Ventura County
Watershed Protection District
Water Resources Division

2016 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."

2016 Annual Report of Groundwater Conditions

Cover Photo: Well in an orchard in the West Las Posas Groundwater Basin

Ventura County Watershed Protection District
Water Resources Division
Groundwater Section

2016 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 extractions. 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 2016 water quality and groundwater elevation conditions in 32 County-recognized groundwater basins.

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 years 2005 to 2006. This report is the 11th 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.

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. The Groundwater Resources Section conducts quarterly water level measurements, annual water quality sampling, reports on County groundwater basins conditions, reviews development projects, and provides the public with water quality and well information.

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. 150 permits for wells and engineering test holes were conditioned and issued during calendar year 2016.

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.

Well Inventory and Status

A well records and status database contains details for various wells including water supply wells, long-term monitoring wells, cathodic protection wells, and springs with an assigned state well number. At the end of 2016 there were 9,131 well records in the database in the categories listed in **Table 2-1**.

Table 2-1: Inventory and Status of Wells.

2016 Status	Number
Active	4,090
Abandoned	416
Can't Locate	1,816
Non-Compliant	84
Non-Compliant Abandoned	132
Destroyed	2,578
Exempt	15

- 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 9.6 inches[2] for the 2015/2016 water year[3]. Throughout the County, precipitation for the 2015/2016 water year was generally less and ranged between 44 and 57 percent of normal. Port Hueneme received 44% of normal, while the Matilija Dam and Thousand Oaks areas received 57% of the normal rainfall total. **Figure 3-1** shows various rain gage/area rainfall totals comparing water year 2015/2016 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 2015/2016 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** shoes rainfall distribution for drier water years (2014/2015 and 2015/2016).

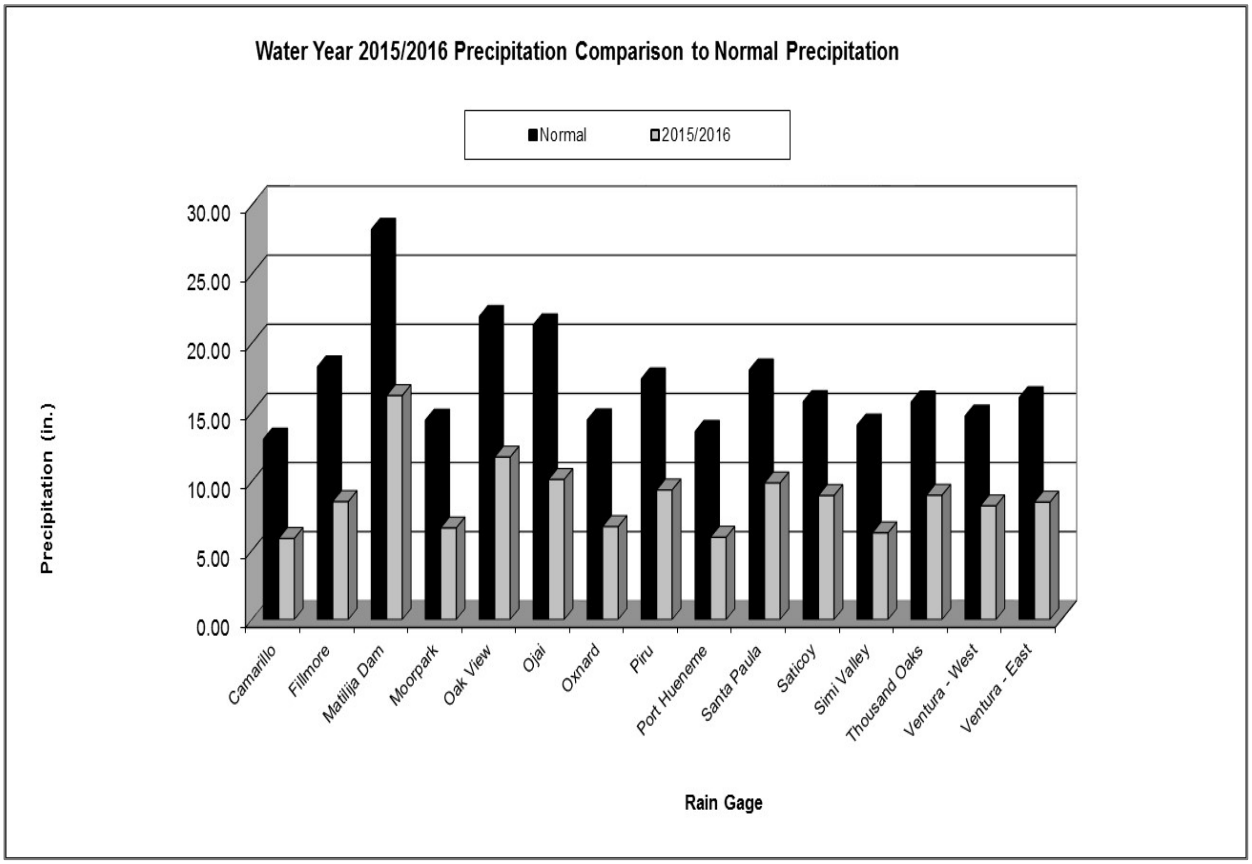


Figure 3-1: 2015/2016 precipitation and normal precipitation totals.

[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.

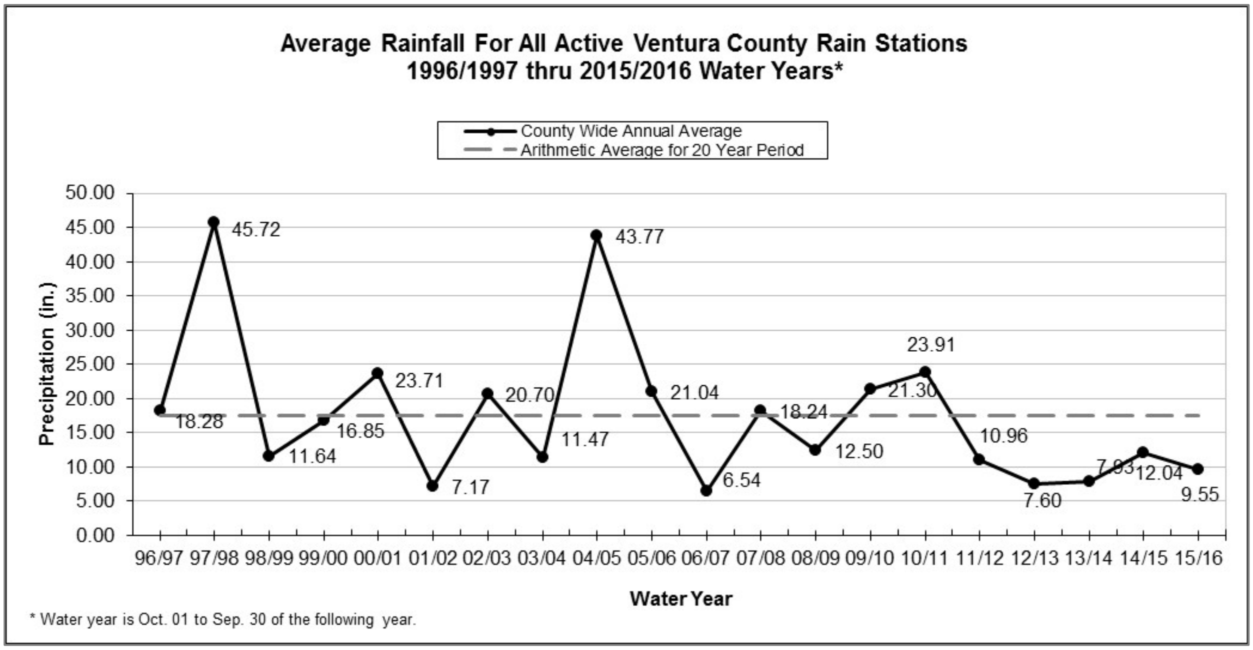


Figure 3-2: Average annual rainfall for Ventura County.

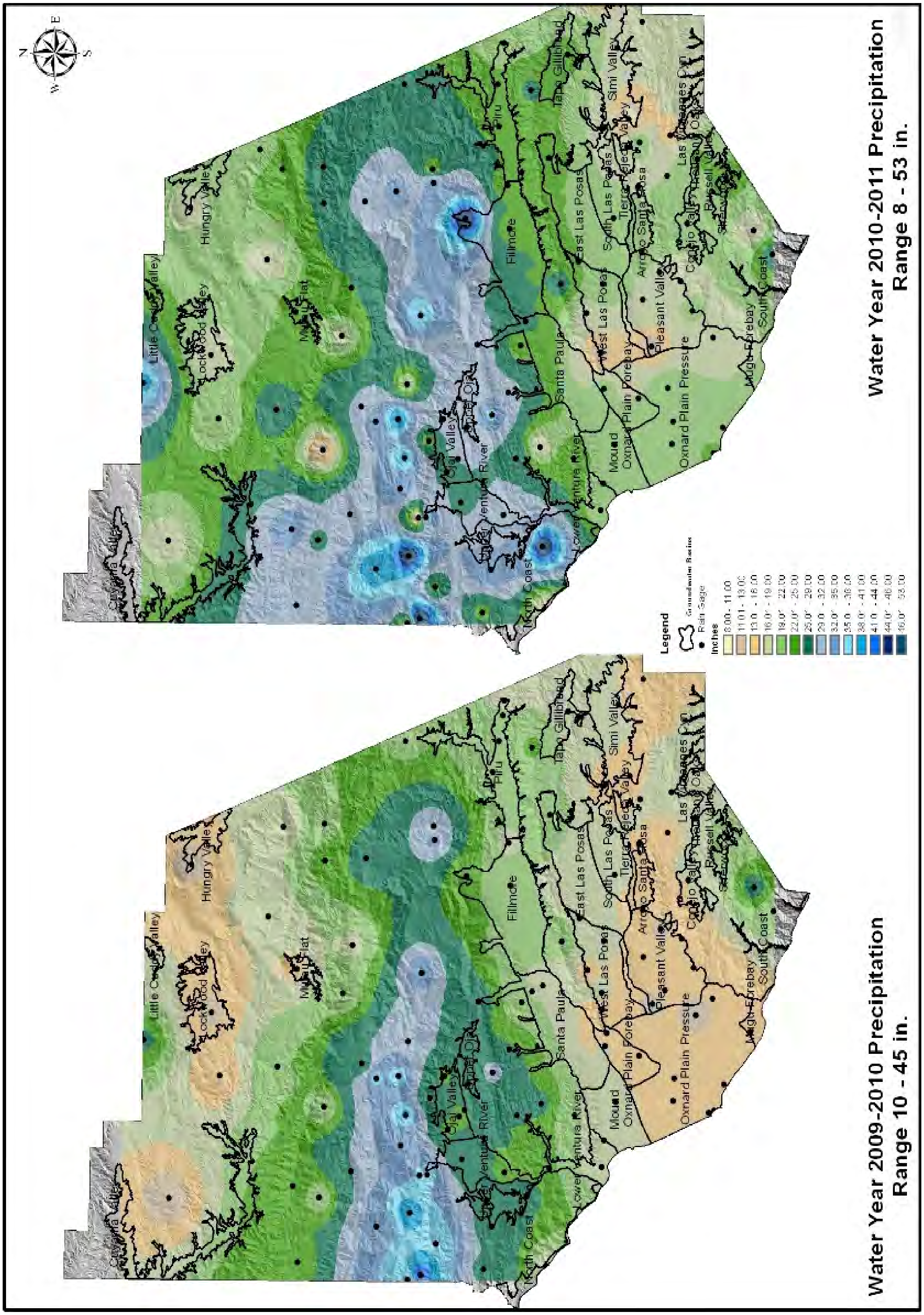


Figure 3-3: Precipitation maps of wet years.

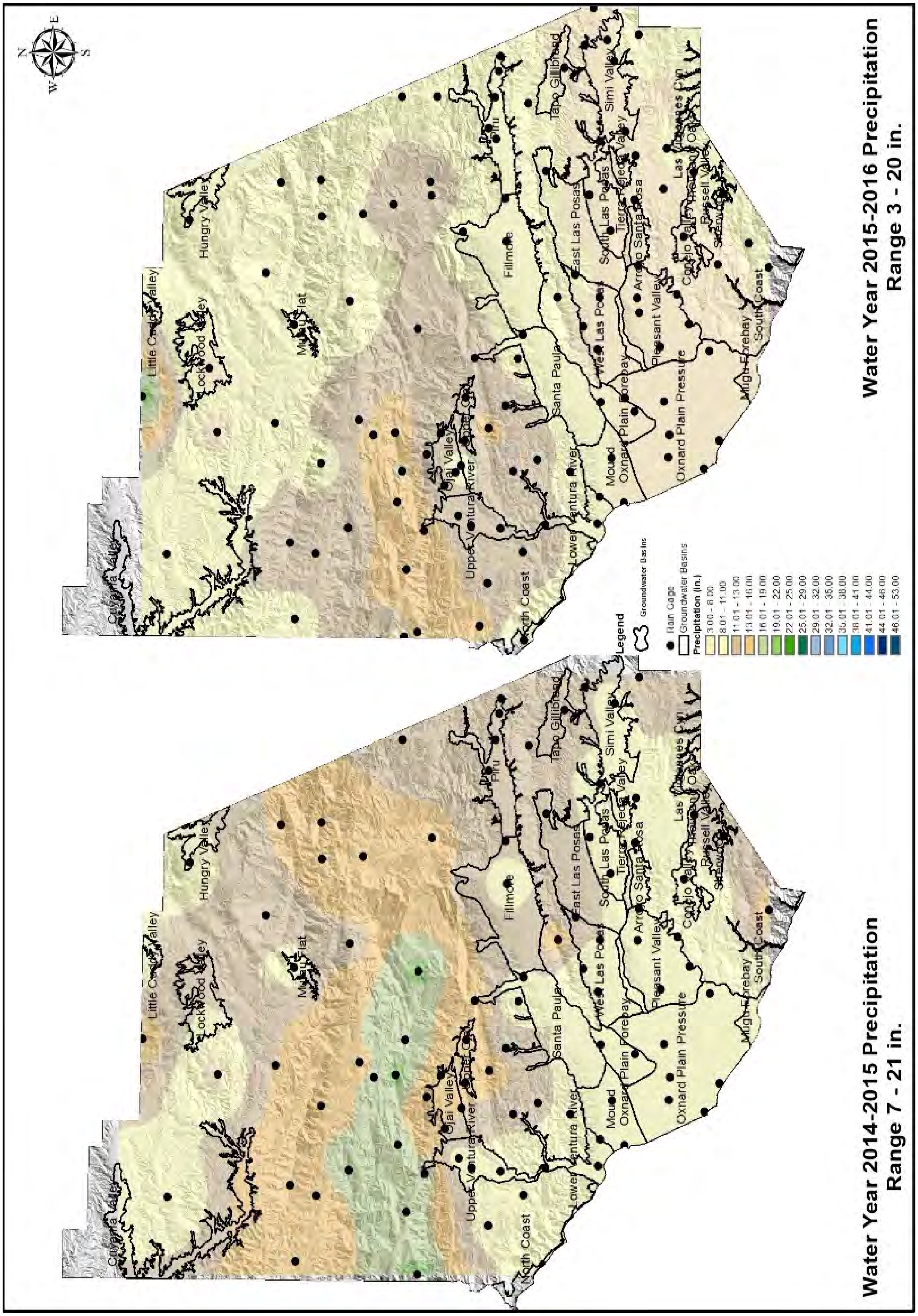


Figure 3-4: Precipitation maps of dry years.

4.0 Groundwater

Most accessible groundwater is found in 32 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, UWCD, individual water purveyors, and the USGS all collect County 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.

Groundwater Extractions

The FCGMA, OBGMA and UWCD oversee groundwater extractions within their jurisdictional boundaries (**Figure 4-2**). Well owners/operators within the boundaries of the management agencies are required to report groundwater extractions to their respective agency. Owners of wells located outside of a groundwater management agency boundary are not required to report their extractions but are asked to report annual well usage to the County.

Table 4-1 compares extractions reported to the agencies for the years 2006 to 2016. Groundwater wells located in agency boundary overlap areas must report their extractions to both. **Figure 4-2** shows the overlap area of the FCGMA and UWCD.

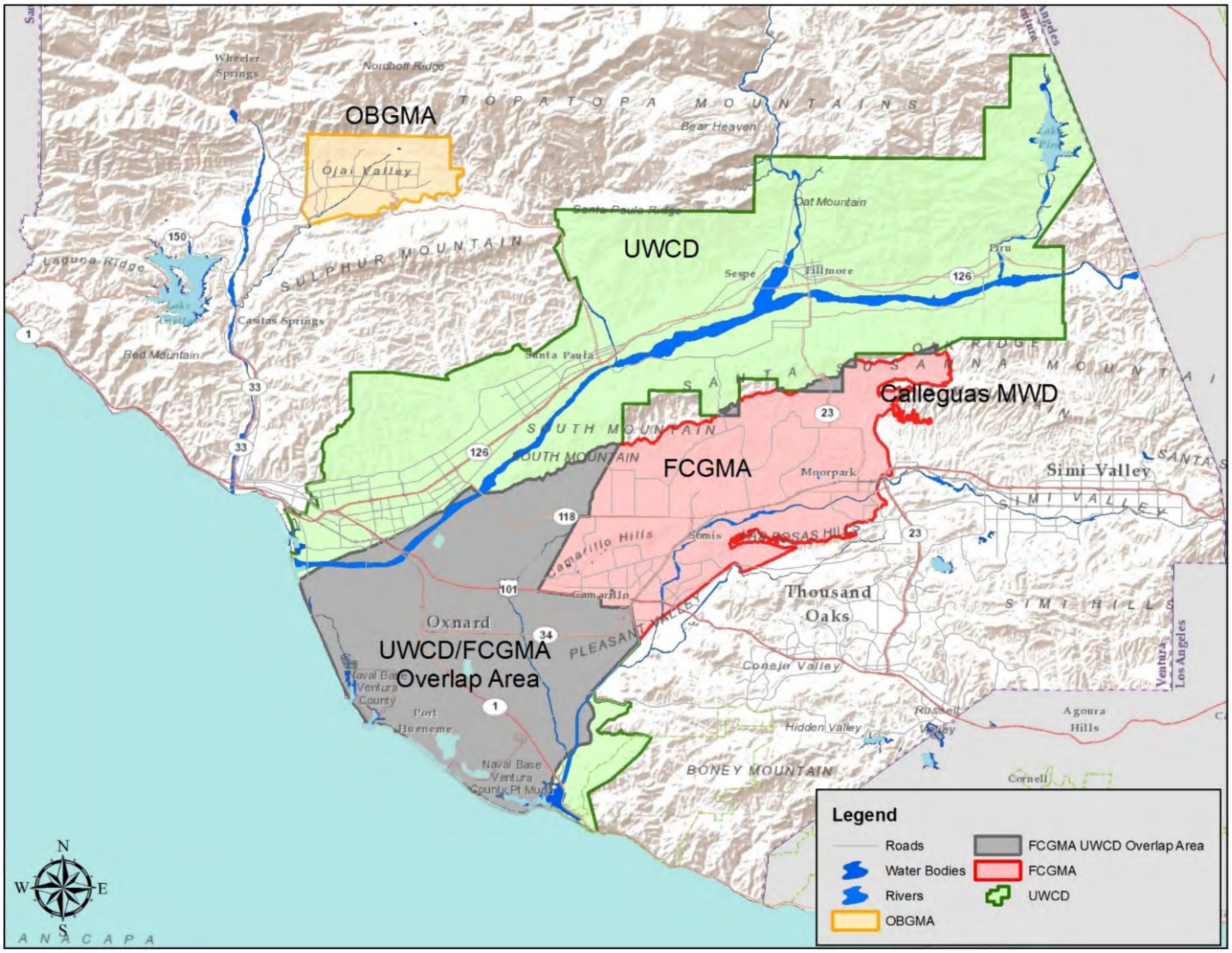


Figure 4-2: Groundwater management agencies in Ventura County.

Table 4-1: Agency reported extractions 2005-2017[5,6].

	Agency		
Reported Extractions (AF)	UWCD	FCGMA	OBGMA
2005-1	58,045.00	42,133.62	1,748.07
2005-2	95,174.00	64,688.76	2,880.39
Annual Total 2005	**153,219.00**	**106,822.38**	**4,628.46**
2006-1	65,469.00	43,659.82	1,722.17
2006-2	101,684.00	70,011.27	2,234.77
Annual Total 2006	**167,153.00**	**113,671.09**	**3,956.94**
2007-1	90,701.00	59,711.06	2,708.68
2007-2	108,289.70	77,666.25	2,759.06
Annual Total 2007	**198,990.70**	**137,377.32**	**5,467.74**
2008-1	90,997.65	64,582.83	2,650.38
2008-2	102,106.68	75,655.54	2,590.30
Annual Total 2008	**193,104.33**	**140,238.36**	**5,240.68**
2009-1	82,505.37	63,066.07	2,553.48
2009-2	104,049.64	83,007.28	2,871.94
Annual Total 2009	**186,555.01**	**146,073.36**	**5,425.42**
2010-1	69,541.85	54,876.68	2,004.86
2010-2	89,558.90	71,518.05	3,001.11
Annual Total 2010	**159,100.75**	**126,394.73**	**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	64,736.60	2,805.76
2013-2	116,708.94	88,897.64	2663.216
Annual Total 2013	**204,045.80**	**153,634.24**	**5,468.97**
2014-1	101,577.29	85,037.29	2,232.15
2014-2	101,468.80	65,333.37	2,144.20
Annual Total 2014	**203,046.09**	**150,370.65**	**4,376.35**
2015-1*	85,905.46	71,411.15	1,817.92
2015-2*	107,590.82	71,125.41	1,901.51
Annual Total 2015*	**193,496.28**	**142,536.56**	**3,719.43**
2016-1**	82,315.09	69,650.69	1,461.22
2016-2**	100,888.85	58,982.98	1,422.15
Annual Total 2016***	**183,203.94**	**128,633.67**	**2,883.37**

*Reflects revised values for all agencies.
**Values are subject to change. *FCGMA as of 04/12/2017, UWCD as 03/22/2017.*
***Preliminary - Values do not reflect full reporting.

[5] Data courtesy of FCGMA.
[6] Data courtesy of OBGMA.

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 (Ca^{2+}), magnesium (Mg^{2+}), and the negatively charged anions chloride (Cl^-), carbonate (CO_3^{2-}), bicarbonate (HCO_3^-), and sulfate (SO_4^{2-}). These ionic species when added together account for most of the salinity that is commonly referred to as total dissolved solids (TDS). The Groundwater Section 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 4-4**). 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.

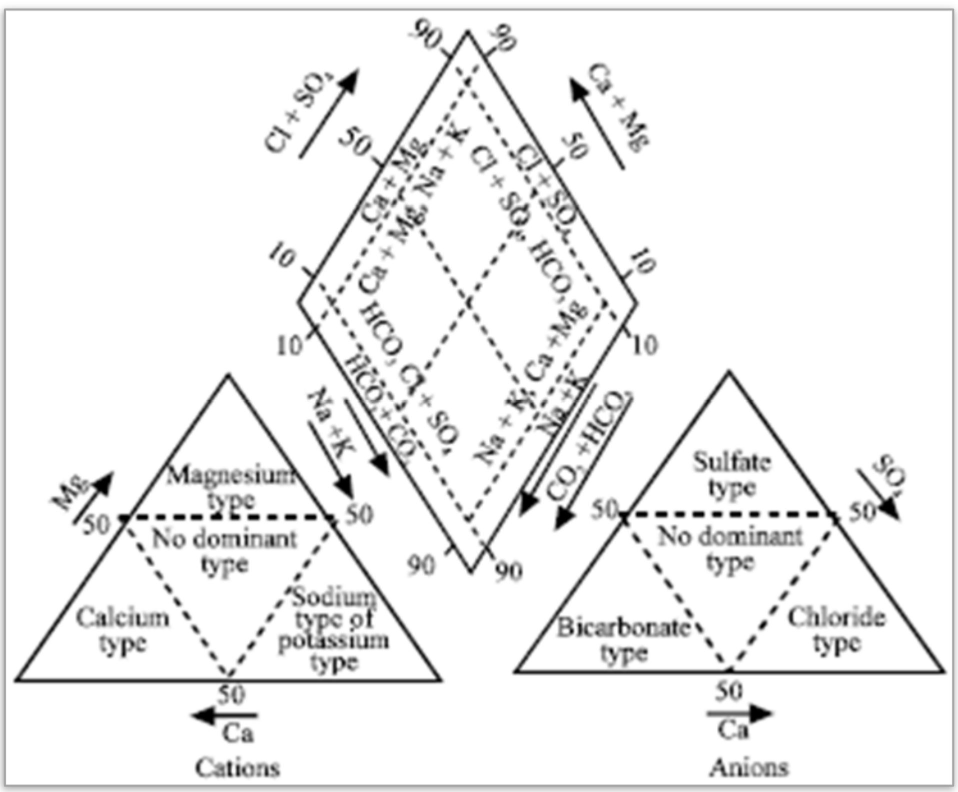


Figure 4-3: Piper diagram with water types.

Figure 4-3 shows how a Piper diagram is used to characterize water quality. Anions (Cl^-, CO_3^{2-}, HCO_3^-, and SO_4^{2-}) and cations (Na^+, K^+, Ca^{2+}, Mg^{2+}) 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).

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 D**.

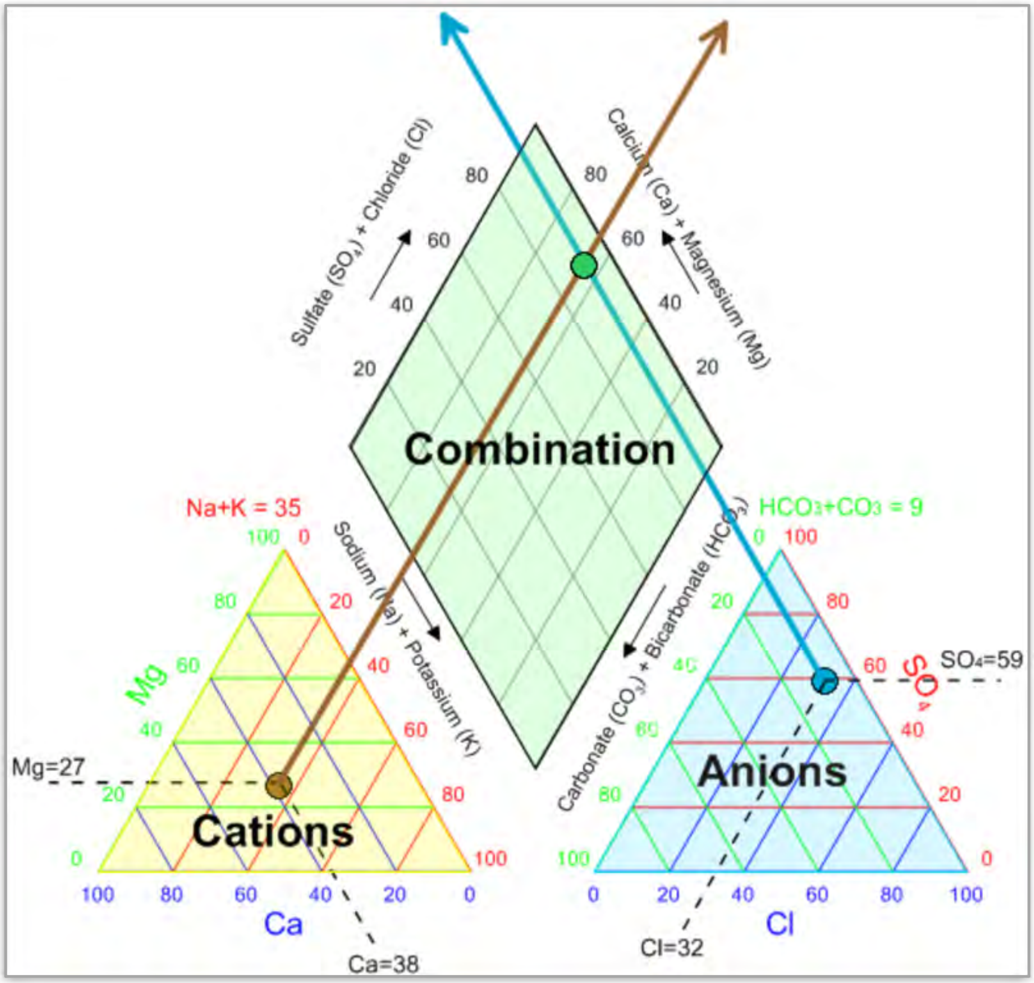


Figure 4-4: Example of a Piper Diagram.

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.

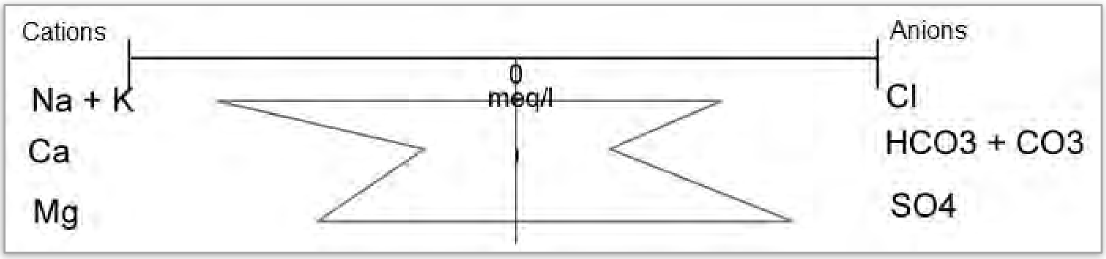


Figure 4-5: Example of Stiff Diagram.

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 192 water supply wells were sampled throughout the County in 2016. 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 80 wells were selected for analysis of California Title 22 metals, and 9 wells were analyzed for gross alpha particles[7].

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/).

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

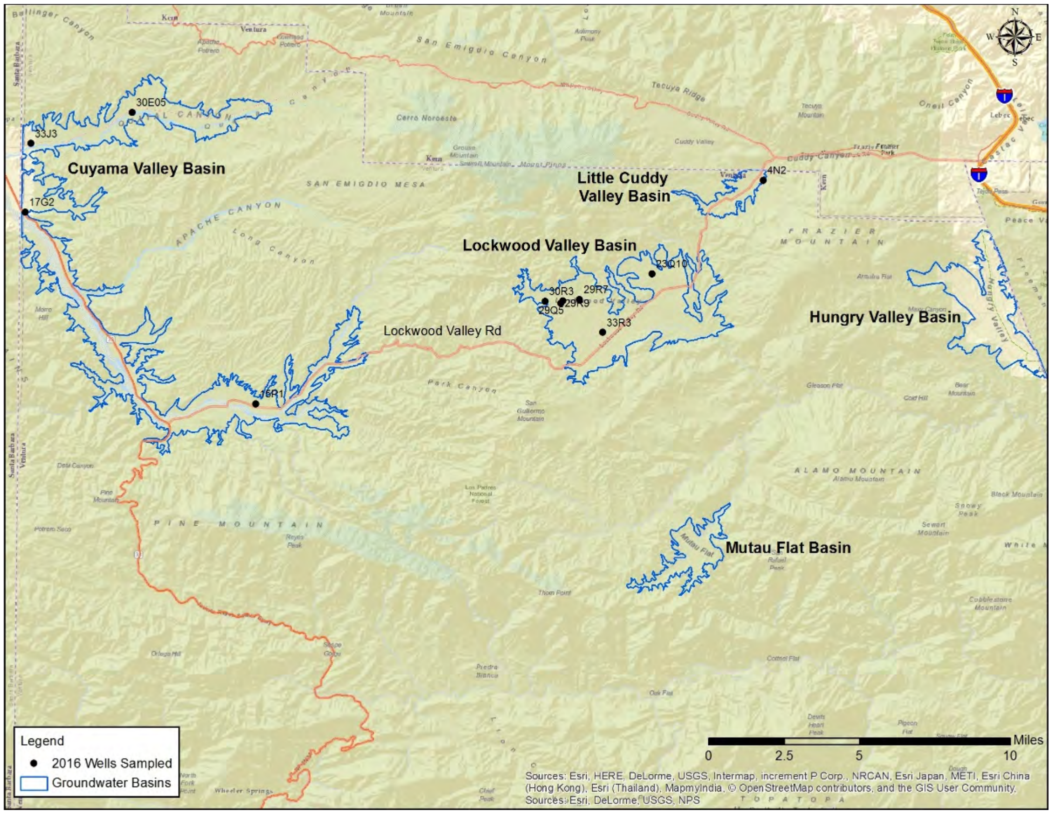


Figure 4-6: Location of wells sampled in North half of the County.

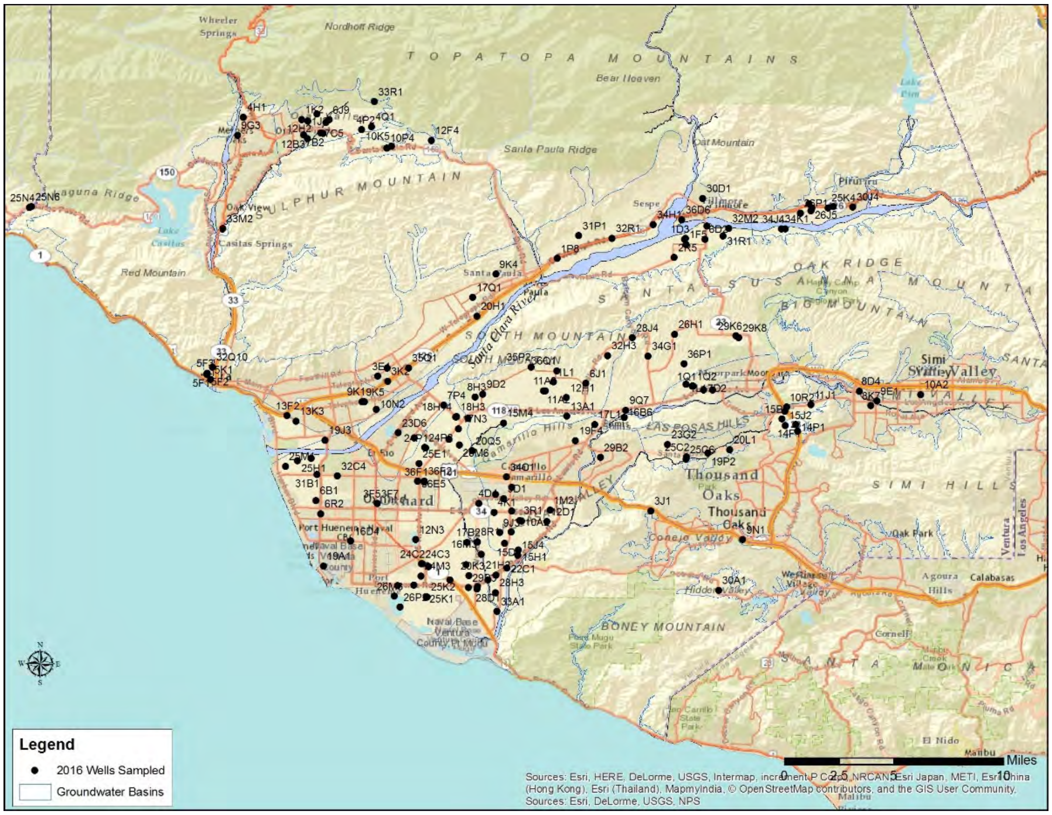


Figure 4-7: Location of wells sampled in South half of the County.

Water Quality Standards

The Annual Report uses United States Environmental Protection Agency (EPA) National Drinking Water Regulations and California Code of Regulations (CCR) Title 22, Chapter 15, Article 4, Section 64431, standards for reporting groundwater quality. To be certified as a permanent domestic or municipal water supply, water quality must meet these standards.

The EPA's National Primary Drinking Water Regulations, or primary standards, set mandatory water quality standards for drinking water contaminants are called maximum contaminant levels (MCLs). These are legally enforceable standards established to protect the public health by limiting the levels of contaminants in drinking water. An MCL is the highest level of a contaminant allowed in drinking water that can be present without any adverse health effects. MCLs are set as close as feasible to the concentration below which there is no known or expected health risk. MCLs for Title 22 metals and their potential health effects are listed in **Table 4-2**.

MCLs for radionuclides were established by the California Department of Public Health (CDPH)[8] for various radionuclides consisting of uranium, radon, tritium, strontium, radium, gross alpha particles and gross beta particles (**Table 4-3**). The EPA's established MCLs differ from California's for uranium, radon, strontium, tritium and gross beta particle activity.

The EPA also has established National Secondary Drinking Water Regulations, or secondary standards, for 15 constituents (**Table 4-4**). Secondary standards are established guidelines to assist in managing drinking water for aesthetic considerations such as taste, odor, and color and are known as secondary maximum contaminant levels (SMCLs). These water quality standards do not pose a threat to human health at the SMCL and are non-mandatory. These thresholds are set to a level at which most people will notice their presence in drinking water. SMCLs are not enforced by the EPA and water systems are not required to comply with them, however, states may choose to adopt the secondary standards as enforceable standards.

[8] The California Department of Public Health Drinking Water Program was transferred to the State Water Resources Control Board Division of Drinking Water in July 2014.

Table 4-2: 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	<u>Short term exposure</u>: Gastrointestinal distress. <u>Long term exposure</u>: 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	<u>Infants and children</u>: Delays in physical or mental development; children could show slight deficits in attention span and learning abilities. <u>Adults</u>: Kidney problems; high blood pressure.
Mercury	Hg	0.002	0.002	Kidney damage.
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.
Nitrate[5]	NO_3^-	not listed	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.

Primary Contaminants	Chemical Formula	EPA MCL[1] (mg/L)[2]	CCR, Title 22 MCL (mg/L)	Potential Health Effects
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 4-3: Primary Maximum Contaminant Levels for Radionuclides.

