7
Copper	Cu	µg/l	EPA 200.7
Carbonate	CO_3^{2-}	mg/l	SM23320B
Chloride	Cl^-	mg/l	EPA 300.0
Electrical Conductivity	eC	µmhos/cm	SM2510B
Fluoride	F^-	mg/l	EPA 300.0
Iron	Fe	µg/l	EPA 200.7
Potassium	K	mg/l	EPA 200.7
Magnesium	Mg	mg/l	EPA 200.7
Manganese	Mn	µg/l	EPA 200.7
Nitrate	NO_3^-	mg/l	SM4500NO3F
Sodium	Na	mg/l	EPA 200.7
Sulfate	SO_4^{2-}	mg/l	EPA 300.0
Total Dissolved Solids	TDS	mg/l	EPA 200.7
Zinc	Zn	µg/l	EPA 200.7
pH	pH	units	SM4500-H B

Table D-1 General Minerals

GW Basin	SWN	Date	B	HCO_3^-	Ca	CO_3^{2-}	Cl^-	Cu	E C	F^-	Fe	K	Mg	Mn	NO_3^-	Na	SO_4^{2-}	TDS	ZN	pH
Arroyo Santa Rosa	02N19W19P02S	11/29/2017	0.2	330	76	ND	107	ND	1170	0.2	ND	1	74	ND	70.2	73	114	700	ND	7.5
Arroyo Santa Rosa	02N19W20L01S	09/27/2017	0.2	310	92	ND	137	ND	1400	0.2	ND	ND	84	ND	81.1	77	168	910	60	7.4
Arroyo Santa Rosa	02N20W23G03S	09/27/2017	0.1	290	68	ND	168	ND	1250	0.2	ND	1	71	ND	72.8	83	92.1	790	ND	7.4
Arroyo Santa Rosa	02N20W23R01S	09/27/2017	0.4	270	96	ND	194	ND	1580	0.2	ND	1	76	ND	104	134	192	970	ND	7.4
Arroyo Santa Rosa	02N20W25C06S	11/29/2017	0.4	250	67	ND	153	ND	1230	0.3	ND	1	57	ND	23	113	166	720	ND	7.3
Arroyo Santa Rosa	02N20W26C02S	09/27/2017	0.4	350	100	ND	176	ND	1620	0.3	ND	1	77	ND	78.9	131	218	1040	ND	7.3
Conejo Valley	01N20W03J01S	11/14/2017	0.2	450	71	ND	74	ND	1140	0.2	ND	ND	82	ND	12.6	58	115	680	130	7.1
Cuyama Valley	08N24W17G02S	11/15/2017	0.4	270	18	ND	113	ND	1220	0.4	180	2	3	30	ND	276	190	740	ND	8.3
Cuyama Valley	09N23W30E05S	11/15/2017	0.6	360	86	ND	221	ND	1630	1	ND	3	16	ND	5.2	279	185	980	30	7.4
Fillmore	03N20W01F05S	10/26/2017	0.6	270	139	ND	58	10	1380	0.7	ND	5	51	ND	12.9	97	416	1020	60	6.8
Fillmore	03N20W02R05S	11/02/2017	1.4	410	321	ND	200	ND	3000	0.6	ND	9	98	20	38.7	273	1010	2340	ND	7.1
Fillmore	03N21W01P08S	10/26/2017	0.3	330	175	ND	56	ND	1420	0.5	ND	3	44	560	55.5	82	369	1020	130	6.9
Fillmore	04N19W31F01S	10/26/2017	0.7	260	134	ND	65	ND	1330	0.7	ND	5	52	ND	9.4	99	407	970	40	7.0
Fillmore	04N20W31H04S	11/09/2017	0.1	320	123	ND	14	ND	1200	0.5	ND	2	30	ND	13.8	37	201	640	60	7.6
Fillmore	04N20W32R03S	11/02/2017	0.5	280	164	ND	52	ND	1390	0.5	ND	3	36	20	35.8	95	400	980	ND	7.7
Fillmore	04N20W36D07S	10/30/2017	0.7	290	158	ND	67	ND	1550	0.8	ND	5	62	40	12	102	482	1130	ND	7.5
Fillmore	04N20W36P04S	10/26/2017	0.6	290	150	ND	59	ND	1450	0.7	ND	5	57	ND	27	101	448	1100	290	6.8
Gillibrand/Tapo	03N18W24C07S	11/13/2017	0.2	290	152	ND	29	ND	1110	0.2	ND	3	31	ND	11	42	322	820	ND	7.4
Gillibrand/Tapo	03N18W24H07S	11/13/2017	0.3	360	160	ND	29	ND	1210	0.4	920	3	35	120	ND	49	345	870	ND	7.2
Las Posas - East	02N20W04B01S	11/14/2017	ND	200	69	ND	14	ND	658	0.3	ND	4	21	130	ND	39	144	420	ND	7.6
Las Posas - East	02N20W04R03S	10/02/2017	0.4	190	259	ND	157	ND	1840	0.2	190	4	45	ND	ND	101	584	1350	ND	7.6
Las Posas - East	02N20W09Q07S	09/28/2017	0.7	240	197	ND	199	ND	2140	0.4	ND	5	65	230	24.6	202	667	1560	ND	7.4
Las Posas - East	02N20W16B06S	11/16/2017	0.7	260	139	ND	175	1	1920	0.4	ND	5	60	53.2	ND	199	538	1360	ND	7.5
Las Posas - East	03N19W29K06S	10/02/2017	ND	90	55	ND	48	ND	526	0.3	ND	1	9	ND	79.3	32	32.7	380	ND	7.0
Las Posas - East	03N19W29K08S	10/02/2017	0.1	200	80	ND	29	ND	695	0.4	30	3	17	ND	17.3	42	128	460	20	7.5
Las Posas - East	03N20W26R03S	11/21/2017	ND	240	124	ND	14	ND	910	0.2	ND	3	27	190	ND	45	277	630	ND	7.7
Las Posas - East	03N20W28J04S	11/21/2017	0.2	250	65	ND	42	ND	834	0.6	ND	3	31	ND	52.6	75	124	550	ND	7.4
Las Posas - East	03N20W34G01S	11/21/2017	ND	210	68	ND	12	ND	616	0.3	30	3	18	160	ND	33	129	380	ND	7.6
Las Posas - East	03N20W36P01S	11/27/2017	ND	170	50	ND	20	ND	460	0.2	ND	2	10	ND	24.4	28	39.8	290	50	8.0
Las Posas - South	02N19W07B02S	11/08/2017	1	250	109	ND	157	ND	1830	0.7	30	3	47	10	5.4	216	494	1220	ND	7.5
Las Posas - South	02N20W01Q01S	10/02/2017	0.8	290	163	ND	146	ND	1740	0.3	ND	3	43	ND	37.6	166	423	1200	30	7.2
Las Posas - South	02N20W01Q02S	11/21/2017	1	260	139	ND	165	ND	1900	0.5	ND	5	53	ND	17.7	249	548	1360	ND	7.5
Las Posas - West	02N20W06J01S	09/28/2017	0.1	220	89	ND	17	ND	914	0.4	330	5	31	160	ND	54	219	610	ND	7.6
Las Posas - West	02N20W07R03S	09/28/2017	ND	160	58	ND	18	ND	561	0.4	140	2	13	90	ND	35	106	370	ND	7.8
Las Posas - West	02N21W04Q02S	11/27/2017	0.2	270	64	ND	57	ND	871	0.4	ND	3	28	ND	29.4	88	113	540	ND	7.9
Las Posas - West	02N21W08H03S	09/28/2017	0.3	250	82	ND	68	ND	1130	0.3	ND	3	32	30	17.1	118	230	730	ND	7.6
Las Posas - West	02N21W09N01S	09/28/2017	0.3	250	65	ND	53	ND	910	0.2	110	3	19	60	ND	105	141	560	ND	7.8
Las Posas - West	02N21W10G03S	11/14/2017	0.3	330	58	ND	50	ND	978	0.2	ND	5	22	ND	9.7	134	147	580	ND	7.8
Las Posas - West	02N21W11A02S	09/28/2017	0.2	210	196	ND	127	ND	1820	0.4	ND	3	64	ND	198	96	439	1370	ND	7.4
Las Posas - West	02N21W11A03S	10/02/2017	0.2	240	63	ND	36	ND	812	0.2	190	5	25	50	ND	73	143	530	ND	7.8

Table D-1 General Minerals (cont.)

GW Basin	SWN	Date	B	HCO_3^-	Ca	CO_3^{2-}	Cl^-	Cu	E C	F^-	Fe	K	Mg	Mn	NO_3^-	Na	SO_4^{2-}	TDS	Zn	pH
Las Posas - West	02N21W12H01S	11/08/2017	0.2	220	113	ND	72	ND	1190	0.2	ND	4	37	50	18.1	76	306	810	60	7.5
Las Posas - West	02N21W15M04S	09/28/2017	0.4	270	153	ND	103	ND	1780	0.2	40	6	51	70	63.8	177	502	1300	ND	7.7
Las Posas - West	02N21W17F05S	09/28/2017	0.7	250	106	ND	66	ND	1500	0.3	250	6	40	60	ND	179	443	1060	ND	7.6
Las Posas - West	03N20W32H03S	09/28/2017	0.2	280	164	ND	24	10	1370	0.5	440	5	49	420	ND	78	449	1030	ND	7.3
Las Posas - West	03N21W35P02S	11/16/2017	0.2	260	85	ND	77	ND	1100	0.4	ND	4	39	ND	60.5	89	181	720	ND	7.5
Las Posas - West	03N21W36Q01S	09/28/2017	0.2	220	79	ND	88	ND	1120	0.5	ND	3	40	ND	69.6	84	153	720	20	7.4
Little Cuddy Valley	08N20W04N02S	11/15/2017	0.2	310	69	ND	14	50	558	0.3	ND	2	9	ND	ND	43	12.8	310	30	7.1
Lockwood Valley	08N21W23Q10S	11/15/2017	11.4	430	1	ND	8	ND	1080	2.3	ND	ND	ND	ND	2.7	285	147	700	ND	9.3
Lockwood Valley	08N21W33R03S	11/15/2017	0.8	250	99	ND	18	ND	798	0.6	ND	1	23	ND	9.5	43	176	510	30	7.1
Mound	02N22W07P01S	10/27/2017	0.7	330	433	ND	138	ND	3500	0.3	40	11	123	170	64.6	300	1550	3040	ND	7.4
Mound	02N22W09K01S	12/27/2017	0.6	300	166	ND	76	10	1940	0.4	ND	6	55	340	8.4	180	698	1420	ND	7.3
Mound	02N22W09K07S	12/27/2017	0.5	210	134	ND	68	ND	1470	0.2	ND	4	23	200	ND	160	492	1070	ND	7.6
Mound	02N23W13F02S	12/27/2017	0.6	370	150	ND	67	ND	1540	0.4	220	5	39	280	ND	136	446	1140	30	7.2
Mound	02N23W13K03S	12/27/2017	0.7	350	356	ND	134	10	3100	0.3	ND	9	97	150	61.4	267	1350	2710	ND	7.1
North Coast	04N25W25N06S	10/31/2017	0.4	440	152	ND	107	ND	1690	0.6	ND	2	70	ND	9.8	125	397	1140	70	6.9
North Coast	04N25W35G01S	10/31/2017	ND	300	102	ND	33	40	859	0.2	ND	1	28	ND	12.4	37	150	530	30	6.9
Ojai Valley	04N22W04P05S	12/27/2017	ND	270	123	ND	29	ND	980	0.4	ND	ND	31	ND	44.1	36	216	680	ND	7.0
Ojai Valley	04N22W04Q01S	11/28/2017	ND	230	125	ND	27	10	916	0.3	30	1	33	ND	42.8	38	215	620	30	7.5
Ojai Valley	04N22W06J09S	11/28/2017	0.1	270	136	ND	26	ND	911	0.2	ND	1	28	ND	39.9	37	205	590	ND	7.1
Ojai Valley	04N22W06K10S	11/28/2017	0.2	270	136	ND	95	ND	1160	0.3	ND	1	30	30	20.3	85	211	760	ND	7.2
Ojai Valley	04N23W01J03S	11/28/2017	0.1	310	73	ND	24	ND	885	0.6	ND	ND	16	310	1.3	118	165	560	ND	7.4
Ojai Valley	04N23W12B03S	12/27/2017	ND	340	76	ND	25	ND	760	1.1	ND	1	12	610	ND	69	83.4	520	ND	7.2
Ojai Valley	05N22W32K02S	11/28/2017	0.2	270	148	ND	76	ND	1250	0.9	ND	1	15	20	4.6	136	299	860	ND	7.3
Ojai Valley	05N22W33J01S	11/28/2017	ND	300	159	ND	36	ND	1150	0.8	270	2	38	140	18.4	55	315	820	ND	7.1
Oxnard Plain Forebay	02N21W07P04S	10/27/2017	0.6	280	167	ND	67	ND	1600	0.5	390	6	57	130	ND	112	527	1170	ND	6.9
Oxnard Plain Forebay	02N22W23H07S	11/27/2017	1	340	339	ND	86	ND	2650	0.5	ND	7	117	ND	129	158	1060	2190	40	7.2
Oxnard Plain Pressure	01N21W04D04S	11/02/2017	0.5	330	67	ND	90	ND	1200	0.3	70	7	25	40	ND	154	183	740	ND	7.7
Oxnard Plain Pressure	01N21W08R01S	09/12/2017	0.3	190	75	ND	62	ND	1090	0.3	80	6	28	40	ND	118	236	730	ND	7.7
Oxnard Plain Pressure	01N21W16M03S	11/30/2017	0.5	300	64	ND	107	ND	1330	0.4	30	6	24	30	ND	160	283	850	ND	7.7
Oxnard Plain Pressure	01N21W17B02S	09/11/2017	0.4	210	89	ND	44	ND	1130	0.2	ND	8	32	90	ND	119	297	770	ND	7.5
Oxnard Plain Pressure	01N21W20B01S	11/30/2017	0.5	240	90	ND	37	ND	1120	0.2	ND	6	33	70	ND	79	361	780	ND	7.7
Oxnard Plain Pressure	01N21W21H02S	09/13/2017	0.5	270	70	ND	120	ND	1310	0.3	ND	5	35	20	ND	164	272	860	ND	7.6
Oxnard Plain Pressure	01N21W21K03S	11/21/2017	0.4	240	54	ND	51	ND	914	0.2	30	5	35	80	ND	117	233	630	ND	7.9
Oxnard Plain Pressure	01N21W21N02S	11/21/2017	0.5	300	138	ND	112	ND	1450	0.3	ND	4	49	840	ND	122	374	1030	ND	7.5
Oxnard Plain Pressure	01N21W22C01S	09/13/2017	0.4	290	60	ND	114	ND	1190	0.2	ND	4	39	40	ND	139	203	770	ND	7.7
Oxnard Plain Pressure	01N21W28D01S	09/12/2017	0.4	180	62	ND	76	ND	1150	0.2	ND	6	34	20	ND	123	275	800	ND	7.7
Oxnard Plain Pressure	01N21W28H03S	09/11/2017	0.3	240	93	ND	91	ND	1170	0.3	70	4	35	90	ND	114	230	750	ND	7.5
Oxnard Plain Pressure	01N21W29K02S	11/21/2017	0.7	280	121	ND	53	ND	1220	0.3	40	5	41	690	ND	103	351	860	ND	7.5
Oxnard Plain Pressure	01N21W33A01S	11/21/2017	0.4	320	107	ND	214	ND	1560	0.2	ND	5	55	280	ND	162	237	1010	ND	7.6
Oxnard Plain Pressure	01N22W03F05S	09/06/2017	0.7	240	134	ND	50	ND	1360	0.6	40	4	43	20	16.6	94	447	1000	ND	7.6

Table D-1 General Minerals (cont.)