Radionuclide	EPA MCL	CCR, Title 22 MCL [1]	CCR Title 22 DLR [2]	Potential Health Effects
Gross Alpha particle activity (excluding radon and uranium)	15 pCi/L [3]	15 pCi/L	3 pCi/L	Toxic kidney effects, risk of cancer.
Gross Beta particle activity	4 millirem/yr [4]	50 pCi/L 4 millirem/yr	4 pCi/L	
Radium-226	5 pCi/L [5]	5 pCi/L	1 pCi/L	
Radium-228	combined with Radium-226	5 pCi/L	1 pCi/L	
Strontium-90	covered under gross beta	8 pCi/L	2 pCi/L	
Tritium	covered under gross beta	20,000 pCi/L	1,000 pCi/L	
Uranium	30 µg/L [6]	20 pCi/L	1 pCi/L	

[1] MCL = Maximum Contaminant Level.

[2] DLR = Detection Levels for Purposes of Reporting.

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

[4] 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.

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

[6] µg/L = micrograms per liter

Table 4-4: 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.

Current Sampling Results by Basin

General interpretations of the groundwater quality data for each groundwater basin sampled this year are included in this section. Basin summaries are presented in alphabetical order. In general, County-wide groundwater has high total dissolved solids (TDS) and sulfate.

A basin is classified as nitrate-impacted if three or more wells in each year exceed the State's primary MCL for nitrate (45 mg/L). Nitrate impacted basins in Ventura County include the Arroyo Santa Rosa Basin, Fillmore Basin, Las Posas Valley Basin, Oxnard Plain Forebay Basin*, Oxnard Plain Pressure Basin, Piru Basin, Tierra Rejada Valley Basin.

*The Oxnard Plain Forebay has been historically nitrate-impacted for a few years, however, limited sampling was available in the basin this year.

4.1.1 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 to be 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 Arroyo Santa Rosa and Conejo Creek, 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 Formation against the San Pedro Formation, creating a barrier to groundwater flow into the basin from the north and 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, both of which are 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 approximately 87 total water supply wells in the Arroyo Santa Rosa Basin and 40 active wells.

The piper diagram in **Figure E-2**, shows moderate variation in water quality of the wells sampled this year. Magnesium is the dominant cation in one sample and the remainder of the samples also 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. Water from four of the five wells sampled this year have nitrate concentrations higher than the primary MCL for drinking water. All five wells have TDS concentrations above the SMCL; ranging from 823 to 1,020 mg/L. Chloride concentrations in four of the wells are above the level that can cause agricultural beneficial uses for sensitive plants to be impaired but are not above the primary MCL for drinking water. One water sample was 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 4-8** 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 Arroyo Santa Rosa basin.

ARROYO SANTA ROSA BASIN

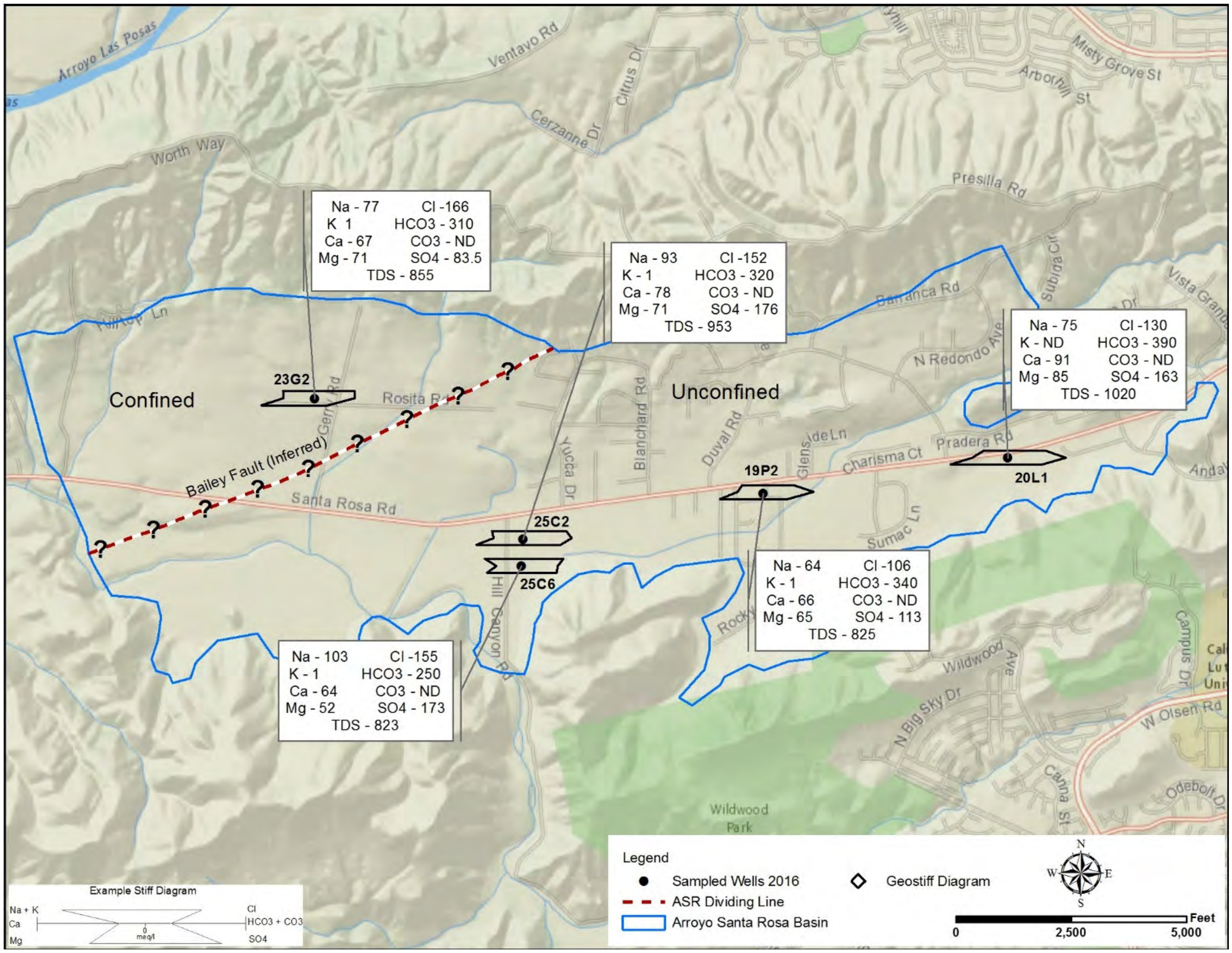


Figure 4-8: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams.

Figure 4-9 shows the geographic distribution of the wells sampled, with graduated symbols representing nitrate concentrations for 2016. **Figure 4-10** shows nitrate results for 2007 through 2016 in the same representation.

The Arroyo Santa Rosa Basin has remained 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. No groundwater samples collected this year had nitrate (NO_3^-) concentrations above 108 mg/L which is less than historic concentrations as high as 292 mg/L.

ARROYO SANTA ROSA BASIN
2016 Nitrate Concentrations

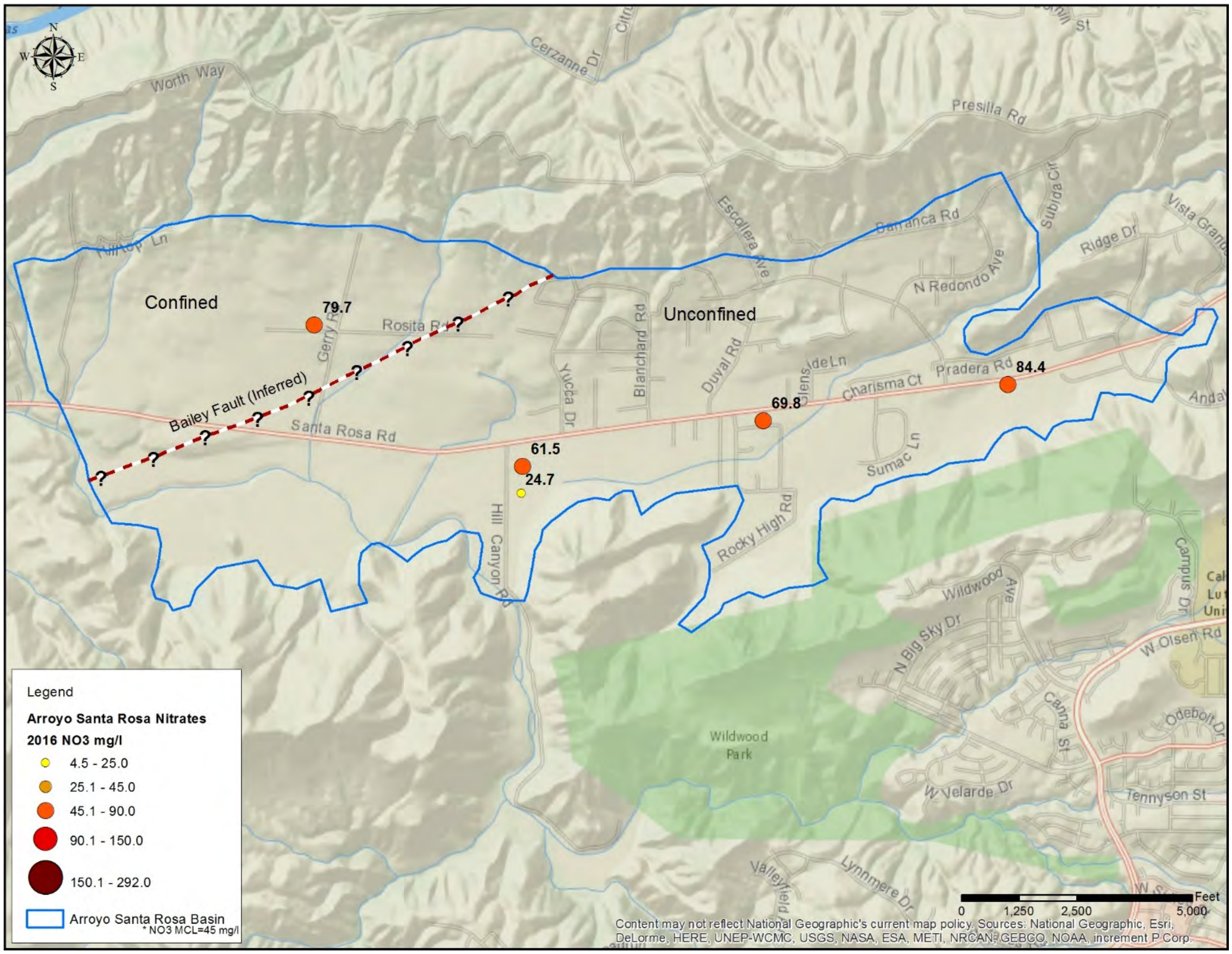


Figure 4-9: Map showing nitrate results in mg/l for the year 2016.

ARROYO SANTA ROSA BASIN
2007 – 2016 Nitrate Concentrations

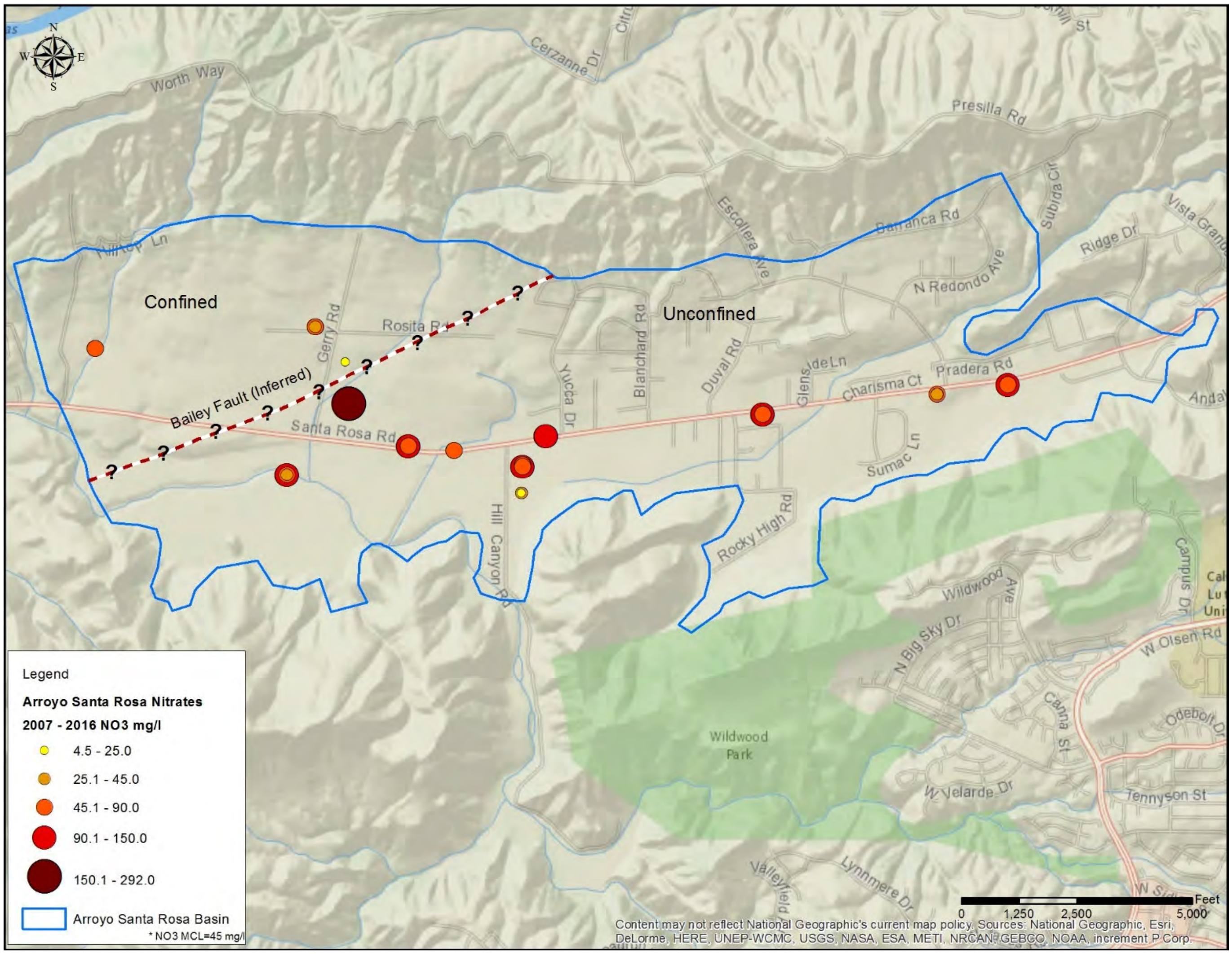


Figure 4-10: Arroyo Santa Rosa nitrate concentrations 2007 – 2016.

4.1.2 Conejo Valley Basin

The Conejo Valley Basin has very 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 this year. There is no dominant cation or anion. The water is magnesium bicarbonate type. TDS concentration is above the secondary MCL for drinking water.

Figure 4-11 shows the approximate well location and selected water quality concentrations.

CONEJO VALLEY BASIN

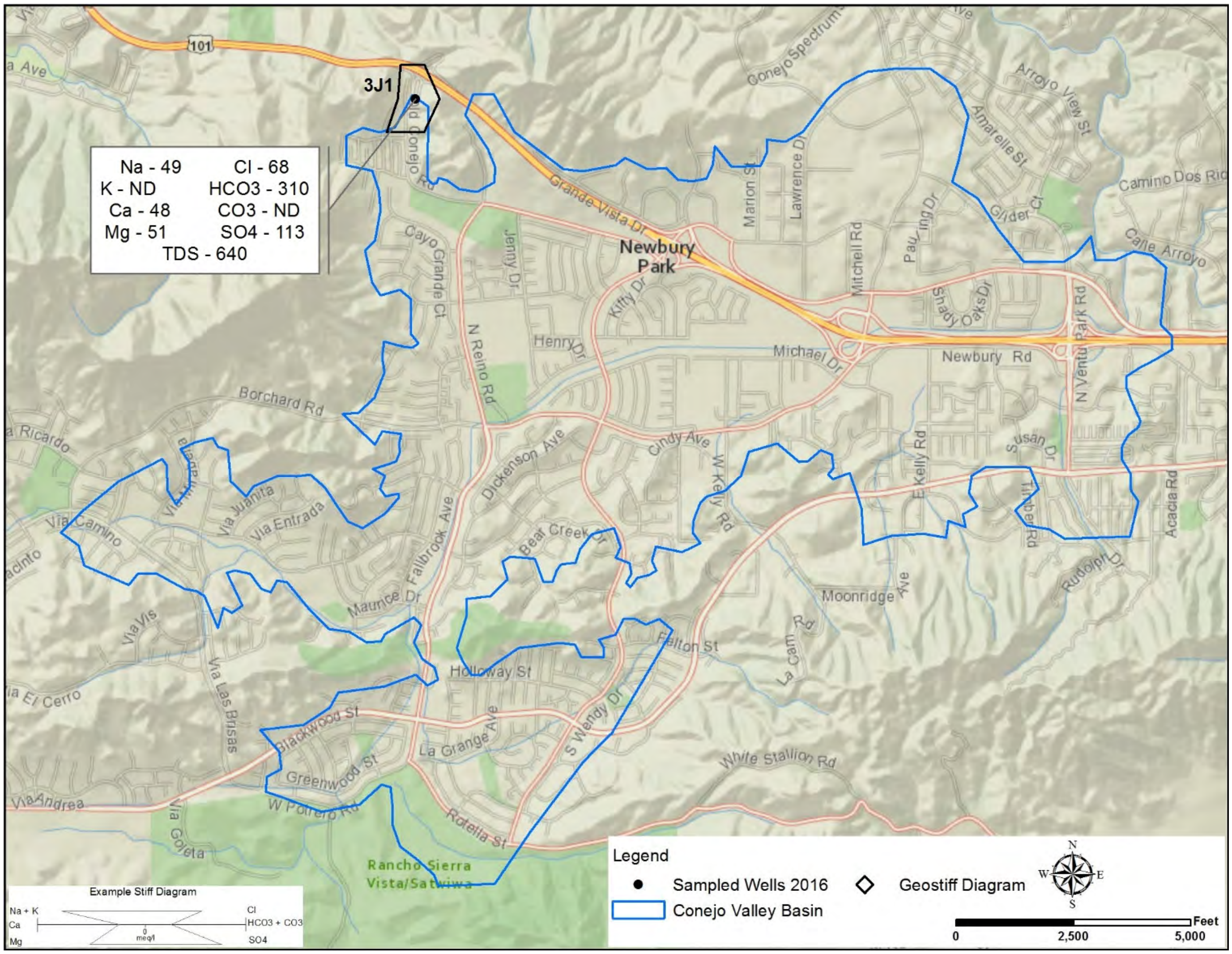
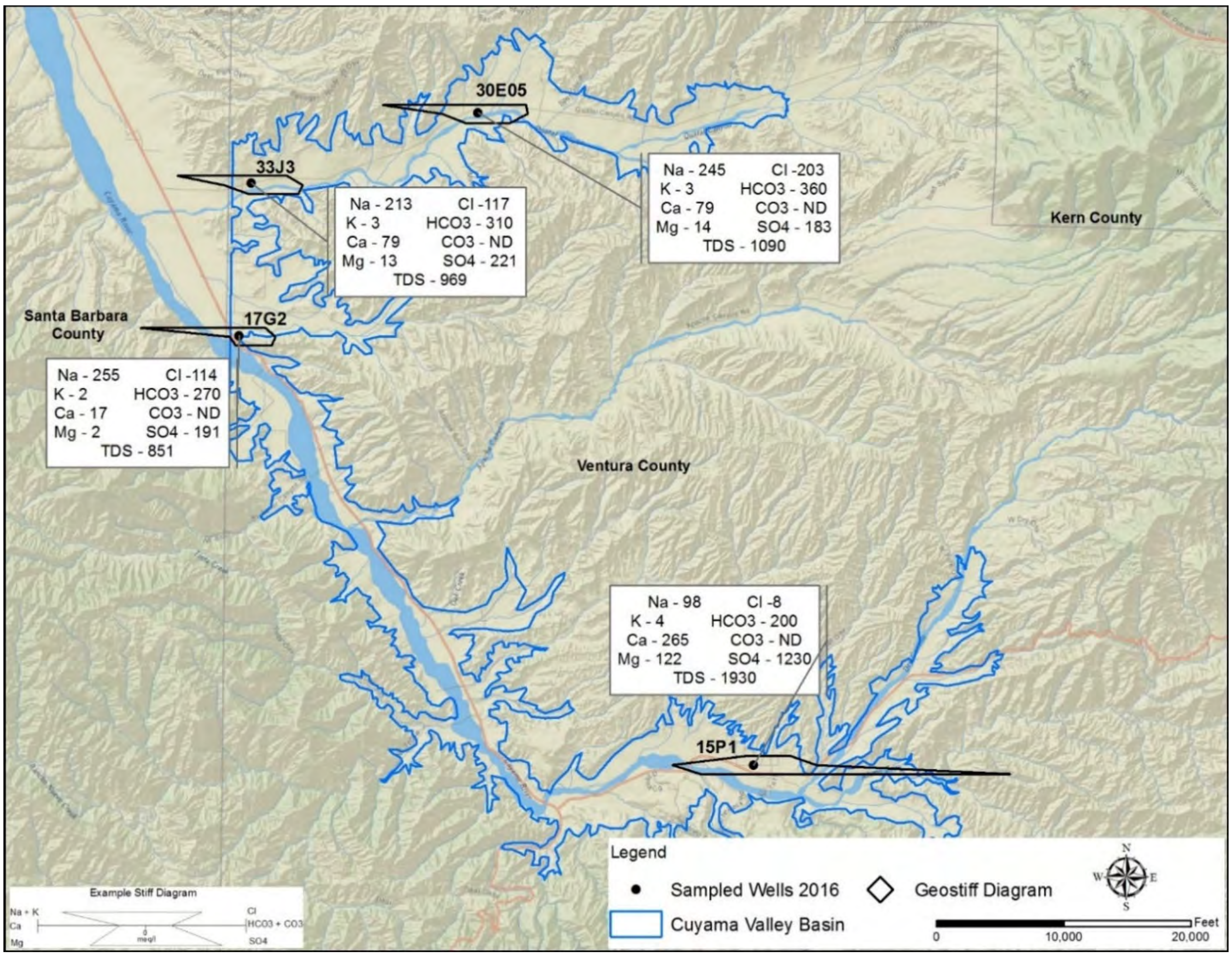


Figure 4-11: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams.

4.1.3 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 154 wells in the Cuyama Valley Basin and 111 are active water supply wells. Depth to the main water bearing unit varies between 40 to 170 feet bgs. The piper diagram in **Figure E-5** shows moderate variability in water quality of the wells sampled this year. Sodium is the dominant cation in the three samples and there is no dominant anion. Three samples are sodium-sulfate type and one sample is calcium-sulfate type. Two wells have iron concentrations above the SMCL, one well has sulfate above the primary MCL and all four wells sampled this year have TDS above the SMCL for drinking water; no other constituent was elevated. Water samples from three wells were analyzed for Title 22 metals. No constituent was above the primary MCL for drinking water. DWR Groundwater Bulletin No. 118 indicates groundwater quality has been deteriorating in some areas because of cycling and evaporation of irrigation water. Three wells sampled in the northern part of the basin where there is less irrigation have good water quality. The poorest water quality is in the southern part of the basin. **Figure 4-12** shows approximate well locations and selected water quality concentrations.

CUYAMA VALLEY BASIN



<u>Figure 4-12:</u> Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagram.

4.1.4 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 is recharged by river flows. Deeper groundwater is older and has acquired chemistry through dissolution of constituents from the surrounding sediments. There are approximately 643 water supply wells in the Fillmore Basin and 463 are active water supply wells. Historically, nitrate concentrations have been elevated. Two out of 14 wells showed elevated nitrate concentrations relative to the primary MCL for drinking water. The piper diagram in **Figure E-7**, shows low variability in the water quality of the wells sampled this year. The dominant cation in four samples is calcium with no dominant cation for the remainder of the samples, plotting closest to a calcium cation type. Sulfate is the major anion for thirteen samples. The water is a calcium-sulfate type. TDS concentrations from all fourteen wells range from 1,030 to 2,460 mg/L and exceed the SMCL for drinking water. All groundwater samples are above the sulfate SMCL for drinking water and water from two wells is above the manganese SMCL. Water samples from seven wells were analyzed for Title 22 metals. All constituents are below the primary MCL for drinking water. Water quality tends to degrade in the southeast portion of the basin in the vicinity of the Oak Ridge Fault. **Figure 4-13** shows approximate well locations and selected water quality concentrations. Water samples from all the wells sampled in the Fillmore, Santa Paula and Piru Basins were compared in a piper diagram in **Figure E-28**. The piper diagram and the data from the three basins show little variation and the water type for all is calcium-sulfate.

FILLMORE BASIN

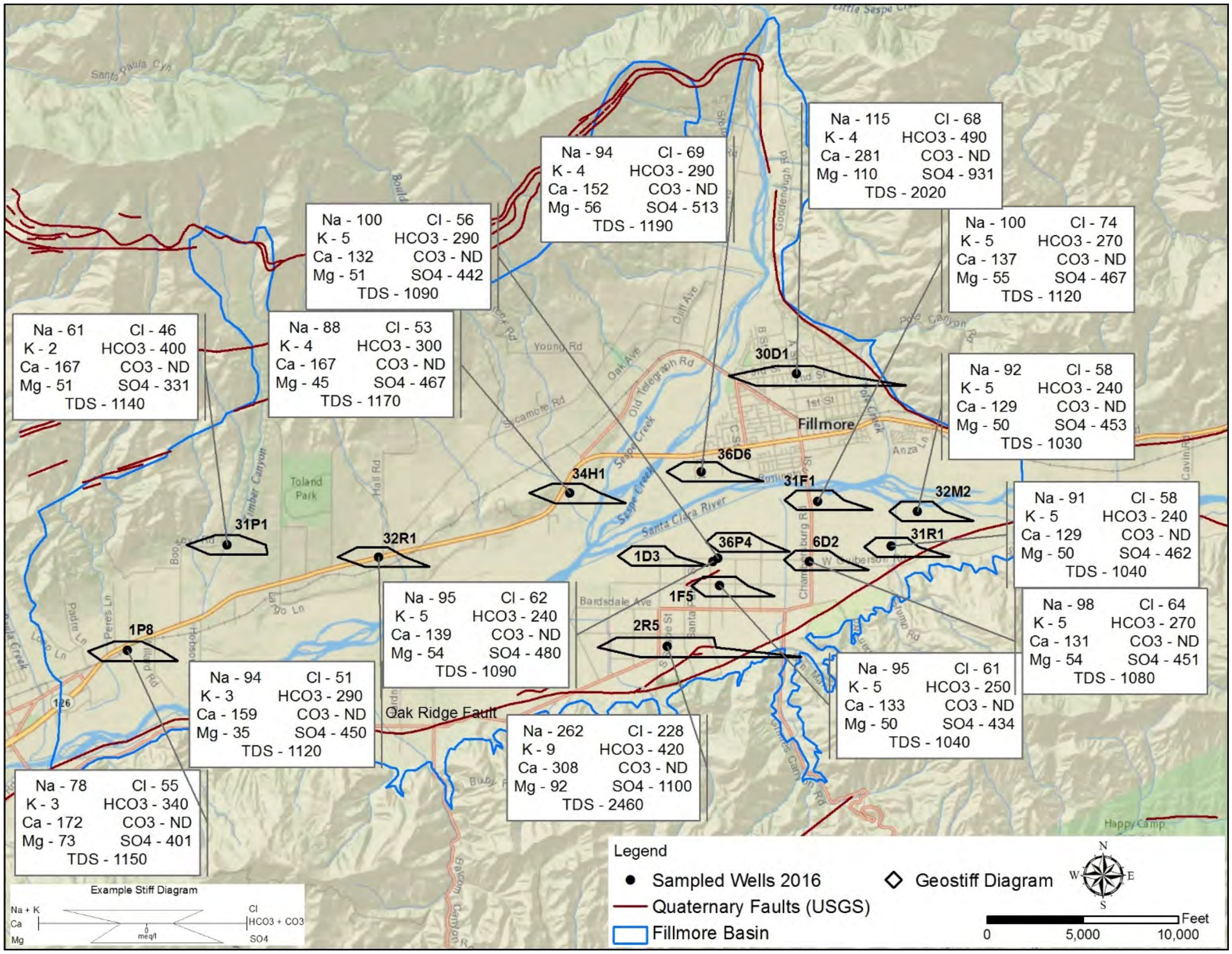


Figure 4-13: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams.

4.1.5 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. Data indicates 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 bgs and 530 to 580 feet bgs to the lower water bearing unit. There are approximately 249 water supply wells in the East Las Posas Basin with 150 active water supply wells.

The piper diagram in **Figure E-6**, shows moderate variability in the water quality of the eight wells sampled this year. Calcium is the dominant cation for five of the wells sampled with no dominant cation for the other three wells. Sulfate is the dominant anion for two of the wells, bicarbonate in four of the wells, and two wells have no dominant anion. The water in four of the wells sampled is calcium-sulfate type and four of the wells is calcium-bicarbonate type. Of the eight 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 level that could be detrimental to agricultural crops. The remainder of the wells have good water quality with TDS ranging between 261 and 805 mg/L.

The piper diagram in **Figure E-38** shows a comparison of 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. Water samples from all three basins are grouped as calcium-sulfate type and plot near the calcium-bicarbonate type. The water chemistry of East and West Las Posas Basins is fairly 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 4-14** shows approximate well locations and selected water quality concentrations.

LAS POSAS BASIN - EAST

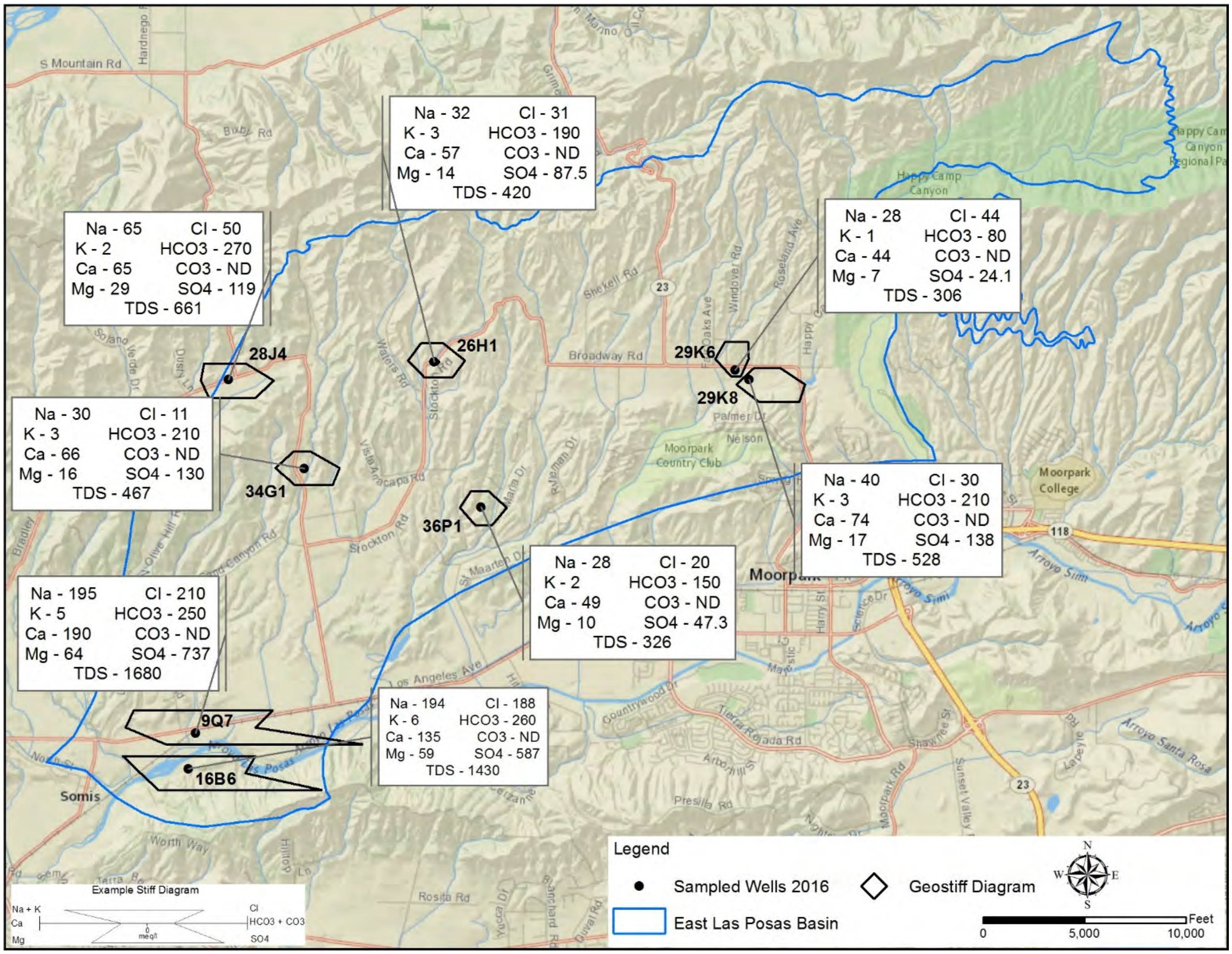


Figure 4-14: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents.

4.1.6 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 three 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 with 28 active water supply wells. **Figure E-31** shows low variability in water quality of the wells sampled this year. The dominant cation for one well is sodium and the remaining four samples have no dominant cation but plot close to calcium type. Sulfate is the dominant anion in four samples and one sample has no dominant anion but plots closely to the sulfate type. The water type of all wells is calcium-sulfate type. The South Las Posas Basin water quality has not changed significantly over the past year. Water from all five wells sampled have TDS and sulfate concentrations 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 fairly consistent. A comparison of the East, West, and South Las Posas Basins is shown in **Figure E-38**. The water chemistry in the East Las Posas and West Las Posas samples are more similar in composition than to the South Las Posas samples. **Figure 4-15** shows approximate well locations and selected water quality concentrations.

LAS POSAS BASIN - SOUTH

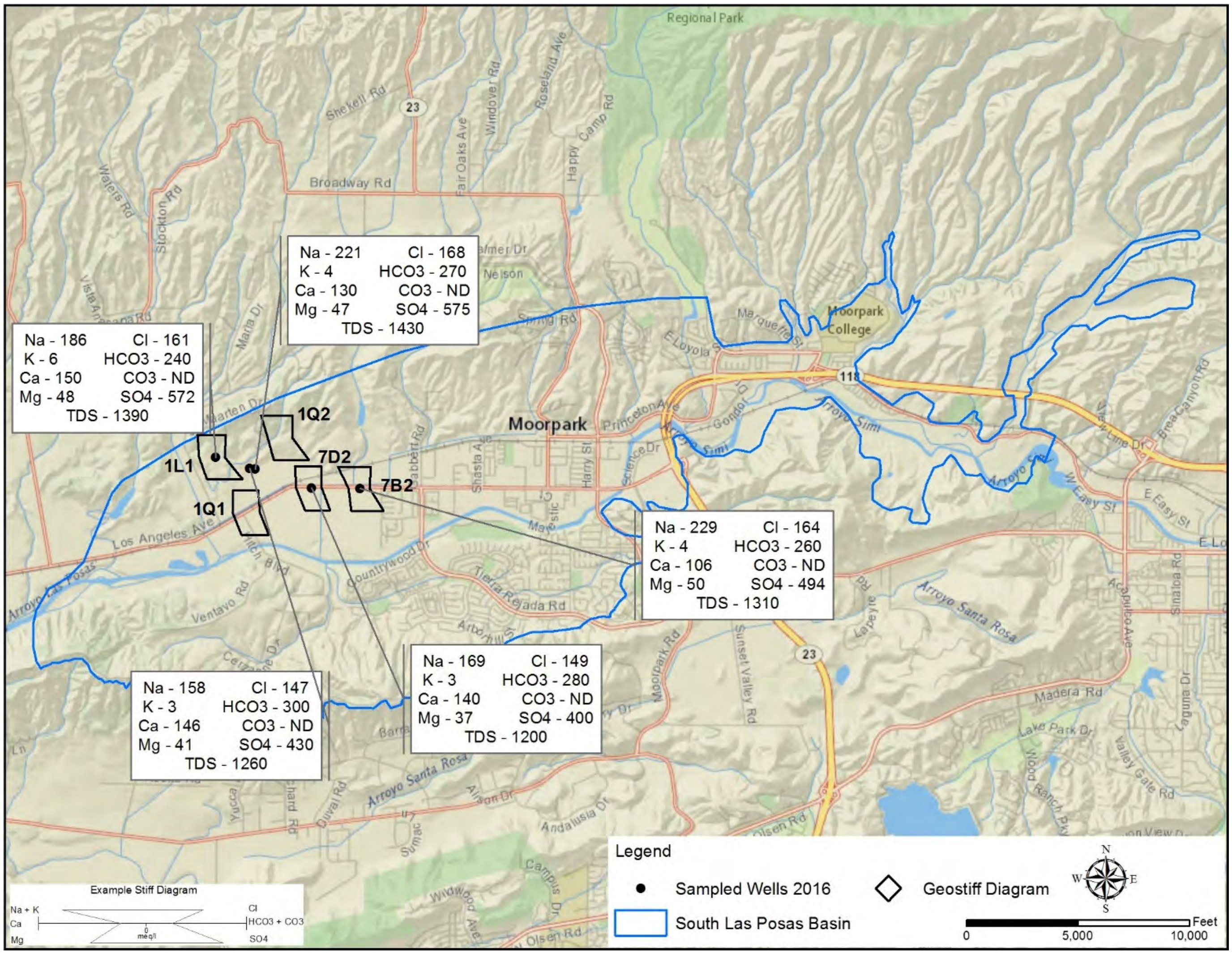


Figure 4-15: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams.

4.1.7 Las Posas Basin - West

There are approximately 117 water supply wells in the West Las Posas Basin, 65 of which are active wells. A total of 13 wells within this basin were sampled this year. Although Well 13A1 plots just outside the basin boundary on our current map, it is included because it has the same chemical characteristics and is within the DWR Bulletin 118 basin boundary. **Figure E-37** shows moderate variability in water quality of the wells sampled this year. Calcium is the dominant cation for one of the samples and there is no dominant cation for the remainder. Bicarbonate is the dominant anion for three of the wells sampled, sulfate is the dominant anion for six of the wells and four wells have no dominant anion but plot close to the bicarbonate anion type. The water in ten wells is calcium-sulfate type and the remaining three wells are calcium-bicarbonate type.