GW Basin	SWN	Date	B	HCO_3^-	Ca	CO_3^{2-}	Cl^-	Cu	E C	F^-	Fe	K	Mg	Mn	NO_3^-	Na	SO_4^{2-}	TDS	ZN	pH
Oxnard Plain Pressure	01N22W03F07S	09/06/2017	0.7	290	185	ND	74	ND	1680	0.6	ND	5	63	20	17.6	105	590	1310	ND	7.4
Oxnard Plain Pressure	01N22W06B01S	09/11/2017	1	270	190	ND	63	ND	1650	0.7	ND	6	62	ND	11.9	127	586	1240	ND	7.2
Oxnard Plain Pressure	01N22W06R02S	09/13/2017	0.9	230	192	ND	71	ND	1830	0.6	ND	6	66	20	8.1	131	702	1420	ND	7.5
Oxnard Plain Pressure	01N22W12M01S	11/30/2017	0.6	250	131	ND	53	ND	1490	0.4	ND	6	41	220	ND	110	559	1110	ND	7.7
Oxnard Plain Pressure	01N22W12Q03S	11/30/2017	0.6	230	120	ND	50	ND	1290	0.7	ND	4	35	230	ND	80	466	940	ND	7.6
Oxnard Plain Pressure	01N22W16D04S	11/22/2017	0.7	220	121	ND	41	ND	1170	0.7	160	4	39	90	ND	87	379	820	ND	7.4
Oxnard Plain Pressure	01N22W21B06S	11/30/2017	0.3	270	61	ND	46	ND	1130	0.3	ND	6	30	80	ND	110	302	740	ND	7.8
Oxnard Plain Pressure	01N22W24C03S	11/21/2017	0.7	230	125	ND	43	ND	1210	0.6	ND	4	39	200	ND	92	394	850	ND	7.6
Oxnard Plain Pressure	01N22W24M03S	11/02/2017	0.7	230	155	ND	141	ND	1480	0.5	40	5	45	220	ND	93	358	1020	ND	7.6
Oxnard Plain Pressure	01N22W25K01S	11/02/2017	0.7	280	269	ND	540	ND	3000	0.3	ND	9	92	860	ND	244	507	2010	ND	7.5
Oxnard Plain Pressure	01N22W26D05S	11/02/2017	0.5	250	118	ND	50	ND	1230	0.3	ND	6	37	180	ND	93	360	870	ND	7.9
Oxnard Plain Pressure	01N22W26M03S	11/02/2017	0.5	240	114	ND	41	ND	1210	0.2	ND	6	34	170	1.9	92	368	850	ND	7.7
Oxnard Plain Pressure	01N22W26R04S	11/02/2017	0.6	240	130	ND	86	ND	1280	0.5	ND	4	38	260	ND	87	327	880	ND	7.6
Oxnard Plain Pressure	02N21W17N03S	10/27/2017	0.4	290	91	ND	63	ND	1100	0.3	ND	3	28	190	9.3	108	214	730	ND	7.7
Oxnard Plain Pressure	02N21W18H03S	10/27/2017	0.6	310	242	ND	180	ND	2410	0.4	ND	6	90	ND	121	169	686	1790	ND	7.4
Oxnard Plain Pressure	02N21W18H14S	10/27/2017	0.4	310	87	ND	47	ND	1320	0.1	ND	7	38	50	ND	159	358	910	ND	7.1
Oxnard Plain Pressure	02N21W19G03S	10/27/2017	0.6	230	122	ND	45	ND	1270	0.3	ND	4	40	140	ND	101	404	900	ND	7.1
Oxnard Plain Pressure	02N21W20Q05S	10/27/2017	0.6	270	104	ND	63	ND	1330	0.3	ND	6	35	80	ND	138	362	910	ND	6.8
Oxnard Plain Pressure	02N22W24P02S	09/11/2017	0.7	130	140	ND	50	ND	1310	0.7	ND	4	45	ND	8.6	101	433	950	ND	7.3
Oxnard Plain Pressure	02N22W25E01S	11/22/2017	1.1	280	261	ND	117	ND	2320	0.6	ND	7	113	ND	27.7	183	926	1820	40	7.3
Oxnard Plain Pressure	02N22W30F03S	09/11/2017	0.7	220	137	ND	45	ND	1260	0.6	ND	5	38	150	ND	103	407	900	ND	7.2
Oxnard Plain Pressure	02N22W31D02S	09/11/2017	0.7	240	157	ND	55	ND	1430	0.7	ND	5	48	240	21.7	109	480	1030	ND	7.2
Oxnard Plain Pressure	02N22W32C04S	09/11/2017	0.7	240	156	ND	56	ND	1410	0.7	ND	5	51	ND	29.4	102	464	1020	ND	7.2
Oxnard Plain Pressure	02N22W36E02S	09/06/2017	0.6	170	132	ND	50	ND	1350	0.7	ND	4	42	ND	9.4	97	448	970	ND	7.3
Oxnard Plain Pressure	02N22W36E04S	09/06/2017	0.9	210	201	ND	62	ND	1930	0.6	ND	6	67	ND	61	144	720	1520	ND	7.3
Oxnard Plain Pressure	02N22W36E05S	09/06/2017	0.9	220	198	ND	68	ND	1960	0.6	ND	6	73	40	55.1	141	741	1500	20	7.3
Oxnard Plain Pressure	02N23W25M01S	11/02/2017	0.6	130	147	ND	58	ND	1520	0.4	ND	5	41	270	5.1	129	580	1130	30	6.6
Piru	04N18W30J04S	10/26/2017	0.6	270	126	ND	108	ND	1480	0.6	ND	6	47	ND	15.7	137	368	1020	150	6.8
Piru	04N19W25M03S	10/26/2017	0.8	410	297	ND	65	20	2660	0.9	ND	6	127	750	31.2	197	1130	2320	ND	6.6
Piru	04N19W26H01S	10/26/2017	0.7	290	149	ND	109	ND	1590	0.7	ND	5	59	ND	20.4	125	416	1140	ND	6.9
Piru	04N19W26J02S	11/09/2017	0.5	180	120	ND	28	ND	1180	0.3	ND	4	48	160	11.3	70	418	860	20	7.7
Piru	04N19W34J04S	11/02/2017	0.7	340	233	ND	90	ND	2170	0.6	ND	6	94	ND	244	108	558	1630	60	7.2
Pleasant Valley	01N21W01B05S	09/06/2017	0.3	300	57	ND	214	ND	1340	ND	ND	6	52	70	ND	133	57.4	770	ND	7.5
Pleasant Valley	01N21W03D01S	09/06/2017	0.4	190	146	ND	96	ND	1450	0.3	ND	4	41	ND	51.6	106	395	1030	ND	7.2
Pleasant Valley	01N21W03K01S	09/13/2017	0.4	150	164	ND	129	ND	1660	0.3	ND	4	47	10	31.9	125	489	1180	ND	7.4
Pleasant Valley	01N21W03R01S	09/12/2017	0.6	120	210	ND	219	ND	2330	0.2	ND	6	75	20	45.8	206	677	1760	ND	7.2
Pleasant Valley	01N21W04K01S	09/12/2017	0.3	220	75	ND	60	ND	879	0.3	130	4	24	100	ND	83	158	550	ND	7.7
Pleasant Valley	01N21W10A02S	09/06/2017	0.5	270	356	ND	250	ND	2870	0.2	ND	4	97	1390	71.5	174	1040	2330	430	7.2
Pleasant Valley	01N21W10G01S	09/12/2017	0.4	220	166	ND	186	ND	1870	0.2	ND	4	62	140	8.3	141	497	1350	ND	7.4
Pleasant Valley	01N21W12D01S	09/06/2017	0.6	280	209	ND	241	ND	2340	0.2	ND	5	80	110	17.3	192	670	1680	ND	7.3

Table D-1 General Minerals (cont.)

GW Basin	SWN	Date	B	HCO_3^-	Ca	CO_3^{2-}	Cl^-	Cu	E C	F^-	Fe	K	Mg	Mn	NO_3^-	Na	SO_4^{2-}	TDS	ZN	pH
Pleasant Valley	01N21W15D02S	09/12/2017	0.6	170	124	ND	180	ND	1720	0.3	ND	5	50	180	1	172	383	1150	ND	7.4
Pleasant Valley	01N21W15H01S	09/06/2017	1.8	150	503	ND	710	ND	5540	ND	1550	8	192	1760	0.4	780	2380	4650	ND	7.0
Pleasant Valley	02N20W17L01S	09/27/2017	0.6	230	172	ND	176	ND	1910	0.3	140	6	56	310	23.9	181	562	1310	ND	7.4
Pleasant Valley	02N20W19F04S	11/08/2017	0.6	260	180	ND	156	ND	1920	0.2	100	5	46	130	ND	160	591	1390	ND	7.2
Pleasant Valley	02N20W29B02S	11/29/2017	0.3	340	79	ND	123	ND	1230	0.3	ND	3	56	50	5.2	114	161	740	ND	7.5
Pleasant Valley	02N21W33R02S	11/08/2017	0.3	260	86	ND	87	ND	1110	0.4	50	4	23	30	ND	106	209	710	ND	7.6
Pleasant Valley	02N21W34C01S	11/08/2017	0.3	260	95	ND	78	ND	1170	0.3	60	5	27	50	ND	103	261	760	ND	7.5
Pleasant Valley	02N21W34G01S	09/13/2017	0.8	310	103	ND	198	ND	1830	0.3	ND	7	34	30	ND	272	351	1200	ND	7.6
Santa Paula	02N22W03E01S	11/02/2017	0.6	350	300	ND	109	ND	2540	0.4	270	6	88	520	ND	188	971	2010	ND	7.2
Santa Paula	03N21W09K04S	10/24/2017	0.4	300	139	ND	49	ND	1320	ND	50	4	32	410	-7.2	116	392	950	ND	7.3
Santa Paula	03N21W17Q01S	12/27/2017	0.7	400	208	ND	79	ND	1970	0.5	ND	4	57	70	25.9	141	663	1560	ND	7.1
Santa Paula	03N22W35Q01S	10/27/2017	1.1	420	332	ND	98	ND	3240	0.4	ND	7	101	820	33.1	315	1250	2560	ND	7.2
Santa Paula	03N22W36K07S	11/08/2017	0.4	310	212	ND	71	ND	1720	0.4	40	4	51	150	ND	89	601	1300	ND	7.4
Sherwood	01N19W19H03S	11/14/2017	0.1	340	63	ND	40	ND	832	0.1	ND	3	41	40	ND	56	102	480	70	7.6
Sherwood	01N19W29E04S	11/14/2017	ND	340	112	ND	58	ND	1000	ND	ND	ND	33	10	ND	66	155	650	ND	7.2
Sherwood	01N20W25C07S	11/30/2017	0.2	350	204	ND	445	ND	2180	0.1	100	3	74	340	5.3	73	213	1500	2880	7.3
Sherwood	01N20W25F04S	11/30/2017	0.1	260	21	ND	32	ND	580	0.1	ND	1	3	ND	ND	90	30.8	330	330	
Simi Valley	02N17W15E04S	11/16/2017	ND	400	100	ND	71	ND	1260	0.5	40	4	46	181	ND	104	238	820	30	7.2
Simi Valley	02N18W08D04S	11/13/2017	1.2	370	219	ND	170	ND	2350	0.4	ND	6	82	190	17	205	782	1800	ND	7.2
Simi Valley	02N18W08K07S	11/13/2017	1	310	278	ND	170	ND	2520	0.5	ND	5	84	ND	54.1	187	964	2010	ND	7.0
Simi Valley	02N18W10A02S	11/14/2017	1.3	330	256	ND	151	ND	2470	0.5	ND	6	93	ND	58.8	217	822	1900	ND	7.1
Thousand Oaks	01N19W08G02S	11/14/2017	0.1	360	142	ND	132	ND	1810	0.2	ND	3	114	130	ND	110	492	1330	ND	7.7
Tierra Rejada Valley	02N19W10R02S	11/13/2017	0.2	260	54	ND	75	ND	971	0.4	ND	1	58	ND	8.2	56	176	670	ND	7.6
Tierra Rejada Valley	02N19W11J03S	11/13/2017	0.2	270	62	ND	68	ND	486	0.3	ND	ND	56	10	23.7	53	168	680	330	7.7
Tierra Rejada Valley	02N19W14F01S	11/13/2017	0.1	390	107	ND	159	ND	1480	0.3	ND	ND	92	ND	92	52	165	980	ND	7.3
Tierra Rejada Valley	02N19W14Q02S	11/13/2017	0.1	340	54	ND	58	ND	971	0.2	ND	6	47	120	ND	75	142	600	50	7.6
Tierra Rejada Valley	02N19W15B01S	11/27/2017	0.1	270	84	ND	117	ND	1160	0.3	ND	1	66	ND	47.8	58	163	760	ND	7.8
Tierra Rejada Valley	02N19W15J02S	11/13/2017	0.2	380	93	ND	163	ND	1590	0.2	ND	3	88	ND	57.3	107	268	1070	ND	7.5
U N D E F I N E D	02N21W13A01S	10/02/2017	0.1	200	74	ND	14	ND	725	0.3	140	3	20	70	ND	53	159	450	ND	7.8
Upper Ojai	04N22W10K05S	10/24/2017	0.2	420	119	ND	83	ND	1090	0.6	ND	ND	26	1240	2.3	79	92.5	680	ND	7.0
Upper Ojai	04N22W11J01S	10/24/2017	ND	180	60	ND	33	20	586	0.4	ND	ND	20	ND	46.5	34	75.5	420	20	6.6
Ventura River - Lower	02N23W05F03S	12/01/2017	0.5	420	124	ND	148	ND	1850	0.2	ND	7	35	120	ND	200	407	1230	ND	7.6
Ventura River - Lower	02N23W05K01S	10/31/2017	0.9	390	157	ND	216	ND	1950	0.6	ND	6	55	250	ND	207	408	1290	ND	7.6
Ventura River - Lower	03N23W32Q03S	12/01/2017	0.9	380	138	ND	206	20	1960	0.5	ND	7	44	120	ND	190	414	1310	ND	7.4
Ventura River - Upper	04N23W04H01S	10/31/2017	1	260	123	ND	50	ND	1090	0.5	ND	2	33	ND	17.2	64	269	760	ND	7.3
Ventura River - Upper	04N23W09G03S	10/31/2017	0.4	350	134	ND	83	ND	1210	0.3	ND	2	39	ND	34.9	57	197	810	ND	7.3

California Title 22 Metals

Metals Table D-2			
Element Name	Element Symbol	Reported Units	Laboratory Analytical Method
Aluminum	Al	µg/l	EPA 200.8
Antimony	Sb	µg/l	EPA 200.8
Arsenic	As	µg/l	EPA 200.8
Barium	Ba	µg/l	EPA 200.8
Beryllium	Be	µg/l	EPA 200.8
Cadmium	Cd	µg/l	EPA 200.8
Chromium	Cr	µg/l	EPA 200.8
Lead	Pb	µg/l	EPA 200.8
Mercury	Hg	µg/l	EPA 245.1
Nickel	Ni	µg/l	EPA 200.8
Selenium	Se	µg/l	EPA 200.8
Silver	Ag	µg/l	EPA 200.8
Thallium	Tl	µg/l	EPA 200.8
Vanadium	V	µg/l	EPA 200.8

Radio Chemistry

Radio Chemistry Table D-3			
Name	Element Symbol	Reported Units	Laboratory Analytical Method
Gross Alpha		pCi/l	EPA 900.0
Uranium	U	pCi/l	EPA 908.0

Table D-2 Metals

GW Basin	SWN	Date	Al	Sb	As	Ba	Be	Cd	Cr	Pb	Hg	Ni	Se	Ag	Tl	V
Arroyo Santa Rosa	02N19W19P02S	11/29/2017	ND	ND	3	17.6	ND	ND	22	ND	ND	ND	3	ND	ND	70
Arroyo Santa Rosa	02N19W20L01S	09/27/2017	ND	ND	4	27.7	ND	ND	30	ND	ND	1	4	ND	ND	80
Arroyo Santa Rosa	02N20W26C02S	09/27/2017	ND	ND	5	31.4	ND	ND	13	ND	ND	11	13	ND	ND	51
Cuyama Valley	08N24W17G02S	11/15/2017	ND	ND	2	23.8	ND	ND	1	ND	ND	ND	1	ND	ND	ND
Cuyama Valley	09N23W30E05S	11/15/2017	ND	ND	1	33.9	ND	ND	2	ND	ND	ND	8	ND	ND	ND
Fillmore	03N20W02R05S	11/02/2017	ND	ND	3	23.4	ND	0.7	5	ND	ND	4	21	ND	ND	3
Fillmore	04N20W31H04S	11/09/2017	ND	ND	ND	27.3	ND	ND	6	0.5	ND	ND	2	ND	ND	2
Gillibrand/Tapo	03N18W24C07S	11/13/2017	ND	ND	2	49.1	ND	ND	ND	ND	ND	2	47	ND	ND	13
Las Posas - East	02N20W04R03S	10/02/2017	ND	ND	ND	57.5	ND	ND	8	ND	0.06	4	4	ND	ND	10
Las Posas - East	02N20W16B06S	11/16/2017	ND	ND	1	15.9	ND	ND	3	ND	ND	7	4	ND	ND	ND
Las Posas - East	03N19W29K06S	10/02/2017	ND	ND	2	206	ND	ND	6	ND	ND	1	5	ND	ND	20
Las Posas - East	03N19W29K08S	10/02/2017	ND	ND	ND	35.1	ND	ND	8	ND	ND	2	8	ND	ND	12
Las Posas - East	03N20W28J04S	11/21/2017	ND	ND	ND	45.2	ND	ND	9	ND	ND	ND	12	ND	ND	7
Las Posas - South	02N19W07B02S	11/08/2017	ND	ND	2	15.1	ND	ND	8	ND	ND	12	2	ND	ND	9
Las Posas - West	02N20W06J01S	09/28/2017	ND	ND	ND	56.4	ND	ND	8	ND	ND	ND	ND	ND	ND	3
Las Posas - West	02N21W09N01S	09/28/2017	ND	ND	6	54	ND	ND	9	ND	ND	ND	4	ND	ND	5
Las Posas - West	02N21W10G03S	11/14/2017	ND	ND	1	61.2	ND	ND	2	ND	ND	ND	12	ND	ND	2
Little Cuddy Valley	08N20W04N02S	11/15/2017	ND	ND	ND	146	ND	ND	2	1.3	ND	ND	ND	ND	ND	ND
Mound	02N22W07P01S	10/27/2017	ND	ND	3	25.8	ND	0.4	6	1	ND	2	115	ND	ND	5
Mound	02N22W09K01S	12/27/2017	ND	ND	1	17.8	ND	0.3	1	ND	ND	ND	4	ND	ND	ND
Mound	02N22W09K07S	12/27/2017	ND	ND	ND	41.4	ND	ND	ND	ND	ND	ND	2	ND	ND	ND
Ojai Valley	04N22W04Q01S	11/28/2017	ND	ND	ND	33.2	ND	ND	2	ND	ND	ND	ND	ND	ND	ND
Ojai Valley	04N22W06J09S	11/28/2017	ND	ND	ND	55.2	ND	ND	ND	ND	ND	ND	1	ND	ND	ND
Ojai Valley	04N23W01J03S	11/28/2017	ND	ND	ND	36.8	ND	ND	2	ND	ND	ND	ND	ND	ND	ND
Oxnard Plain Forebay	02N22W23H07S	11/27/2017	ND	ND	5	53.9	ND	0.5	4	ND	ND	2	80	ND	ND	3
Oxnard Plain Pressure	01N21W08R01S	09/12/2017	ND	ND	4	85.8	ND	ND	5	ND	ND	ND	2	ND	ND	ND
Oxnard Plain Pressure	01N21W28H03S	09/11/2017	ND	ND	ND	108	ND	ND	ND	ND	ND	ND	2	ND	ND	ND
Oxnard Plain Pressure	01N21W29K02S	11/21/2017	ND	ND	2	20.1	ND	ND	1	ND	ND	ND	1	ND	ND	10
Oxnard Plain Pressure	01N22W03F05S	09/06/2017	ND	ND	ND	21.6	ND	ND	4	ND	ND	ND	15	ND	ND	4
Oxnard Plain Pressure	01N22W03F07S	09/06/2017	ND	ND	ND	42.4	ND	0.3	5	ND	ND	1	19	ND	ND	5
Oxnard Plain Pressure	01N22W12M01S	11/30/2017	ND	ND	2	42.8	ND	ND	3	0.8	ND	ND	2	ND	ND	ND
Oxnard Plain Pressure	01N22W16D04S	11/22/2017	ND	ND	ND	21.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oxnard Plain Pressure	01N22W26D05S	11/02/2017	ND	ND	ND	45.2	ND	0.3	2	ND	ND	2	1	ND	ND	ND
Oxnard Plain Pressure	02N22W30F03S	09/11/2017	ND	ND	ND	19.3	ND	ND	6	ND	ND	ND	ND	ND	ND	ND
Piru	04N18W30J04S	10/26/2017	ND	ND	1	32.6	ND	0.5	2	ND	ND	3	4	ND	ND	2
Piru	04N19W26H01S	10/26/2017	ND	ND	1	22.3	ND	0.2	4	ND	ND	2	4	ND	ND	4
Piru	04N19W34J04S	11/02/2017	ND	ND	ND	42.2	ND	0.2	3	ND	ND	3	9	ND	ND	3
Pleasant Valley	01N21W12D01S	09/06/2017	ND	ND	ND	39.5	ND	ND	5	ND	ND	1	10	ND	ND	4
Pleasant Valley	02N20W17L01S	09/27/2017	ND	ND	3	24.4	ND	ND	7	ND	ND	6	21	ND	ND	2
Pleasant Valley	02N20W29B02S	11/29/2017	ND	ND	6	51.7	ND	ND	4	ND	ND	ND	3	ND	ND	17

Table D-2 Metals (cont.)

GW Basin	SWN	Date	Al	Sb	As	Ba	Be	Cd	Cr	Pb	Hg	Ni	Se	Ag	Tl	V
Pleasant Valley	02N21W34G01S	09/13/2017	ND	ND	ND	36.4	ND	ND	5	ND	ND	1	5	ND	ND	ND
Santa Paula	02N22W03E01S	11/02/2017	ND	ND	3	24.5	ND	0.5	4	ND	ND	1	7	ND	ND	ND
Santa Paula	03N22W35Q01S	10/27/2017	ND	ND	2	24.4	ND	0.3	6	ND	ND	2	66	ND	ND	4
Sherwood	01N19W29E04S	11/14/2017	ND	3	1	62.5	ND	ND	1	ND	ND	ND	ND	ND	0.4	ND
Simi Valley	02N17W15E04S	11/16/2017	ND	ND	2	33.9	ND	ND	5	ND	ND	ND	1	ND	ND	ND
Simi Valley	02N18W08D04S	11/13/2017	ND	ND	2	15.6	ND	ND	1	ND	ND	2	13	ND	ND	3
Thousand Oaks	01N19W08G02S	11/14/2017	ND	ND	1	19.5	ND	ND	1	ND	ND	ND	2	ND	ND	ND
Tierra Rejada Valley	02N19W10R02S	11/13/2017	ND	ND	1	24.6	ND	ND	2	ND	ND	ND	2	ND	ND	36
Upper Ojai	04N22W10K05S	10/24/2017	ND	ND	3	107	ND	2.6	6	ND	0.01	2	7	ND	ND	8
Ventura River - Lower	02N23W05F02S	12/01/2017	ND	ND	1	81.6	ND	ND	5	ND	ND	ND	4	ND	ND	ND
Ventura River - Upper	04N23W09G03S	10/31/2017	ND	ND	ND	44.5	ND	ND	9	ND	ND	ND	2	ND	ND	3

Table D-3 Radiochemistry

GW Basin	SWN	Date	Alpha pCi/L	CE	Uranium pCi/L	CE
Little Cuddy Valley	08N20W04N02S	11/15/2017	9.66	2.09		

* CE – Counting Error

Appendix E – Piper Diagrams

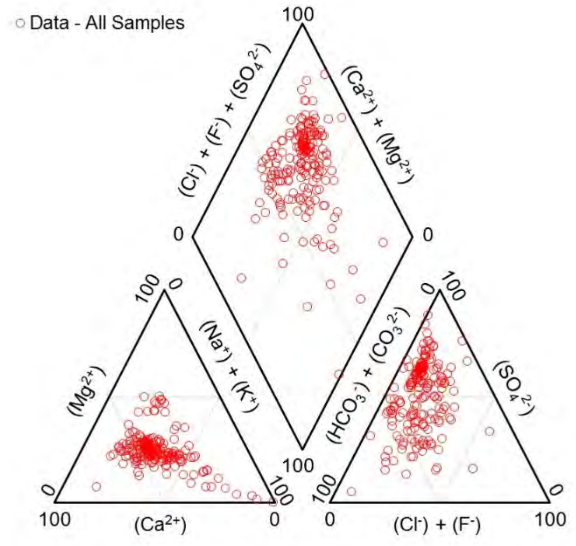

Figure E-1: Piper Diagram for all samples.

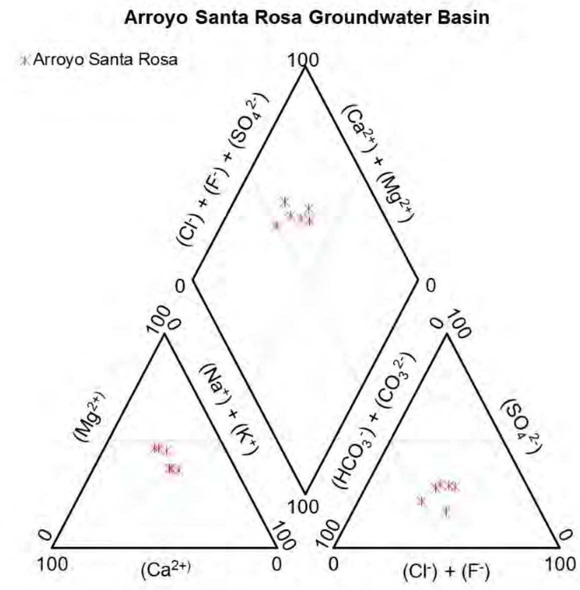

Figure E-2: Arroyo Santa Rosa Basin Piper Diagram.

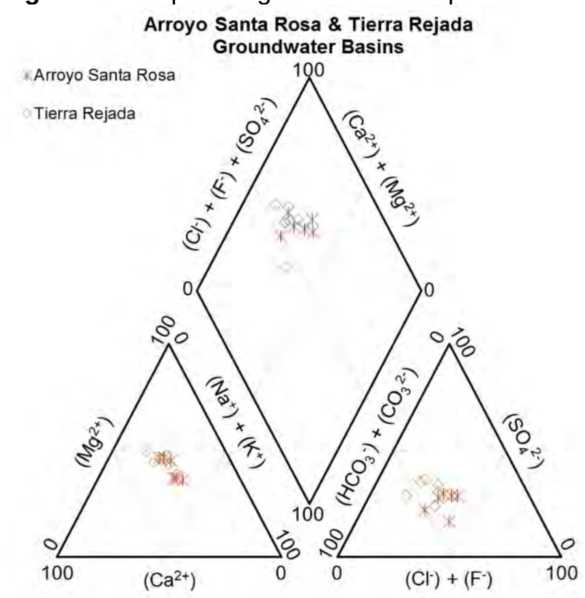

Figure E-3: Arroyo Santa Rosa & Tierra Rejada Basin's Piper Diagram.

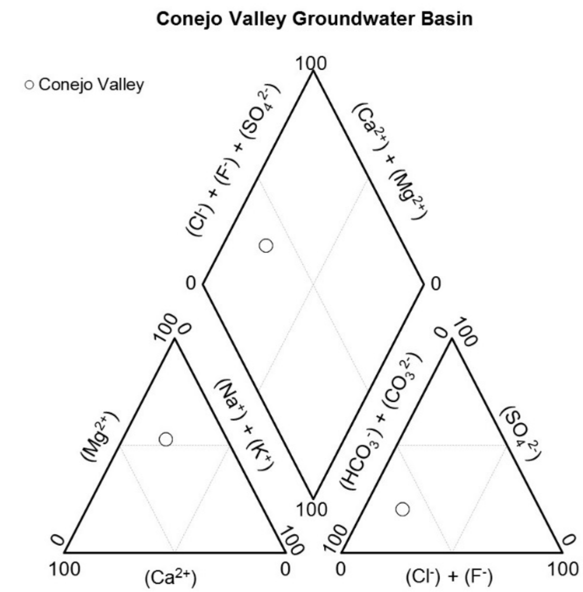

Figure E-4: Conejo Valley Basin Piper Diagram.

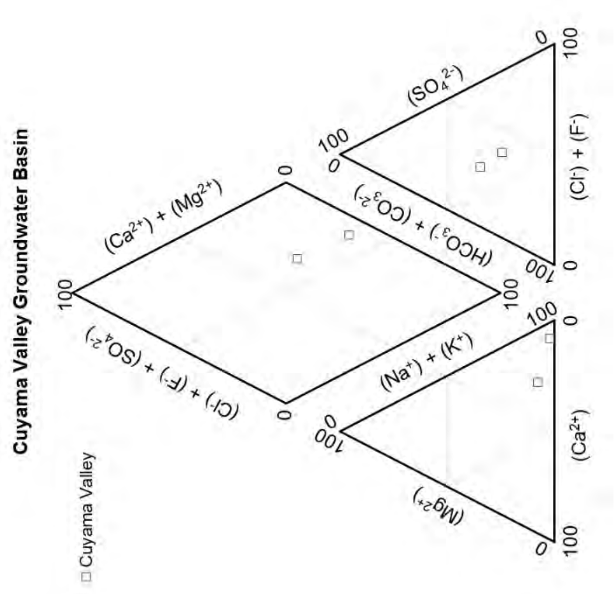

Figure E-5: Cuyama Valley Basin Piper Diagram.

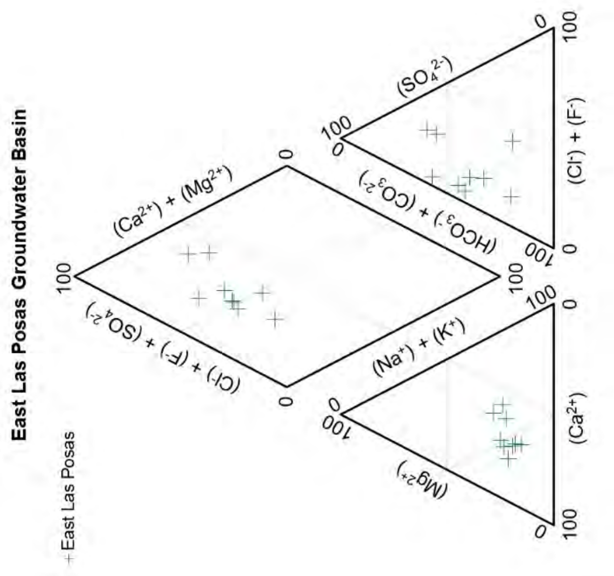

Figure E-6: East Las Posas Basin Piper Diagram.

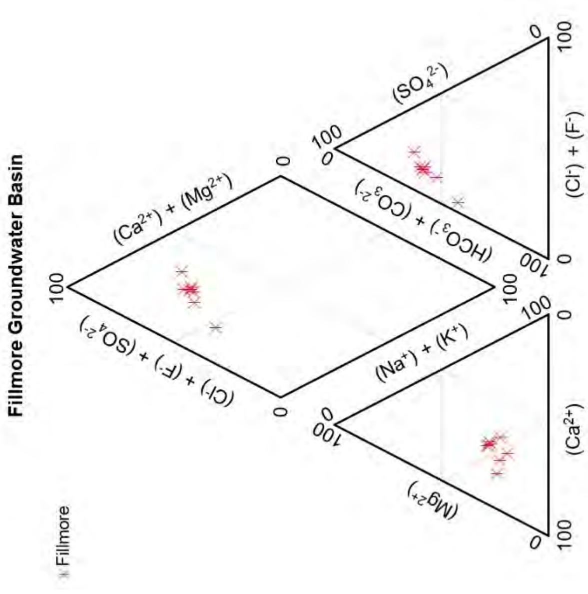

Figure E-7: Fillmore Basin Piper Diagram.