TDS is above the SMCL for drinking water in all the wells sampled in the West Las Posas Basin ranging from 667 to 1,430 mg/L. Four wells have nitrate concentrations above the primary MCL for drinking water and two are five times the MCL. Six wells have sulfate concentrations above the SMCL, one well has an iron concentration that was above the SMCL and four have manganese concentrations above the MCL. The chemistry of Well 13A1 is similar to that of the wells inside the DWR Bulletin 118 basin boundary and closest to Well 36Q1 to the northwest which has a water level at approximately the same elevation. Water from six wells was analyzed for Title 22 metals. One well has selenium above the primary MCL. No other constituents were above the primary MCL for drinking water. **Figure 4-16** shows approximate well locations and selected water quality concentrations.

LAS POSAS BASIN - WEST

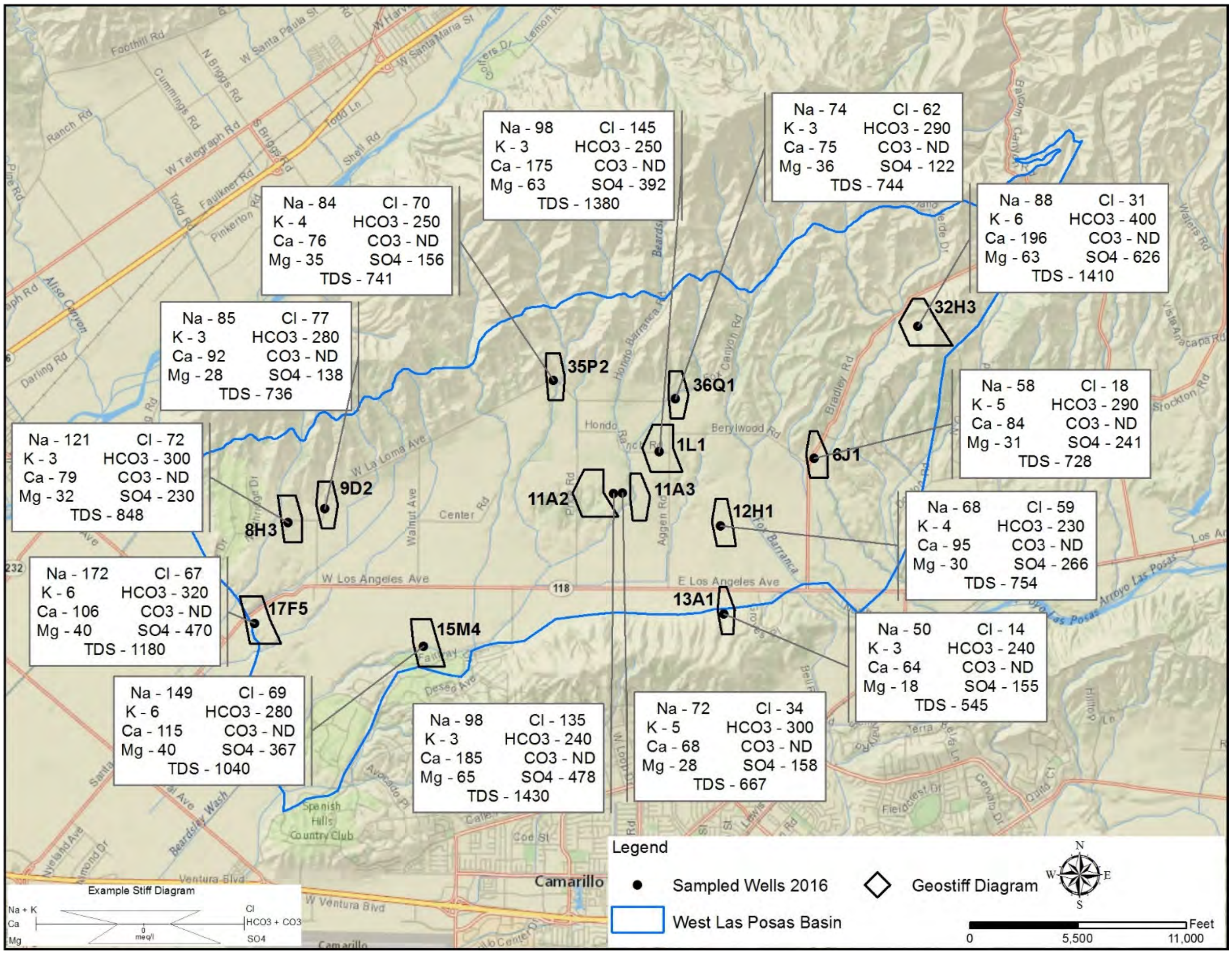


Figure 4-16: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams.

4.1.8 Little Cuddy Valley Basin

The Little Cuddy Valley Basin is located 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. Historical groundwater quality has been considered very good. There are approximately 29 water supply wells in the Little Cuddy Valley Basin and 27 active wells. One well was sampled in the basin this year. The piper diagram in **Figure E-39** 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. The sample was analyzed for Title 22 metals, gross alpha and uranium. No constituent or radionuclide was above the MCL for drinking water. **Figure 4-17** shows the approximate well location and selected water quality concentrations.

LITTLE CUDDY VALLEY BASIN

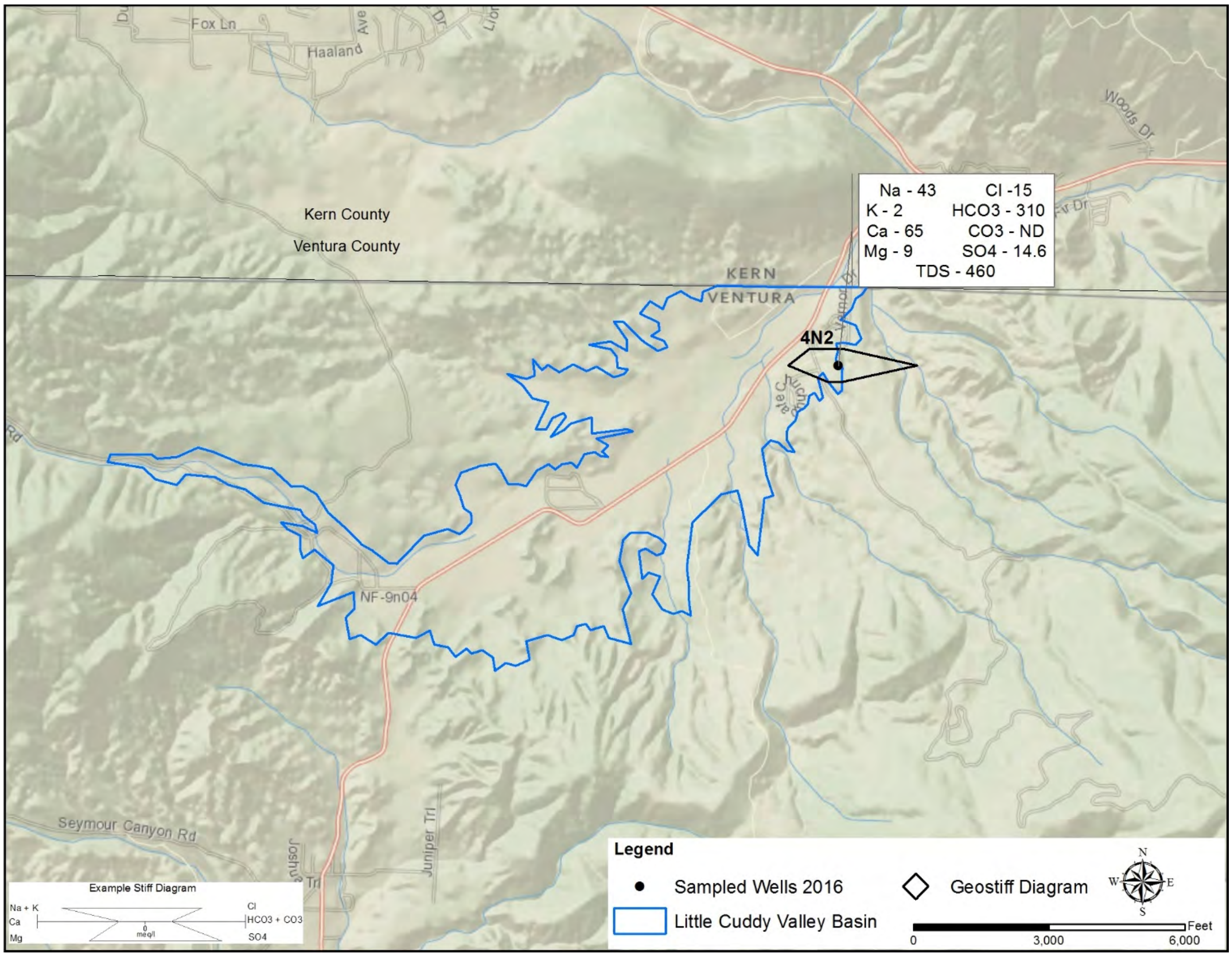


Figure 4-17: Map showing approximate location of sampled wells with concentrations (in mg/L) of selected inorganic constituents.

4.1.9 Lockwood Valley Basin

The Lockwood Valley Basin groundwater quality ranges from good to poor. The basin covers a large geographic area of approximately 34.1 square-miles. Depth to water bearing material is approximately 55 to 60 feet bgs. There are approximately 264 water supply wells in the Lockwood Valley Basin and 219 are active. Seven groundwater wells within this basin were sampled this year. **Figure E-9** shows moderate variation in groundwater chemistry of the wells sampled this year. Sodium is the dominant cation in five samples, calcium is the dominant cation in one sample and one sample has no dominant cation. Sulfate is the dominant anion in four samples, bicarbonate is the dominant anion in one sample and two samples have no dominant anion. Four water samples are sodium-sulfate type, two samples are calcium-sulfate type and one sample is sodium-bicarbonate type. Of the seven wells sampled this year all have TDS concentrations above the SMCL for drinking water, four have sulfate above the SMCL and one has iron above the SMCL.

Samples from all seven wells were also analyzed for Title 22 metals and five were analyzed for radionuclides. One sample has an arsenic concentration above the California MCL for Title 22 metals and the EPA MCL for drinking water. None of the remaining constituents were above the primary MCL for drinking water.

Three of the wells sampled were analyzed for gross alpha with results above 5 pCi/L; that level requires the sample to be analyzed for uranium. In 2004, the Drinking Water Branch of the California Department of Public Health issued an Initial Monitoring and MCL Compliance Determination flow chart. The flow chart is used to determine the source of gross alpha for determining compliance in community water systems. Based on the flow chart, naturally occurring uranium was determined to be the source of the gross alpha in these samples. Following the additional uranium testing radionuclides were determined to be above the MCL for drinking water in one sample. **Figure 4-18** shows approximate well locations and selected water quality concentrations.

LOCKWOOD VALLEY BASIN

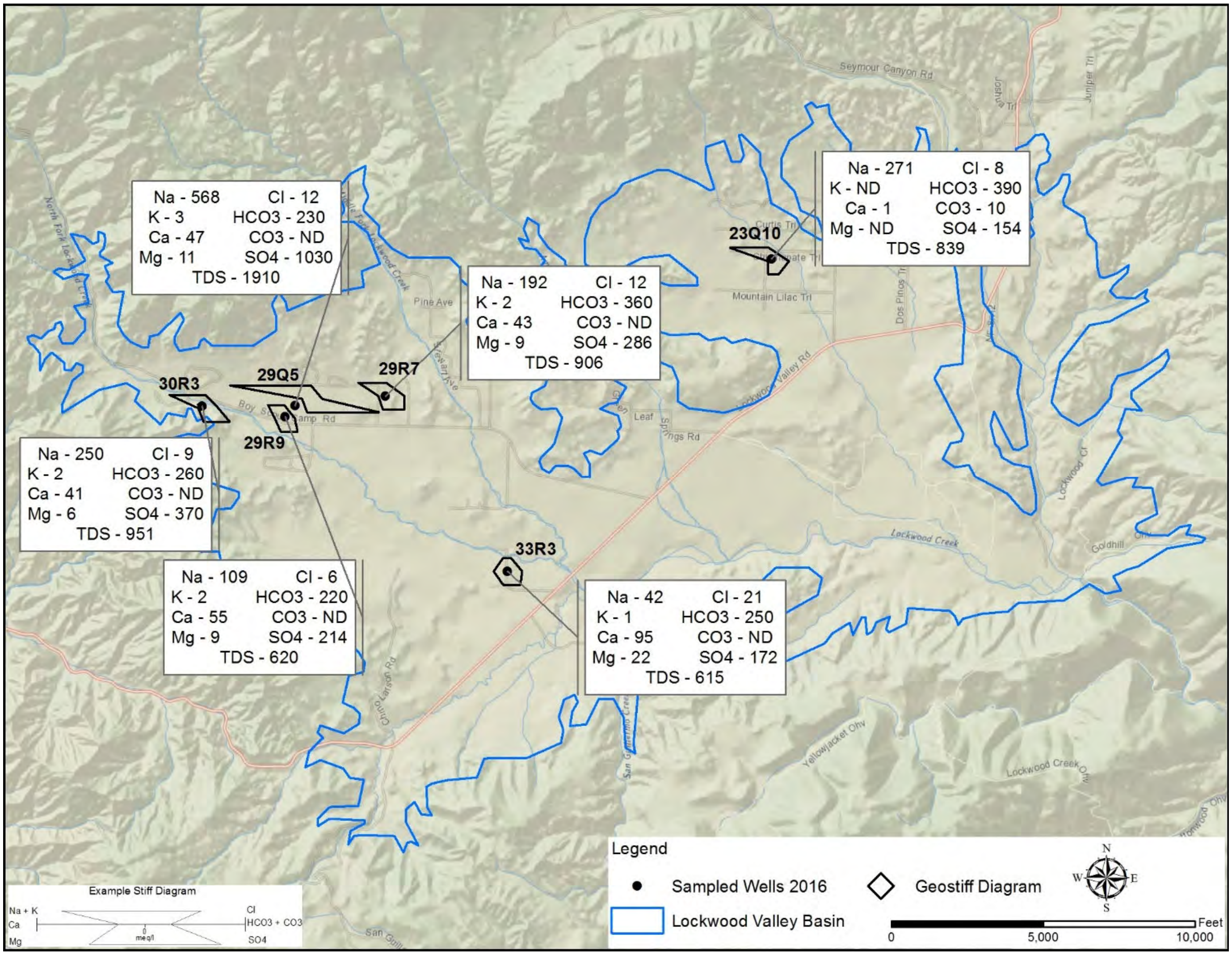


Figure 4-18: Location of sampled wells with concentrations (mg/l) of selected inorganic constituents and stiff diagram.

4.1.10 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 Plain Pressure 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 Pressure Basin. 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. Data collected this year shows 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 approximately 78 water supply wells in the Mound Basin and 29 are active water supply wells. **Figure E-11** shows low variability in water quality of all the wells sampled this year. Calcium is the dominant cation for one water sample with no dominant cation for the remaining water samples but all plotting close to the calcium type. Sulfate is the dominant anion for all samples. All samples are calcium-sulfate type.

TDS concentration for the wells sampled this year range from 1,040 to 2,870 mg/L which are above the SMCL for drinking water. Sulfate concentrations are greater than the secondary MCL for drinking water in all five wells sampled. Iron is above the SMCL in one of the wells and manganese is above the MCL in four wells. **Figure 4-19** shows approximate well locations and selected water quality.

MOUND BASIN

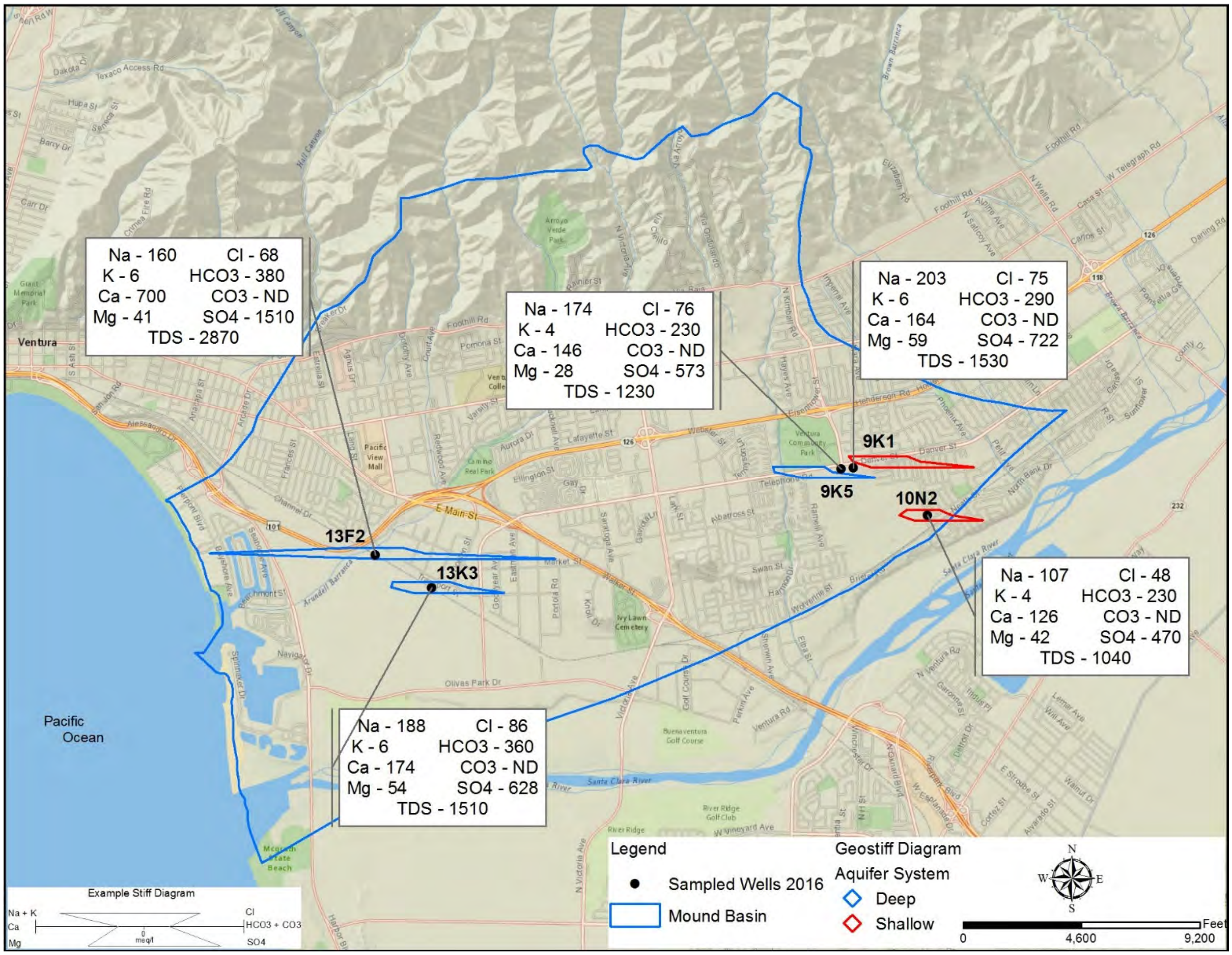


Figure 4-19: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagram.

4.1.11 North Coast Basin

The North Coast Basin does not have well defined boundaries or definite areas of recharge and discharge. 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. There are 26 water supply wells in the North Coast Basin and 9 are active wells mainly in the northwest portion of the Basin along Rincon Creek. Water samples were collected from two wells at the northwest end of the Basin. **Figure E-12** shows little variation in the water quality amongst the wells sampled this year. There is no dominant cation and no dominant anion. The water in both wells is calcium-sulfate type. Both samples have TDS and sulfate concentrations above the SMCL. **Figure 4-19** shows approximate well locations and selected water quality concentrations.

NORTH COAST BASIN

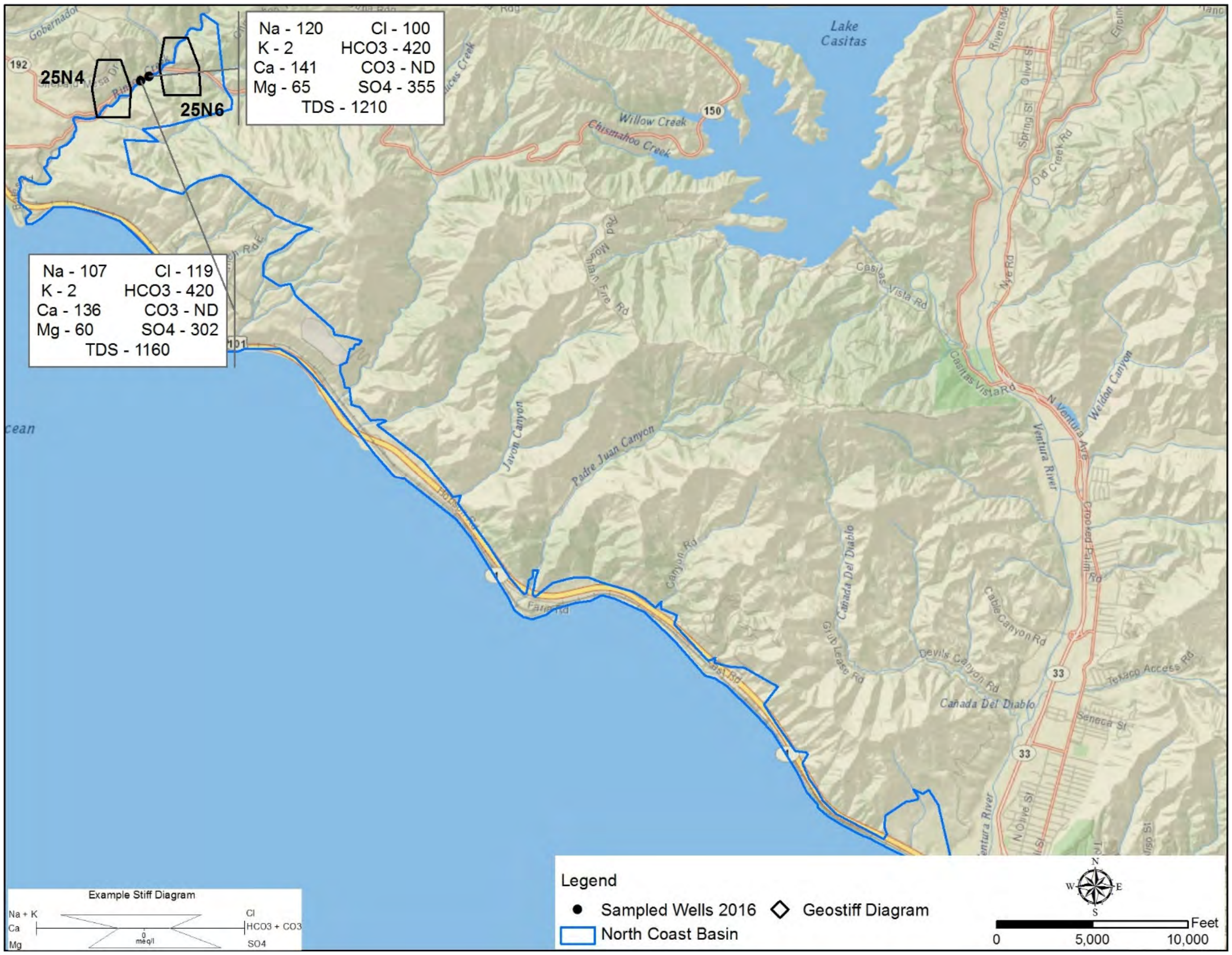


Figure 4-20: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagram.

4.1.12 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 344 water supply wells in the Ojai Valley Basin and 193 are active wells. Depth to water bearing material is generally between 25 to 30 feet bgs. **Figure E-13** shows high variation amongst the water quality of the twelve wells sampled this year. Calcium is the dominant cation for ten of the samples with sodium as the dominant cation for one sample and one sample with no dominant cation. Sulfate is the dominant anion for one sample, bicarbonate is the dominant anion for five of the samples, chloride is the dominant anion for one sample and no dominant anion for five samples. Four samples are calcium-bicarbonate type, six samples are calcium-sulfate type and one sample is sodium-bicarbonate type.

All twelve wells sampled have TDS concentrations above the SMCL for drinking water. TDS concentration ranges from 664 to 1,180 mg/L. Concentrations of iron in two wells, manganese in four wells, sulfate in one well, chloride in one well and nitrate in one well were above the SMCL for drinking water.

Water samples from five wells were analyzed for Title 22 metals. None of the constituents were above the primary MCL for drinking water. **Figure 4-21** shows approximate well locations and selected water quality concentrations.

OJAI VALLEY BASIN

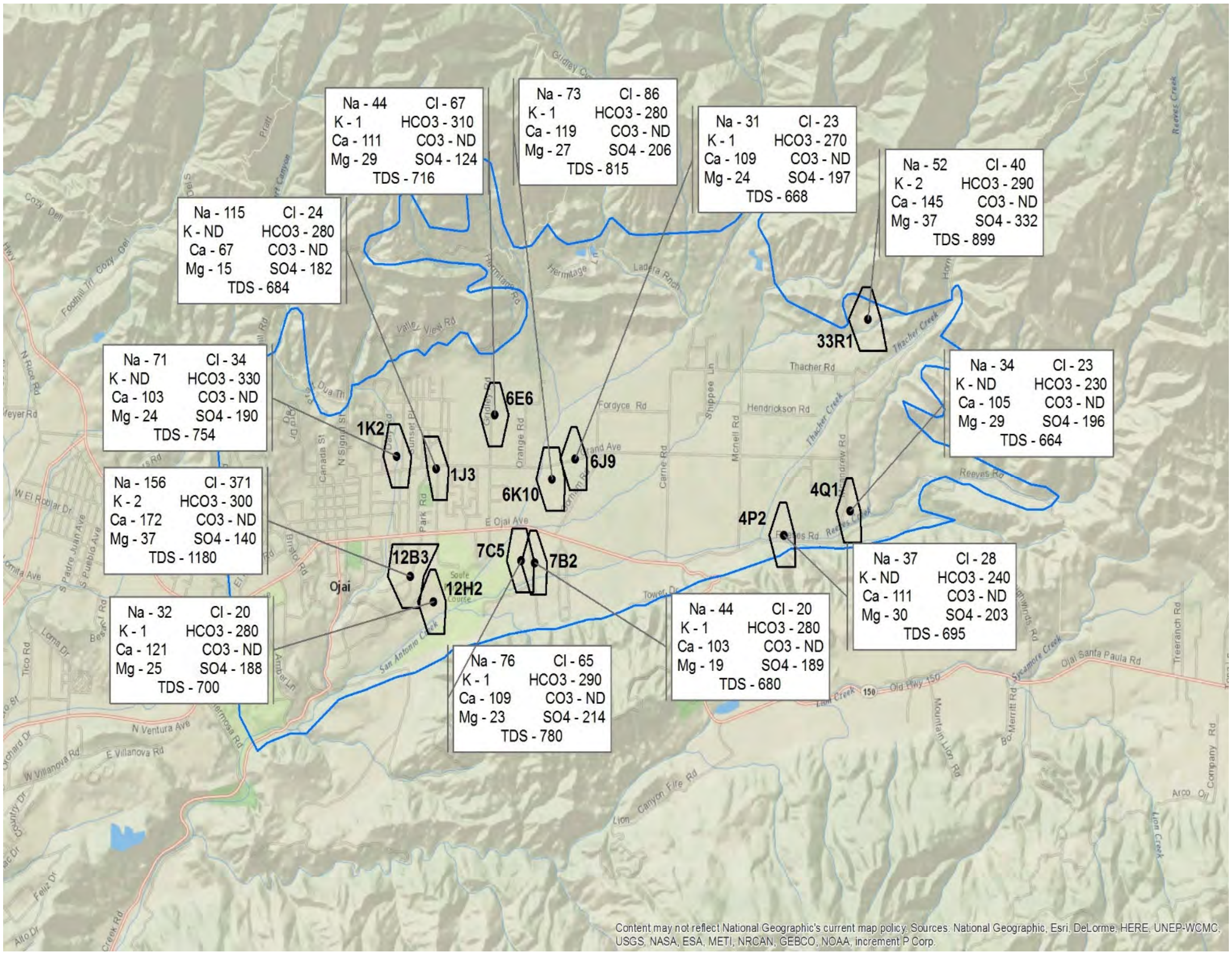


Figure 4-21: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams.

4.1.13 Oxnard Plain Forebay Basin

The Oxnard Plain Forebay Basin is the principal recharge area for the UAS and LAS of the Oxnard Plain Pressure Basin. Approximate depth to the water bearing unit is 25 to 50 feet bgs. There are approximately 312 water supply wells in the Oxnard Plain Forebay Basin and 110 active wells. 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 rely on individual septic systems. One week was sampled in the UAS, one in the LAS, and one screened in both. **Figure 4-21** shows low variability in water quality amongst all three wells. The piper diagram in **Figure E-8** shows little difference between the UAS and LAS. Calcium is the dominant cation for the UAS sample. There is no dominant cation type for the LAS samples but plot close to the calcium type. Sulfate is the dominant anion. The water in all three samples is calcium-sulfate type. **Figure E-23** shows that the wells sampled have very similar chemistry to that of the UAS of the Oxnard Pressure Basin.

All three wells sampled have TDS and sulfate concentrations above the SMCL for drinking water and one well has a manganese concentration above the MCL. One of the wells sampled this year has a nitrate concentration above the MCL for drinking water. Water from two wells was analyzed for Title 22 metals. Selenium was above the primary MCL for drinking water in one well. No other constituent was above the primary MCL. **Figure 4-22** shows approximate well locations and selected water quality concentrations.

OXNARD PLAIN FOREBAY BASIN

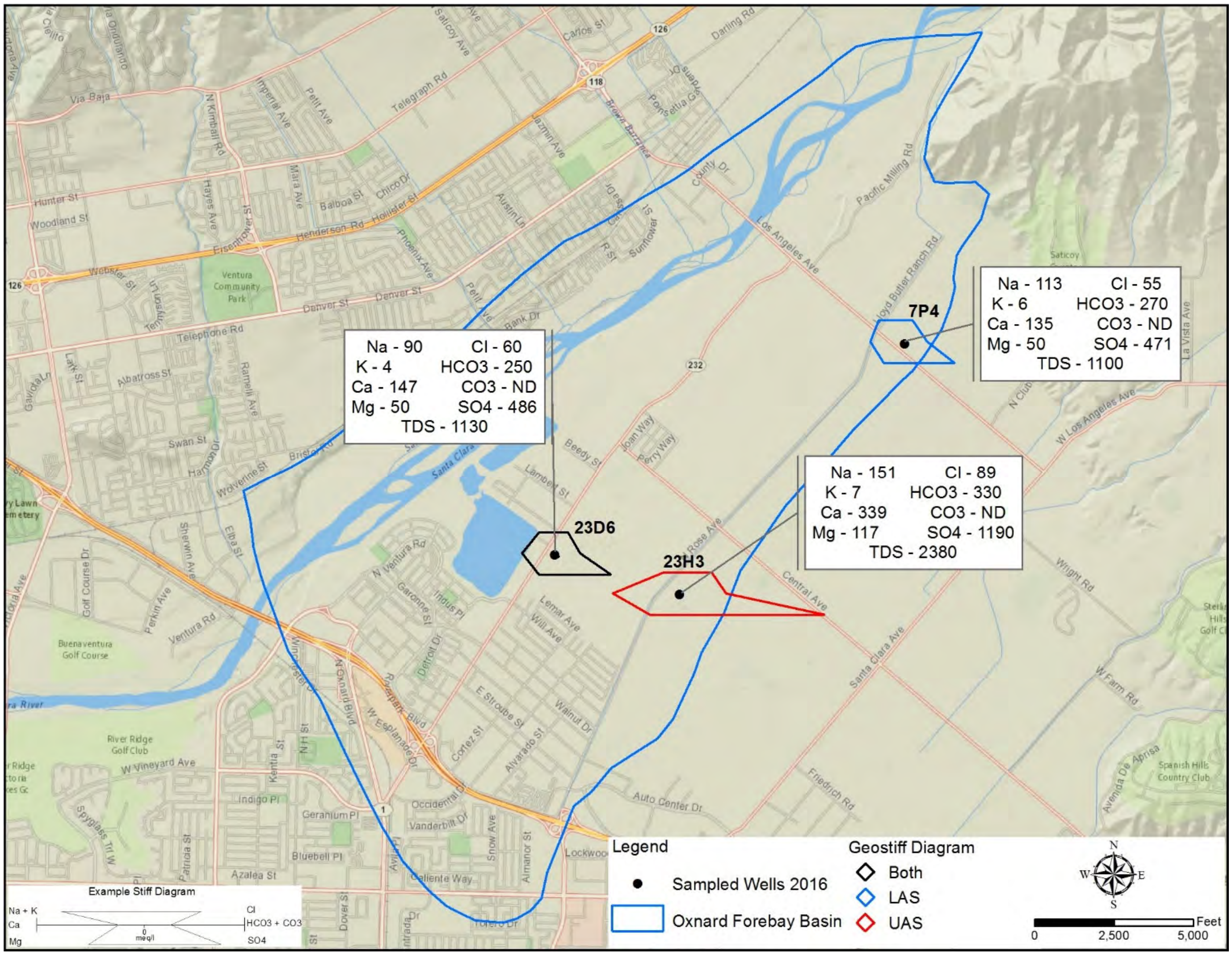


Figure 4-22: Map showing approximate location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams.

4.1.14 Oxnard Plain Pressure Basin

The Oxnard Plain Pressure Basin includes two major aquifer systems. The UAS consists of the Perched, Semi Perched, Oxnard, and Mugu aquifers. Only the Oxnard and Mugu aquifers are sampled in the UAS. The LAS consists of the Hueneme, Fox Canyon and Grimes Canyon aquifers. There are approximately 901 water supply wells in the Oxnard Plain Pressure Basin and 366 are active. There are no wells perforated solely in the Grimes Canyon Aquifer.

Figures 4-23 thru **4-25** show approximate well locations and selected water quality concentrations. **Figures 4-26** and **4-27** show the locations and selected water quality concentrations of wells sampled in the LAS.

4.1.14.1 Upper Aquifer System (UAS)

Oxnard Aquifer

The Oxnard Aquifer is the shallowest of the confined aquifers. Based on the number of wells, the Oxnard Aquifer is the most developed production zone. Average depth to the main water bearing material is 80 feet bgs. The piper diagram in **Figure E-22** shows low variability in water quality of the wells. There is no dominant cation, though data plot closest to a calcium cation type. Sulfate is the major anion. The water is best classified as a calcium-sulfate type. Groundwater samples were collected from nine wells in the Oxnard Aquifer. A comparison of the stiff diagrams with those from the 2015 report show no significant change in water quality type.

Water from two of the wells have iron concentrations above the SMCL and one is five times the limit. Water from three of the wells have manganese concentrations above the SMCL for drinking water. Samples from all ten of the wells have TDS concentrations at least twice the SMCL for drinking water and eight have sulfate concentrations above the SMCL. Sulfate concentrations range from 480 to 878 mg/L. TDS ranged from 1,050 to 1,700 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 primary MCL for drinking water.

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

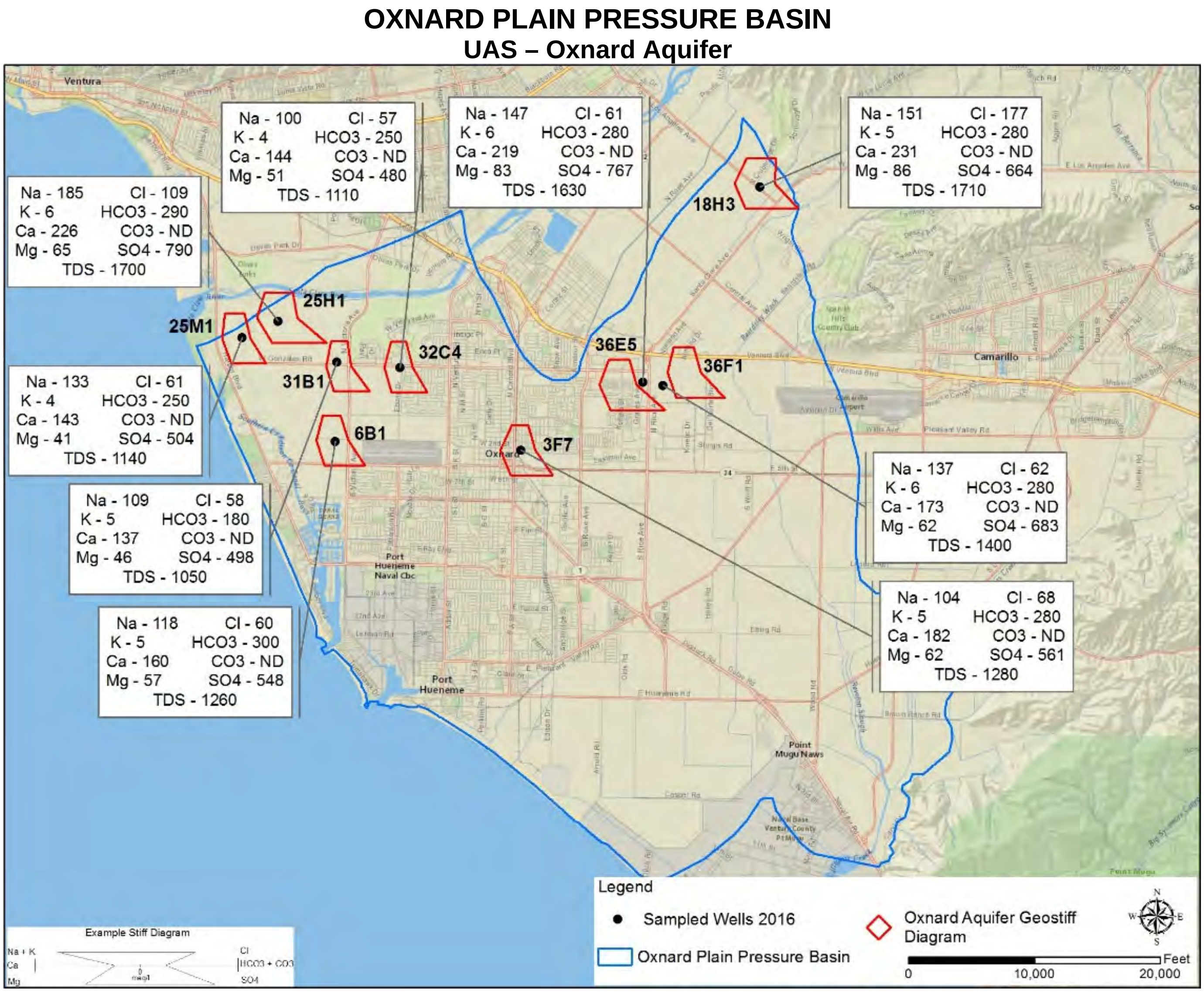


Figure 4-23: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams for the Oxnard aquifer.