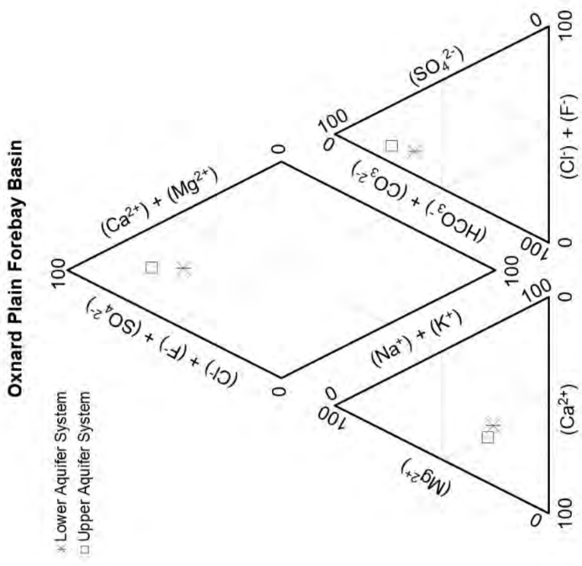

Figure E-8: Oxnard Plain Forebay Basin Piper Diagram.

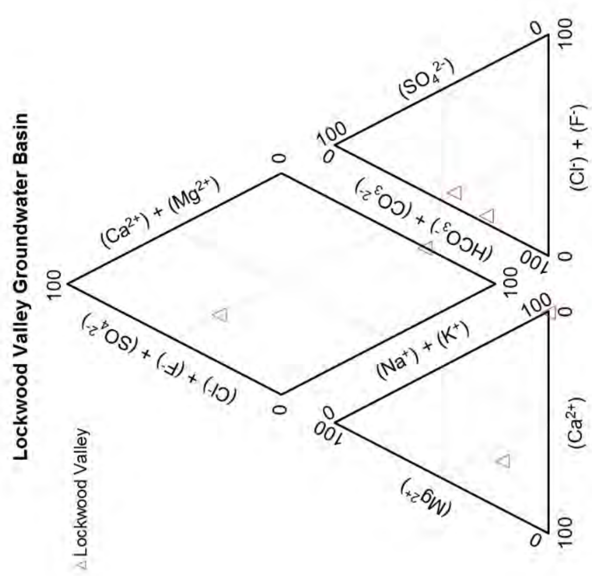

Figure E-9: Lockwood Valley Basin Piper Diagram.

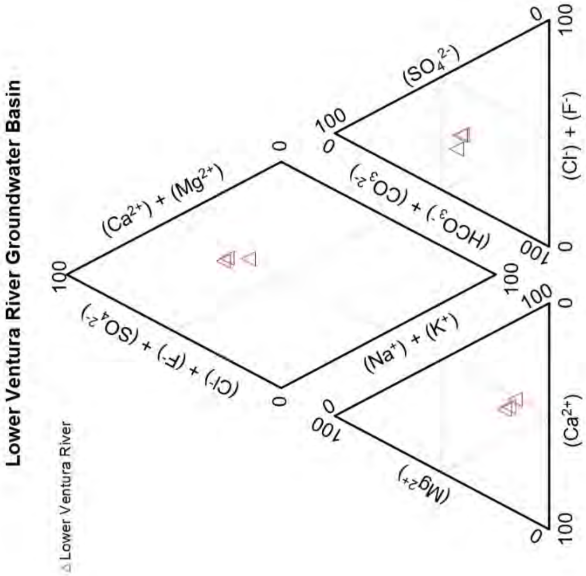

Figure E-10: Lower Ventura River Basin Piper Diagram.

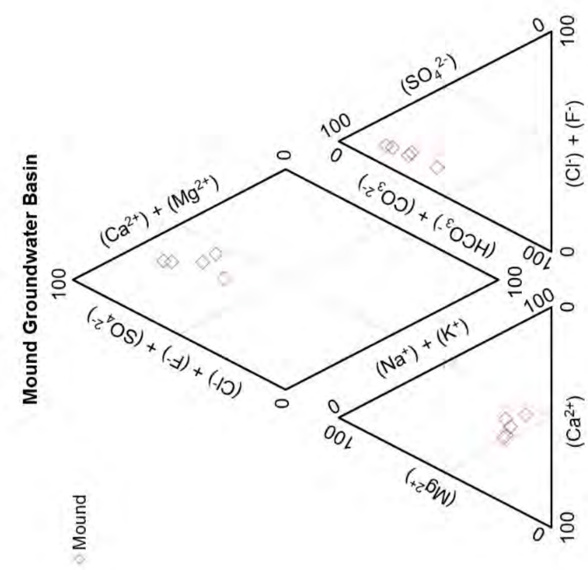

Figure E-11: Mound Basin Piper Diagram.

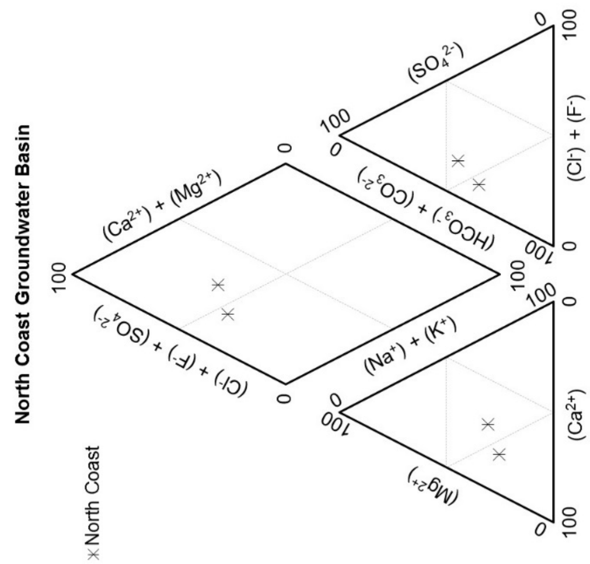

Figure E-12: North Coast Basin Piper Diagram.

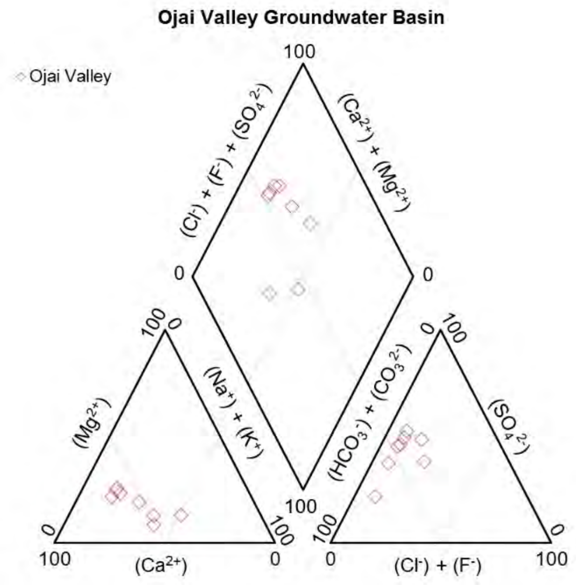

Figure E-13: Ojai Valley Basin Piper Diagram.

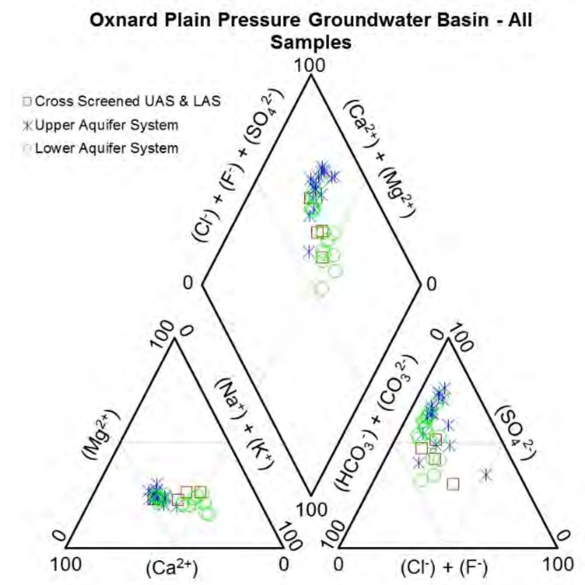

Figure E-14: Oxnard Plain Pressure Basin all samples Piper Diagram.

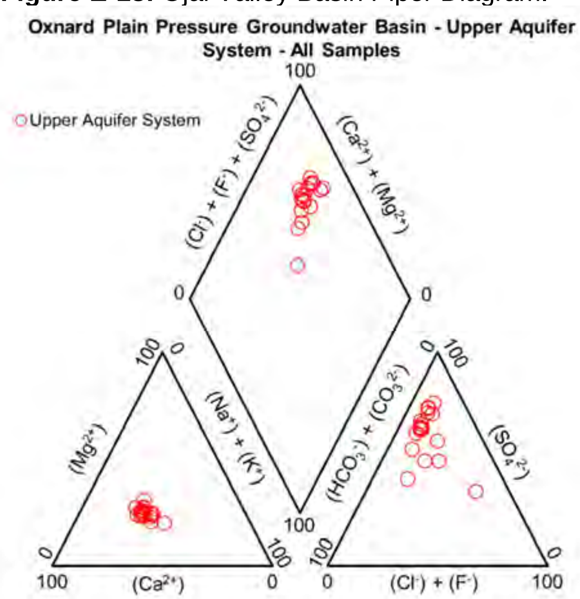

Figure E-15: All Upper Aquifer System Piper Diagram.

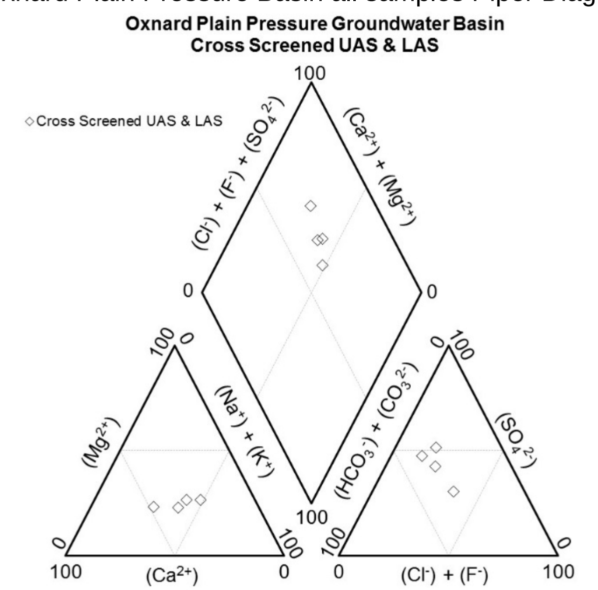

Figure E-16: Upper and Lower Aquifer System cross-screened Piper Diagram.

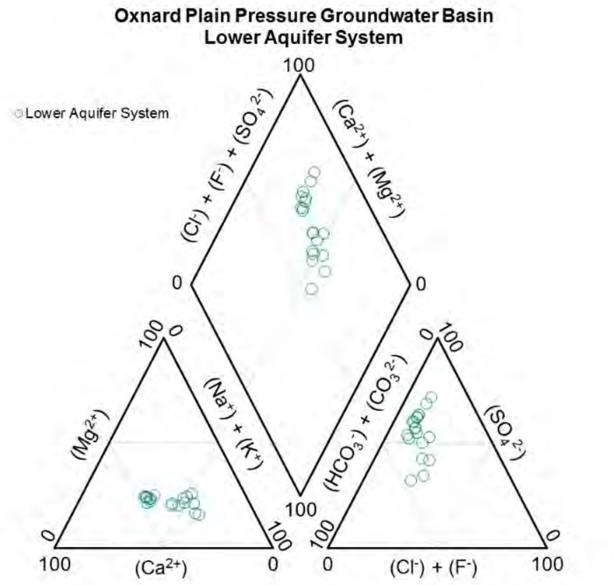

Figure E-17: All Lower Aquifer System Piper Diagram.

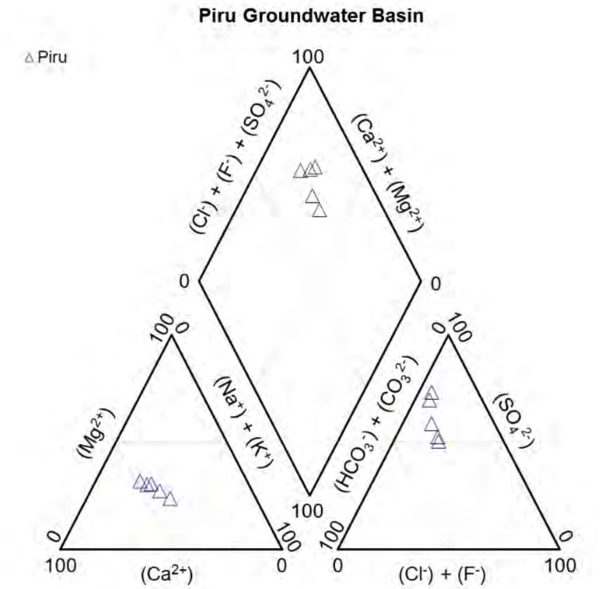

Figure E-18: Piru Basin Piper Diagram.

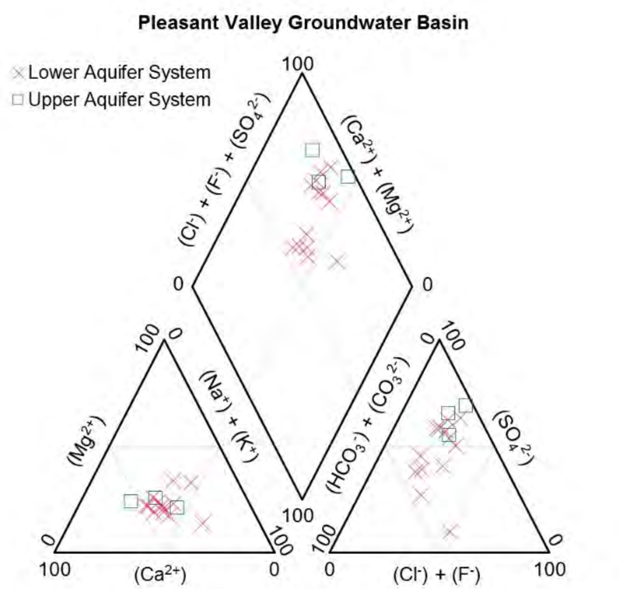

Figure E-19: Pleasant Valley Basin Piper Diagram.

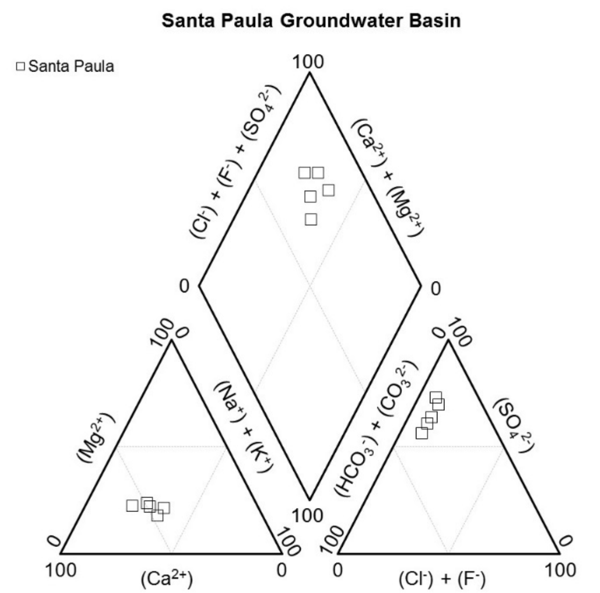

Figure E-20: Santa Paula Basin Piper Diagram.

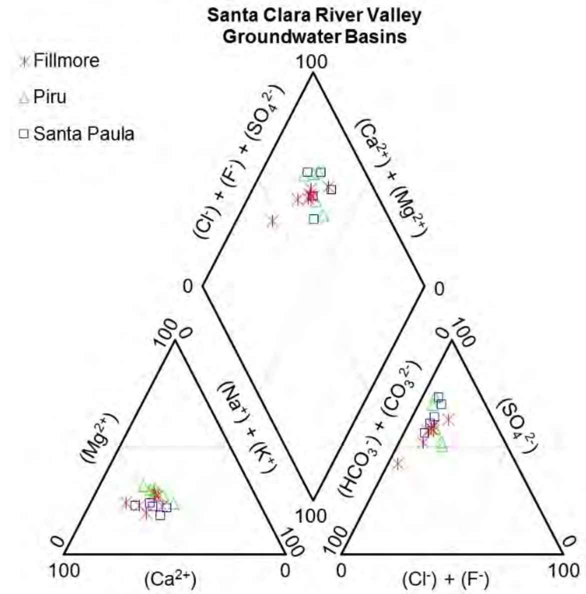

Figure E-21: Fillmore, Piru & Santa Paula Piper Diagram.