Mugu Aquifer

The Mugu Aquifer is the lowest layer of the UAS and has similar physical and chemical characteristics to the Oxnard Aquifer but 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. **Figures 4-24** and **E-23** show low variability in water quality of the wells. There is no dominant cation, though data plots closest to a calcium cation type. Sulfate is the major anion for three samples and two samples have no dominant anion but plot close to the sulfate type. The water is best classified as a calcium-sulfate type. All five wells sampled have sulfate and TDS concentrations above the MCL for drinking water. TDS ranges from 898 to 1,560 mg/L. One well has an iron concentration and three wells have manganese concentrations above the SMCL. Three water samples from wells perforated solely in the Mugu were analyzed for Title 22 metals. The concentrations of all constituents were below the MCL for drinking water.

OXNARD PLAIN PRESSURE BASIN
UAS – Mugu Aquifer

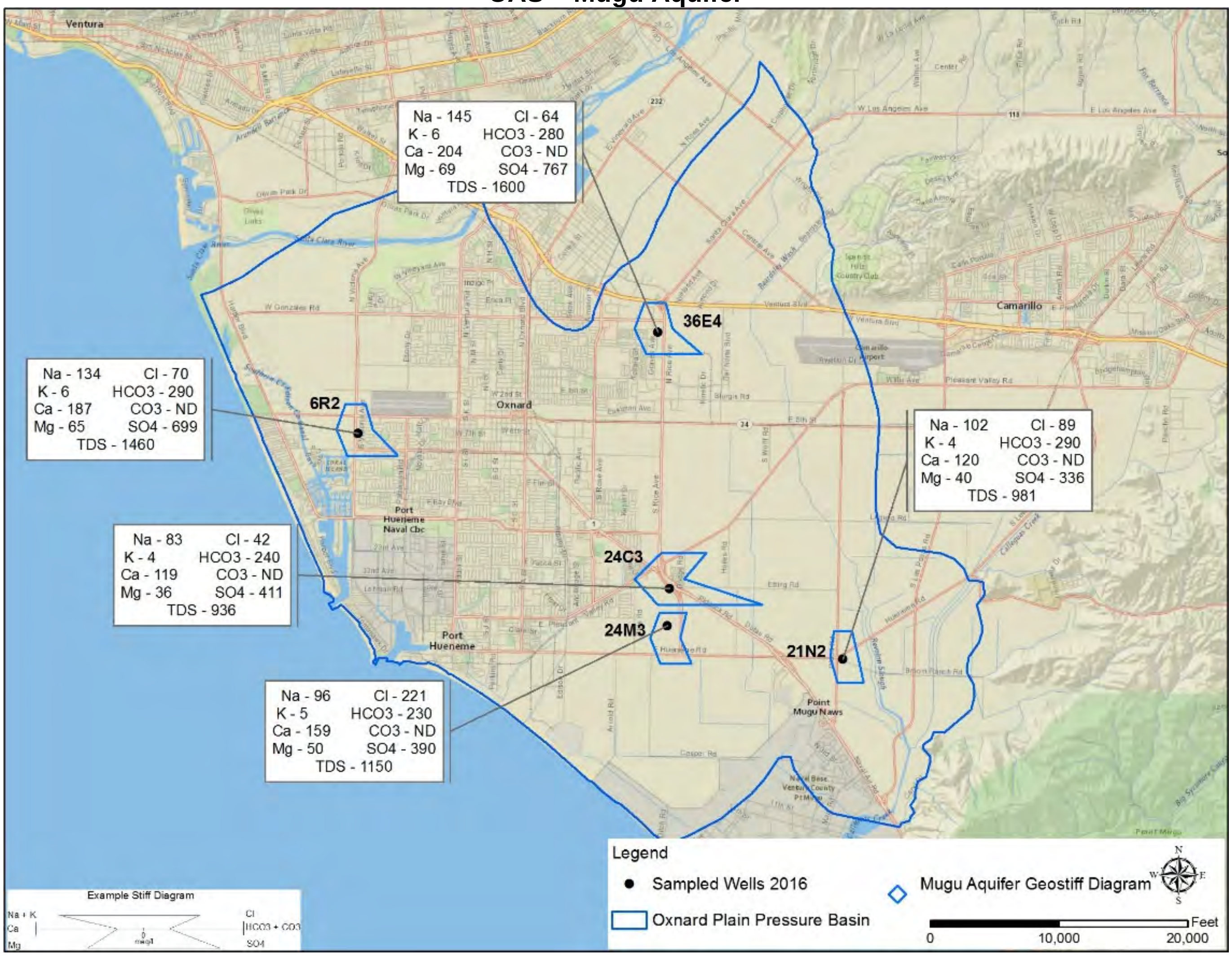


Figure 4-24: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams for the Mugu aquifer.

Oxnard & Mugu Aquifers

The piper diagram in **Figure E-24** shows water chemistry of Upper Aquifer 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 with no dominant cation in the remainder. The data plots close to the calcium cation type. Sulfate is the dominant anion in three of the samples, chloride is the dominant anion in one sample, and with no dominant anion for one sample. The data plots close to the sulfate anion type and the water is calcium-sulfate type.

TDS concentrations for all samples exceeded the SMCL and ranged from 784 to 2,550 mg/L (**Figure 4-25**). All samples exceed the SMCLs for manganese and sulfate and three of the wells have iron concentrations above the SMCL.

The piper diagram in **Figure E-21** shows a comparison of all the wells sampled in the UAS.

OXNARD PLAIN PRESSURE BASIN
UAS – Wells Cross-screened across Oxnard & Mugu Aquifers

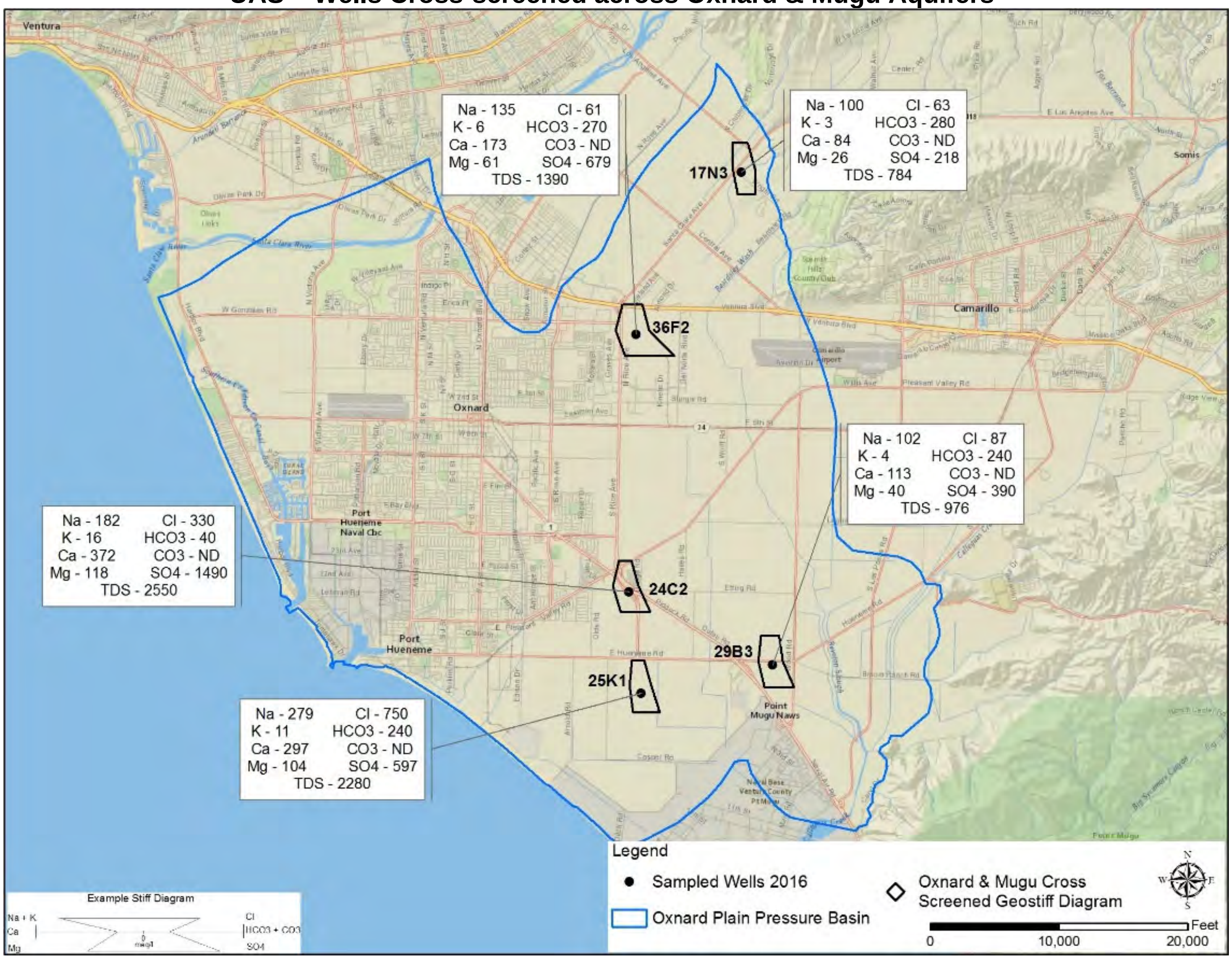


Figure 4-25: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams for wells screened in both the Oxnard and Mugu aquifers.

4.1.14.2 Lower Aquifer System (LAS)

Hueneme Aquifer

The Hueneme Aquifer is the shallowest of the LAS aquifers with depth to the main water bearing material at approximately 375 feet bgs. Very few wells are perforated exclusively in the Hueneme Aquifer making water quality determination for the aquifer difficult. Three wells screened solely in the Hueneme Aquifer were sampled this year (**Figure 4-26**). The piper diagram in **Figure E-20** shows low variability in water quality of the wells sampled. There is no dominant cation and although the data plots closest to a calcium cation type, sulfate is the major anion. The water is best classified as a calcium-sulfate type. All four wells sampled have elevated TDS and sulfate concentrations compared to the SMCL for drinking water. Two samples have iron and three samples have manganese concentrations above the MCL for drinking water. Overall, water quality has not changed significantly since previously sampled.

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. Thirteen wells perforated solely in the Fox Canyon Aquifer were sampled (**Figure 4-26**). 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 and allocations are monitored by the FCGMA to mitigate aquifer overdraft and reduce seawater intrusion.

The piper diagram in **Figure E-17** shows moderate variability in water quality amongst the twelve wells sampled. Sodium is the dominant cation in one sample and there is no dominant cation in the remainder of the samples. Bicarbonate is the dominant anion in one sample and two samples have no dominant anion. Sulfate is the dominant anion in the remaining nine samples. The water type of ten samples is calcium-sulfate, one is sodium-sulfate and one is calcium-bicarbonate. TDS concentrations in all wells exceed the SMCL for drinking water and ranged from 551 to 1,020 mg/L. Five water samples have iron concentrations above the SMCL for drinking water. SMCL concentrations for drinking water were exceeded in six samples for manganese and in twelve samples for sulfate. One sample was analyzed for Title 22 metals. None of the constituents were above the MCL for drinking water.

Hueneme & Fox Canyon Aquifers

Six of the Oxnard Plain Pressure Basin wells that were sampled 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 4-27**). The piper diagram in **Figure E-18** shows little variability in water quality of the wells sampled this year. There is no dominant cation but samples plot close to the calcium cation type. Sulfate is the dominant anion. The water type is calcium-sulfate. TDS concentration from these wells varies between 850 and 1,080 mg/L. SMCL concentrations for drinking water were exceeded in three samples for iron and in five samples for manganese. All six have sulfate and TDS concentrations above the SMCL for drinking water. Water samples from three of the wells were analyzed for Title 22 metals. All constituents were well below the primary MCL for drinking water.

Fox Canyon & Grimes Aquifers

Three of the Oxnard Plain Pressure Basin wells sampled this year are perforated in the Fox Canyon and the 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 the LAS in **Figure 4-27**. The piper diagram in **Figure E-16** shows moderate variability in water quality of the wells sampled. Sodium is the dominant cation in two samples with no dominant cation in the third. 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 type. TDS concentration of water from these wells varies between 897 and 1,020 mg/L. One well exceeded the SMCL concentrations for drinking water for iron and manganese. All three wells have sulfate and TDS concentrations above the SMCL for drinking water.

Hueneme, Fox Canyon & Grimes Aquifers

Four 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 the LAS in **Figure 4-27**. The piper diagram in **Figure E-19** shows moderate variability in water quality of the wells sampled. Sodium is the dominant cation in one sample with no dominant cation in the remaining three samples but plot closely 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 concentrations from these wells varies between 672 and 995 mg/L. Samples from three wells have manganese concentrations above the SMCL for drinking water and two have sulfate concentrations above the SMCL. All samples have TDS concentrations above the SMCL for drinking water. Water samples from three of the Fox/Hueneme/Grimes wells were analyzed for Title 22 metals. All constituents were well below the primary MCL for drinking water.

OXNARD PLAIN PRESSURE BASIN
LAS - Hueneme & Fox Canyon Aquifers

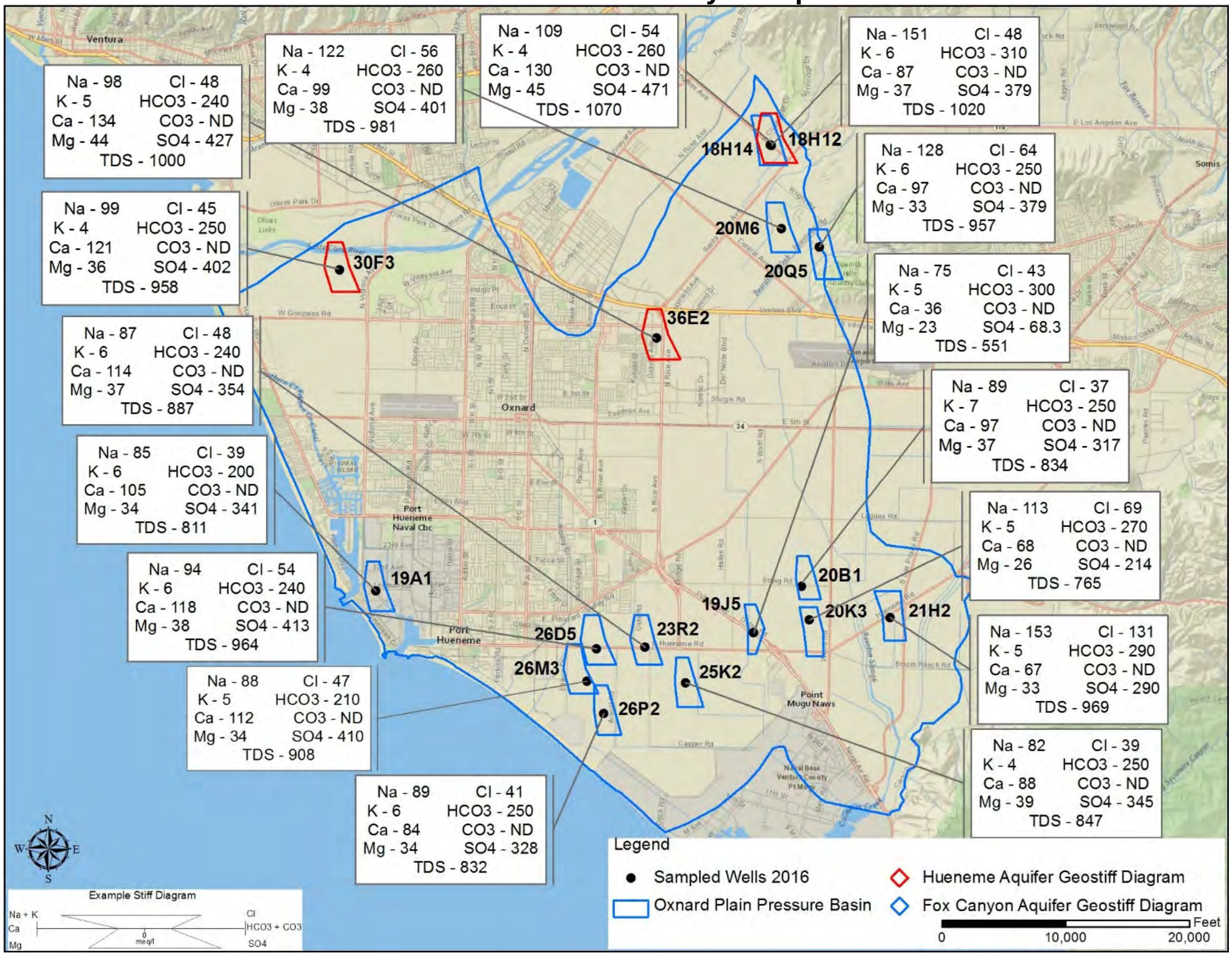


Figure 4-26: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams for the Hueneme and Fox Canyon Aquifers.

OXNARD PLAIN PRESSURE BASIN
LAS – Wells Cross-screened Across Multiple Aquifers

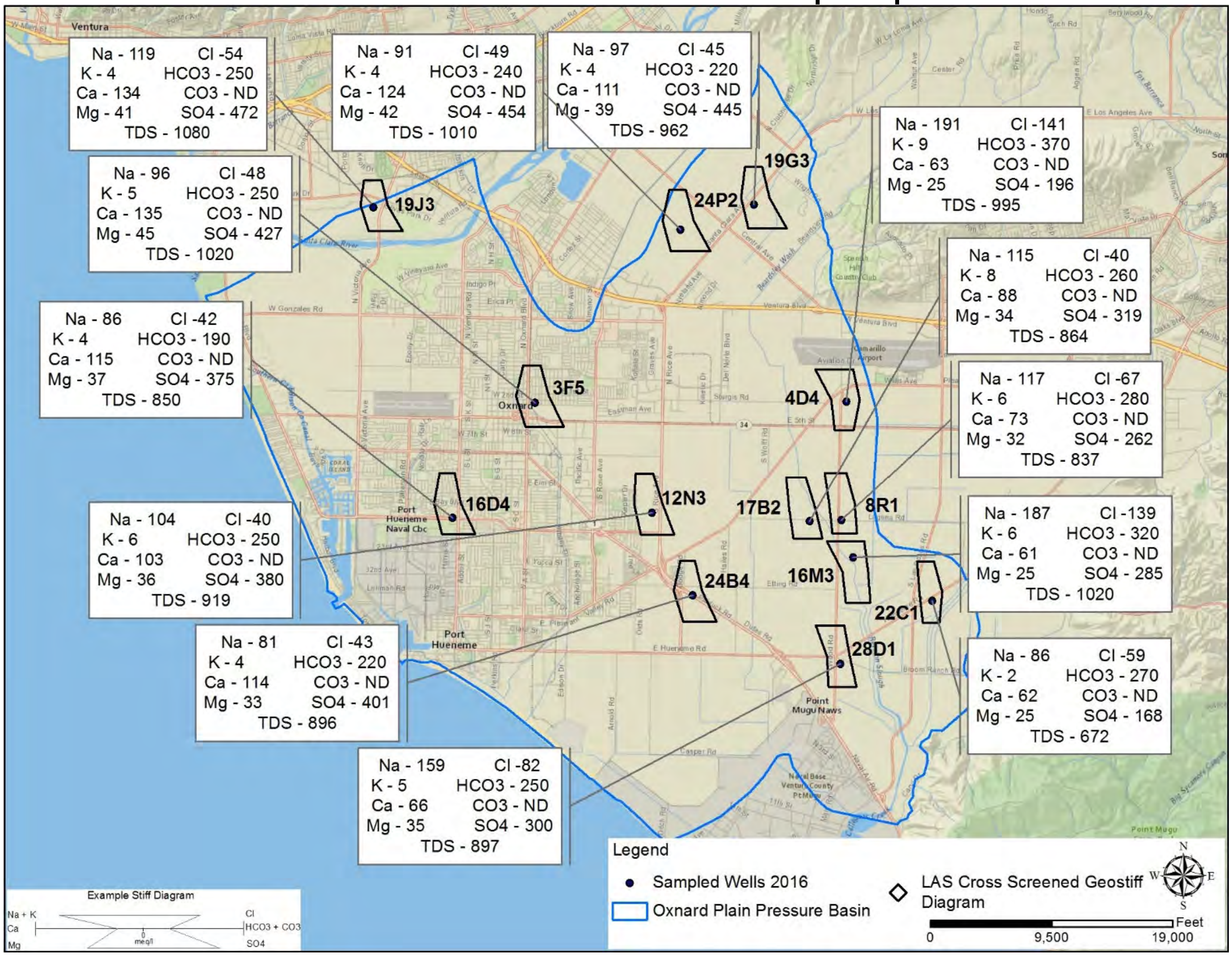


Figure 4-27: Location of sampled LAS cross-screened wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams.

4.1.15 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 192 water supply wells in the Piru Basin and 150 are active water supply wells. Depth to the main water bearing material is approximately 30 to 90 feet bgs. On April 6, 2010, the Los Angeles Regional Water Quality Control Board (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.

Ten wells were sampled in the Piru Basin. None of the groundwater sampled has a chloride concentration above the chloride TMDL. **Figure E-25** shows low variability in water quality amongst the wells sampled. Calcium is the dominant cation for one sample and there is no dominant cation for the remaining nine 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. The TDS concentration of the samples vary from 870 to 2,550 mg/L. All ten wells are above the SMCL for drinking water. Three wells have TDS concentrations above 2,000 mg/L. Water samples from all ten wells have sulfate concentrations greater than the SMCL for drinking water and two have manganese concentrations greater than the SMCL. **Figure 4-28** shows approximate well locations and selected water quality concentrations.

Water samples from nine wells were analyzed for Title 22 metals. Two wells located south of California State Highway 126 have consistently been found to have selenium levels that exceed the primary MCL for drinking water of 0.05 mg/L. Elevated selenium concentrations occur in those wells perforated in the interval between approximately 125 to 250 feet bgs. A well located north of Highway 126 and perforated at a similar elevation does not have water with a high selenium concentration.

PIRU BASIN

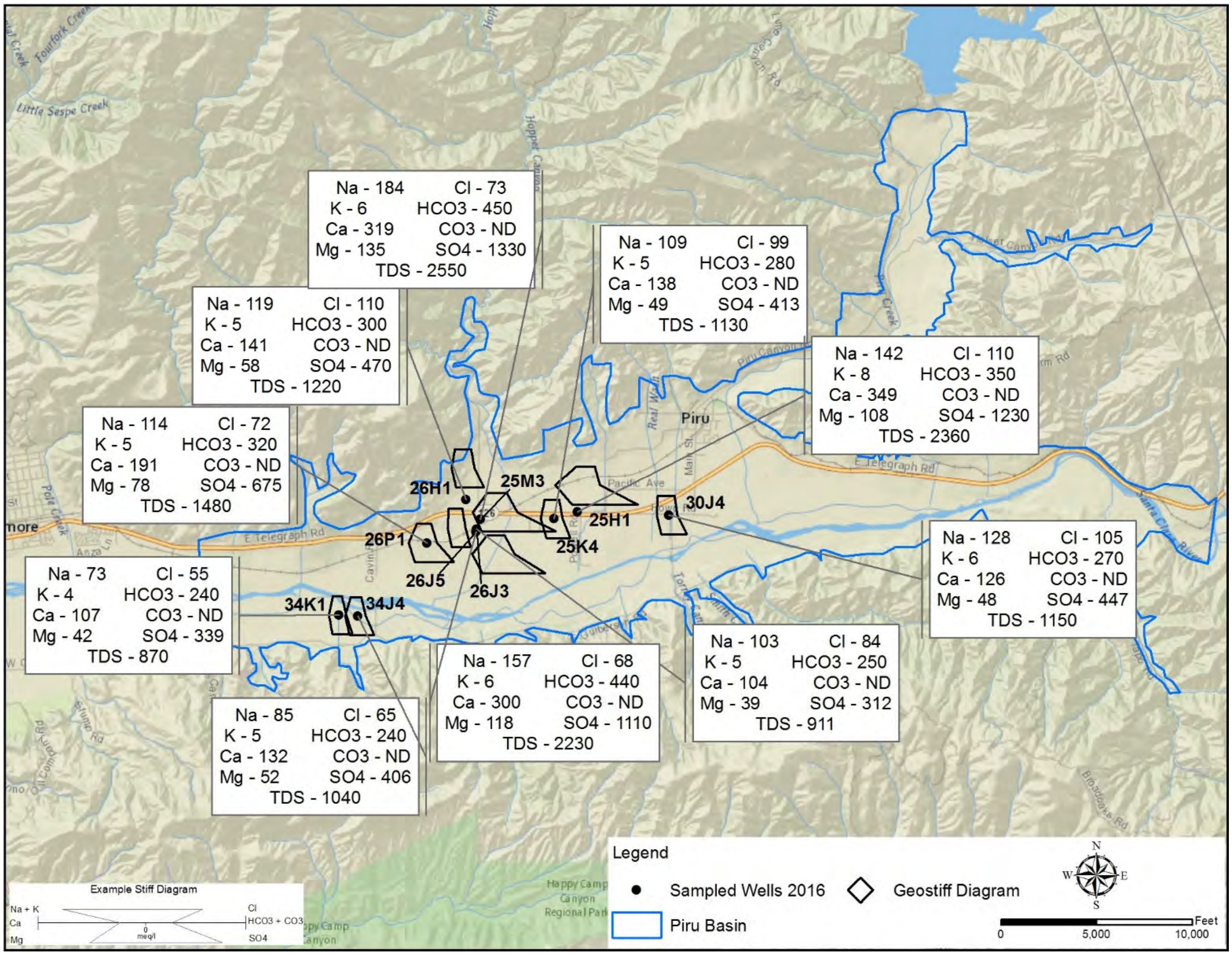


Figure 4-28: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams.

4.1.16 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 greater than 1000 feet bgs and is perforated by only the deepest wells. There are approximately 332 water supply wells in the Pleasant Valley Basin and 91 are active. Eighteen wells were sampled with three perforated in the Upper Zone and 15 perforated in the Lower Zone.

Figure E-26 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. The piper diagram shows moderate variability in water quality of the wells in the Lower Zone and low variability for the wells in the Upper Zone. Water from the Upper Zone wells show calcium as the dominant cation for one of the samples with the remaining two samples having no dominant cation but plotting very close to the calcium type. Sulfate is the dominant anion in all samples. The water in the Upper Zone is calcium-sulfate type. Water from the Lower Zone wells show sodium as the dominant anion in two wells with no dominant anion for the remainder. Sulfate is the dominant anion in four samples with no dominant anion for the remaining ten samples but the data plotting closely to the sulfate type. The water in two samples is sodium-sulfate type and the remainder are calcium-sulfate type.

TDS concentrations in all water samples (Upper and Lower Zones) vary from 706 to 4,420 mg/L. All eighteen sampled wells have TDS concentrations above the SMCL for drinking water. Thirteen of the wells have sulfate concentrations above the SMCL for drinking water. Five water samples have iron concentrations above the SMCL for drinking water and eleven have manganese concentrations above the SMCL. Chloride concentrations are above the SMCL for drinking water in three wells while fourteen are above 117 mg/L. The LARWQCB Basin Plan indicates that agricultural beneficial uses are impaired when the concentration of chloride is above 117 mg/L. Water samples from seven wells were analyzed for Title 22 metals. None of the analytes was above the primary MCL. **Figure 4-29** shows approximate well locations and selected water quality concentrations.

PLEASANT VALLEY BASIN

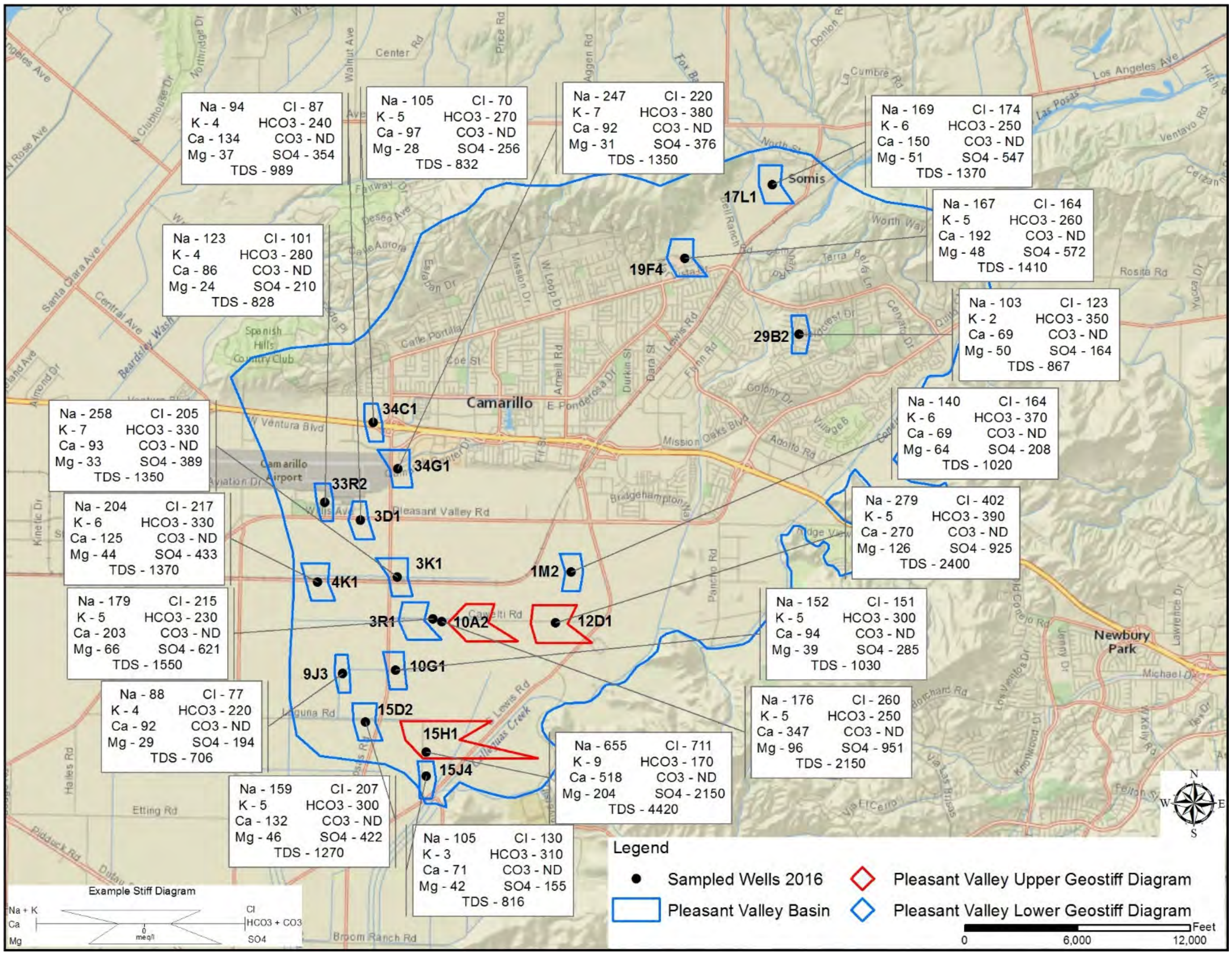


Figure 4-29: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams.

4.1.17 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 286 water supply wells in the Santa Paula Basin and 154 are active. **Figure E-27** shows no significant change in the water quality since the previous sampling. Calcium is the dominant cation in two samples while the remaining five have no dominant cation. Sulfate is the dominant anion. The water is calcium-sulfate type. TDS concentration ranges from 1,050 to 2,810 mg/L; all above the current SMCL for drinking water. All seven water samples have concentrations above the SMCL for sulfate and manganese and three are above the SMCL for iron. Three water samples were analyzed for Title 22 metals. All constituents are below the primary MCL for drinking water. **Figure 4-30** shows approximate well locations and selected water quality concentrations.

Figure E-28 compares water samples from the up-gradient Piru and Fillmore Basins to the Santa Paula Basin. The piper diagram shows low variability between the samples and that they are all calcium-sulfate water types.

SANTA PAULA BASIN

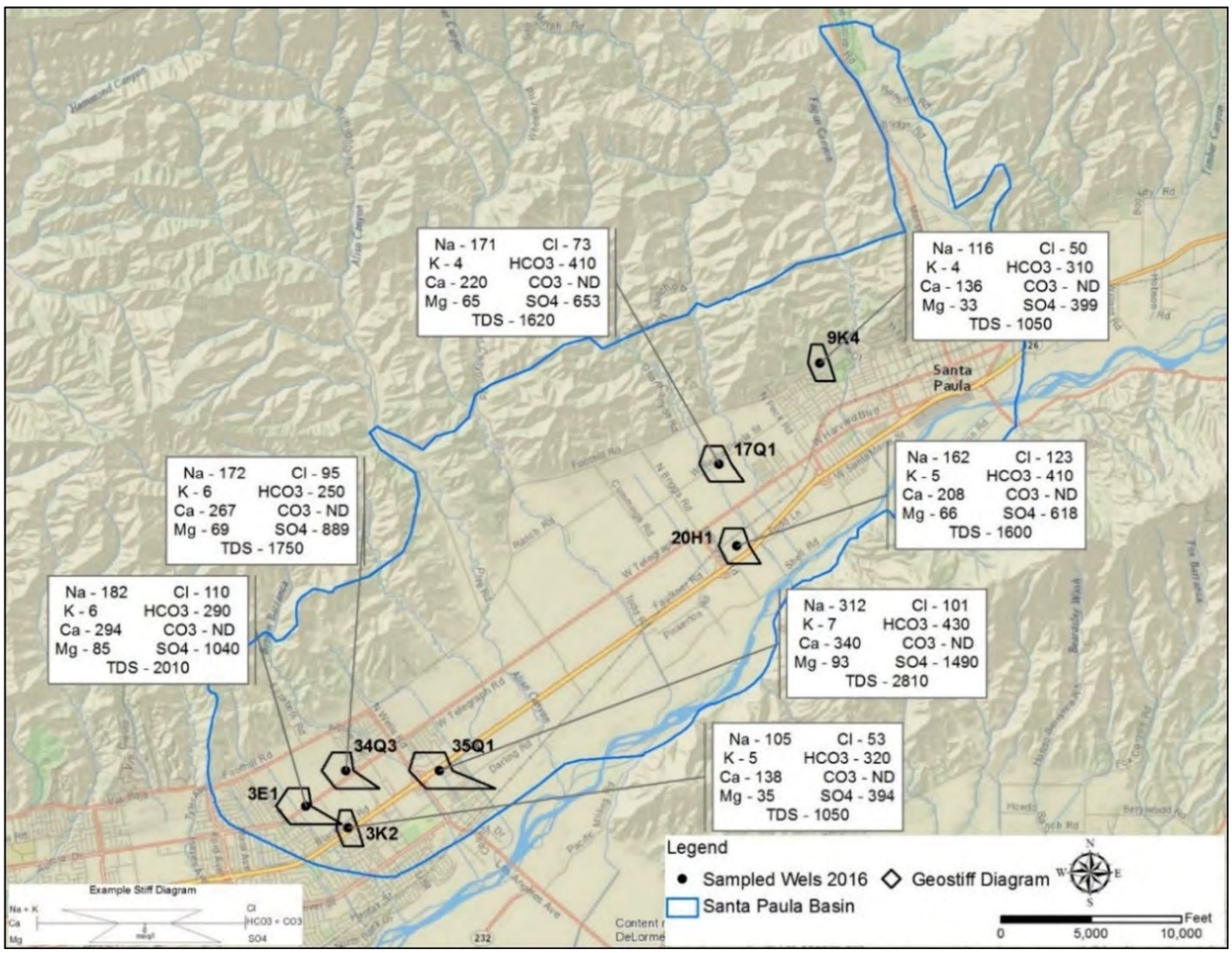


Figure 4-30: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams.

4.1.18 Sherwood Basin

The Sherwood Basin consists mainly of fractured volcanic rock. 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. One well was sampled and analyzed. The piper diagram in **Figure E-29** shows the sample chemistry. There is no dominant cation but the sample plots closely to the calcium type. Bicarbonate is the dominant anion. The water is calcium-bicarbonate type.

Iron and TDS are above the SMCL. The water sample was not analyzed for Title 22 metals. **Figure 4-31** shows the approximate well location and selected water quality concentrations.