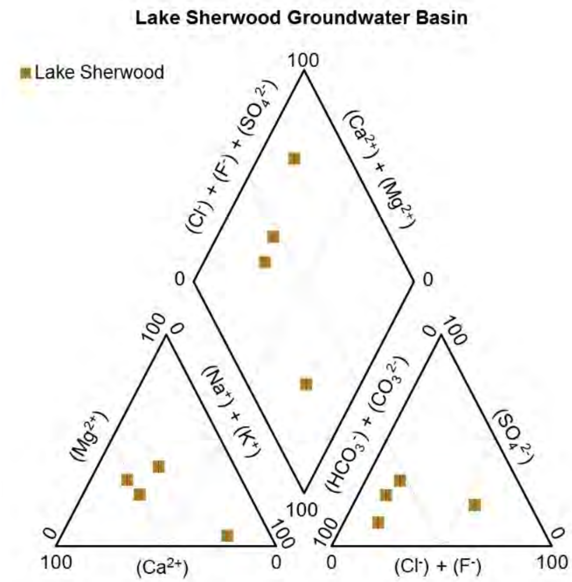

Figure E-22: Lake Sherwood Basin Piper Diagram.

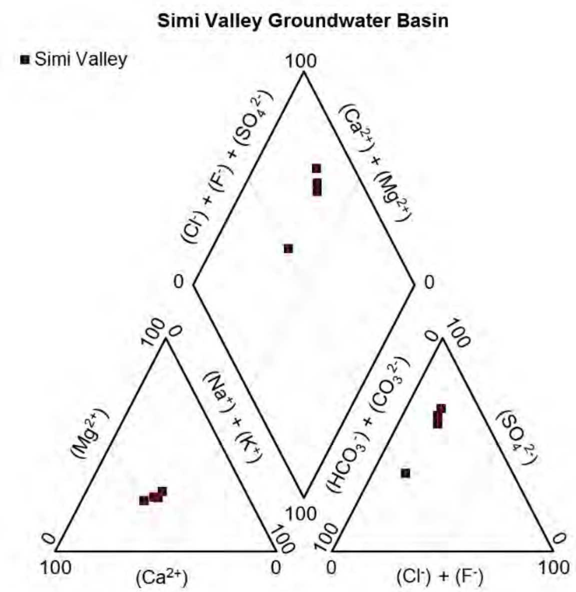

Figure E-23: Simi Valley Piper Diagram.

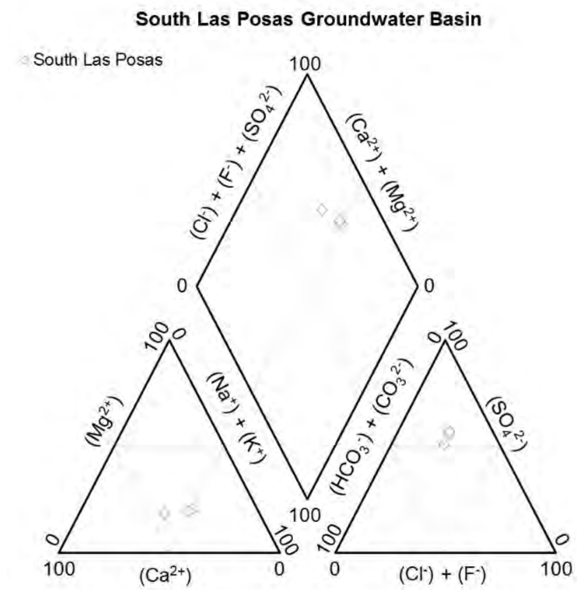

Figure E-24: South Las Posas Basin Piper Diagram.

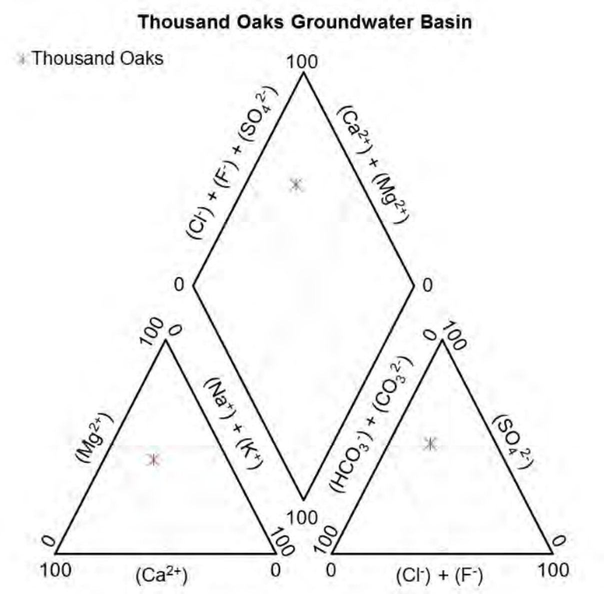

Figure E-25: Thousand Oaks Basin Piper Diagram.

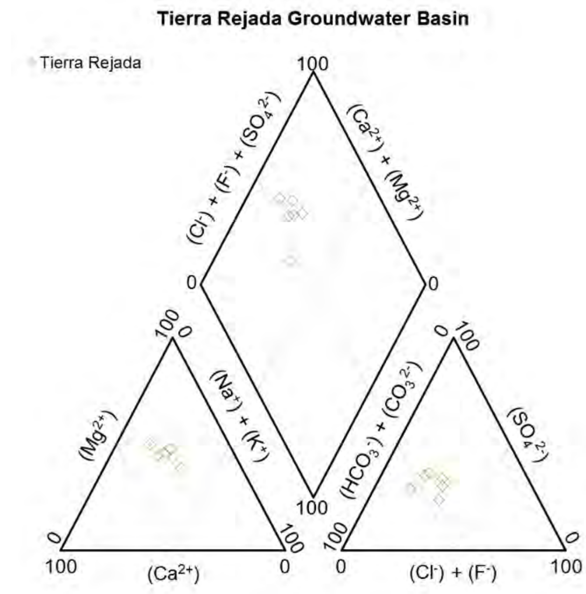

Figure E-26: Tierra Rejada Valley Basin Piper Diagram.

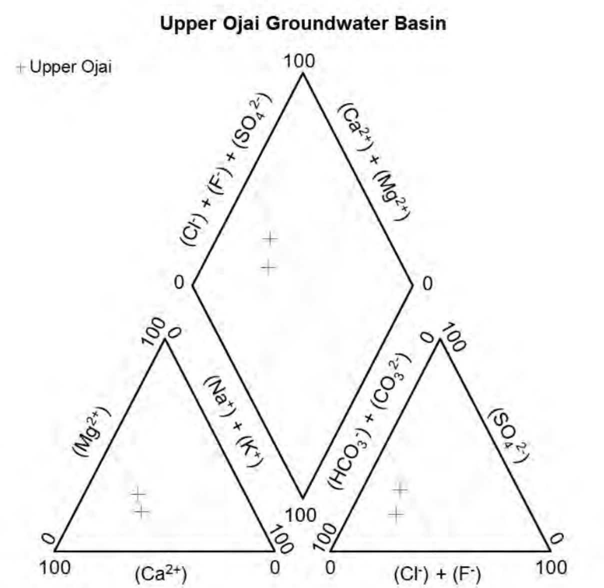

Figure E-27: Upper Ojai Basin Piper Diagram.

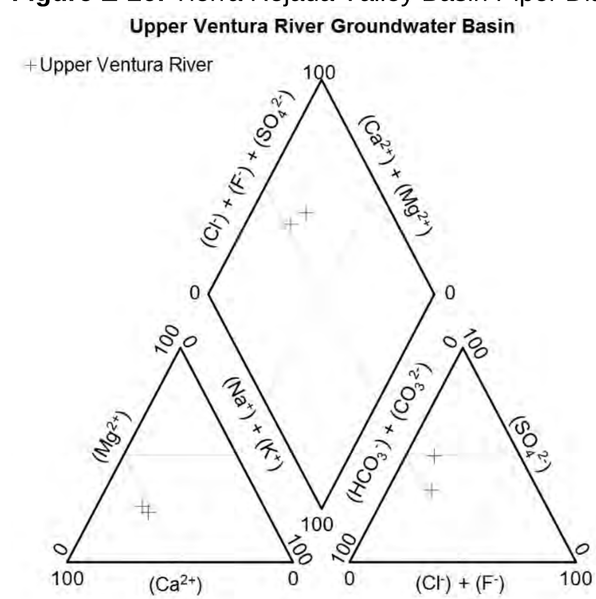

Figure E-28: Upper Ventura River Basin Piper Diagram.

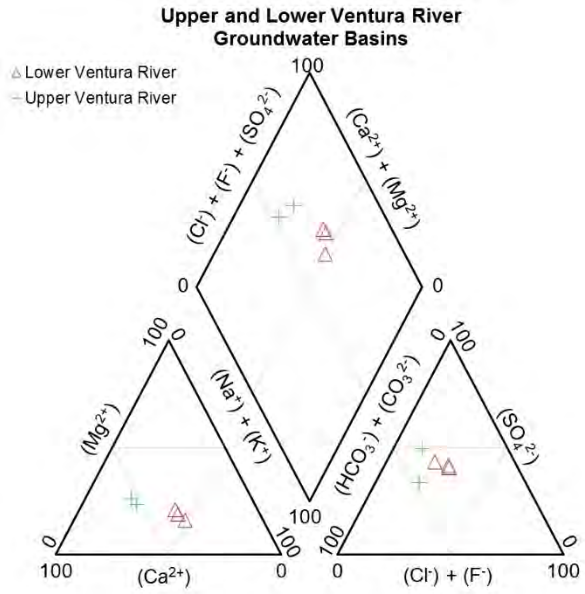

Figure E-29: Lower & Upper Ventura River Basins Piper Diagram.

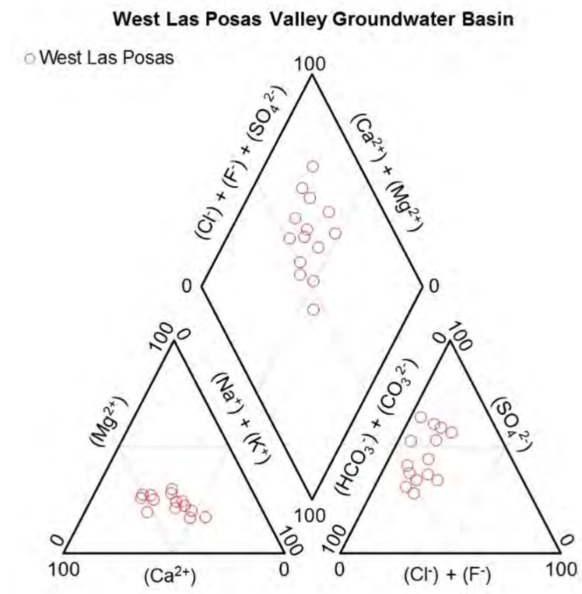

Figure E-30: West Las Posas Basin Piper Diagram.

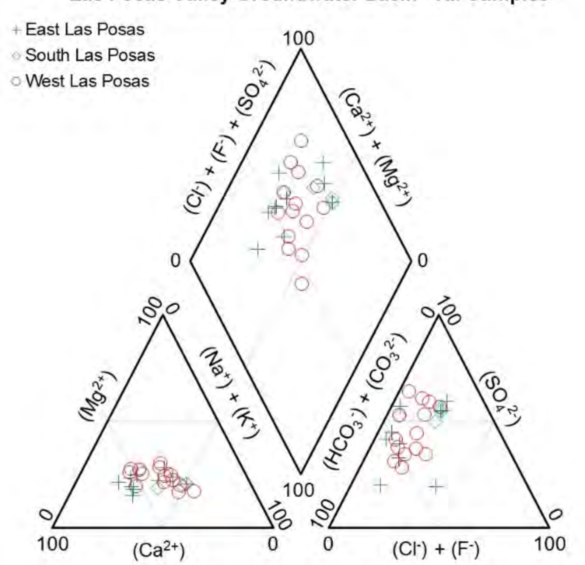

Figure E-31: All Las Posas Basins Piper Diagram.

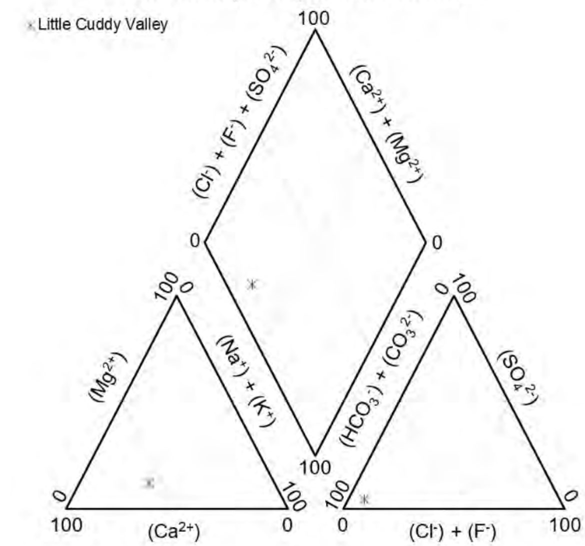

Figure E-32: Little Cuddy Valley Basin Piper Diagram.

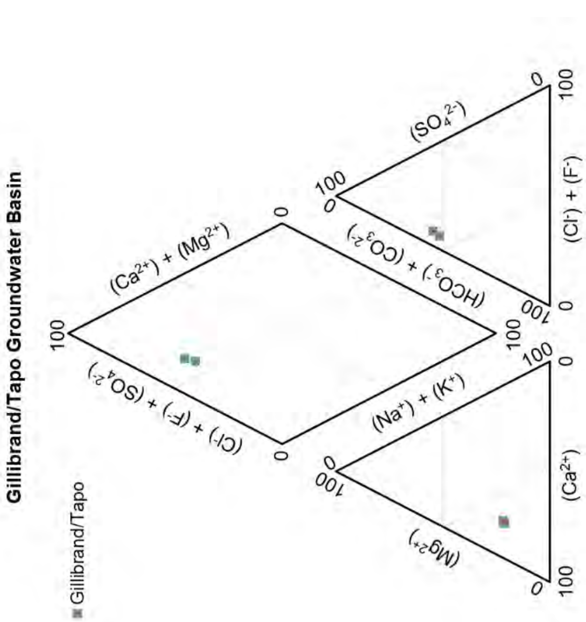

Figure E-33: Gillibrand/Tapo Basin Piper Diagram.

Appendix F - Basin Summary Sheets

The following basin summary sheets provide an overview of data, trends, and facts for groundwater basins in the County designated as high and medium priority in June of 2014 by the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. Trends for groundwater levels and groundwater quality were determined over the last five years for 2016. Trend analysis used sample sets with wells that were sampled or measured consistently over the five year period where available. In some instances this resulted in a small sample set. The spatial distribution of the wells may not cover the entire groundwater basin. Data from VCWPD and other agencies was also used in the trend analysis.

Arroyo Santa Rosa Basin

Groundwater Basin Surface Area:	3,270 acres
Irrigated Acreage:	≈1,755 (estimate determined from Ventura County Ag Commissioner's data)
Watershed:	Calleguas Creek
Aquifers:	Unconfined and confined aquifers
DWR Groundwater Basin Designation and Size:	Arroyo Santa Rosa Valley Basin (4-7). Surface area 3,747 acres. (DWR, 2014)
CASGEM Basin Priority:	Medium
DWR Groundwater Basin Population:	2,211 (2010)

Known Water Supply Wells (as of Mar. 2018)	**2017 Self Reported Groundwater Extraction to FCGMA (as of April 11, 2018) (West part of basin only)**	**Water Demand Estimate (Whole basin)**
Number of Wells: 91 Active: 42 Destroyed: 35 Abandoned: 5 Can't Locate: 9	Agricultural Extractions - 1,041 Af/Yr Municipal, Industrial and Domestic - 0 Af/Yr	Irrigation Demand @ 2 AF/Ac:3,510 AF/Yr Municipal Demand @ 0.5 AF/person/Yr: 1,105 AF/Yr Total Demand Estimate: 4,615 AF/Yr

2017 Groundwater Levels in General for All Wells Gauged by County

"Key" well 02N20W26B03S - December level was down 27.40 feet from the January measurement.