SHERWOOD BASIN

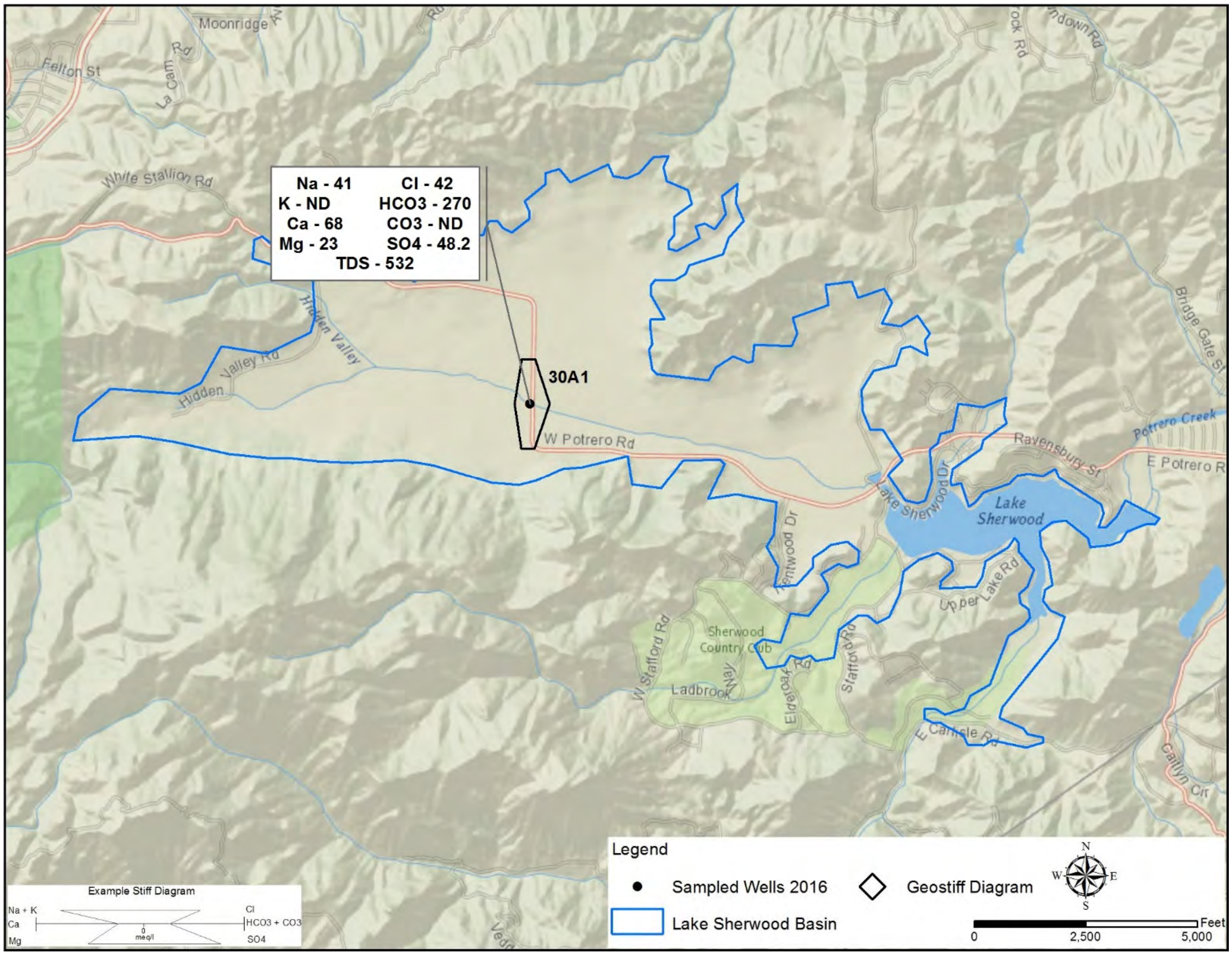


Figure 4-31: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents.

4.1.19 Simi Valley Basin

The Simi Valley Basin drains to the west and water quality becomes more enriched in salts and thus poorer quality farther west in the basin. There are approximately 192 water supply wells in the Simi Valley Basin and 43 are active. 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 pump down groundwater when it gets too high. **Figure E-30** shows low variability in water quality. There is no dominant cation but all three samples plot closely to the calcium cation type and sulfate is the dominant anion. The water is calcium-sulfate type. The four wells sampled are located in the western half of the basin. Sulfate and TDS concentrations in all four wells are above the SMCL for drinking water and one well has manganese above the MCL. All four wells also have chloride concentrations that exceed agricultural beneficial uses but are not above the primary MCL for drinking water. Water samples from two wells were analyzed for Title 22 metals. Two samples have selenium concentrations above the primary MCL for drinking water. **Figure 4-32** shows approximate well locations and selected water quality concentrations.

SIMI VALLEY BASIN

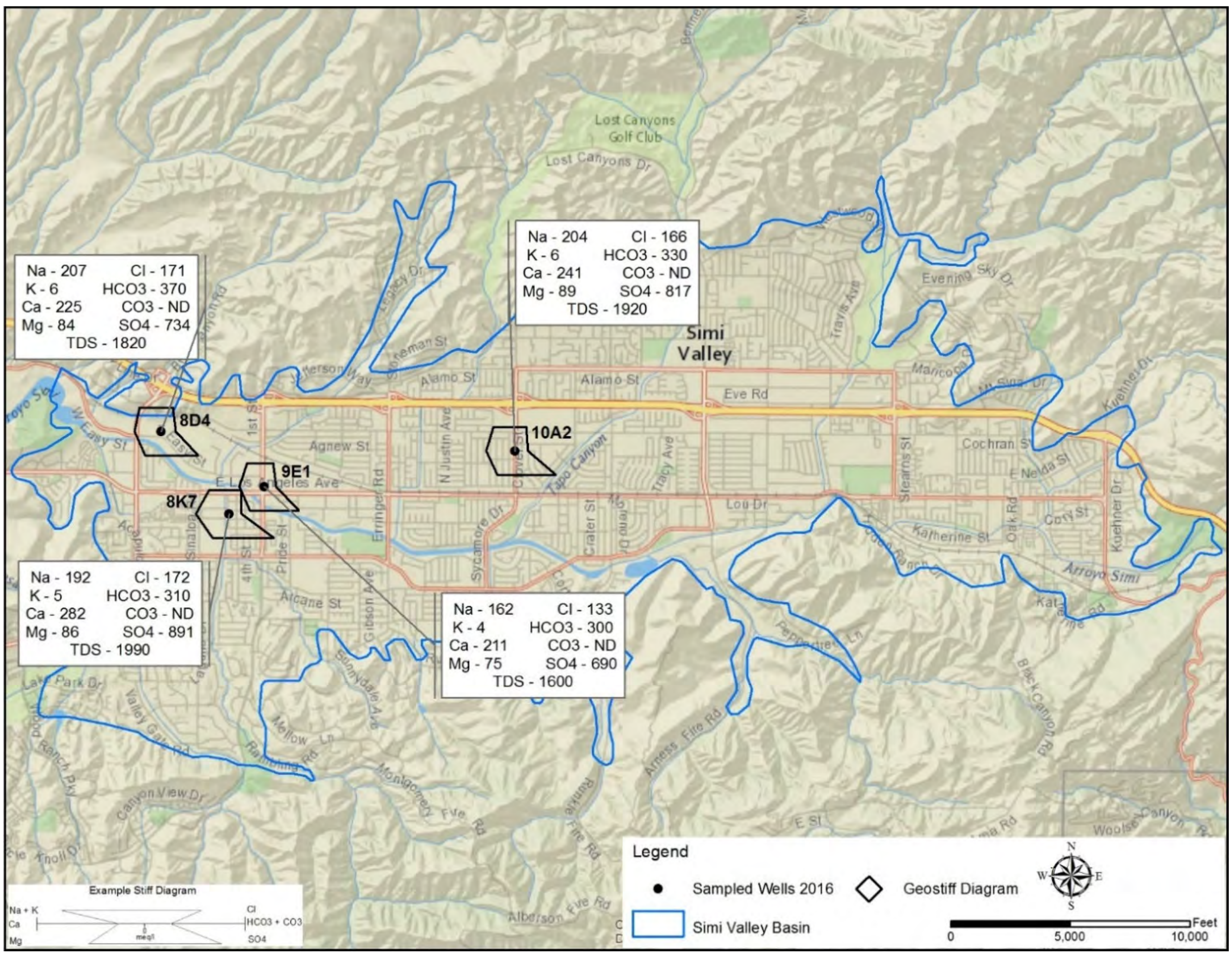


Figure 4-32: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagram.

4.1.20 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 196 water supply wells in the and 20 are active. One well located at the west end of the basin was sampled. **Figure E-32** shows the water quality of the wells sampled this year. There is no dominant cation but the water plots closely to the magnesium type with sulfate as the dominant anion. The water is magnesium-sulfate type. Concentrations of iron, sulfate, and TDS are above the SMCL for drinking water. The sample was not analyzed for Title 22 metals. **Figure 4-33** shows the approximate well location and selected water quality concentrations.

THOUSAND OAKS BASIN

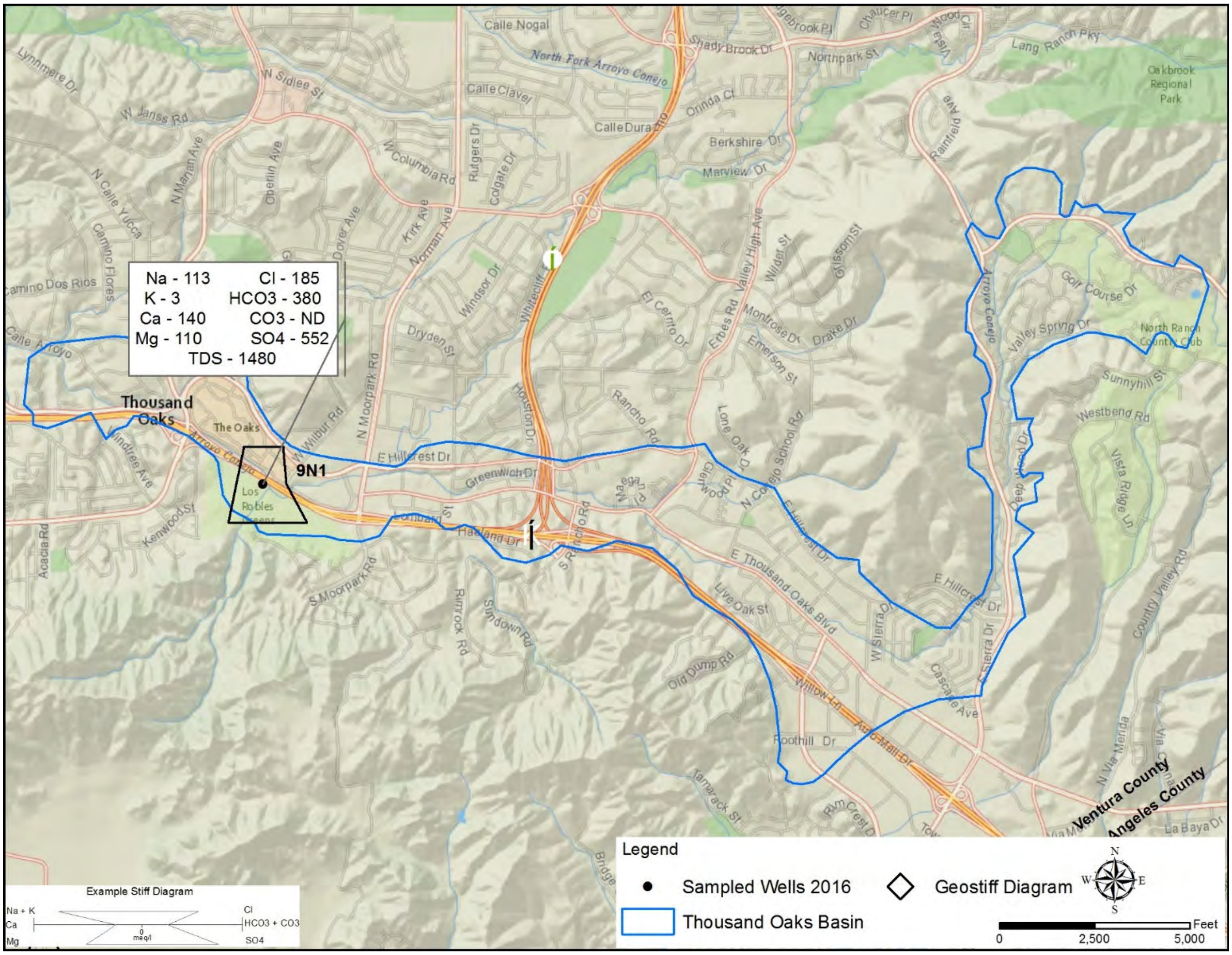


Figure 4-33: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagram.

4.1.21 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 33 are active. Seven wells were sampled. **Figure E-33** shows some variation in water quality. The samples have no dominant cation but plot closely to the magnesium type. The dominant anion for two samples is bicarbonate with the remainder having no dominant anion. Two wells are magnesium-bicarbonate type and the remaining five are magnesium-sulfate type. All seven wells have concentrations above the SMCL for TDS ranging from 654 to 1,010 mg/L. Four wells have nitrate concentrations above the MCL for drinking water. Samples from two wells were also analyzed for Title 22 metals. All constituents were below the primary MCL for drinking water.

Figure E-3 shows a comparison of water chemistry between Tierra Rejada and Arroyo Santa Rosa Basins. Chemistry between the two basins is similar but there is more variation in Tierra Rejada with slightly higher bicarbonate and sulfate. **Figure 4-34** shows approximate well locations and selected water quality concentrations.

TIERRA REJADA BASIN

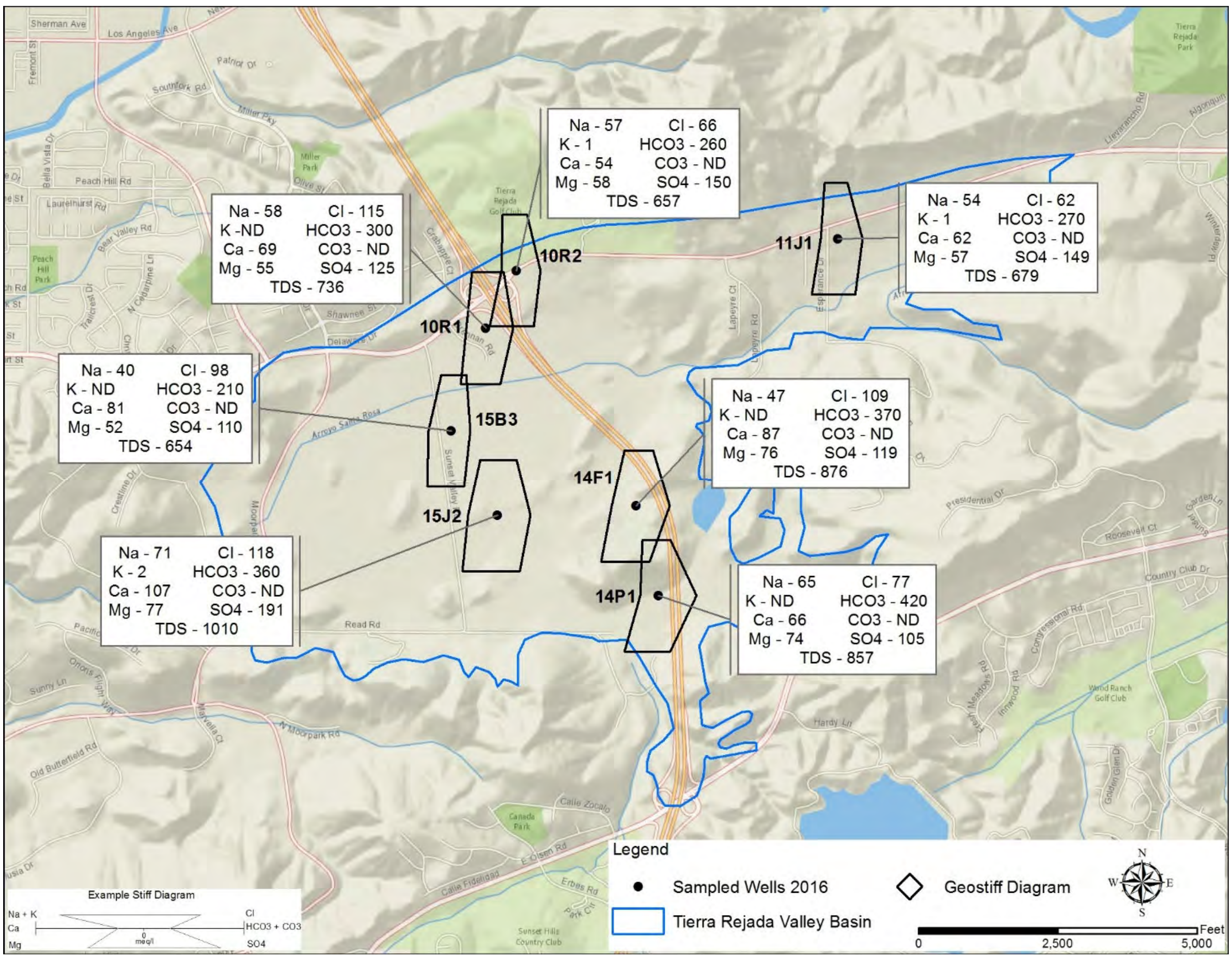


Figure 4-34: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams.

Figure 4-35 shows nitrate concentrations for wells sampled in Tierra Rejada Basin. Groundwater from two of the wells sampled this year have 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.

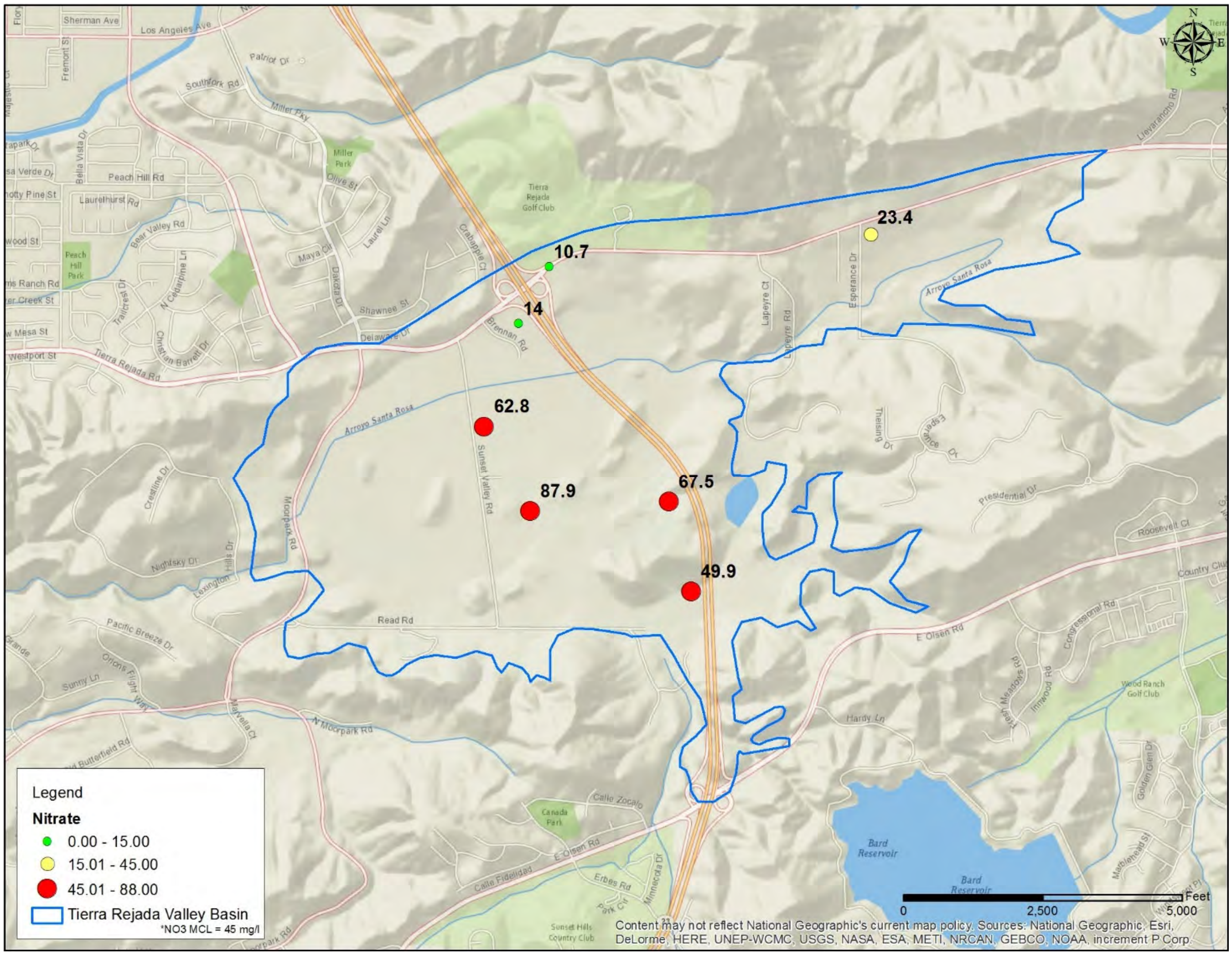


Figure 4-35: Map showing nitrate concentrations (in mg/L) in wells sampled in the Tierra Rejada Basin.

4.1.22 Upper Ojai Basin

The Upper Ojai Basin is a small, linear valley to the 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 with better quality during winter months. There are approximately 147 water supply wells in the Upper Ojai Basin and 105 active wells. Three wells were sampled. **Figure E-34** shows little variation in the water quality amongst the sampled wells. Calcium is the dominant cation in two samples with no dominant cation in the remaining sample but plotting closely to the sodium cation type. Bicarbonate is the dominant anion in one sample with no dominant anion in the remaining samples. The water is calcium-sulfate type in two samples and calcium-bicarbonate type in the third sample. TDS for the wells sampled ranged from 341 to 595 mg/L and is above the SMCL for drinking water in one well. One well has iron above the MCL for drinking water and two have manganese concentrations above the MCL for drinking water. No water samples were analyzed for Title 22 metals. **Figure 4-36** shows approximate well locations and selected water quality concentrations.

UPPER OJAI BASIN

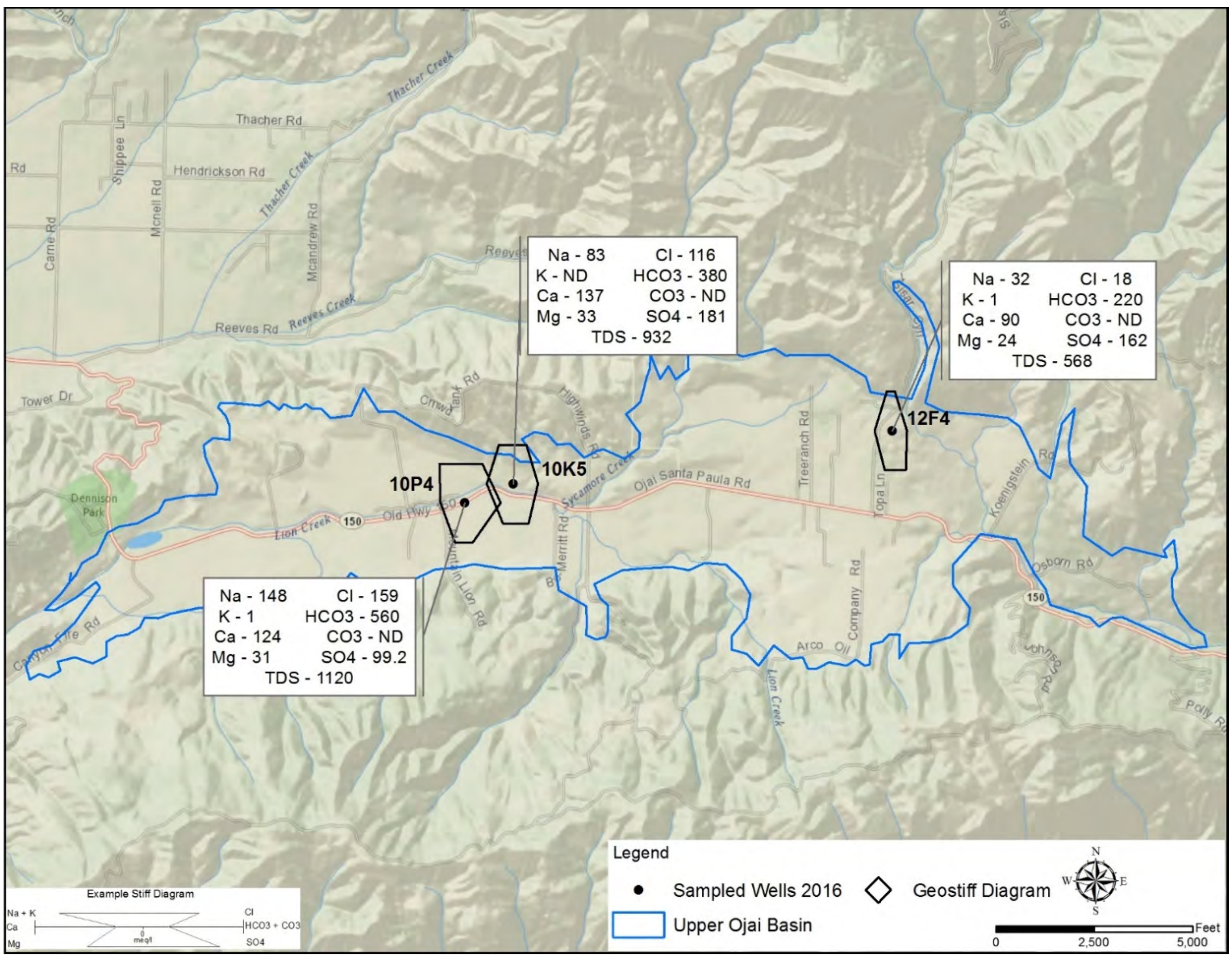


Figure 4-36: Map showing approximate location of sampled wells with concentrations (in mg/L) of selected inorganic constituents.

4.1.23 Ventura River Basin - Lower

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. **Figure E-10** shows the water quality of five wells sampled. Sodium is the dominant cation in two samples and there is no dominant cation for three samples. Bicarbonate is the dominant anion in one sample with the remainder having no dominant anion. The water in three wells is calcium-sulfate, one is sodium-sulfate and one is sodium-bicarbonate type. The wells sampled are located in riverbed alluvium near the coast. TDS in four wells is above the SMCL and over twice the SMCL. Sulfate and iron concentrations in four wells are above the SMCL, manganese concentrations in three wells and chloride in two wells. **Figure 4-37** shows the approximate well locations and selected water quality concentrations. **Figure E-36** shows a comparison of the chemistry between Upper and Lower Ventura River Basins.

VENTURA RIVER BASIN - LOWER

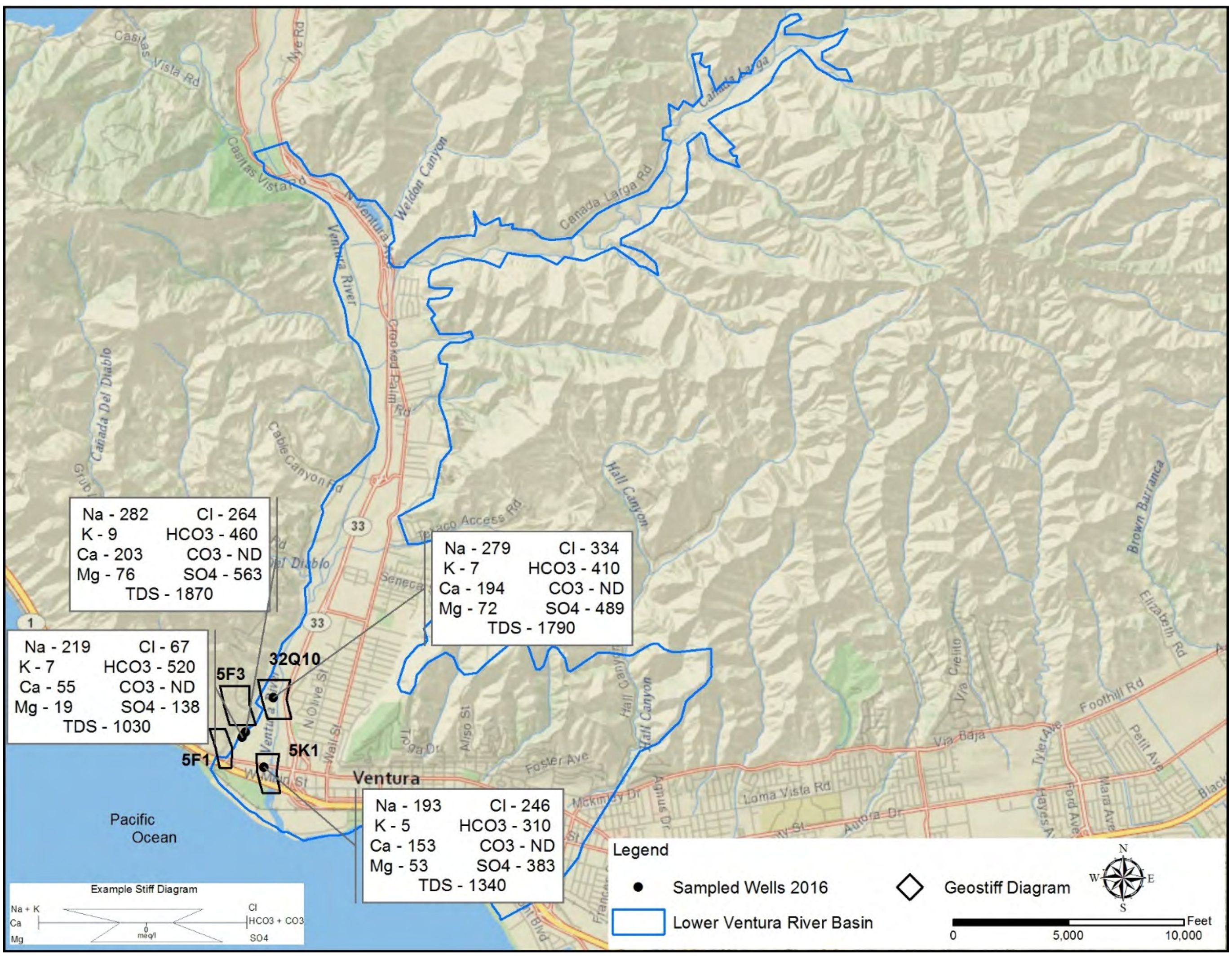


Figure 4-37: Location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams.

4.1.24 Ventura River Basin - Upper

The Upper Ventura River Basin is mainly composed of thin alluvial deposits. There are approximately 298 water supply wells in the Upper Ventura River Basin and 165 are active wells. **Figure E-25** shows low variation in water quality among the samples collected. The dominant cation is calcium and there is no dominant anion. The water is calcium-sulfate type. All three samples have TDS concentrations that exceed the SMCL for drinking water ranging from 765 to 1,580 mg/L and one has sulfate above the SMCL. Samples from two wells were also analyzed for Title 22 metals. None of the constituents analyzed exceeded the State MCLs. **Figure E-36** shows a comparison between 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. The samples do not overlap on the center field of the piper diagram. **Figure 4-38** shows approximate well locations and selected water quality concentrations.

VENTURA RIVER BASIN - UPPER

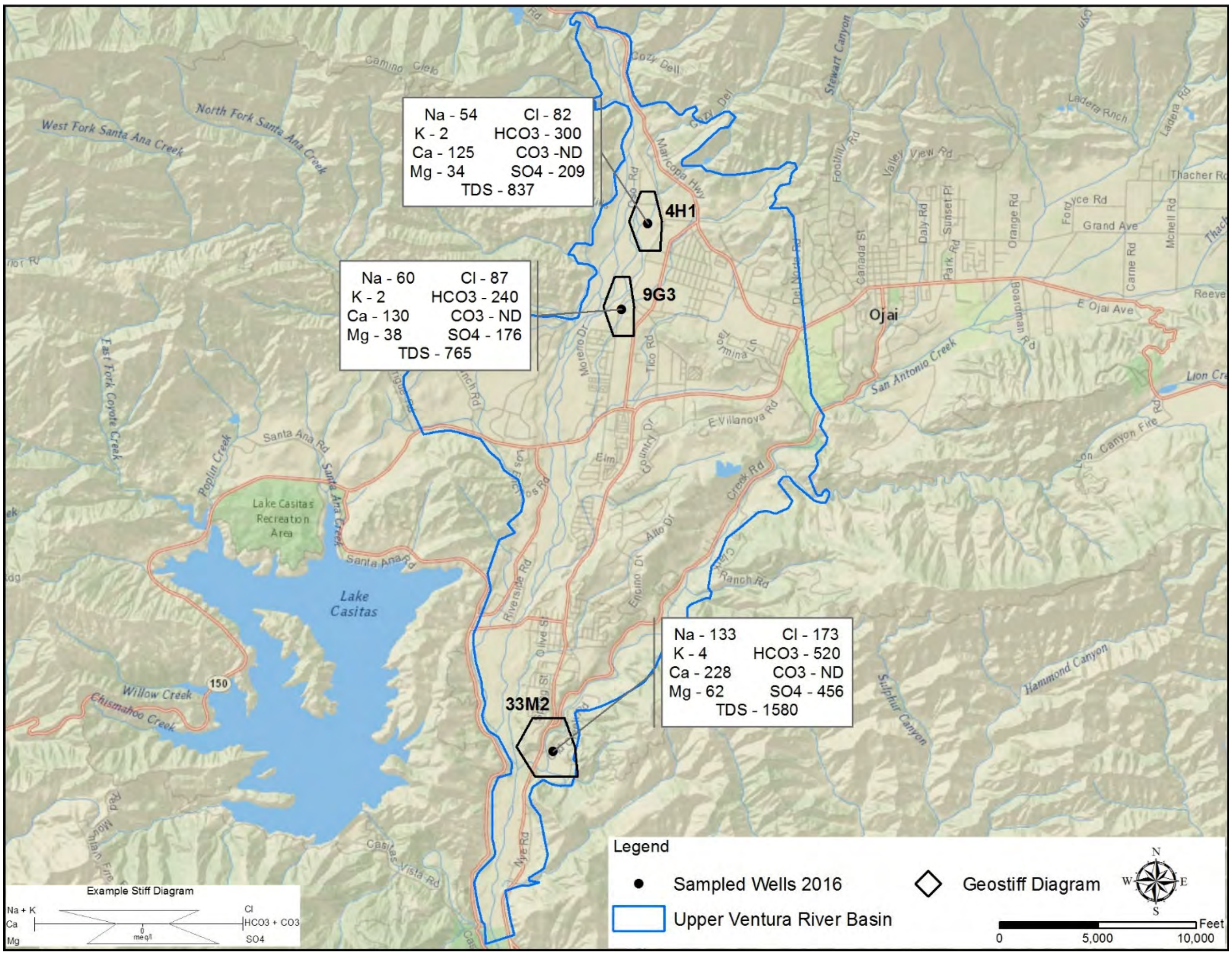


Figure 4-38: Map showing approximate location of sampled wells with concentrations (in mg/L) of selected inorganic constituents and stiff diagrams.

5.0 Groundwater Elevations

Groundwater elevations are measured in production and monitoring wells throughout the County. Changes in 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 used in certain basins to generate potentiometric surface maps to determine the direction of groundwater movement. Collected data is publicly available.

In 2016 approximately 200 wells were gauged throughout the County including seventeen wells designated as “key” wells considered to represent groundwater elevations over a broad area of the groundwater basin (**Figures 5-1** and **5-2**). Key wells[9] were chosen based on their location, 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 off 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.

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

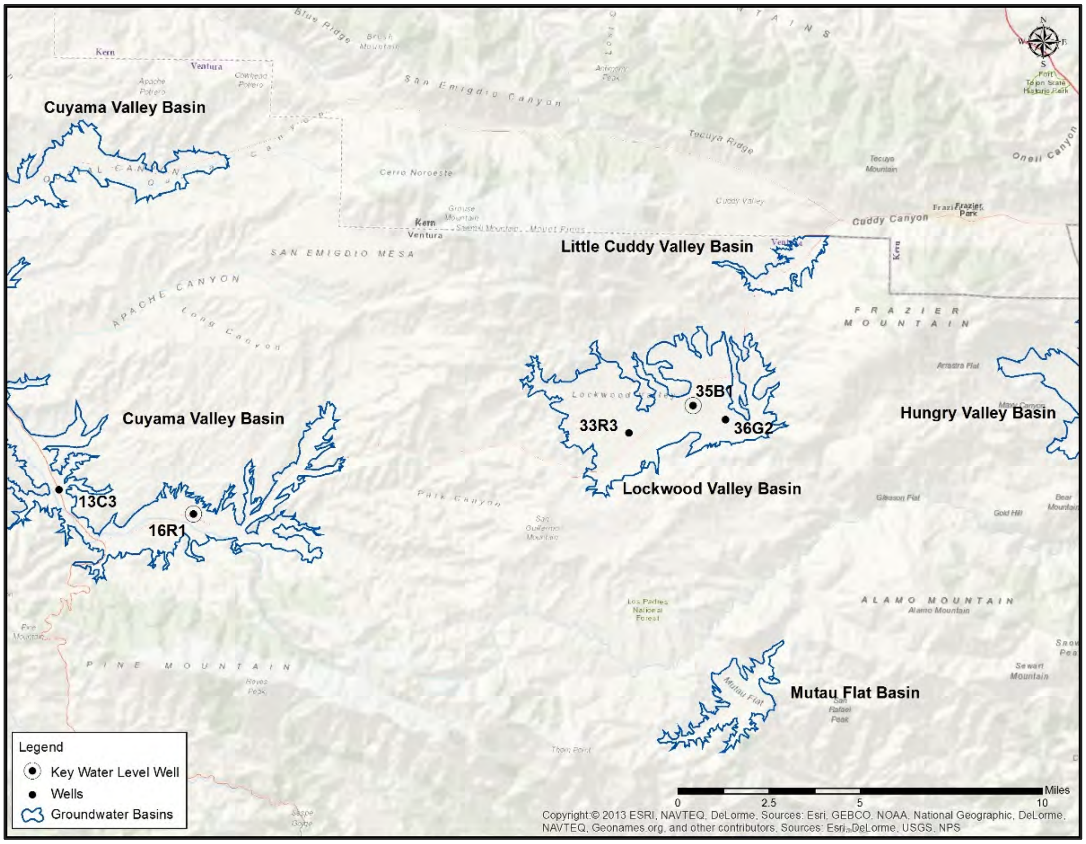


Figure 5-1: Water level wells measured in the northern half of the County.