In general for 4 wells measured in 2017 in the basin, water levels declined in 3 and rose in 1 well over the course of the year from the 1st quarter reading to the last quarter reading.

2017 Groundwater Quality in General for All Wells Sampled by County

(6 wells)

The water type In 1 of the wells is magnesium bicarbonate type and 5 wells are magnesium sulfate type.

Primary MCL Exceedances for Nitrate >45mg/l?	Yes, 5 wells
Secondary MCL Excedances for Chloride >250mg/l?	No
Secondary MCL Excedances for TDS >500mg/l?	Yes, 6 wells
Secondary MCL Excedances for Sulfate >250mg/l?	No

5 Year Groundwater Level Trend 2013 - 2017

"Key" well 02N20W26B03S: ⬇

In general for 5 wells consistently measured: ⬇

5 Year Groundwater Quality Trend 2013-2017

SWN	Nitrate	Chloride	TDS	Sulfate
02N19W19P02S	⬇	⬆	⬇	⬆
02N20W23G03S	➡	⬆	⬆	⬆
02N20W25C06S	➡	⬆	⬇	➡

Wells are generally in the southern central part of the basin.

Sources of Groundwater Recharge

Basin Recharge: Infiltration of precipitation. Subsurface flow from Tierra Rejada basin. Surface flow percolation from Arroyo Santa Rosa and Conejo Creek. Waste water returns from residential onsite septic systems. (MWH, 2013)

Potable Water Sources

Groundwater from Arroyo Santa Rosa Basin. Imported State Project Water via Calleguas Municipal Water District.

Non-Potable Water Source

Reclaimed water from Hill Canyon Waste Water Treatment Plant via Conejo Creek.

Subsurface Hydrologic Connection to Other Groundwater Basins

Upgradient: Arroyo Santa Rosa basin receive some subsurface inflow from Tierra Rejada basin. (MWH, 2013)

Downgradient: No

DWR CASGEM Groundwater Basin Prioritization Level - Medium

Impact Comments: Some primary and secondary inorganic contaminants above the MCL (B-118).

Groundwater Quality Trend Notes: Trend is relatively flat, or no clear trend ➡; Level trending up ⬆; Level Trending down ⬇

Cuyama Valley Basin

Groundwater Basin Surface Area:	16,560 acres
Irrigated Acreage:	≈1,410 (estimate determined from Ventura County Ag Commissioner's data)
Watershed:	Cuyama River
Aquifers:	Unconfined Aquifer
DWR Groundwater Basin Designation and Size:	Cuyama Valley (3-13) Surface area 242,114 Acres. (DWR, 2014)
CASGEM Basin Priority:	Medium
DWR Groundwater Basin Population:	1,236 (2010)

Known Water Supply Wells (as of Mar. 2018)

Number of Wells: 152
Active: 113
Destroyed: 8
Abandoned: 11
Can't Locate: 20

Water Demand Estimate

Irrigation Demand @ 2 AF/Ac: 2,820 AF/Yr

Municipal Demand @ 0.5AF/person/Yr: 618 AF/Yr
Total Demand Estimate: 3,438 AF/Yr

2017 Groundwater Levels in General for All Wells Gauged by County

Note: Wells are measured twice per year in the Cuyama Valley basin.

"Key" well 07N23W16R01S - Well was dry at the fall measurement.

Both spring and fall measurements were obtained on 4 wells in the basin in 2017. The water level in all wells decreased from the spring measurement to the fall measurement.

2017 Groundwater Quality in General for All Wells Sampled by County

(2 wells)

The water type for both samples is sodium sulfate type.

Primary MCL Exceedances for Nitrate >45mg/l?	No
Secondary MCL Excedances for Chloride >250mg/l?	No
Secondary MCL Excedances for TDS >500mg/l?	Yes, 2 wells
Secondary MCL Excedances for Sulfate >250mg/l?	No

5 Year Groundwater Level Trend 2013 - 2017

"Key" well 07N23W16R01S: ↓

In general for 2 wells consistently measured: ↓

5 Year Groundwater Quality Trend 2013-2017

SWN	Nitrate	Chloride	TDS	Sulfate
09N23W30E05S	↑	↑	↓	↑
08N24W17G02S	→	↑	↓	↑

Wells are in the northern portion of the basin.

Sources of Groundwater Recharge

Basin Recharge: Infiltration of precipitation. Seepage from the Cuyama River. (DWR, 2006)

Potable Water Sources

Groundwater from Cuyama Valley groundwater basin.

Subsurface Hydrologic Connection to Other Groundwater Basins

Within Ventura County: None

DWR CASGEM Groundwater Basin Prioritization Level - Medium

Impact Comments:Local salinity and TDS impairments in basin (B-118)

Groundwater Quality Trend Notes: Trend is relatively flat, or no clear trend →; Level trending up ↑; Level Trending down ↓

East Las Posas Basin

Groundwater Basin Surface Area:	19,771 acres
Irrigated Acreage:	≈7,784 acres (estimate determined from Ventura County Ag Commissioner's data)
Watershed:	Calleguas Creek
Aquifers:	Unconfined and confined aquifers
DWR Groundwater Basin Designation and Size:	Los Posas Valley Basin (4-8). Surface area 42,353 acres. Note: DWR groups three County basins into Las Posas Valley Basin (4-8) (DWR, 2014)
CASGEM Basin Priority:	High
DWR Groundwater Basin Population:	39,385 (2010)

Known Water Supply Wells (as of Mar. 2018)

Number of Wells: 250
Active: 153
Destroyed: 62
Abandoned: 21
Can't Locate: 14

2017 Self Reported Groundwater Extraction to FCGMA (as of April 11, 2018)

Agricultural Extractions: 21,446 AF/Yr

Municipal, Industrial, and Domestic Extractions: 1,218 AF/Yr

Total: 22,664 AF/yr

2017 Groundwater Levels in General for All Wells Gauged by County

"Key" well 03N20W26R03S - December level was down 16.2 feet from the March measurement.

In general for 11 wells measured in 2017 in the basin, water levels declined in 9 wells and rose in 2 wells over the course of the year from the 1st quarter reading to the last quarter reading.

2017 Groundwater Quality in General for All Wells Sampled by County

(9 wells)

The water type in 6 samples is calcium sulfate type and the remaining 3 samples are calcium bicarbonate type.

Primary MCL Exceedances for Nitrate >45mg/l?	Yes, 2 wells
Secondary MCL Excedances for Chloride >250mg/l?	No
Secondary MCL Excedances for TDS >500mg/l?	Yes, 5 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 4 wells

5 Year Groundwater Level Trend 2013 - 2017

"Key" well 03N20W26R03S: →

→

The 5 year trend based on 2013 through 2017 groundwater level elevation maps varies.

The majority of the wells in the basin show a downward trend while a few of the wells show a rising trend.

5 Year Groundwater Quality Trend 2013-2017

SWN	Nitrate	Chloride	TDS	Sulfate
02N20W09Q05/07S	↑	↑	↑	↑
02N20W16B06S	→	↑	→	↑
03N19W29K07/08S	↑	→	↓	→
03N19W29K06S	↑	↑	→	→

Two wells are located in the south, three wells are located in the east.

Sources of Groundwater Recharge

Basin Recharge: Infiltration of precipitation, minor stream flow across outcrops of the Fox Canyon and Grimes Canyon gravels, and percolation from flow in the Arroyo Las Posas. (DWR, 2006) Imported State Project Water via injection in the Calleguas Municipal Water District ASR well field.

Potable Water Sources

Groundwater from East Las Posas basin. Imported State Project Water from Calleguas MWD to various purveyors.

Subsurface Hydrologic Connection to Other Groundwater Basins

West:Possible connection to West Las Posas basin in NW part of basin.

South/Southeast: South Las Posas Basin.

Southwest: Restrictive subsurface structure between Pleasant Valley basin and East Las Posas basin may cause spillover from East Las Posas to Pleasant Valley when basin is full.

DWR CASGEM Groundwater Basin Prioritization Level - High

Impact Comments: TDS is generally high in this basin. Pubic Comment includes reports of subsidence, overdraft and saline intrusion (chloride from adjacent basin?)

Groundwater Quality Trend Notes: Trend is relatively flat, or no clear trend →; Level trending up ↑; Level Trending down ↓

Fillmore Basin

Groundwater Basin Surface Area:	24,392 acres
Irrigated Acreage:	≈12,230 acres (estimate determined from Ventura County Ag Commissioner's data)
Watershed:	Santa Clara River
Aquifers:	Unconfined Aquifer
DWR Groundwater Basin Designation and Size:	Santa Clara River Valley Basin, Fillmore Subbasin (4-4.05). Surface area 20,842 acres. (DWR, 2006)
CASGEM Basin Priority:	Medium
DWR Groundwater Basin Population:	16,417 (2010)

Known Water Supply Wells (as of Feb. 2017)

Number of Wells: 645
Active: 467
Destroyed: 83
Abandoned: 33
Can't Locate: 62

2017 Self Reported Groundwater Extraction to UWCD (as of April 11, 2018)

Agricultural Extractions: 47,134 AF/Yr

Municipal Extractions: 2,352 AF/Yr

Total Extractions: 49,486 AF/Yr

2017 Groundwater Levels in General for All Wells Gauged by County

"Key" well 03N20W05D01S - December level was down 12.3 feet from the March measurement.

In general for the wells measured in the basin in 2017, water levels declined over the course of the year from the 1st quarter reading to the last quarter in all but 3 wells.

2017 Groundwater Quality in General for All Wells Sampled by County

(8 wells)

The water is calcium sulfate type in 7 samples and calcium bicarbonate type in 1 sample.

Primary MCL Exceedances for Nitrate >45mg/l?	Yes, 1 well
Secondary MCL Excedances for Chloride >250mg/l?	No
Secondary MCL Excedances for TDS >500mg/l?	Yes, 8 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 7 wells

5 Year Groundwater Level Trend 2013 - 2017

"Key" well 03N20W05D01S: ↓

The 5 year trend based on 2013 through 2017 groundwater level elevation maps is downward.

5 Year Groundwater Quality Trend 2013-2017

(*sampled by UWCD)

SWN	Nitrate	Chloride	TDS	Sulfate
03N20W02R05S	↓	→	→	↓
03N21W01P08S	↑	→	↓	↓
04N19W31F01S	→	↓	↓	↓
03N20W06D03S*	↑	↑	↓	↓
04N19W30D01S*	→	↓	↓	↓
04N20W33C03S*	↓	↓	↓	↓

Wells are distributed throughout the basin.

Sources of Groundwater Recharge

Basin Recharge: Infiltration of precipitation. Subsurface flow from Piru basin. Surface flow percolation from Santa Clara River, Sespe Creek, and minor tributaries. (DWR, 2006) Imported State Project Water via Lake Piru release to Santa Clara River.

Subsurface Hydrologic Connection to Other Groundwater Basins

Upgradient: Yes, Piru groundwater basin.
Downgradient: Yes, Santa Paula groundwater basin.

DWR CASGEM Groundwater Basin Prioritization Level - Medium

Impact Comments: Many groundwater quality impairments in the basin; Nitrates problematic during dry periods; High TDS, etc. (B-118). REH - PubComm indicated WQ is localized and being managed

Groundwater Quality Trend Notes: Trend is relatively flat, or no clear trend →; Level trending up ↑; Level Trending down ↓

Oxnard Plain Forebay Basin

Groundwater Basin Surface Area:	7,010 acres
Irrigated Acreage:	≈1,797 (estimate determined from Ventura County Ag Commissioner's data)
Watershed:	Santa Clara River
Aquifers:	Unconfined and confined
DWR Groundwater Basin Designation and Size:	Santa Clara River Valley Basin, Oxnard Subbasin (4-4.02) Surface area 58200 Acres. Note: DWR groups two County basins into Oxnard Subbasin (4-4.02) (DWR, 2014)
CASGEM Basin Priority:	High
DWR Groundwater Basin Population:	235,973 (2010) Note: DWR groups two County basins into Oxnard Subbasin (4-4.02)

Known Water Supply Wells (as of Mar. 2018)

Number of Wells: 312
Active: 108
Destroyed: 154
Abandoned: 17
Can't Locate: 33

2017 Self Reported Groundwater Extraction to FCGMA (as of April 11, 2018)

Agricultural Extractions: 6,294 AF/Yr

Municipal, Industrial, and Domestic Extractions: 10,086 AF/Yr

Total: 16,380 AF/yr

2017 Groundwater Levels in General for Wells Gauged by County and UWCD

"Key" well 02N22W12R04S - Note: Measurements from UWCD. There was measurable water in the well in March but the well was dry at the end of 2017.

In general for wells measured by VCWPD in 2017 in the basin, water levels declined over the course of the year from the 1st quarter reading to the last quarter reading. VCWPD was unable to measure 1 well in 2017.

2017 Groundwater Quality in General for All Wells Sampled by County
(2 wells)

Forebay basin: the 2 samples are calcium sulfate type.

Primary MCL Exceedances for Nitrate >45mg/l?	Yes, 1 well
Secondary MCL Excedances for Chloride >250mg/l?	No
Secondary MCL Excedances for TDS >500mg/l?	Yes, 2 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 2 wells

5 Year Groundwater Level Trend 2013 - 2017

"Key" well 02N22W12R04S: Well is dry as of November 2017 measurement. This is an upper sysytem well.

Upper System ↓

The 5 year trend based on 2013 through 2017 groundwater level elevation maps is downward.

Lower System ↓

The 5 year trend based on 2013 through 2017 groundwater level elevation maps is downward.

5 Year Groundwater Quality Trend 2013-2017

Upper System (Includes wells sampled by other agencies)

SWN	Nitrate	Chloride	TDS	Sulfate
02N22W12J02S	→	↓	↓	↓
02N22W14P02S	↑	↑	↑	↑
02N22W23B02S	↑	→	→	↑
02N22W23G03S	↑	→	→	→
02N22W26E01S	↑	↑	↑	↑

Lower System

SWN	Nitrate	Chloride	TDS	Sulfate
02N22W13N02S	→	→	↑	↑
02N22W23H04S	→	→	↑	↓
02N22W26B03S	→	→	↓	↓

Wells are located in the southeast portion of the basin.

Sources of Groundwater Recharge

Basin Recharge: percolation of surface flow from the Santa Clara River and, some subsurface flow from Santa Paula Subbasin makes its way over or across the Oak Ridge fault. Some amount of irrigation return also occurs (DWR, 2006) Imported State Project Water via Lake Piru release to Santa Clara River.

Potable Water Sources

Groundwater from Oxnard Plain Forebay basin. Surface water from Santa Clara River diversion via United Water Conservation District. Groundwater from Oxnard Plain Pressure basin via Oxnard Water System. Imported State Project Water from Calleguas MWD via Oxnard Water System.

Subsurface Hydrologic Connection to Other Groundwater Basins

Upgradient: Yes, Santa Paula groundwater basin to the northwest and Oxnard Plain groundwater basin to the east and south.

Downgradient: Yes, Mound groundwater basin to the southwest. Oxnard Plain Pressure groundwater basin to the south and southwest. Flow into and out of Mound

DWR CASGEM Groundwater Basin Prioritization Level - High

Impact Comments: Saline intrusion, nitrates, pesticides, and PCBs have impacted some water wells per (B-118)

Groundwater Quality Trend Notes: Trend is relatively flat, or no clear trend →; Level trending up ↑; Level Trending down ↓

Mound Basin

Groundwater Basin Surface Area:	12,023 acres
Irrigated Acreage:	≈2,075 acres (estimate determined from Ventura County Ag Commissioner's data)
Watershed:	Santa Clara River
Aquifers:	Unconfined and confined aquifers
DWR Groundwater Basin Designation and Size:	Santa Clara River Valley Basin, Mound Subbasin (4-4.03) Surface area 14,846 Acres. (DWR, 2014)
CASGEM Basin Priority:	Medium
DWR Groundwater Basin Population:	77,886 (2010)

Known Water Supply Wells (as of Mar. 2018)

Number of Wells: 81
Active: 31
Destroyed: 36
Abandoned: 6
Can't Locate: 8

2017 Self Reported Groundwater Extraction to UWCD (as of April 11, 2018)

Agricultural Extractions: 3,500 AF/Yr

Municipal Extractions: 1,496 AF/Yr

Total Extractions: 4,995 AF/Yr

2017 Groundwater Levels in General for All Wells Gauged by County

"Key" well 02N22W07M02S - November level was down 4.4 feet from the January measurement.

In general for 3 wells measured in the basin in 2017, water levels declined in all 3 wells over the course of the year from the 1st quarter reading to the last quarter reading.

2017 Groundwater Quality in General for All Wells Sampled by County

(5 wells)

The water type in the 5 samples is calcium sulfate type.

Primary MCL Exceedances for Nitrate >45mg/l?	Yes, 2 wells
Secondary MCL Excedances for Chloride >250mg/l?	No
Secondary MCL Excedances for TDS >500mg/l?	Yes, 5 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 5 wells

5 Year Groundwater Level Trend 2013 - 2017

"Key" well 02N22W07M02S: ↓

The 5 year trend based on 2013 through 2017 groundwater level elevation maps is downward.

5 Year Groundwater Quality Trend 2013-2017

(Based on wells sampled by other agencies)(D=Deep aquifer S=Shallow aquifer)

SWN	Nitrate	Chloride	TDS	Sulfate
02N22W08F01S (D)	→	→	↑	→
02N22W08G01S (D)	↓	→	↓	↓
02N22W07M02S (D)	→	→	→	↓
02N22W09L03S (D)	→	→	→	→
02N23W15J02S (D)	→	↑	→	↑
02N22W07M03S (S)	↑	↑	↑	↓
02N22W09L04S (S)	↓	↓	↑	→
02N23W15J03S (S)	→	↓	↓	↓

Wells are generally in the center of the basin along a east to west line.

Sources of Groundwater Recharge

Basin Recharge: Infiltration of precipitation. Subsurface flow from Santa Paula basin. Surface flow percolation from Santa Clara River and, percolation of direct precipitation into the San Pedro Formation which crops out along the northern edge of the subbasin. (DWR, 2006) Imported State Project Water via Lake Piru release to Santa Clara River.

Potable Water Sources

Groundwater from Mound Basin, Ventura River Basin, Oxnard Plain Pressure Basin via Ventura Water System. Surface water from Ventura River diversion via Ventura Water System. Surface water from Lake Casitas via Casitas MWD to Ventura Water System.

Subsurface Hydrologic Connection to Other Groundwater Basins

Upgradient: Yes, Santa Paula groundwater basin.

East/Southeast: Yes, Oxnard Plain Forebay and Oxnard Plain Pressure groundwater basins. Flow into and out of basin dependent on groundwater levels.

DWR CASGEM Groundwater Basin Prioritization Level - Medium

Impact Comments: Some primary and secondary inorganic contaminants above the MCL (B-118).

Groundwater Quality Trend Notes: Trend is relatively flat, or no clear trend →; Level trending up ↑; Level Trending down ↓

Ojai Valley Basin

Groundwater Basin Surface Area:	6,470 acres
Irrigated Acreage:	≈2,135 (estimate determined from Ventura County Ag Commissioner's data)
Watershed:	Ventura River
Aquifers:	Unconfined and confined aquifers
DWR Groundwater Basin Designation and Size:	Ojai Valley Basin (4-2). Surface area 6,851 acres. (DWR, 2014)
CASGEM Basin Priority:	Medium
DWR Groundwater Basin Population:	8,268 (2010)

Known Water Supply Wells (as of Mar. 2018)	**2017 Self Reported Groundwater Extractions to OBGMA**	**Water Demand Estimate**
Number of Wells: 347 Active: 196 Destroyed: 84 Abandoned: 14 Can't Locate: 53	Extractions: 4,514 Af/yr	Irrigation Demand @ 2 AF/Ac:4,270 AF/Yr Municipal Demand @ 0.5AF/person/Yr: 4,134 AF/Yr Total Demand Estimate: 8,404 AF/Yr

2017 Groundwater Levels in General for All Wells Gauged by County

"Key" well 04N22W05L08S: - The December reading was up 27.8 feet from the March level.

In general for 14 wells consistently measured in 2017 in the basin, water levels declined in 5 wells and rose in 9 wells over the course of the year from the 1st quarter reading to the last quarter reading.

2017 Groundwater Quality in General for All Wells Sampled by County

(8 wells)

Ojai Valley groundwater: 1 sample is calcium bicarbonate type, 1 sample is sodium bicarbonate type, and 6 samples are calcium sulfate type.

Primary MCL Exceedances for Nitrate >45mg/l?	No
Secondary MCL Excedances for Chloride >250mg/l?	No
Secondary MCL Excedances for TDS >500mg/l?	Yes, 8 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 2 wells

5 Year Groundwater Level Trend 2013 - 2017

"Key" well 04N22W05L08S: ↓

In general for 17 wells consistently measured: (15 wells) ↓ (2 wells) →

5 Year Groundwater Quality Trend 2013-2017

SWN	Nitrate	Chloride	TDS	Sulfate
04N22W04P05S	↑	↑	↓	↓
04N22W06J09S	→	↓	↓	↓
05N22W33J01S	↑	↓	↓	↓

Wells are located in various areas of the basin.

Sources of Groundwater Recharge

Basin Recharge:infiltration of precipitation on the valley floor, and percolation of surface waters through alluvial channels. (DWR, 2006)

Potable Water Sources

Groundwater from Ojai Valley Basin. Surface water from Lake Casitas via Casitas MWD to various water purveyors.

Subsurface Hydrologic Connection to Other Groundwater Basins

Upgradient: No

Downgradient: No. The basin is drained by Thacher and San Antonio Creeks to the Ventura River. (DWR, 2006)

DWR CASGEM Groundwater Basin Prioritization Level - Medium

Impact Comments: High nitrates and sulfates reported in the basin. Medium to high levels of nitrates reported in the basin

Groundwater Quality Trend Notes: Trend is relatively flat, or no clear trend →; Level trending up ↑; Level Trending down ↓

Oxnard Plain Pressure Basin

Groundwater Basin Surface Area:	47,167 acres
Irrigated Acreage:	≈21,540 (estimate determined from Ventura County Ag Commissioner's data)
Watershed:	Santa Clara River and Calleguas Creek
Aquifers:	Unconfined and confined aquifers
DWR Groundwater Basin Designation and Size:	Santa Clara River Valley Basin, Oxnard Subbasin (4-4.02) Surface area 58,200 Acres. Note: DWR groups two County basins into Oxnard Subbasin (4-4.02) (DWR, 2014)
CASGEM Basin Priority:	High
DWR Groundwater Basin Population:	235,973 (2010)

Known Water Supply Wells (as of Mar. 2018)

Number of Wells: 912
Active: 380
Destroyed: 389
Abandoned: 58
Can't Locate: 85

2017 Self Reported Groundwater Extraction to FCGMA (as of April 11, 2018)

Agricultural Extractions: 46,422 AF/Yr

Municipal, Industrial, and Domestic Extractions: 13,610 AF/Yr

Total: 60,032 AF/yr

2017 Groundwater Levels in General for All Wells Gauged by County

UAS "Key" well 01N21W07H01S - December level was down 13.2 feet from the March measurement.

LAS "Key" well 01N21W32K01S - December level was down 54.3 feet from the January measurement.

In general for 23 wells consistently measured in 2017 in the basin, water levels declined in 22 wells and rose in 1 wells over the course of the year from the 1st quarter reading to the last quarter reading.

2017 Groundwater Quality in General for All Wells Sampled by County

(41 wells)

UAS - Oxnard Pressure basin groundwater: Oxnard aquifer samples are calcium sulfate type. Mugu aquifer samples are calcium sulfate type.

LAS - Oxnard Pressure basin groundwater: Hueneme aquifer samples are calcium sulfate type. Fox Canyon aquifer samples are mainly calcium sulfate type.

Primary MCL Exceedances for Nitrate >45mg/l?	Yes, 3 wells
Secondary MCL Excedances for Chloride >250mg/l?	Yes, 1 wells
Secondary MCL Excedances for TDS >500mg/l?	Yes, 41 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 34 wells

5 Year Groundwater Level Trend 2013 - 2017

UAS "Key" well 01N21W07H01S: ↓

LAS "Key" well 01N21W32K01S: ↓

Upper System

The 5 year trend based on 2013 through 2017 groundwater level elevation maps is downward.

Lower System

The 5 year trend based on 2013 through 2017 groundwater level elevation is downward.

5 Year Groundwater Quality Trend 2013-2017

Upper System

SWN	Nitrate	Chloride	TDS	Sulfate
01N22W06B01S	↓	↑	↑	↑
02N23W25M01S	↓	↓	↓	→

Lower System

SWN	Nitrate	Chloride	TDS	Sulfate
01N21W08R01S	→	↑	→	→
01N21W16M03S	→	↓	↓	↑
01N21W21H02S	→	↑	↑	↑
01N21W28D01S	→	→	↑	↑
01N22W03F05S	→	→	↓	↓
01N22W16D04S	→	→	↓	↑
02N21W20Q05S	→	↑	↓	↑
02N22W36E02S	→	→	↓	↓

For upper system, both wells are in the northwest. For lower system the wells are generally in the center of the basin along a northeast to southwest line, and a small group in the southeast.

Sources of Groundwater Recharge

Basin Recharge:percolation of surface flow from the Santa Clara River, into the Oxnard Forebay; precipitation and floodwater from the Calleguas Creek drainage percolate into the unconfined gravels near Mugu Lagoon. Some underflow may come from the Las Posas and Pleasant Valley Basins on the east. Flow into and out of Mound basin dependent on water levels. (DWR,

Potable Water Sources

Groundwater from Oxnard Plain Pressure Basin via various purveyors. Groundwater from Oxnard Forebay basin via United Water system. Surface water from Santa Clara River via United Water System. Imported State Project water from Calleguas MWD to various water purveyors.

Subsurface Hydrologic Connection to Other Groundwater Basins

North: Oxnard Forebay basin, Mound basin

East/Northeast: Pleasant Valley basin, West Las Posas basin

DWR CASGEM Groundwater Basin Prioritization Level - High

Impact Comments: Saline intrusion, nitrates, pesticides, and PCBs have impacted some water wells per (B-118)

Groundwater Quality Trend Notes: Trend is relatively flat, or no clear trend →; Level trending up ↑; Level Trending down ↓

Piru Basin

Groundwater Basin Surface Area:	10,656 acres
Irrigated Acreage:	≈5,600 (estimate determined from Ventura County Ag Commissioner's data)
Watershed:	Santa Clara River
Aquifers:	Unconfined Aquifer
DWR Groundwater Basin Designation and Size:	Santa Clara River Valley Basin, Piru Subbasin (4-4.06). Surface area 8,915 acres. (DWR, 2014)
CASGEM Basin Priority:	High
DWR Groundwater Basin Population:	2,666 (2010)

Known Water Supply Wells (as of Mar. 2018)

Number of Wells: 193
Active: 152
Destroyed: 22
Abandoned: 6
Can't Locate: 13

2017 Self Reported Groundwater Extraction to UWCD (as of April 11, 2018)

Agricultural Extractions: 11,500 AF/Yr

Municipal Extractions: 461 AF/Yr

Total Extractions: 11,961 AF/Yr

2017 Groundwater Levels in General for All Wells Gauged by County

"Key" well 04N19W25C02S - December level was up 24.3 feet from the March measurement.

In general for 5 wells consistently measured in 2017 in the basin, water levels rose in all 5 wells over the course of the year from the 1st quarter reading to the last quarter reading.

2017 Groundwater Quality in General for All Wells Sampled by County

(5 wells)

Piru basin groundwater is mainly calcium sulfate type.

Primary MCL Exceedances for Nitrate >45mg/l?	Yes, 1 well
Secondary MCL Excedances for Chloride >250mg/l?	No
Secondary MCL Excedances for TDS >500mg/l?	Yes, 5 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 5 wells

5 Year Groundwater Level Trend 2013 - 2017

"Key" well 04N19W25C02S: ↓

The 5 year trend based on 2013 through 2017 groundwater level elevation maps is downward.

5 Year Groundwater Quality Trend 2013-2017

(* sampled by UWCD)

SWN	Nitrate	Chloride	TDS	Sulfate
04N18W30J04S	→	↑	↑	↑
04N19W26H01S	↓	→	↓	→
04N19W34J04S	↑	↑	↑	↑
04N19W25M03S	↑	↑	↑	↑
04N18W20R01S*	→	↑	↑	→
04N18W27B01S*	→	↑	↑	↑
04N18W20M03S*	↑	↑	↑	↑

The wells are in the north central portion of the basin.

Sources of Groundwater Recharge

Basin Recharge: Infiltration of precipitation. Subsurface flow from East basin. Surface flow percolation from Santa Clara River, Piru Creek and Hopper Creek. (DWR, 2006) Imported State Project Water via Lake Piru release to Santa Clara River and percolation ponds.

Subsurface Hydrologic Connection to Other Groundwater Basins

Upgradient: Yes, East groundwater basin.
Downgradient: Yes, Fillmore groundwater basin.

DWR CASGEM Groundwater Basin Prioritization Level - High

DWR Impact Comments:GW Quality impacts: nitrates, storm runoff, leaking tanks, etc. (B-118). High Selenium and other inorganics, average TDS was 1450 mg/l (Ventura Co 2011 annual gw report)

Groundwater Quality Trend Notes: Trend is relatively flat, or no clear trend →; Level trending up ↑; Level Trending down ↓

Pleasant Valley Basin

Groundwater Basin Name:	Pleasant Valley
Groundwater Basin Surface Area:	20,267 acres
Irrigated Acreage:	≈7,980 (estimate determined from Ventura County Ag Commissioner's data)
Watershed:	Calleguas Creek
Aquifers:	Unconfined and confined aquifers
DWR Groundwater Basin Designation and Size:	Pleasant Valley Basin (4-6). Surface area 21,654 acres. (DWR, 2014)
CASGEM Basin Priority:	High
DWR Groundwater Basin Population:	69,392 (2010)

Known Water Supply Wells (as of Mar. 2018)

Number of Wells: 344
Active: 93
Destroyed: 179
Abandoned: 27
Can't Locate: 45

2017 Self Reported Groundwater Extraction to FCGMA (as of April 11, 2018)

Agricultural Extractions: 11,171 AF/Yr

Municipal, Industrial, and Domestic Extractions: 4,572 AF/Yr

Total: 15,743 AF/yr

2017 Groundwater Levels in General for All Wells Gauged by County

"Key" well 01N21W03C01S - December level was down 41.8 feet from the January measurement.

In general for wells consistently measured in 2017 in the basin, water levels declined over the course of the year from the 1st quarter reading to the last quarter reading.

2017 Groundwater Quality in General for All Wells Sampled by County

(16 wells)

Pleasant Valley basin groundwater: 1 sample is sodium sulfate type, and 15 samples are are calcium sulfate type

Primary MCL Exceedances for Nitrate >45mg/l?	Yes, 3 wells
Secondary MCL Excedances for Chloride >250mg/l?	Yes, 1 wells
Secondary MCL Excedances for TDS >500mg/l?	Yes, 16 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 12 wells

5 Year Groundwater Level Trend 2013 - 2017

"Key" well 01N21W03C01S: ↓

Upper System

The 5 year trend based on 2013 through 2017 groundwater level elevation maps is downward.

Lower System

The 5 year trend based on 2013 through 2017 groundwater level elevation maps is downward.