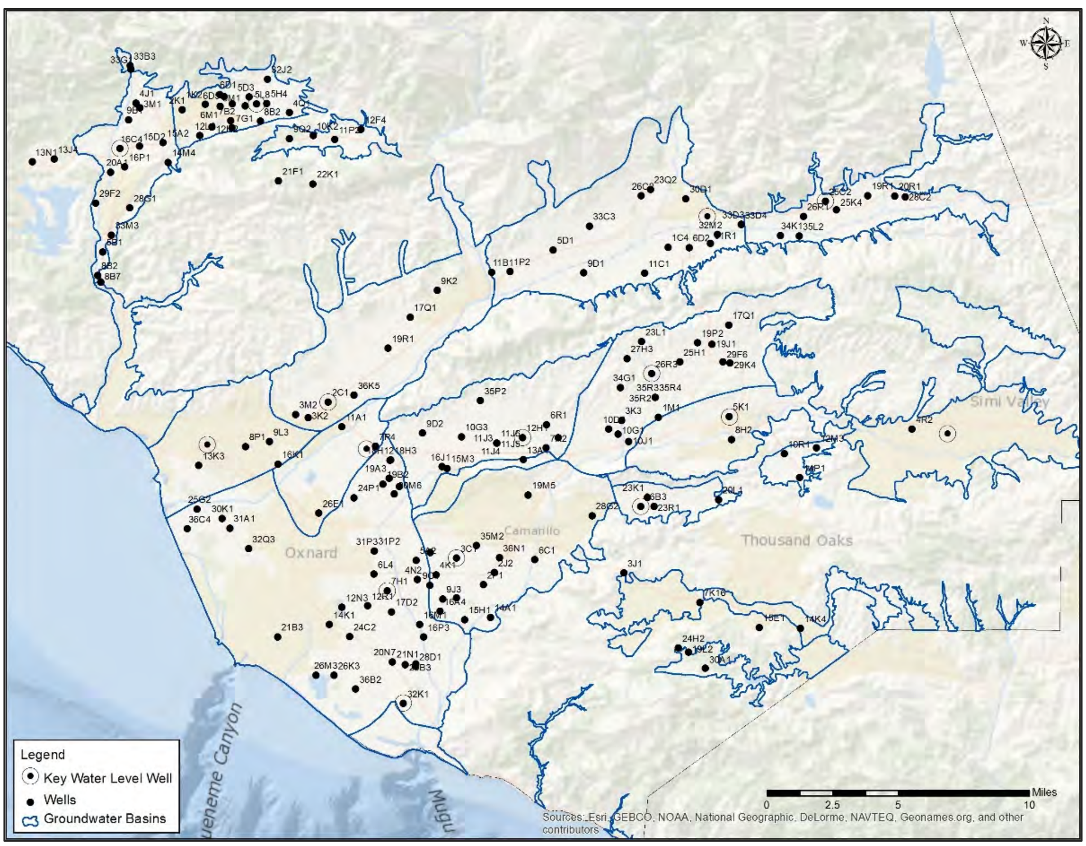


Figure 5-2: Water level wells measured in the southern half of the County.

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 is used to evaluate groundwater conditions. Hydrographs for all "key" water level wells are shown in **Appendix B**. An example hydrograph for Well No. 01N21W02J02S is shown in **Figure 5-3**.

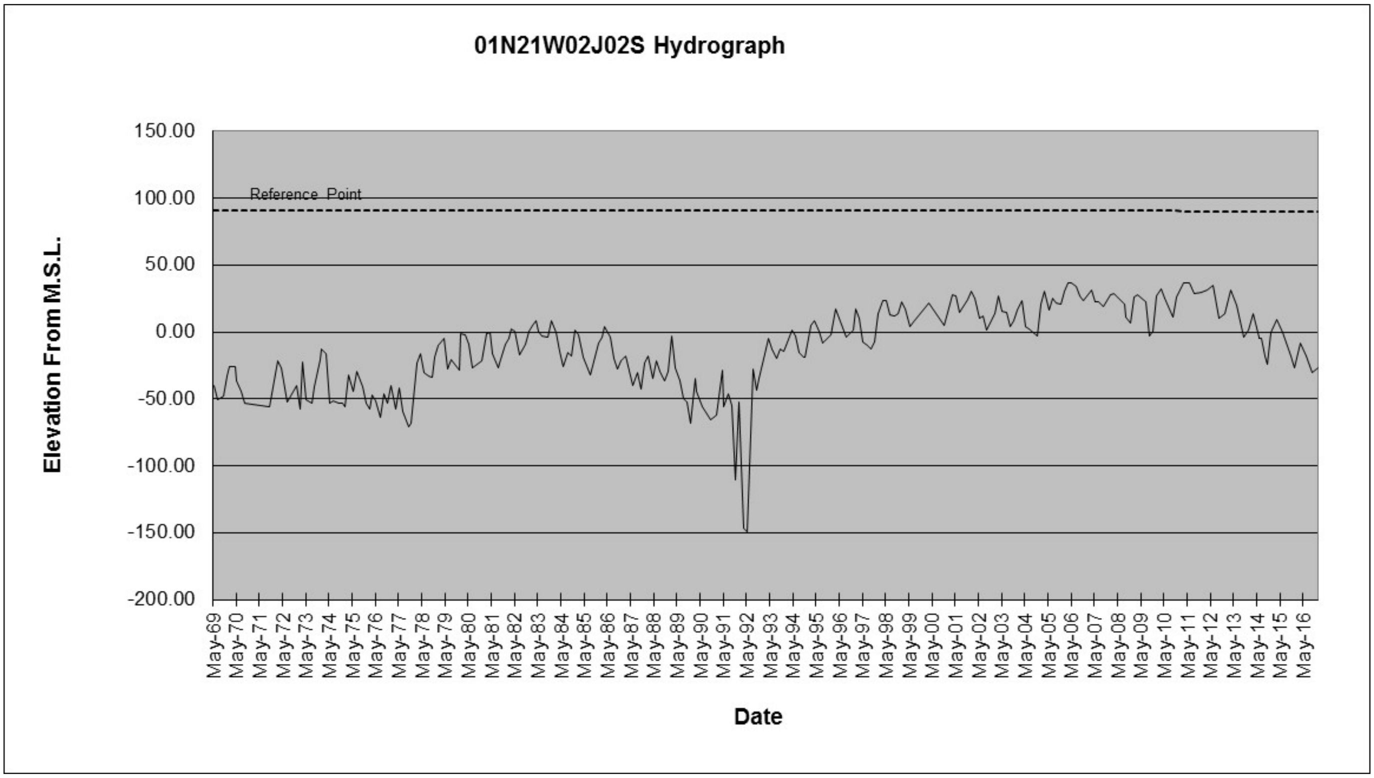


Figure 5-3: Water level hydrograph for Well No. 01N21W02J02S located in the Pleasant Valley Basin.

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** and used to track groundwater elevation trends. Spring season measurements are used for comparison since this time period is typically at the end of the seasonal rainfall year when groundwater basins should be at their fullest. 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 in Ventura County show a decreasing trend due to exceptional drought conditions and increased 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 elevation or a specific reference point (RP) elevation in feet mean sea level (msl). The hydrographs are accompanied by up/down bar graphs to track changes from the previous Spring.

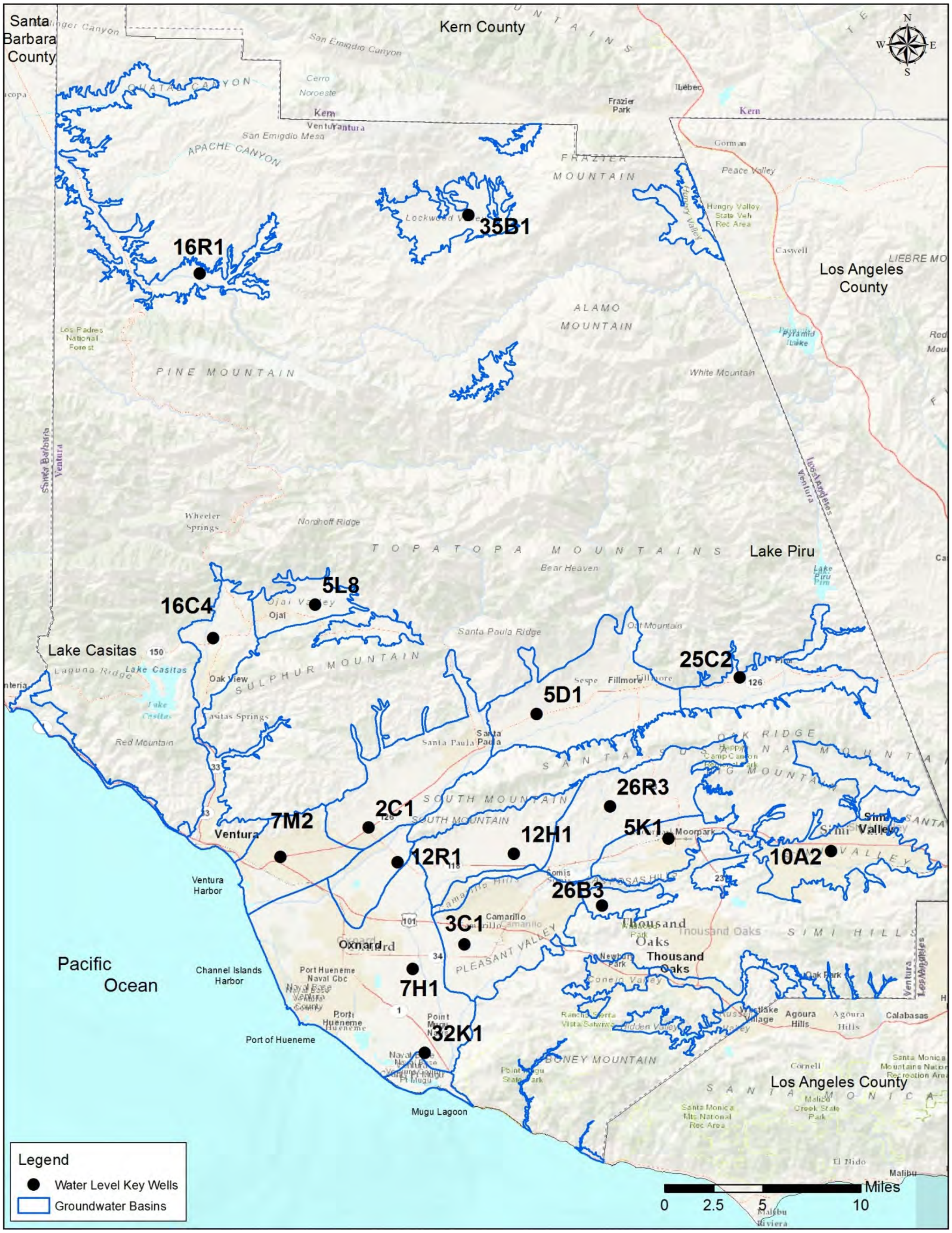


Figure 5-4: Key water level wells in Ventura County.

Table 5-1: Key water level changes for 2016.

DEPTH TO GROUND WATER LEVEL CHANGES AT KEY WELLS IN VENTURA COUNTY							
		HISTORIC		DEPTH TO WATER BELOW GROUND SURFACE			
Groundwater Basin	**STATE WELL NUMBER (SWN)**	**RECORD HIGH (ft.)**	**RECORD LOW (ft.)**	**LEVEL (ft.)**	**LEVEL (ft.)**	**LEVEL (ft.)**	**Change From Previous Year (ft.)**
	(Period of RECORD)	**(DATE)**	**(DATE)**	**(YEAR 2014)**	**(YEAR 2015)**	**(YEAR 2016)**	**(UP/DOWN)**
Oxnard Plain							
Oxnard Aquifer	01N21W07H01S	3.4	88.4	41.1	53.8	57.6	**DOWN 3.8**
	(Jan.1931-present)	(3/1999)	(9/1964)	(3/11)	(3/17)	(3/24)	
Fox Canyon Aquifer	01N21W32K01S	18	129	85.5	78.2	89.0	**DOWN 10.8**
	(Dec. 1972-present)	(4/1983)	(12/1990)	(3/13)	(3/9)	(3/14)	
Oxnard Plain Forebay (Measured By UWCD)	02N22W12R04S	16.2 ft.	Dry	126.27	Dry	Dry	**Dry**
	(Mar 1996-present)	(5/2006)	(7/2014 -?)	(3/26)			
Pleasant Valley Lower System	01N21W03C01S	87.5	253.9	147.1	155.9	156.5	**DOWN 0.6**
	(Feb.1973-present)	(8/1995)	(11/1991)	(3/11)	(3/18)	(3/23)	
West Las Posas	02N21W11J04S	368.4	406.2	385.2	388.0	394.1	**DOWN 6.1**
	(Jan.1991 - Present)	(6/2006)	(9/2016)	(3/10)	(3/15)	(3/3)	
East Las Posas	03N20W26R03S	503	619.3	581.5	571.3	577.3	**DOWN 6.0**
	(1985-present)	(4/1986)	(9/2009)	(3/10)	(3/10)	(3/7)	
South Las Posas	02N19W05K01S	27.5	136.2	31.1	28.1	28.5	**DOWN 0.4**
	(Jun.1975-present)	(7/2006)	(6/1975)	(3/10)	(3/13)	(3/11)	
Santa Rosa Valley	02N20W26B03S	13.2	60.3	58.9	55.1	46.7	**UP 8.4**
	(Oct.1972-present)	(4/1979)	(11/2004)	(3/12)	(3/18)	(4/4)	
Simi Valley	02N18W10A02S	45	92	82.1	80.9	76.9	**UP 4.0**
	(Dec.1984-present)	(2/1998)	(6/1992)	(3/1)	(3/2)	(3/1)	
Ventura River	04N23W16C04S	3.9	101	83	69.9	93.9	**DOWN 24.0**
	(July 1949-present)	(3/1983)	(2/1991)	(3/11)	(3/4)	(3/1)	
Ojai Valley	04N22W05L08S	38.2	312	226.2	231.3	255.1	**DOWN 23.8**
	(Oct.1949 - Present)	(4/1978)	(9/1951)	(6/13)	(3/5)	(3/9)	
Mound (Measured by UWCD)	02N22W07M02S	126.6	176.2	160.6	167.3	161.9	**UP 5.4**
	(Apr.1996-present)	(4/1998)	(4/1996)	(4/15)	(3/18)	(3/24)	
Santa Paula	02N22W02C01S	20.7	51.9	40.5	43.2	50	**DOWN 6.8**
	(Oct.1972-present)	(4/1983)	(12/1991)	(3/10)	(3/16)	(3/22)	
Fillmore	03N20W05D01S	107.8	163.7	139.6	143.3	148	**DOWN 4.7**
	(Oct.1972 - Present)	(2/1979)	(1219/77)	(3/10)	(3/16)	(3/21)	
Piru	04N19W25C02S	43.1	183.2	102.2	116.3	127.25	**DOWN 10.95**
	(Sep.1961-present)	(3/1993)	(10/1965)	(3/10)	(3/16)	(3/21)	
Lockwood Valley	08N21W33R03S	17.5 ft.	53.5 ft.	44.3	45.1	46.7	**DOWN 1.6**
	(April1966-present)	(9/1998)	(4/1974)	(4/17)	(3/27)	(4/13)	
Cuyama Valley	07N23W16R01S	15.0	47.5	49.1	56.1	57.7	**DOWN 1.6**
	(Mar.1972-present)	(4/1993)	(9/1990)	(4/17)	(3/27)	(4/13)	

Data prepared: 3/29/2017

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 well) was dry. The water level elevation in the Oxnard Aquifer key well was down 3.8 feet from the Spring 2015. The water level elevation in the Oxnard Basin, Fox Canyon Aquifer key well was down 10.8 feet from the Spring 2015 measurement.

In the Pleasant Valley LAS the water level elevation in key well was down 0.6 feet from the Spring 2015 measurement.

In the Las Posas Valley, the East Las Posas Basin key well water level elevation was down 6.0 feet from the Spring 2015 measurement. The water levels in this well were in decline over the previous ten-year period with the exception of 2007. The water level elevation in the South Las Posas key well was down 0.4 feet in Spring 2016. The depth to water in this well has risen from 136 feet to as high as 27 feet bgs since 1975. This trend is attributed to groundwater recharge from treated effluent from upstream wastewater treatment plant discharges and groundwater discharge to the surface from the Simi Valley Basin. The key well for the West Las Posas Basin was down 6.1 feet from Spring 2015.

In the Santa Rosa Valley the water level elevation was up 8.4 feet from the Spring 2015 measurement. The water level elevation in the Simi Valley Basin key well No. 02N18W10A02S was up 4.0 feet from Spring 2015. This well has seen only slight changes over the past ten years (<±10 feet).

In the Ojai Valley, the water level elevation in key well No. 04N22W05L08S was down 23.8 feet from the Spring 2015 measurement. The Ojai Valley Basin responds quickly to rainfall or the lack thereof and it is not uncommon to see large declines in water levels during dry periods with recovery to at or above normal levels during wet periods (see Hydrograph in **Appendix B**). In the northern end of the Upper Ventura River Basin, the water level elevation in key well No. 04N23W16C04S was down 24.0 feet from Spring 2015.

The basins underlying the Santa Clara River Valley respond quickly to fluctuations in annual rainfall. The water level elevation in the Piru basin key well was down 10.95 feet in Spring 2016 from Spring 2015. The water level elevation in the Fillmore Basin key well was down 4.7 feet after being down 3.7 feet the Spring 2015, and in the Santa Paula Basin the water level elevation in the key well was down 6.8 feet from Spring 2015. In the Mound Basin the water level elevation in key well No. 02N22W07M02S was up 5.4 feet from the Spring 2015 measurement.

The Lockwood Valley Basin key well No. 08N21W33R03S was down 1.6 feet from the Spring 2015. The water level elevation in the Cuyama Valley Basin key well No. 07N23W16R01S was down 1.6 feet from Spring 2015.

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 2016 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 and **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 and **5-8** show the UAS of the Oxnard and Pleasant Valley area. 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 the 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 and **5-10** depict the LAS of the Oxnard, Pleasant Valley and Las Posas Valley areas. 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 and 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.

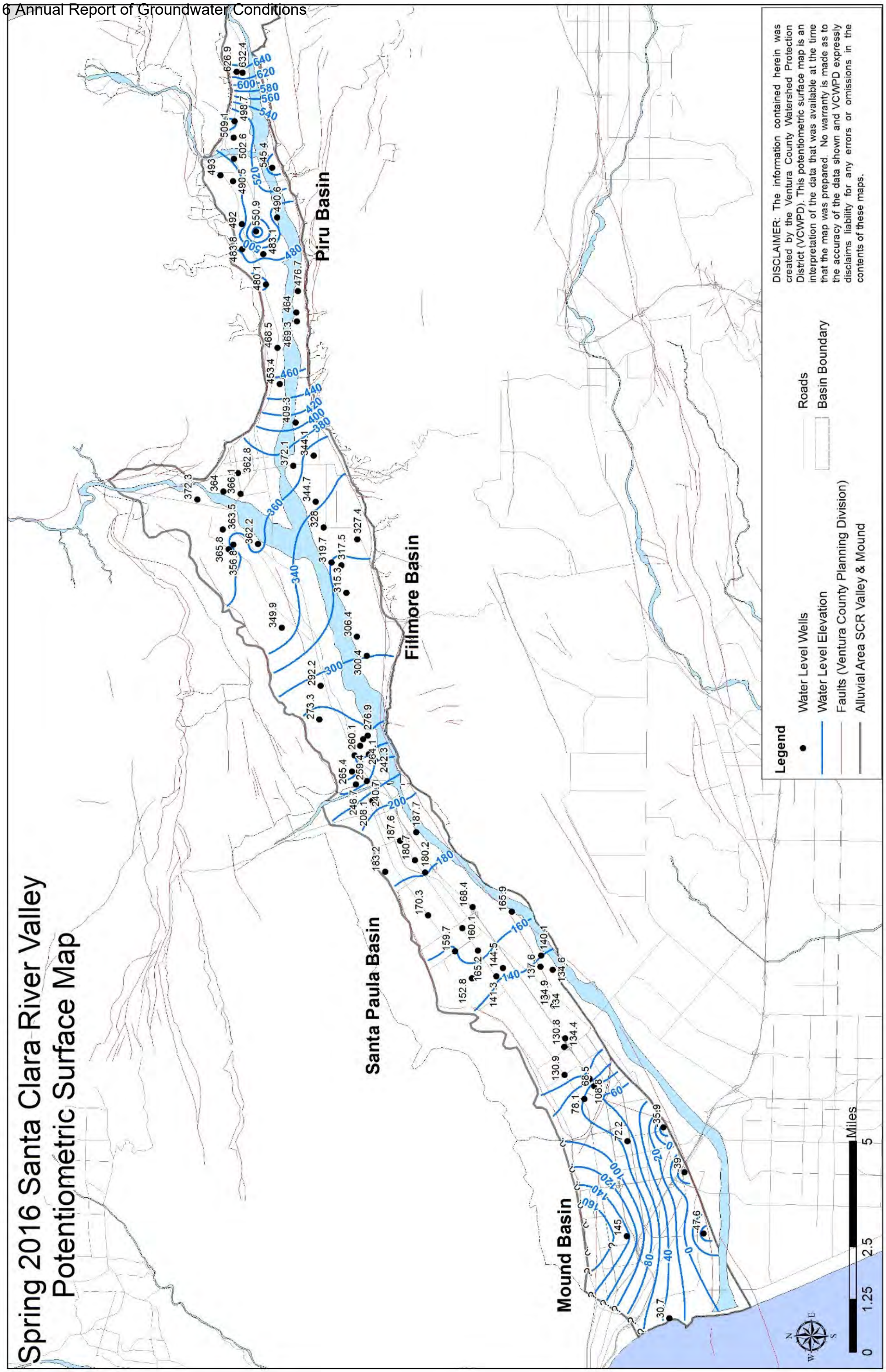


Figure 5-5: Water level surface elevation contours for the Santa Clara River Valley area for Spring 2016.

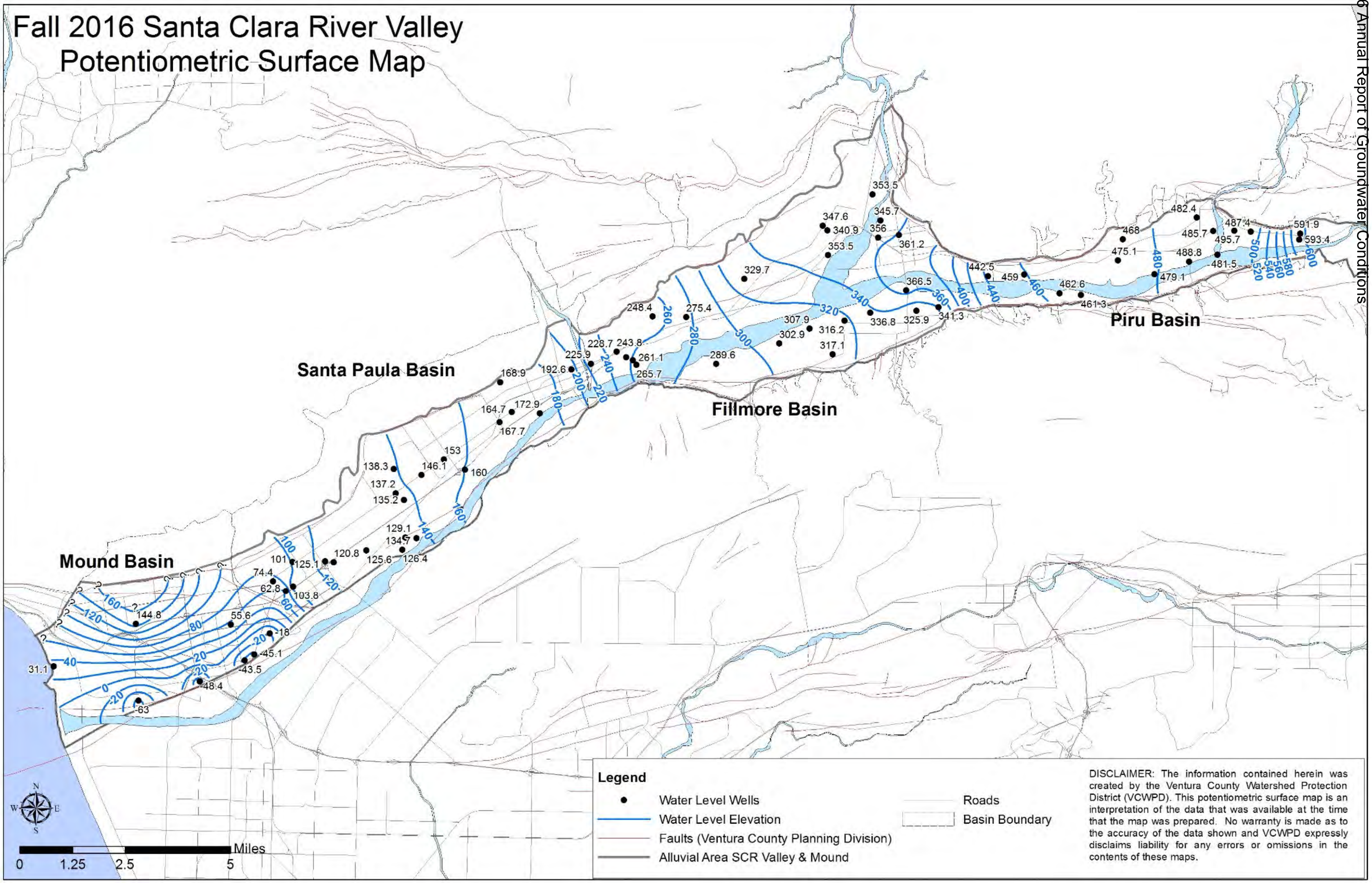


Figure 5-6: Water level surface elevation contours for the Santa Clara River Valley area for Fall 2016.

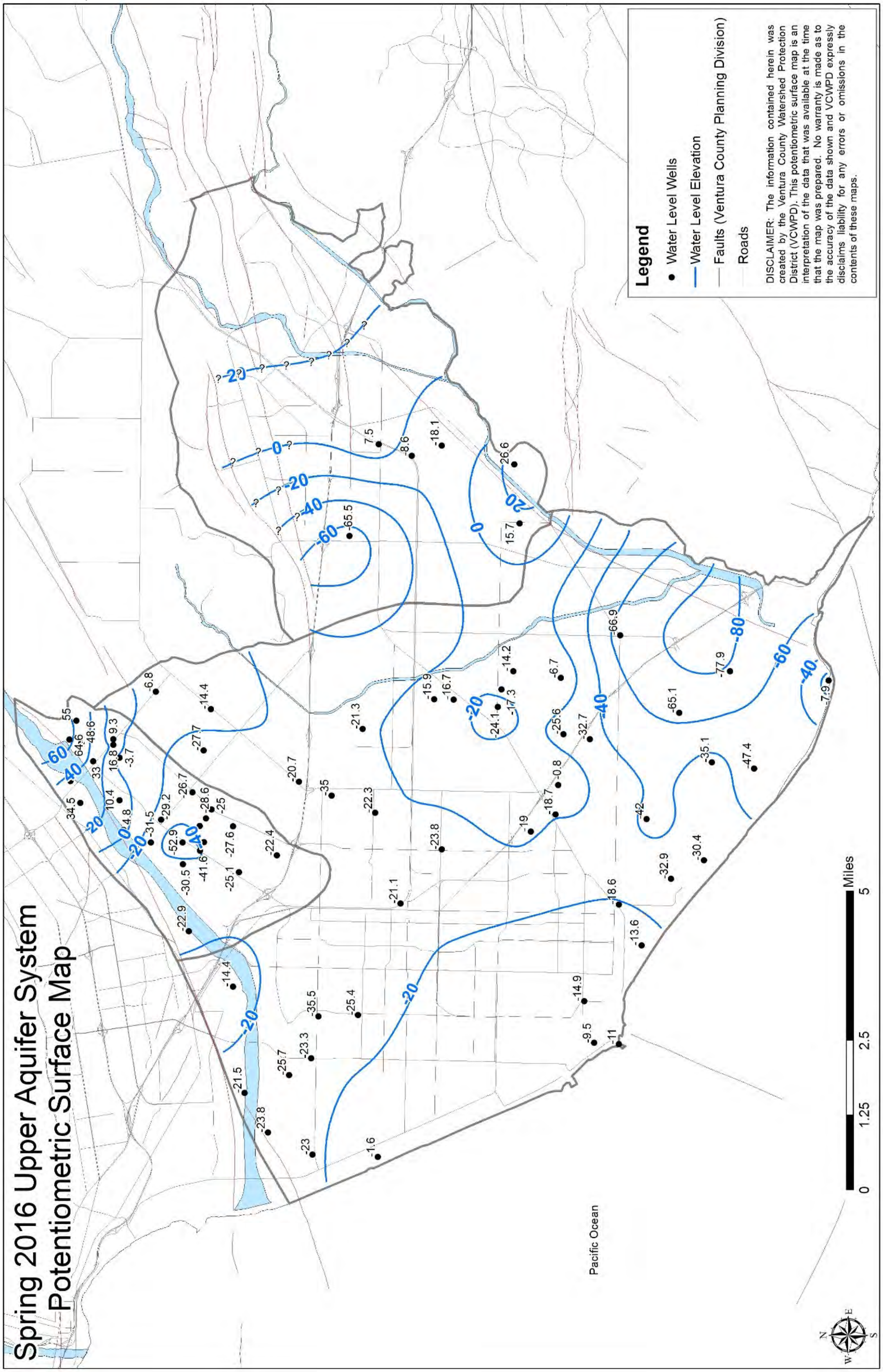


Figure 5-7: Water level surface elevation contours for the UAS for Spring 2016.

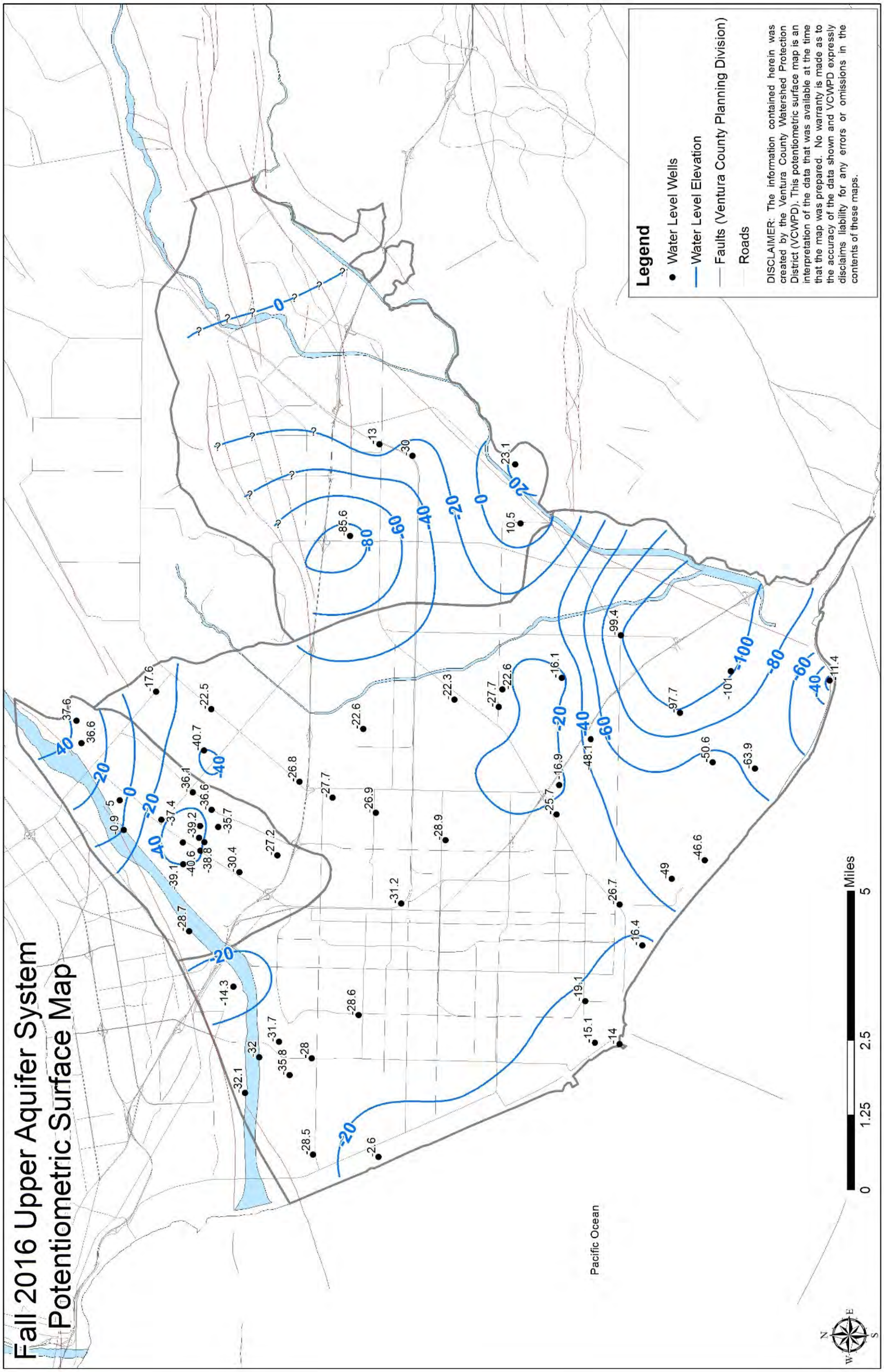


Figure 5-8: Water level surface elevation contours for the UAS for Fall 2016.

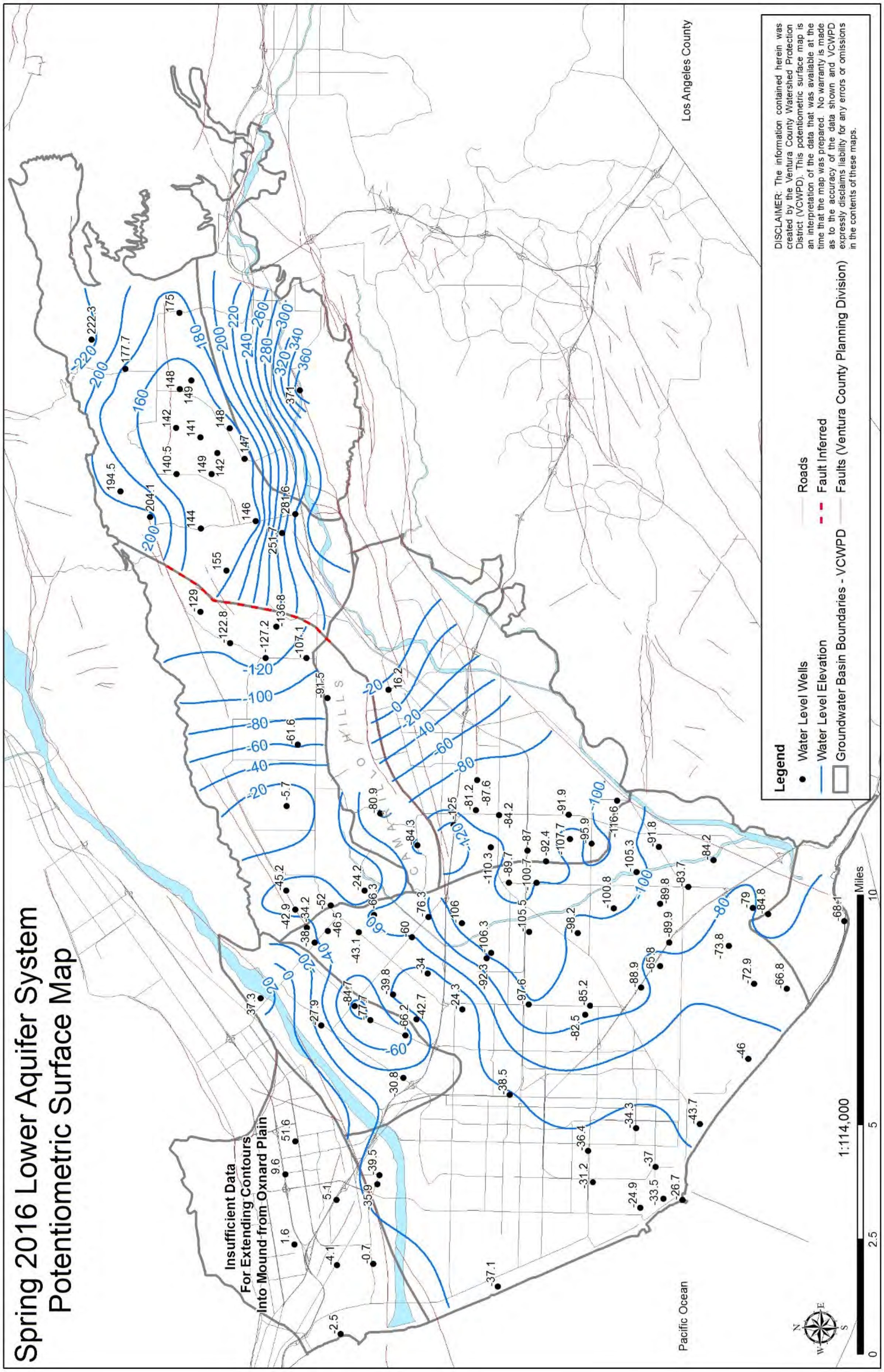


Figure 5-9: Water level surface elevation contours for the LAS for Spring 2016.