5 Year Groundwater Quality Trend 2013-2017

Upper System

SWN	Nitrate	Chloride	TDS	Sulfate
01N21W15H01S	→	↑	→	↑
01N21W10A02S	↑	↓	→	→

Lower System

SWN	Nitrate	Chloride	TDS	Sulfate
01N21W03K01S	↑	↓	→	↑
01N21W03R01S	↑	→	↑	↑
01N21W04K01S	↑	→	↓	↑
01N21W10G01S	→	↑	↑	↑
01N21W15D02S	→	→	↓	→
02N21W34G01S	→	↑	→	↑

One well is in the north central portion, the remaining are in the southwest.

Sources of Groundwater Recharge

Basin Recharge: dominantly from subsurface flow across the Springville fault zone. A modest amount of irrigation water and septic system effluent also contribute to basin recharge. (DWR, 2006)

Potable Water Sources

Groundwater from Pleasant Valley Basin, groundwater from Arroyo Santa Rosa basin via Camrosa Water District. Imported State Project water from Calleguas MWD to various water purveyors.

Subsurface Hydrologic Connection to Other Groundwater Basins

West: Yes, Oxnard Plain Pressure Basin.

East: No.

DWR CASGEM Groundwater Basin Prioritization Level - High

Impact Comments: PC - Discharge of poor quality GW from dewatering wells and effluent discharge from the wastewater treatment facility into the Arroyo Simi have led to rising water levels in the basin along with higher TDS and Chloride levels.

Groundwater Quality Trend Notes: Trend is relatively flat, or no clear trend →; Level trending up ↑; Level Trending down ↓

Santa Paula Basin

Groundwater Basin Surface Area:	21,100 acres
Irrigated Acreage:	≈9,100 acres (estimate determined from Ventura County Ag Commissioner's data)
Watershed:	Santa Clara River
Aquifers:	Unconfined Aquifer
DWR Groundwater Basin Designation and Size:	Santa Clara River Valley Basin, Santa Paula Subbasin (4-4.04) Surface area 22,899 Acres. (DWR, 2014)
CASGEM Basin Priority:	Medium
DWR Groundwater Basin Population:	46,816 (2010)

Known Water Supply Wells (as of Mar. 2018)

Number of Wells: 282
Active: 152
Destroyed: 77
Abandoned: 11
Can't Locate: 45

2017 Self Reported Groundwater Extraction to UWCD (as of April 11, 2018)

Agricultural Extractions: 15,772 AF/Yr

Municipal Extractions: 6,963 AF/Yr

Total Extractions: 22,735 AF/Yr

2017 Groundwater Levels in General for All Wells Gauged by County

"Key" well 02N22W02C01S - December level was down 7.6 feet from the March measurement.

In general for 6 wells measured in 2017 in the basin, water levels declined over the course of the year from the 1st quarter reading to the last quarter reading.

2017 Groundwater Quality in General for All Wells Sampled by County

(5 wells)

The water type for the 5 samples is calcium sulfate type.

Primary MCL Exceedances for Nitrate >45mg/l?	No
Secondary MCL Excedances for Chloride >250mg/l?	No
Secondary MCL Excedances for TDS >500mg/l?	Yes, 5 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 5 wells

5 Year Groundwater Level Trend 2013 - 2017

"Key" well 02N22W02C01S: ↓

The 5 year trend based on 2013 through 2017 groundwater level elevation maps is downward.

5 Year Groundwater Quality Trend 2013-2017

(Based on 3 wells sampled by other agencies)

SWN	Nitrate	Chloride	TDS	Sulfate
03N21W15C06S	→	→	→	→
03N21W15G03S	→	→	→	↓
03N21W16A02S	↓	↓	→	↓
03N21W16H06S	→	↑	→	↓
03N22W35Q01S	→	↑	↑	↑

One well is in the southwest portion of the basin and 4 wells are in the northeast end of the basin.

Sources of Groundwater Recharge

Basin Recharge: Infiltration of precipitation. Subsurface flow from Fillmore basin. Surface flow percolation from Santa Clara River, and Santa Paula Creek (DWR, 2006) Imported State Project Water via Lake Piru release to Santa Clara River.

Potable Water Sources

Groundwater from Santa Paula Basin

Subsurface Hydrologic Connection to Other Groundwater Basins

Upgradient: Yes, Fillmore groundwater basin.
Downgradient: Yes, Mound and Oxnard Plain Forebay groundwater basins

DWR CASGEM Groundwater Basin Prioritization Level - Medium

Impact Comments: Nitrates can fluctuate significantly in the basin, and above MCL. Other inorganics present above MCL.TDS is known to be high.

Groundwater Quality Trend Notes: Trend is relatively flat, or no clear trend →; Level trending up ↑; Level Trending down ↓

South Las Posas Basin

Groundwater Basin Surface Area:	10,189 acres
Irrigated Acreage:	≈2,233 (estimate determined from Ventura County Ag Commissioner's data)
Watershed:	Calleguas Creek
Aquifers:	Unconfined and confined aquifers
DWR Groundwater Basin Designation and Size:	Los Posas Valley Basin (4-8). Surface area 42,353 acres. Note: DWR groups three County basins into Las Posas Valley Basin (4-8) (DWR, 2014)
CASGEM Basin Priority:	High
DWR Groundwater Basin Population:	39,835 (2010)

Known Water Supply Wells (as of Mar. 2018)

Number of Wells: 172
Active: 30
Destroyed: 80
Abandoned: 20
Can't Locate: 42

2017 Self Reported Groundwater Extraction to FCGMA (as of April 11, 2018)

Agricultural Extractions: 1,646 AF/Yr

Municipal, Industrial, and Domestic Extractions: 113 AF/Yr

Total: 1,759 AF/yr

2017 Groundwater Levels in General for All Wells Gauged by County

"Key" well 02N19W05K01S - December level was up 0.6 foot from the January measurement.

In general for 2 wells measured in 2017 in the basin, water level decreased in one well and increased in one well over the course of the year from the 1st quarter reading to the last quarter reading.

2017 Groundwater Quality in General for All Wells Sampled by County

(3 wells)

The water type in 2 samples is calcium sulfate type and 1 sample is sodium sulfate type.

Primary MCL Exceedances for Nitrate >45mg/l?	No
Secondary MCL Excedances for Chloride >250mg/l?	No
Secondary MCL Excedances for TDS >500mg/l?	Yes, 3 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 3 wells

5 Year Groundwater Level Trend 2013 - 2017

"Key" well 02N22W05K01S: ↑

In general 2 wells measured have a slight upward trend.

5 Year Groundwater Quality Trend 2013-2017

SWN	Nitrate	Chloride	TDS	Sulfate
02N19W07B02S	↑	↑	↓	↑
02N20W01Q01S	↓	↑	↑	↑

Wells are in the western portion of the basin.

Sources of Groundwater Recharge

Basin Recharge: Infiltration of precipitation, minor stream flow across outcrops of the Fox Canyon and Grimes Canyon gravels, and percolation from flow in the Arroyo Las Posas. (DWR, 2006)

Potable Water Sources

Groundwater from South and East Las Posas basins. Imported State Project Water from Calleguas MWD to various purveyors.

Subsurface Hydrologic Connection to Other Groundwater Basins

West/Northwest: East Las Posas groundwater basin.

DWR CASGEM Groundwater Basin Prioritization Level - High

Impact Comments: Some primary and secondary inorganic contaminants above the MCL (B-118).

Groundwater Quality Trend Notes: Trend is relatively flat, or no clear trend ⇨; Level trending up ↑; Level Trending down ↓

Tierra Rejada Basin

Groundwater Basin Surface Area:	1,774 acres
Irrigated Acreage:	≈450 (estimate determined from Ventura County Ag Commissioner's data)
Watershed:	Calleguas Creek
Aquifers:	Unconfined Aquifer
DWR Groundwater Basin Designation and Size:	Tierra Rejada (4-15) Surface area 4,611 Acres. (DWR, 2014)
CASGEM Basin Priority:	Very Low
DWR Groundwater Basin Population:	3,673 (2010)

Known Water Supply Wells (as of Mar. 2018)

Number of Wells: 53
Active: 34
Destroyed: 8
Abandoned: 1
Can't Locate: 10

Water Demand Estimate

Irrigation Demand @ 2 AF/Ac: 900 AF/Yr

Municipal Demand @ 0.5AF/person/Yr: 1,834 AF/Yr

Total Demand Estimate: 2,734 AF/Yr

2017 Groundwater Levels in General for All Wells Gauged by County

No key well is in this basin.

In general for 3 wells measured in 2017 in the basin, water levels decreased over the course of the year from the 1st quarter reading to the last quarter reading.

2017 Groundwater Quality in General for All Wells Sampled by County

(6 wells)

Tierra Rejada groundwater: 1 sample is magnesium bicarbonate type, 5 samples are magnesium sulfate type.

Primary MCL Exceedances for Nitrate >45mg/l?	Yes, 2 wells
Secondary MCL Exceedances for Chloride >250mg/l?	No
Secondary MCL Exceedances for TDS >500mg/l?	Yes, 6 wells
Secondary MCL Exceedances for Sulfate >250mg/l?	Yes, 1 wells

5 Year Groundwater Level Trend 2013 - 2017

In general for 3 wells consistently measured: ↓

5 Year Groundwater Quality Trend 2013-2017

SWN	Nitrate	Chloride	TDS	Sulfate
02N19W10R02S	↓	→	↓	→
02N19W11J03S	↓	↓	↓	↓
02N19W14F01S	→	→	↑	↑
02N19W15J02S	↓	→	↓	→

Wells are in various locations in the basin.

Sources of Groundwater Recharge

Basin Recharge: Percolation of rainfall to the valley floor, stream flow, and irrigation return.(DWR, 2006)

Potable Water Sources

Groundwater from Tierra Rejada Basin, Arroyo Santa Rosa Basin via Camrosa Water District. State Project Water from Calleguas MWD via Camrosa Water District.

Subsurface Hydrologic Connection to Other Groundwater Basins

Upgradient: No

Downgradient: Yes, some subsurface flow into Arroyo Santa Rosa basin.

DWR CASGEM Groundwater Basin Prioritization Level - Very Low

Impact Comments: Locally high nitrates documented in the basin (B-118).

Groundwater Quality Trend Notes: Trend is relatively flat, or no clear trend →; Level trending up ↑; Level Trending down ↓

Upper Ventura River Basin

Groundwater Basin Surface Area:	9,360 acres
Irrigated Acreage:	≈1,206 (estimate determined from Ventura County Ag Commissioner's data)
Watershed:	Ventura River
Aquifers:	Unconfined Aquifer
DWR Groundwater Basin Designation and Size:	Ventura River Valley Basin, Upper Ventura River Subbasin (4-3.01) Surface area 7,430 acres. (DWR, 2014)
CASGEM Basin Priority:	Medium
DWR Groundwater Basin Population:	15,961 (2010)

Known Water Supply Wells (as of Mar. 2018)

Number of Wells: 307
Active: 178
Destroyed: 46
Abandoned: 13
Can't Locate: 70

Water Demand Estimate

Irrigation Demand @ 2 AF/Ac: 2,412 AF/Yr

Municipal Demand @ 0.5AF/person/Yr: 7,980 AF/Yr

Total Demand Estimate: 10,392 AF/Yr

2017 Groundwater Levels in General for All Wells Gauged by County

"Key" well 04N23W16C04S - December level was down 35.0 feet from the March measurement.
(Note: Due to the Thomas Fire at the end of 2017 some wells were unable to be measured in December.) In general for wells measured in 2017 in the basin, water levels declined in 7 wells and rose in 1 well over the course of the year from the 1st quarter reading to the last quarter reading.

2017 Groundwater Quality in General for All Wells Sampled by County

(2 wells)

Upper Ventura River basin: The groundwater in the 2 samples is calcium sulfate type.

Primary MCL Exceedances for Nitrate >45mg/l?	No
Secondary MCL Excedances for Chloride >250mg/l?	No
Secondary MCL Excedances for TDS >500mg/l?	Yes, 2 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 1 wells

5 Year Groundwater Level Trend 2013 - 2017

"Key" well 04N23W16C04S: ↓

In general for 13 wells consistently measured: (10 wells) ↓ (3 well) ↑

5 Year Groundwater Quality Trend 2013-2017

(*sampled by other agency)

SWN	Nitrate	Chloride	TDS	Sulfate
04N23W04H01S	→	↓	→	→
04N23W09G03S	↑	↓	↓	↑
03N23W05P02S*	↑	→	↑	→
03N23W08C02S*	↑	↓	↑	↓

2 wells are in the north and 2 wells are in the south portion of the basin.

Sources of Groundwater Recharge

Basin Recharge: percolation of flow in the Ventura River and, to a lesser extent, by percolation of rainfall to the valley floor and excess irrigation water. (DWR, 2006)

Potable Water Sources

Groundwater from Lower Ventura River basin. Surface water from Lake Casitas via Casitas MWD to various water purveyors.

Subsurface Hydrologic Connection to Other Groundwater Basins

Upgradient: No.
Downgradient: Lower Ventura River basin.

DWR CASGEM Groundwater Basin Prioritization Level - Medium

Impact Comments: TDS is known to be high in some parts of the basin (B-118)

Groundwater Quality Trend Notes: Trend is relatively flat, or no clear trend →; Level trending up ↑; Level Trending down ↓

West Las Posas Basin

Groundwater Basin Name:	West Las Posas
Groundwater Basin Surface Area:	14,715 acres
Irrigated Acreage:	≈9,950 (estimate determined from Ventura County Ag Commissioner's data)
Watershed:	Calleguas Creek
Aquifers:	Unconfined and confined aquifers
DWR Groundwater Basin Designation and Size:	Los Posas Valley Basin (4-8). Surface area 42,353 acres. Note: DWR groups three County basins into Las Posas Valley Basin (4-8) (DWR, 2014)
CASGEM Basin Priority:	High
DWR Groundwater Basin Population:	39,385 (2010)

Known Water Supply Wells (as of Mar. 2018)

Number of Wells: 119
Active: 65
Destroyed: 42
Abandoned: 6
Can't Locate: 6

2017 Self Reported Groundwater Extraction to FCGMA (as of April 11, 2018)

Agricultural Extractions: 11,482 AF/Yr

Municipal, Industrial, and Domestic Extractions: 1,783 AF/Yr

Total: 13,265 AF/yr

2017 Groundwater Levels in General for All Wells Gauged by County

"Key" well 02N21W11J04S - December level was down 1.2 feet from the January measurement.

In general for 13 wells measured in 2017 in the basin, water levels declined in 12 wells and rose in 1 well over the course of the year from the 1st quarter reading to the last quarter reading.

2017 Groundwater Quality in General for All Wells Sampled by County

(15 wells)

The water type in 13 samples is calcium sulfate type, 1 samples is calcium bicarbonate type, 1 sample is sodium bicarbonate type.

Primary MCL Exceedances for Nitrate >45mg/l?	Yes, 4 wells
Secondary MCL Excedances for Chloride >250mg/l?	No
Secondary MCL Excedances for TDS >500mg/l?	Yes, 13 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 5 wells

5 Year Groundwater Level Trend 2013 - 2017

"Key" well 02N21W11J04S: ↓

The 5 year trend based on 2013 through 2017 groundwater level elevation maps is downward.

5 Year Groundwater Quality Trend 2013-2017

SWN	Nitrate	Chloride	TDS	Sulfate
02N21W15M04S	→	↑	↑	↑
02N21W17F05S	→	→	↓	→
03N21W36Q01S	↑	→	↓	→
02N21W13A01S	→	↑	→	↑

Wells are in various locations in the basin.

Sources of Groundwater Recharge

Basin Recharge: Infiltration of precipitation, minor stream flow across outcrops of the Fox Canyon and Grimes Canyon gravels, and percolation from flow in the Arroyo Las Posas. (DWR, 2006)

Potable Water Sources

Groundwater from West Las Posas basin. State Project water from Calleguas MWD to various water purveyors.

Subsurface Hydrologic Connection to Other Groundwater Basins

East: Possible connection to East Las Posas basin in NW part of basin.

Southwest: Yes, Oxnard Plain Pressure basin.

DWR CASGEM Groundwater Basin Prioritization Level - High

Impact Comments: TDS is generally high in this basin. Pubic Comment includes reports of subsidence, overdraft and saline intrusion (chloride from adjacent basin?)

Groundwater Quality Trend Notes: Trend is relatively flat, or no clear trend →; Level trending up ↑; Level Trending down ↓