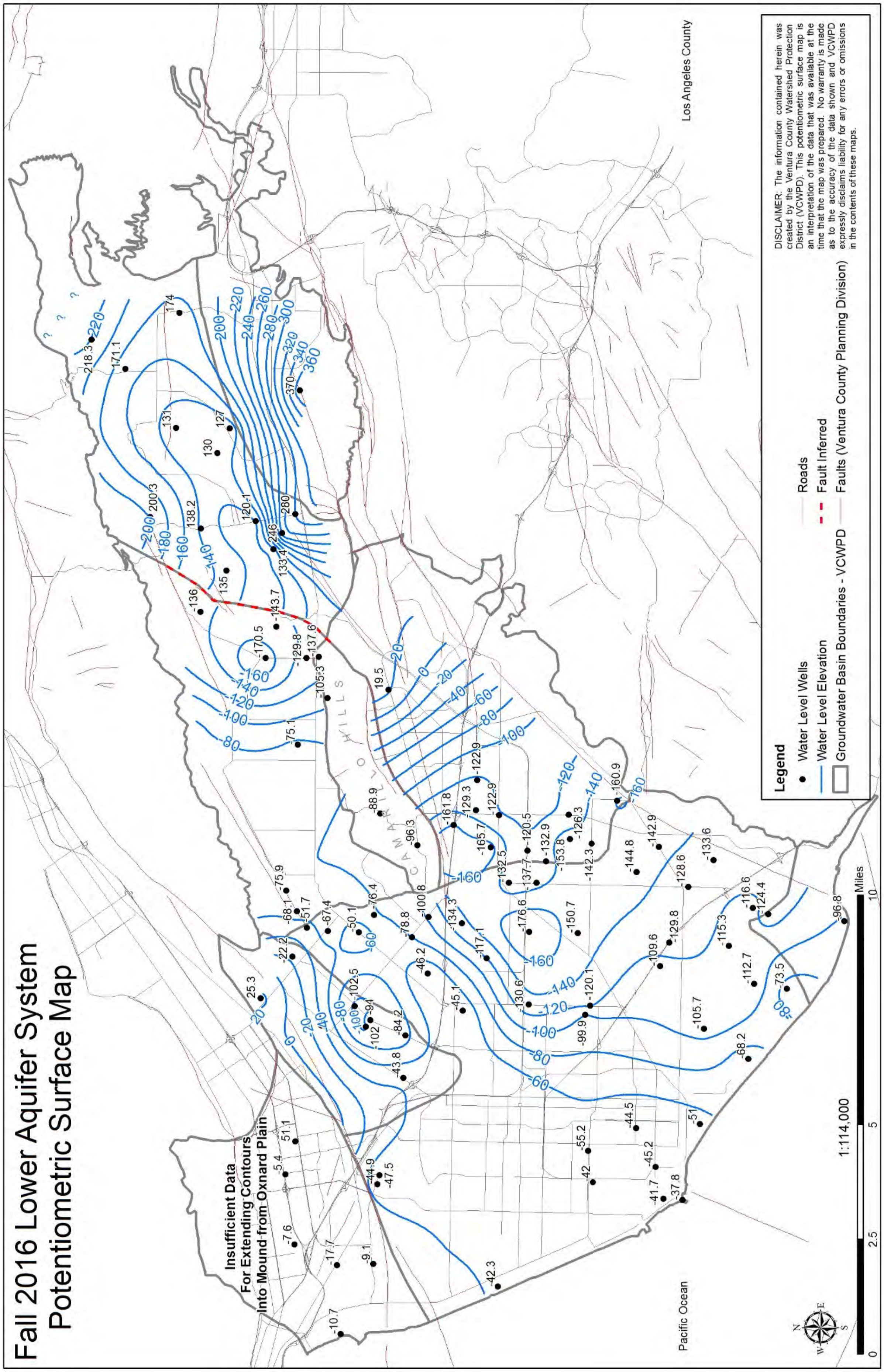


Figure 5-10: Water level surface elevation contours for the LAS area for Fall 2016.

California Statewide Elevation Monitoring (CASGEM) Program

The CASGEM Program was developed by the DWR in response to the passing of Senate Bill Number 6 (SB-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.

Surface and Imported Water

5.1.1 Wholesale Districts

Surface and imported water is supplied by three wholesale water districts including UWCD, Casitas Municipal Water District (CMWD) and Calleguas Municipal Water District (Calleguas) (**Figure 5-11**).

Figure 5-11: Wholesale water districts within the County.

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 which supplies SWP water to Calleguas. Calleguas imported a total of 87,542[6] AF of treated SWP water in 2016. Calleguas delivered 84,196[6] AF of water to retailers in 2016 compared to 89,045[6] AF in 2015 and 106,293[6] AF in 2014. Production from the Calleguas Aquifer Storage and Recovery (ASR) wellfield was 2,126 AF in 2016. Imported water is also injected into the East Las Posas Basin through the Las Posas ASR Project. In the ASR wellfield 6,567[6] AF of water was injected in 2016. Up to 11,000 AF of water can be stored by Calleguas in Lake Bard and can supply demand for short time periods. The end of year volume of water in storage in Lake Bard was 9,975[6] AF. The Las Posas 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 16,757[4] AF of water to retailers and end-users in 2016 which was a slight increase from 16,293[4] AF in 2015. UWCD can store up to 87,000 AF of water in Lake Piru. At the end of 2016 there was 9,268[4] AF of water in stored in Lake Piru and released 6,712[4] *(preliminary data)* AF of water from the Lake in 2016. UWCD imported 1,890 AF of SWP water from Pyramid Lake to Lake Piru in 2016. Water released from Lake Piru flows from 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 Basin 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 5-2** and **Figure 5-12** compares the volume of water diverted and sent to spreading grounds by UWCD. Annual precipitation for the period of 1997 to 2016 is listed. Recharge to basins is a function of SWP deliveries and restrictions from other agencies.

Table 5-2: Precipitation versus UWCD[4] 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)
1997	13.30	22,323.03	25,271.00	4,412.00
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

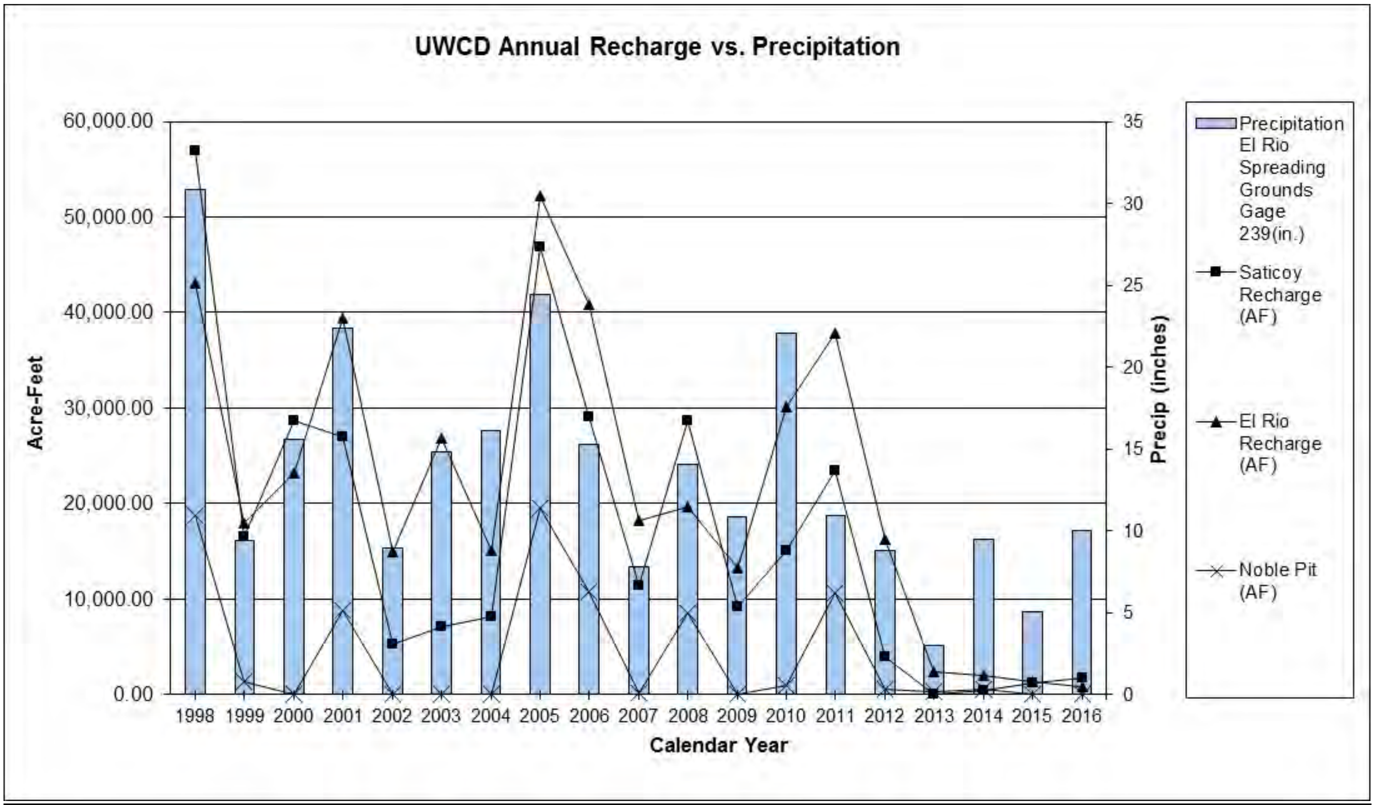


Figure 5-12: Precipitation versus UWCD[4] recharge.

CMWD delivered 12,793[5] AF in 2016 with approximately 3,927[5] 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 2016 there was 89,154[5] AF of water stored. Ventura River water is diverted at the Robles Diversion facility which diverts high flows from rainstorms and operates an average of 53 days[5] per year. CMWD diverts an average of 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.

Table 5-3: Wholesale district water deliveries 2007-2016.

	Total Water Deliveries in Acre Feet (AF)			
Year	Casitas MWD	Calleguas MWD	United WCD	Annual Total
2007	20,081	131,206	41,388	192,675
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
Period Total	160,191	1,055,648	296,251	1,131,268

5.1.2 Surface Water

Surface water resources are commonly hydrologically andhydrogeologically 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 5-13 shows the volumes of surface water in storage and water diverted. UWCD released approximately 6,712 AF of water from Lake Piru in 2016, including a fish passage requirement of 5 cubic feet per second (cfs) per day. UWCD diverted 3,242 AF from the Santa Clara River at the Freeman Diversion Dam with 1,784 AF sent to the Saticoy Spreading Grounds, 805 AF sent to the El Rio Spreading Grounds and 59 AF sent to the Noble Pit, with some surface water also going to agricultural customers through the PTP and the PVP[10]. At the end of 2016 there was 9,268 AF of water in storage in Lake Piru, 89,154[11] AF in Lake Casitas and 9,975[12] AF in Lake Bard. CMWD releases 3,200 AF per year from Lake Casitas for the Robles Diversion Fish Passage.

In 2016 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.

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

[11] Data provided courtesy of CMWD.

[12] Data provided courtesy of Calleguas.

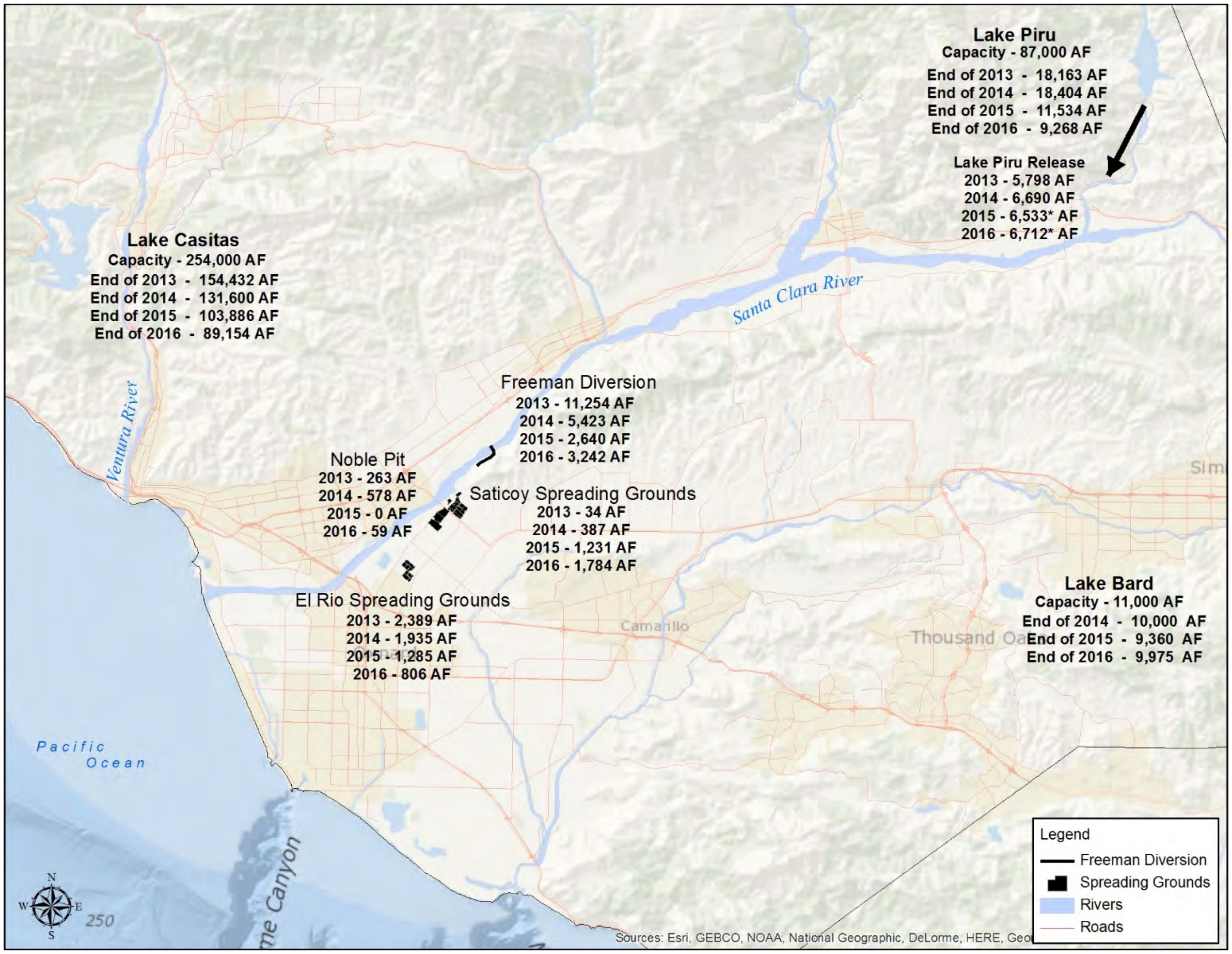


Figure 5-13: Surface water storage and diversion.

5.1.3 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 primarily rely 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 Tapo Canyon. Shallow groundwater is also extracted from several de-watering wells at the west end of the city. The dewatered groundwater is discharged to the Arroyo Simi. The Tapo Canyon Water Treatment Plant (WTP) will utilize the three Tapo Canyon wells to provide water to approximately 500 homes. Golden State Water Company (GSWC) extracts groundwater from one well and blends it with imported water from Calleguas (10% groundwater, 90% imported water)[13]. VCWWD8 serves 68% of demand or approximately 23,000 AF of water while GSWC serves the remaining 32% or approximately 8,500 AF[14]. In 2016 Calleguas delivered 17,519[6] AF to VCWWD8 and 4,934[6] AF to GSWC.

Moorpark residents receive water from Ventura County Water Works District 1 (VCWWD1). Approximately 75-80% of VCWWD1 water is imported from Calleguas. In 2016, Calleguas delivered 6,956[6] 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 Ave 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 2016 these three water purveyors received 29,561[6] 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 remainder supplied by imported water. Groundwater extraction volume is kept below the groundwater extraction allocation from the FCGMA. Calleguas delivered 4,254[6] AF to the City of Camarillo in 2016. 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 unincorporated 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 CMWD.

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13 Golden State Water Company, 2015 Urban Water Management Plan – Simi Valley.

14 Ventura County Waterworks District No. 8, City of Simi Valley, 2010 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)[15] and 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 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 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.

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

6.0 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.

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 6-1**), 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).

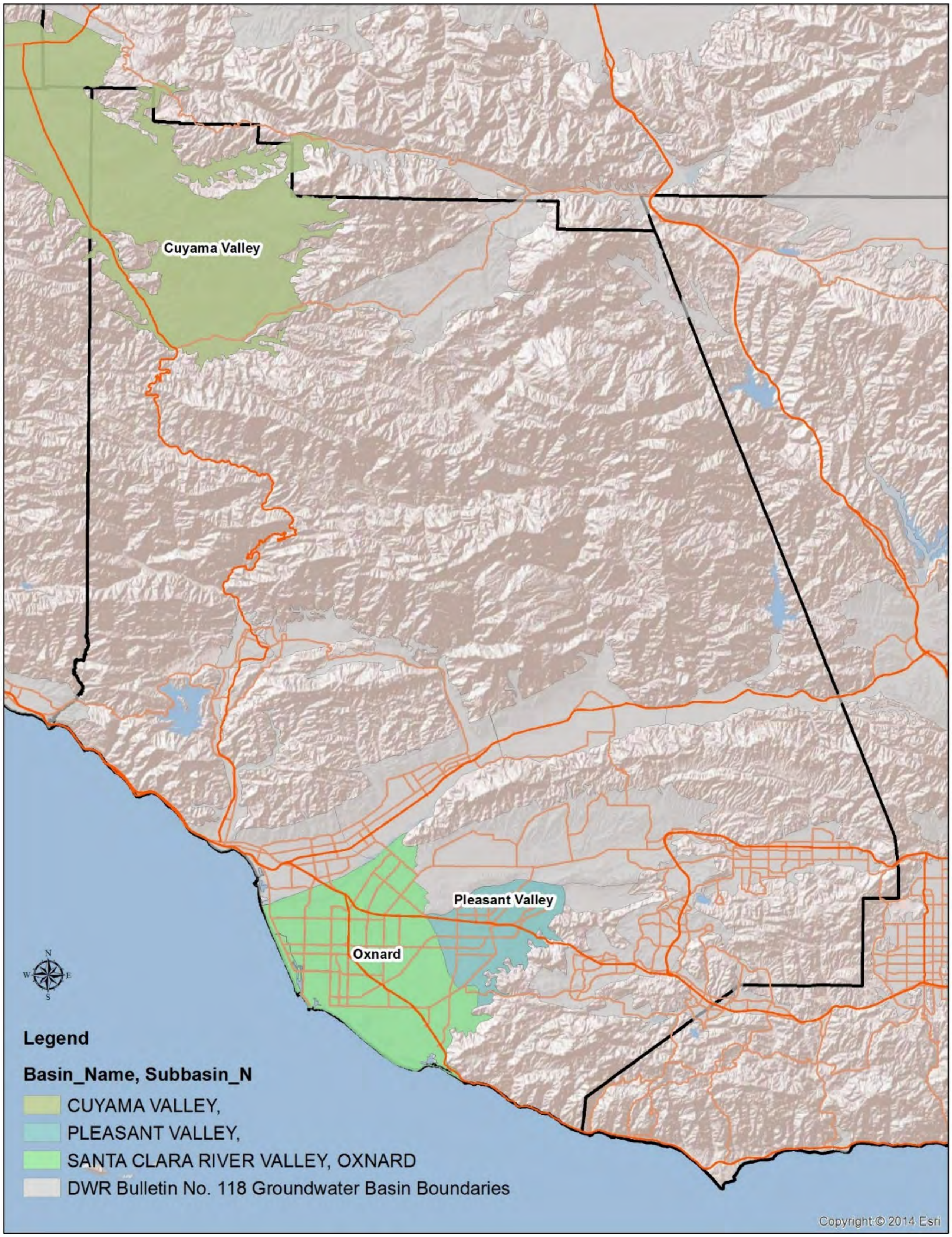

Figure 6-1: Critically-overdrafted basins in Ventura County.

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 intent of the legislation is to ensure a future reliable water supply. 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 was prioritized 515 groundwater basins to identify the need for additional monitoring. The CASGEM basin prioritization is a statewide ranking of groundwater basin importance. Basin ranking is a statewide assessment of the overall importance of groundwater to meet urban and agricultural demands.

As of May 2014, 43 of the 515 basins were ranked as high-priority, 84 as medium-priority. Results indicate that high- and medium-priority basins account for 96% of California's annual groundwater extraction for 88% of the overlying population. Ventura County has a total of 11 high- and medium- priority basins (4 high priority, 7 medium priority) shown in **Figure 6-2**.

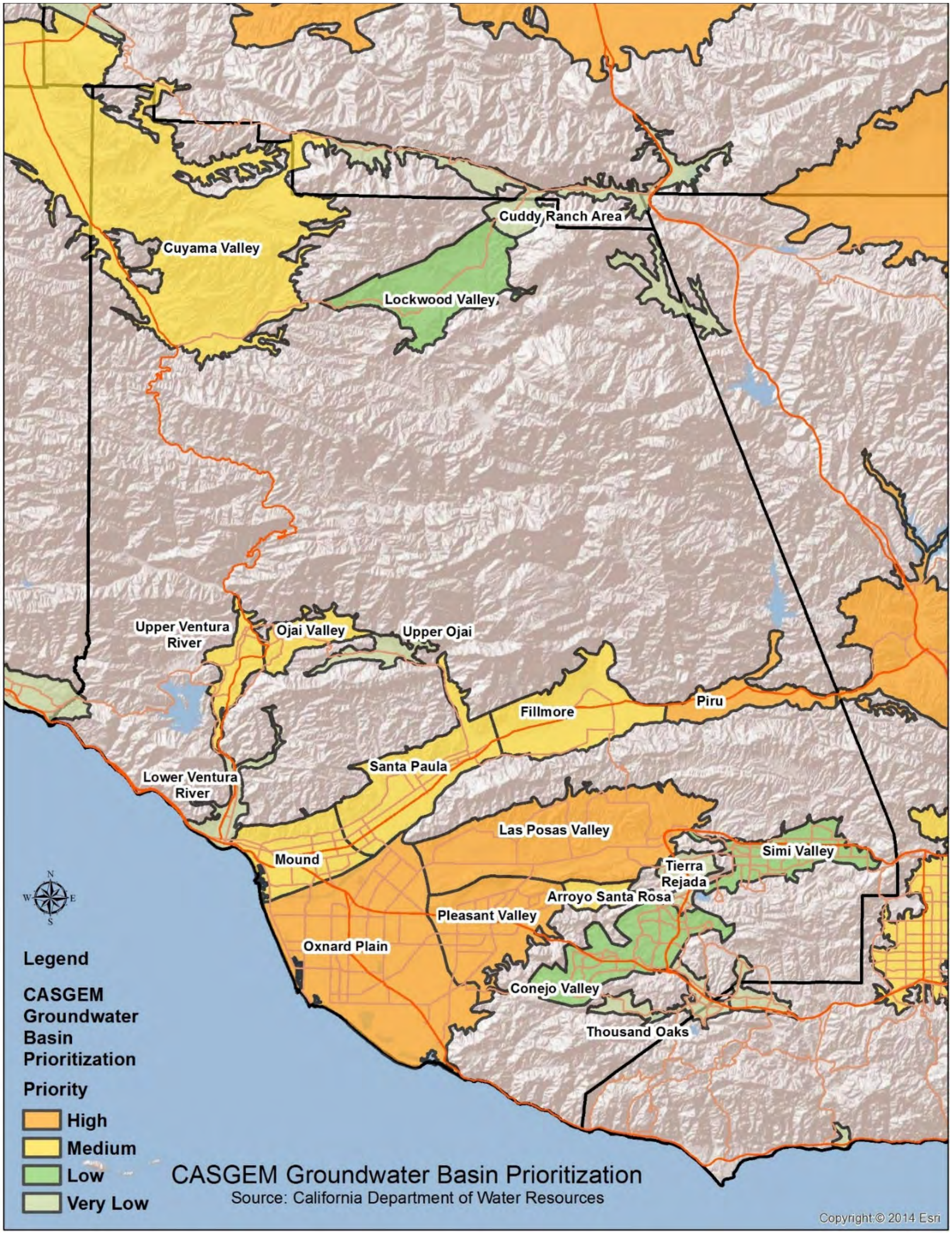

Figure 6-2: CASGEM basin prioritization in Ventura County.

Groundwater Sustainability Agencies (GSAs)

SGMA requires the formation of locally controlled GSAs in the State's medium- and high-priority basins by June 30, 2017. 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.[16]"

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 basin falls 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 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 and Pleasant Valley Basins on June 28, 2017. Camrosa will be the GSA for the areas outside of the FCGMA boundaries that lie within their service area. Both 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 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: 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 supply, water management and land use responsibilities across the entire basin.

Fillmore and Piru Basins GSA

The Fillmore and Piru Basins 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 GSA notice with the DWR on June 29, 2017. MBGSA is a JPA comprised the City of Ventura, County of Ventura and UWCD. The City of Ventura exercises water supply, water management and land use authority within its boundaries. The County exercises water management and land use

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[16] 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 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 (DWR Basin No. 4-07), Oxnard Subbasin (DWR Basin No. 4-04.02), the Pleasant Valley Basin (DWR Basin No. 4-06) and the Las Posas Valley Basin (DWR Basin No. 4-08). FCGMA 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 (DWR Basin No. 4-2) on December 6, 2014. The OBGMA submitted an analysis of basin conditions as an alternative and in lieu of preparing a GSP plan on December 22, 2016.

Upper Ventura River Groundwater Agency

The UVRGA is a JPA comprised CMWD, the City of Ventura, the County of Ventura, Meiners Oaks Water District, and the Ventura River Water District. UVRGA filed a notice of intent to become the GSA for the Ventura River Valley- Upper Ventura River Basin (DWR Basin No. 4-03.01) on April 21, 2017. The basin boundary was modified, reduced and approved by the DWR in October 2016.

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. Probationary basins are subject to State intervention.

Adjudicated Basins

Santa Paula Basin

The Santa Paula Basin is the only adjudicated basin in Ventura County. According to SGMA, adjudicated basins do not need a GSA, but must still provide groundwater measurements to DWR. In the adjudication of a groundwater basin, water rights for all users are defined through court proceedings. A Watermaster is usually appointed by the court to ensure the basin is managed in accordance with the court's decree. 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. A Technical Advisory Committee (TAC) represented by UWCD, the SPBPA and the City of Ventura, acts as the Watermaster for the Santa Paula 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.

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.

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

(Footnotes)
1 – Hydrology Section, Ventura County Watershed Protection District, Historic Rainfall & Hydrologic Data, http://www.vcwatershed.org/hydrodata/htdocs/static/, 2012.
2 - Water Year defined as: October 1 to September 30 of the following year. VCWPD precipitation data is *preliminary* and subject to change.

3 - Based on data from all active Ventura County rain gages. Data is *preliminary* and subject to change.

4 - United Water Conservation District, Water Extraction, Production & Delivery Data, Dan Detmer; Murray McEachron - Personal Communication, February 2015.

5 - Casitas Municipal Water District, Production & Delivery Data,
Chelbi Kelley - Personal Communication, February 2015.

6 - Calleguas Municipal Water District, Imported Water Volume & Delivery Data,
Tony Goff - Personal Communication, February 2015.

7 - Fox Canyon Groundwater Management Agency, Groundwater Extraction Data, February 2015.

8 - Ojai Basin Groundwater Management Agency, Groundwater Extraction Data,
Cece Van Der Meer - Personal Communication, February 2015.

9 - Golden State Water Company, 2010 Urban Water Management Plan – Simi Valley, Ventura County, California, August 2011, Kennedy/Jenks Consultants.

10 - Ventura County Waterworks District No. 8, City of Simi Valley, 2010 Urban Water Management Plan, Ventura County, California, June 2011, RBF Consulting

11 - City of Santa Paula 2010 Urban Water Management Plan Update, Ventura County, California, June 2011, Miller-Villa Consulting

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

FIGURES Page

Appendix B – Key Water Level Wells

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

Appendix B – Key Water Level Wells

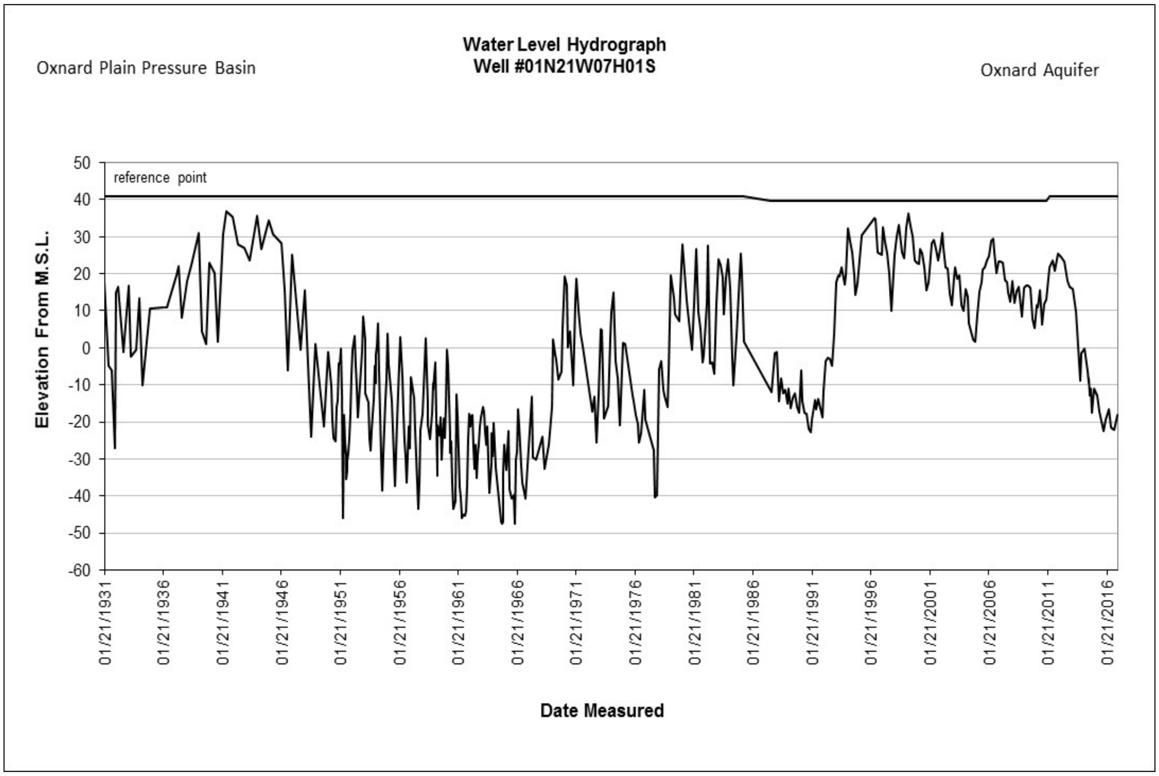

Figure B-2: Oxnard Aquifer key well hydrograph.

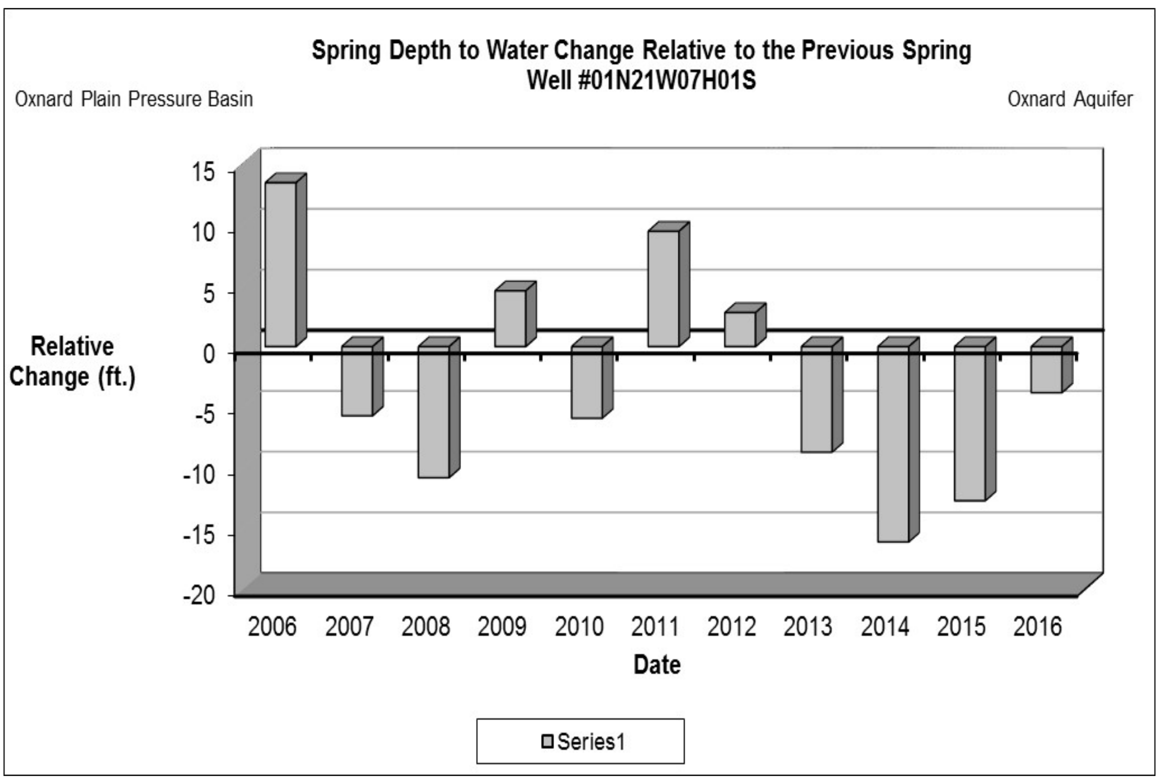

Figure B-3: Oxnard Aquifer 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

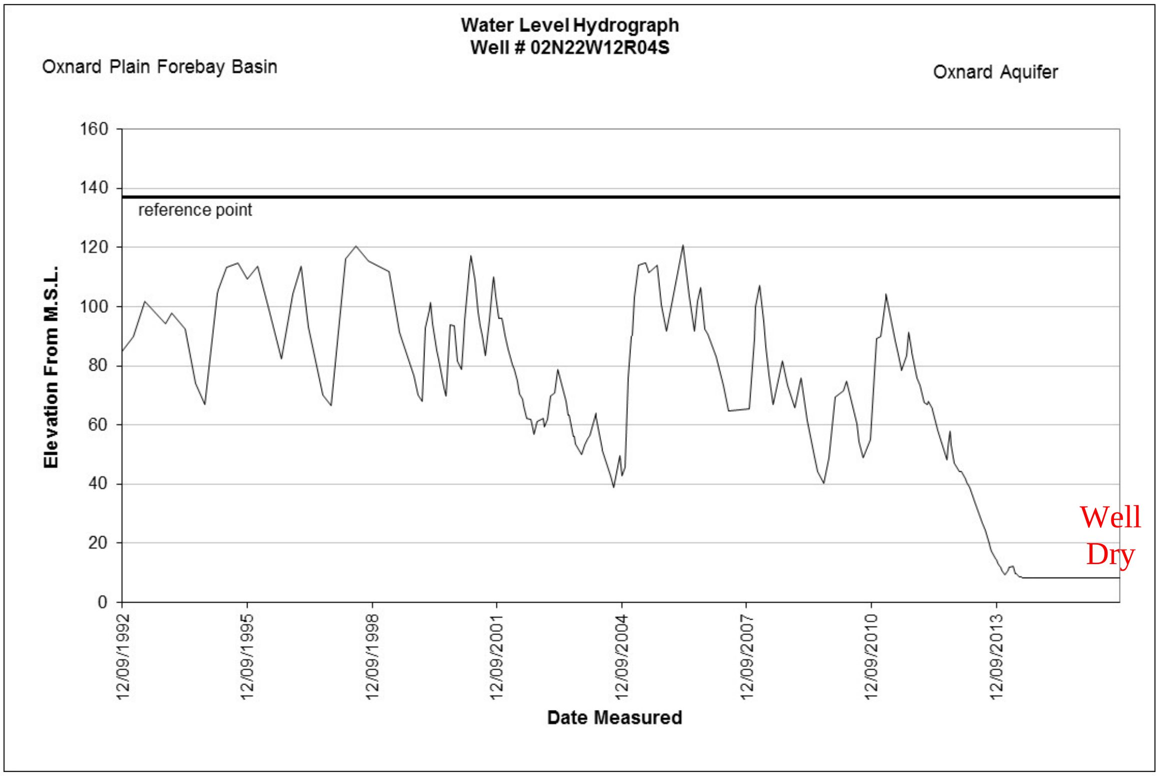

Figure B-4: Forebay Basin key well hydrograph.

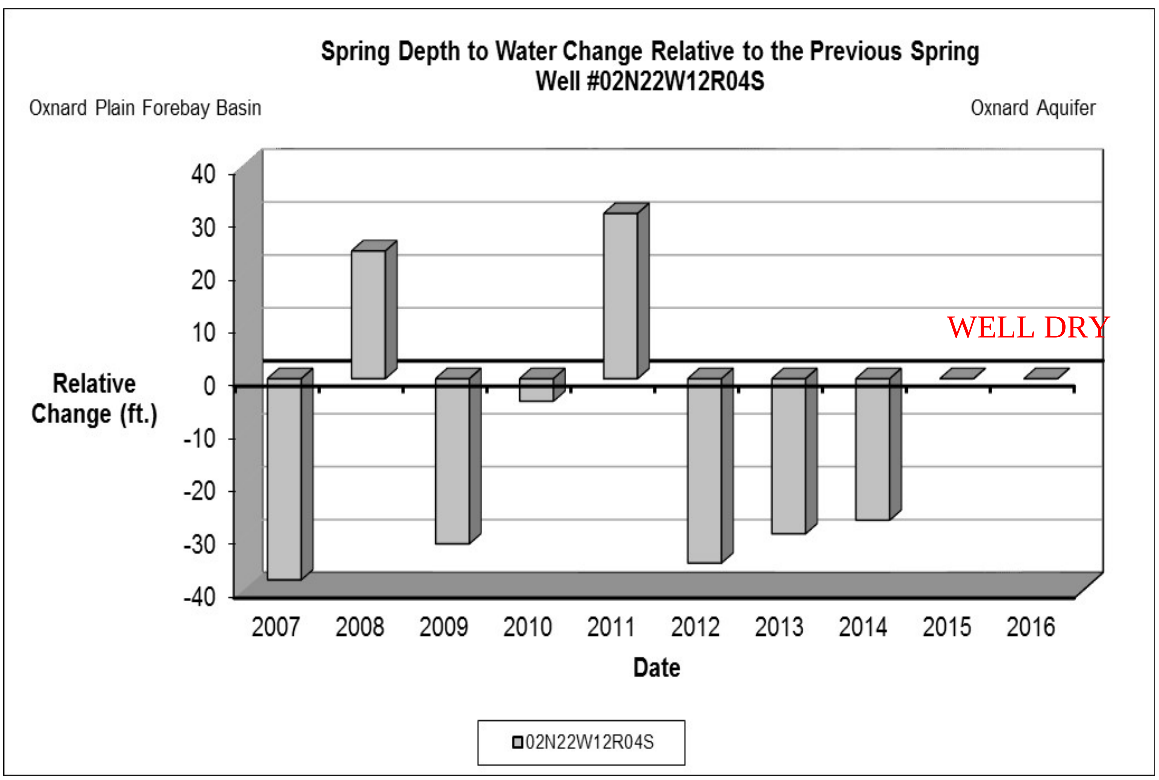

Figure B-5: Forebay Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

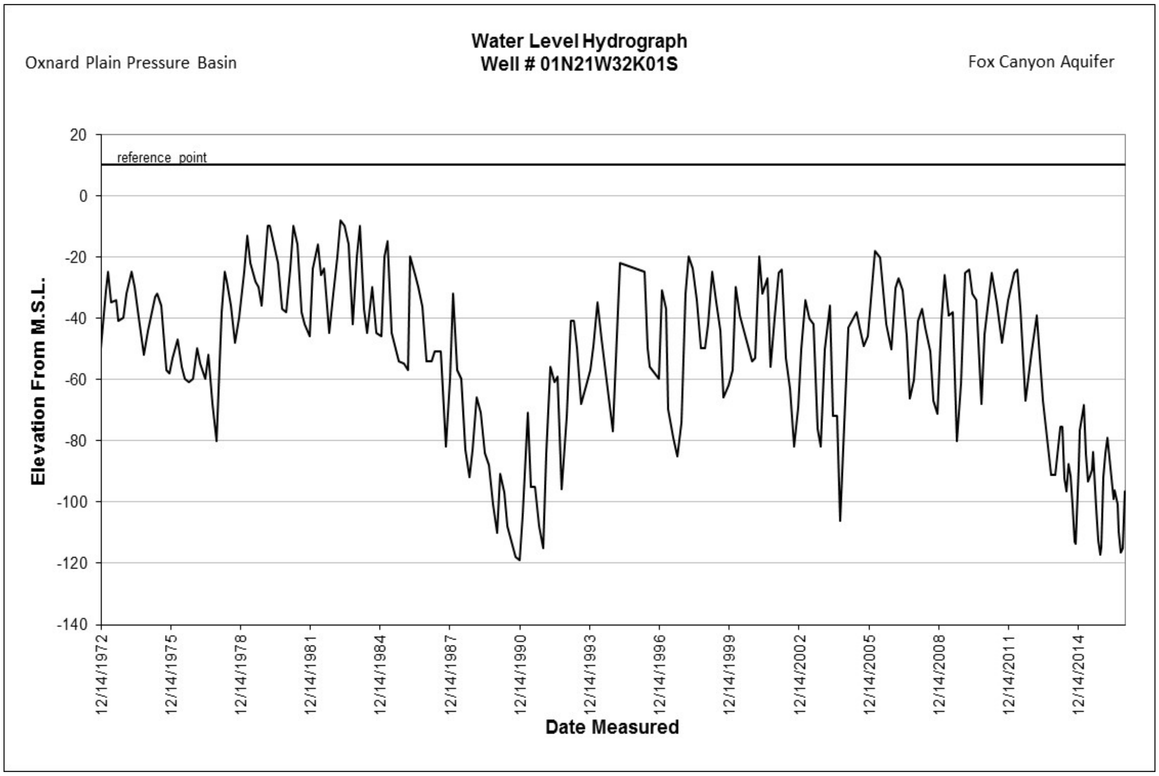

Figure B-6: Oxnard Plain Pressure Basin, Fox Canyon Aquifer key well hydrograph.

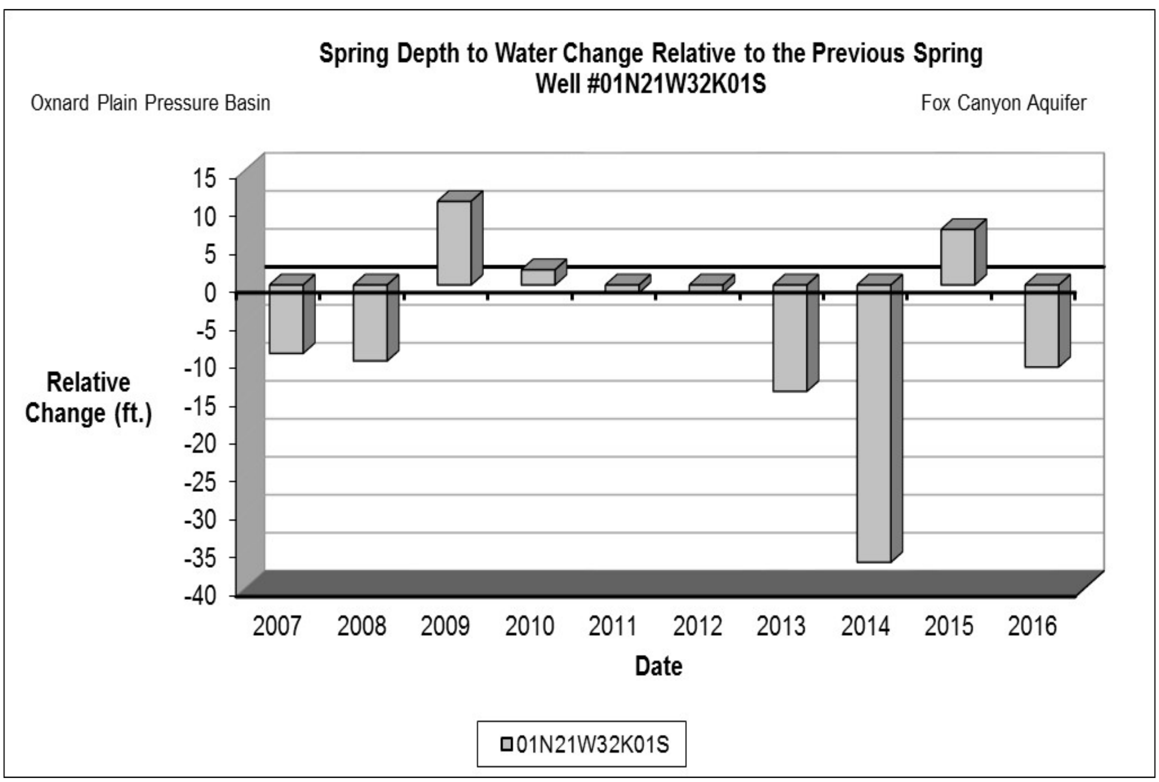

Figure B-7: Oxnard Plain Pressure Basin, Fox Canyon Aquifer 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

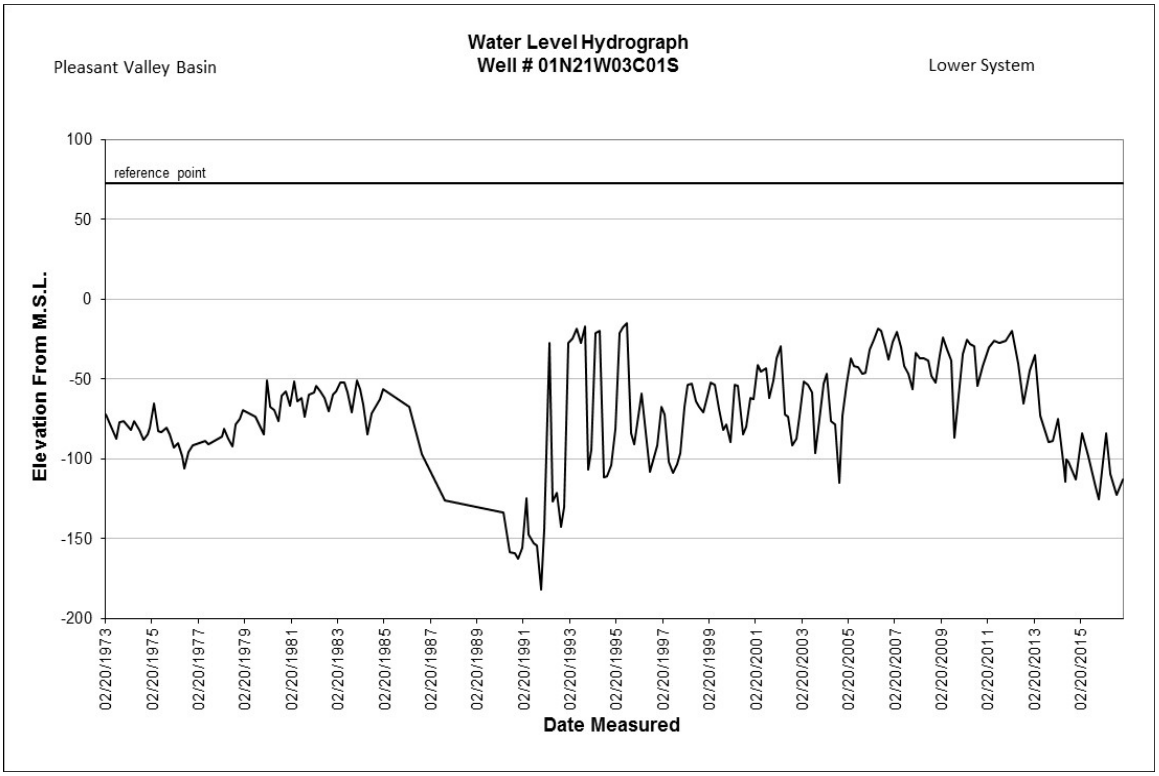

Figure B-8: Pleasant Valley Basin, Fox Canyon Aquifer key well hydrograph.

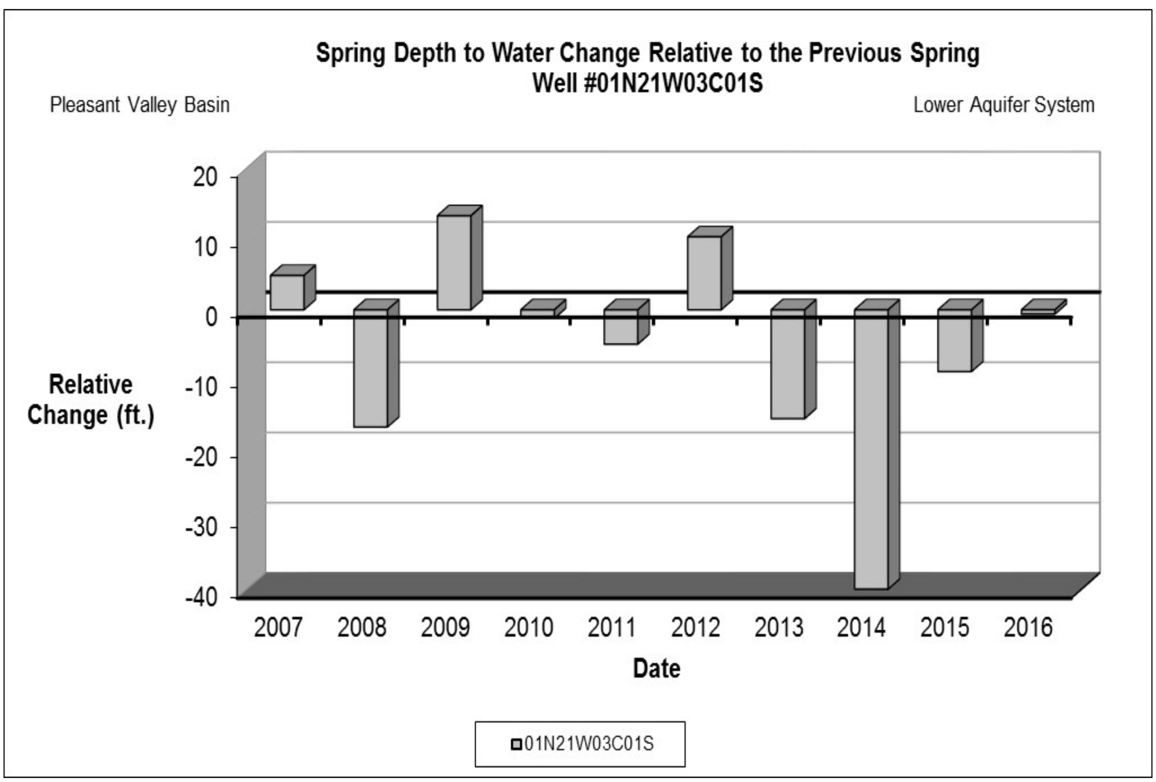

Figure B-9: Pleasant Valley Basin, Fox Canyon Aquifer 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

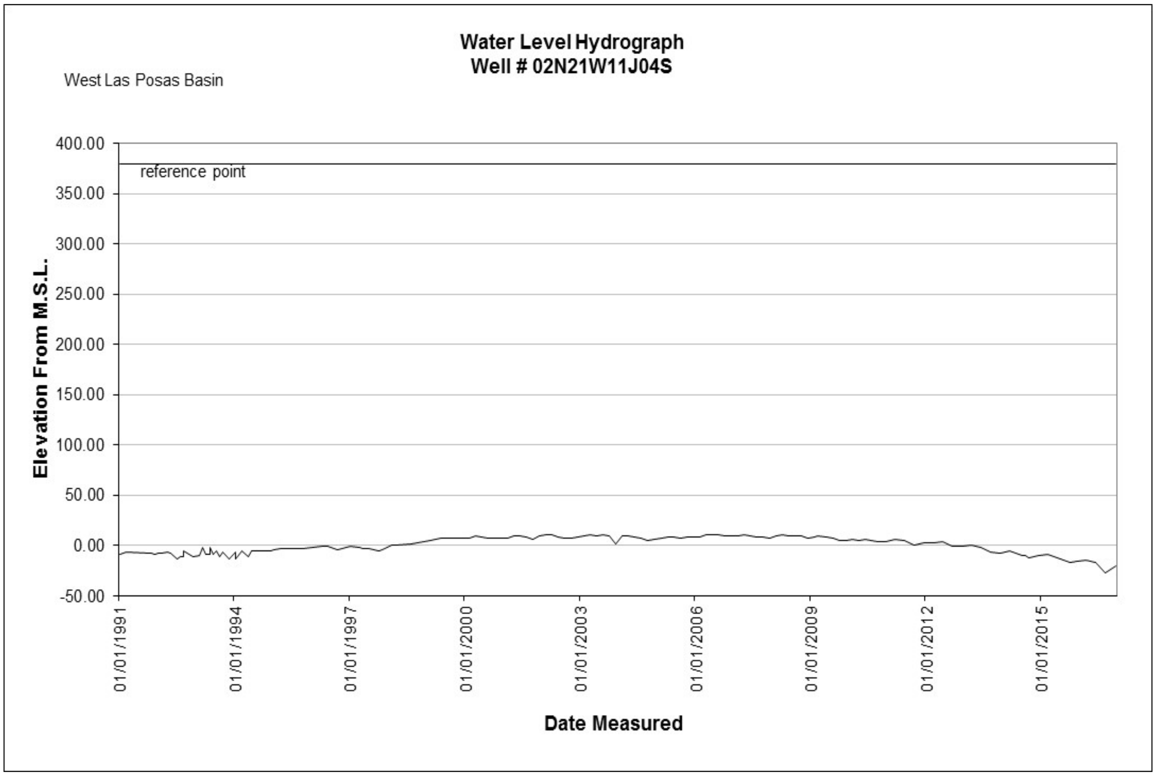

Figure B-10: West Las Posas Basin key well hydrograph.

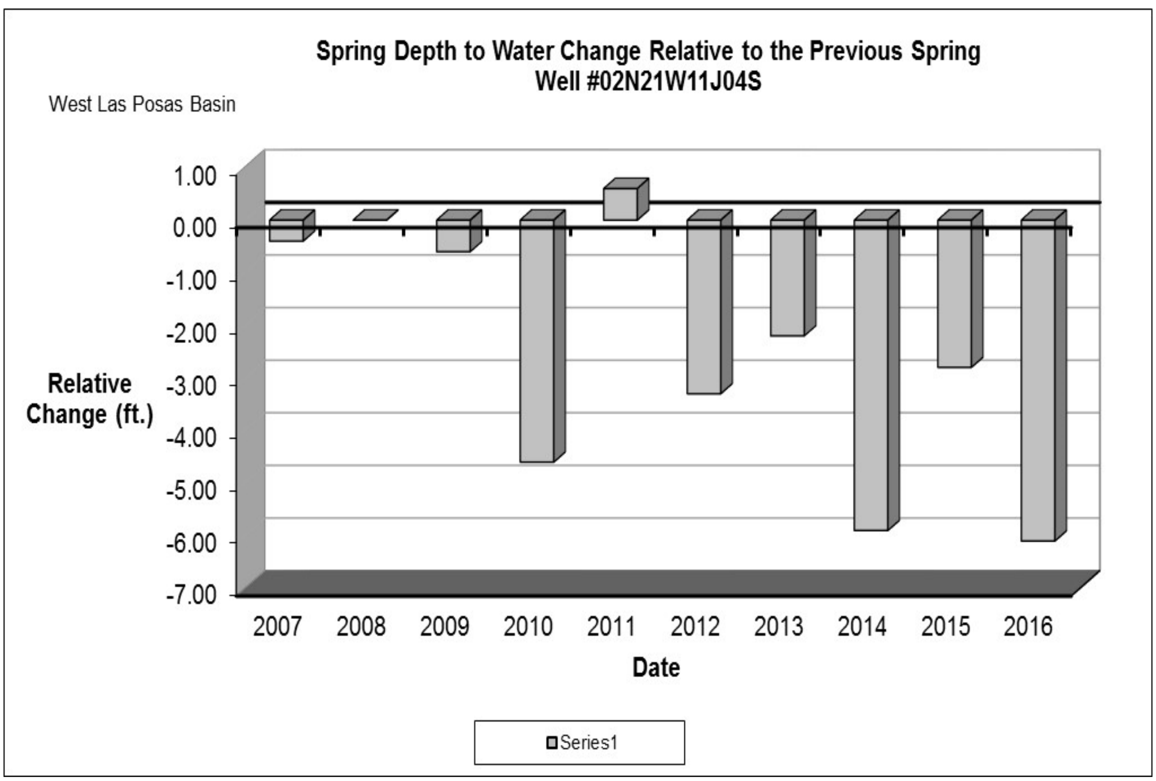

Figure B-11: West Las Posas Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

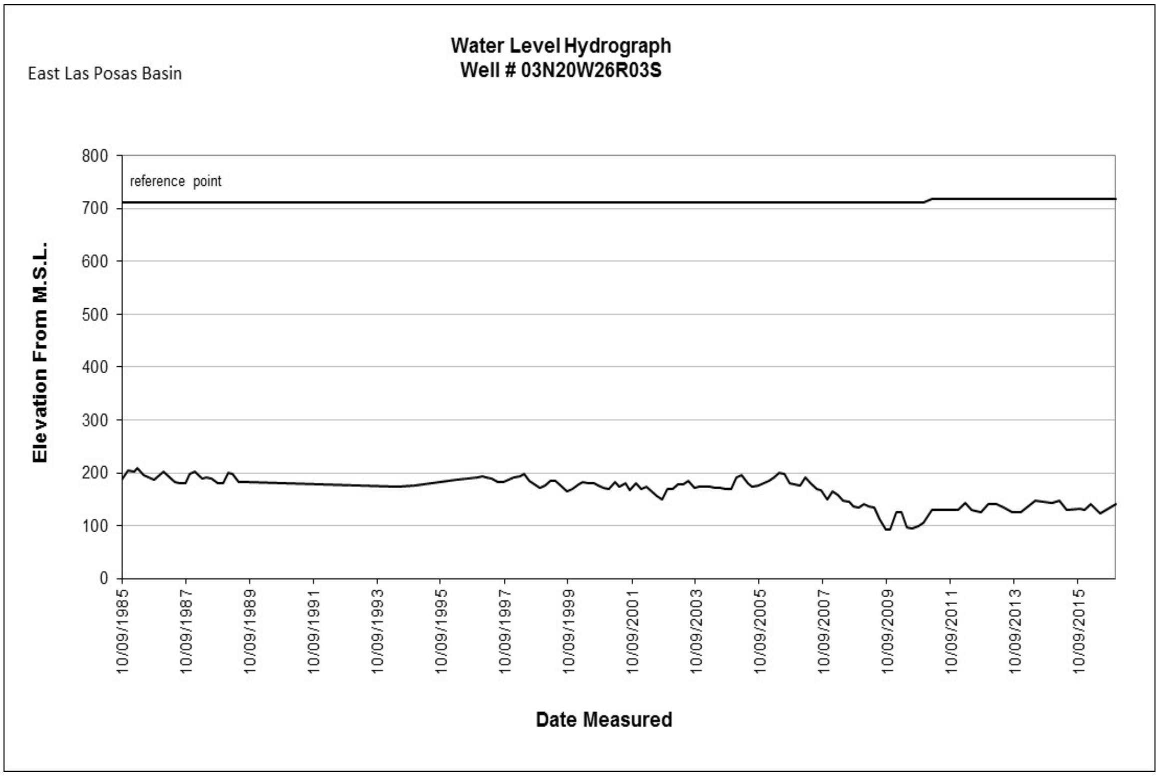

Figure B-12: East Las Posas key well hydrograph.

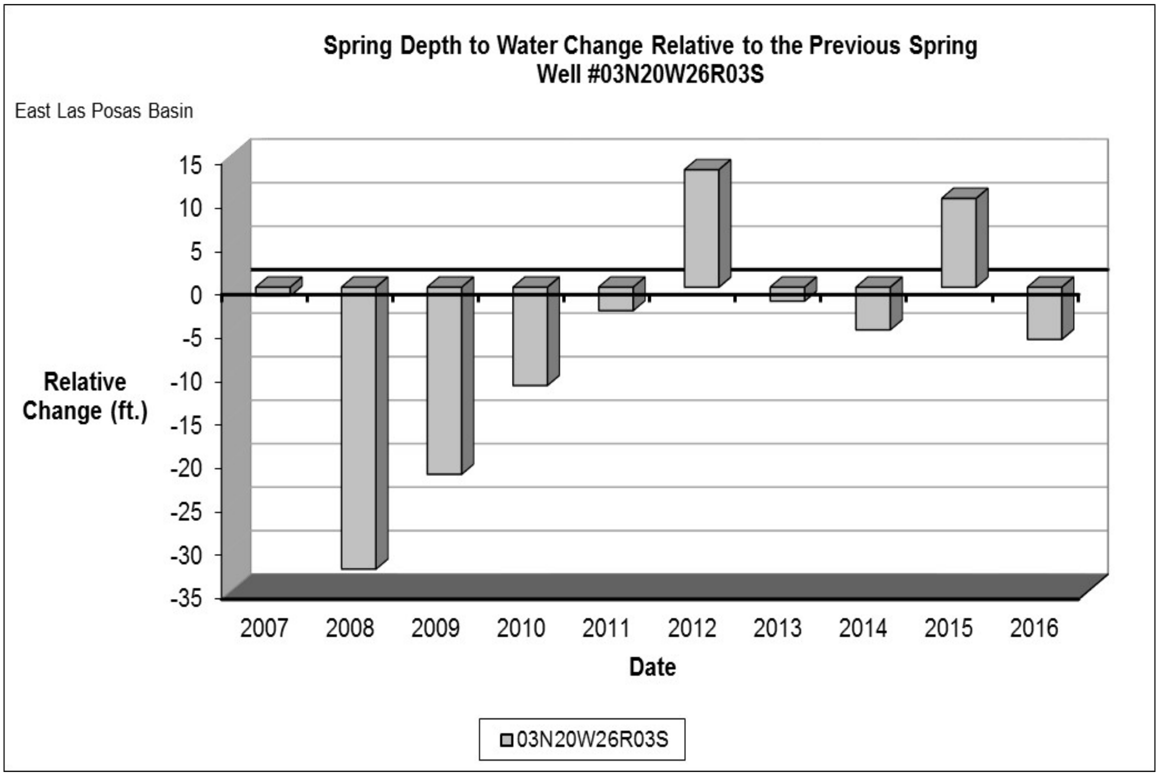

Figure B-13: East Las Posas Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

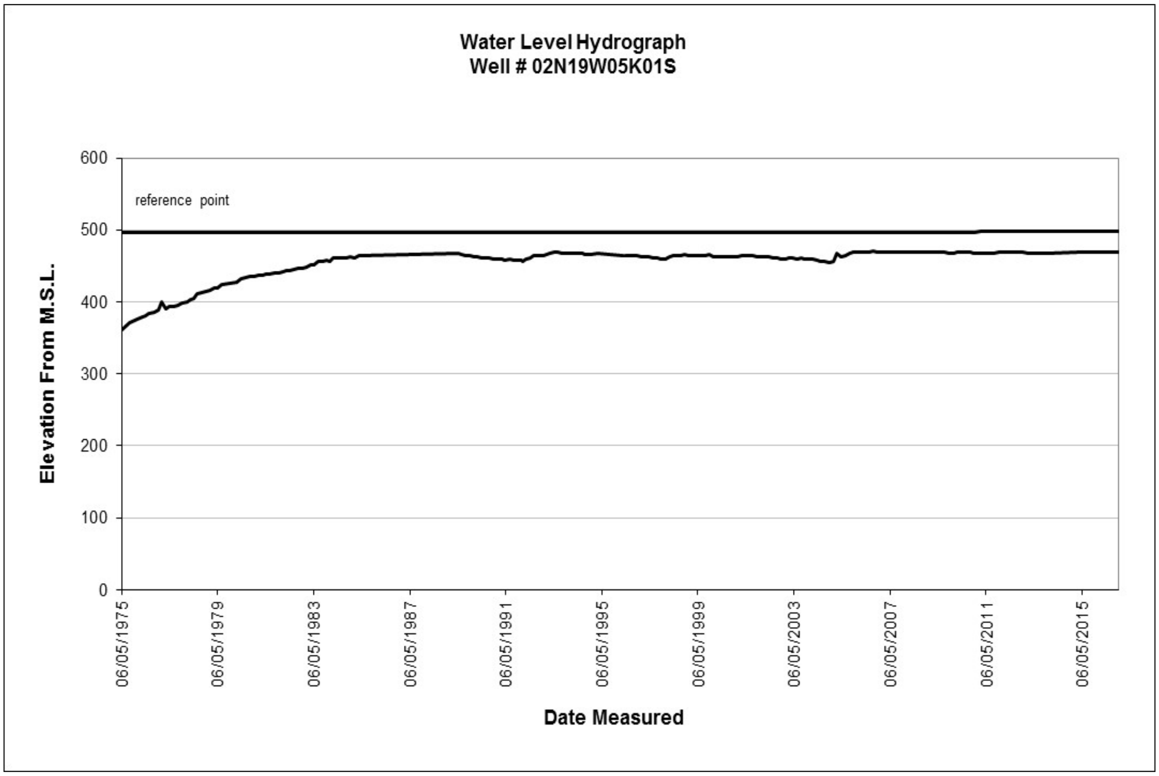

Figure B-14: South Las Posas Basin key well hydrograph.

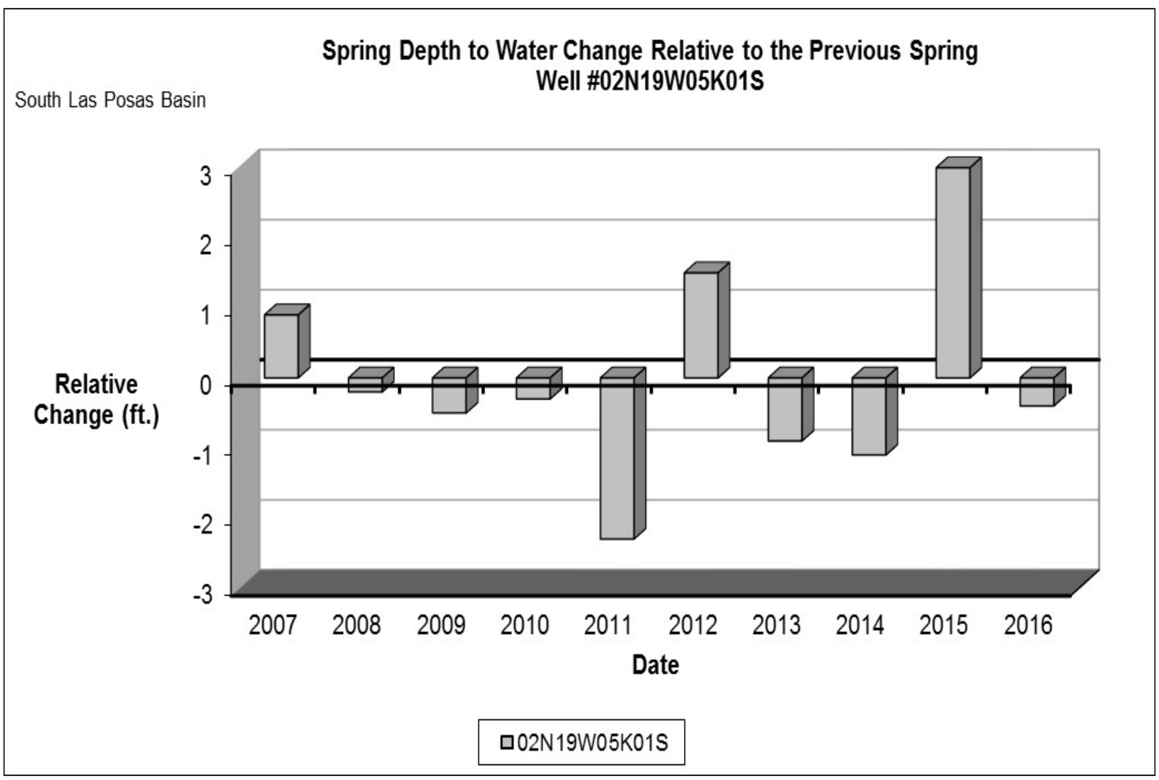

Figure B-15: South Las Posas Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

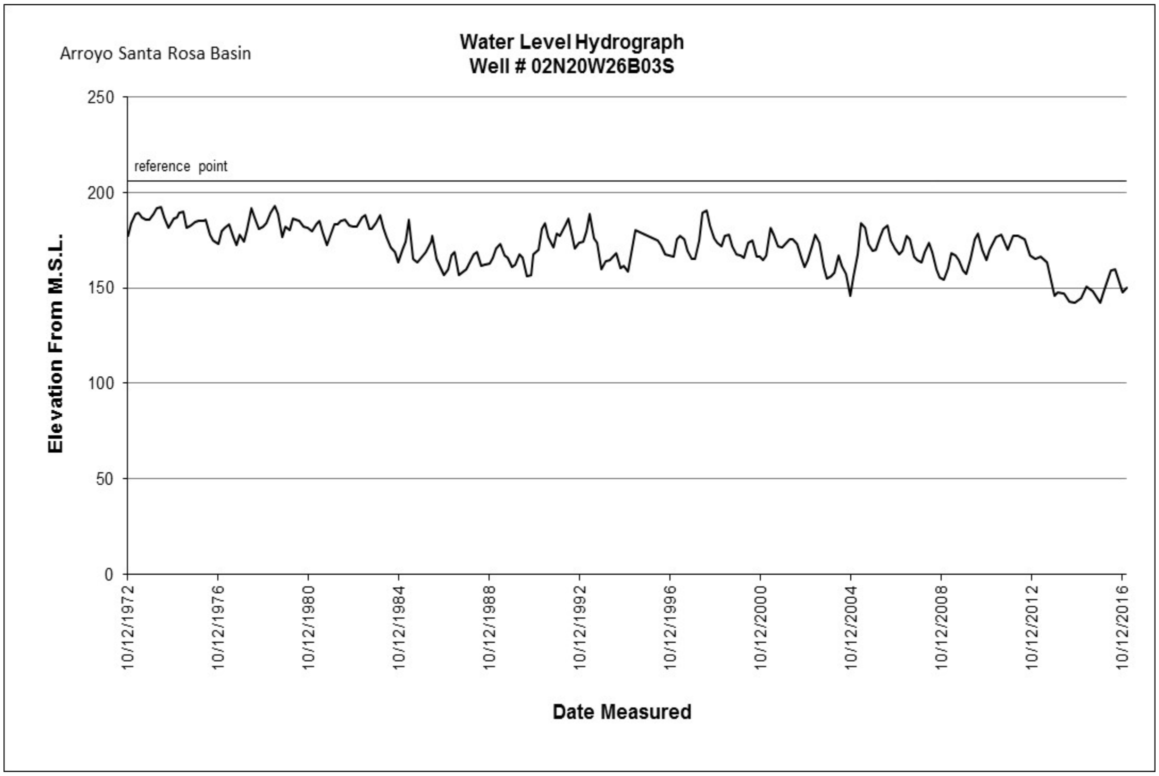

Figure B-16: Arroyo Santa Rosa Basin key well hydrograph.

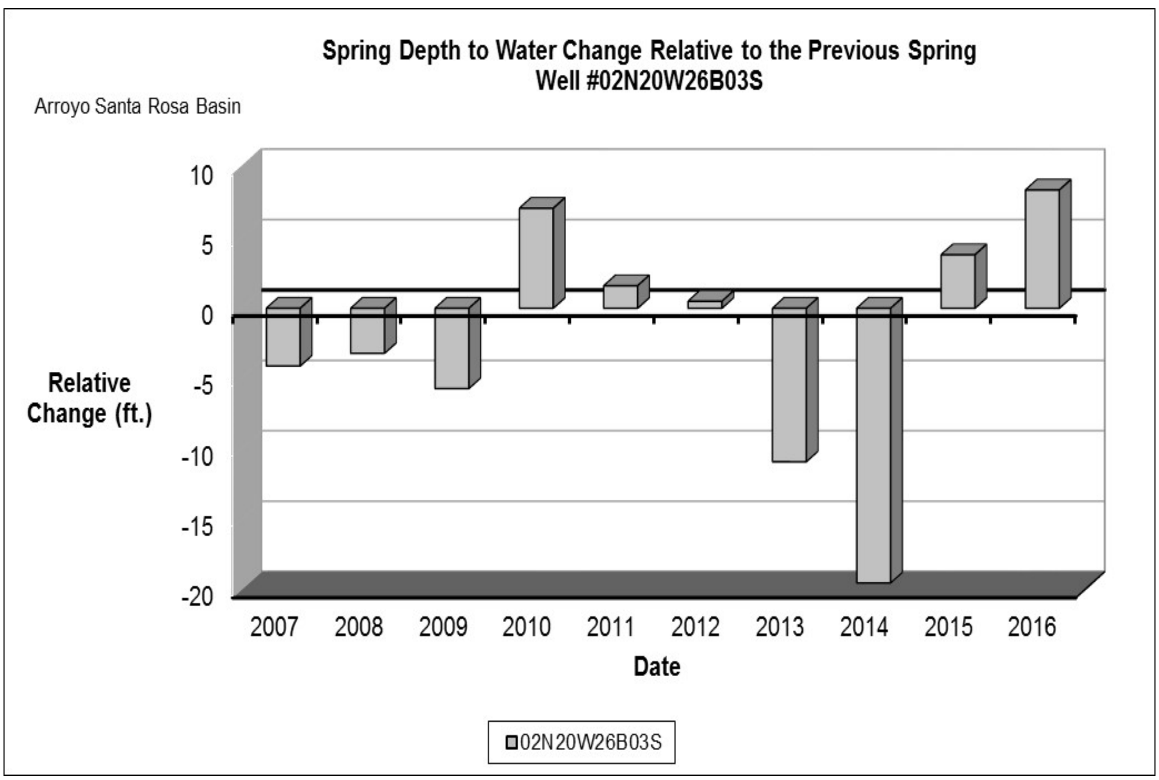

Figure B-17: Arroyo Santa Rosa Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

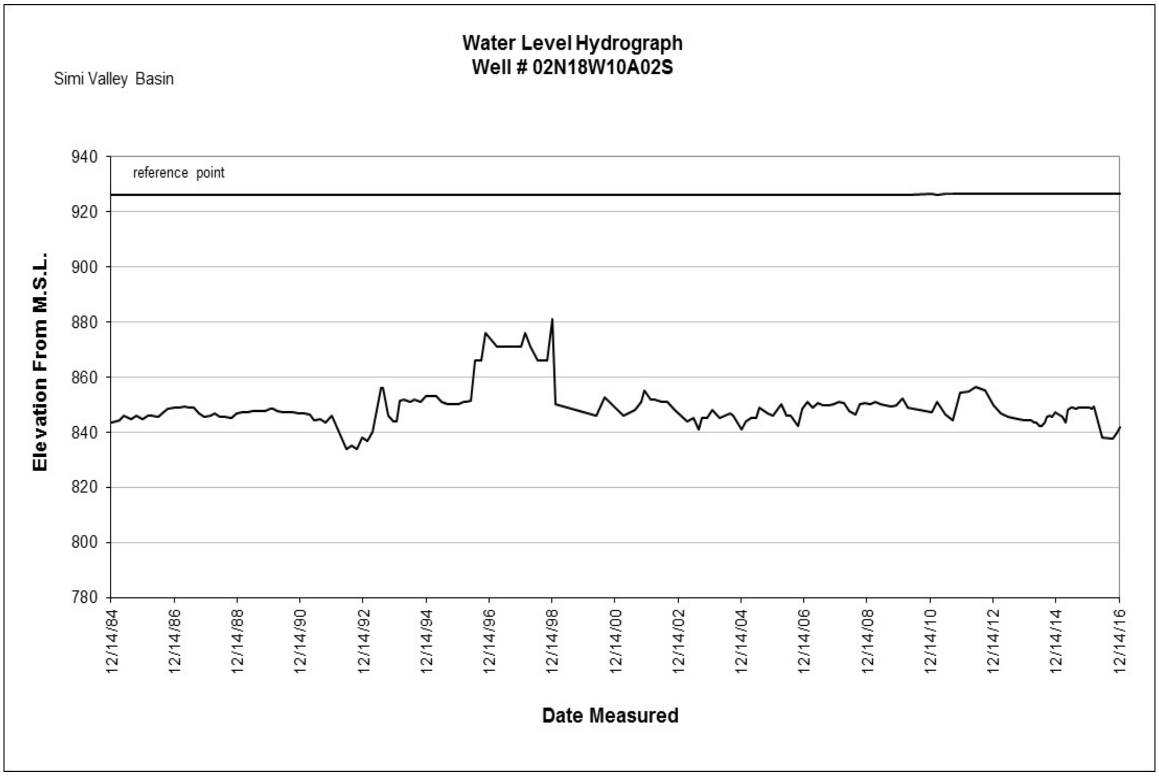

Figure B-18: Simi Valley Basin key well hydrograph.

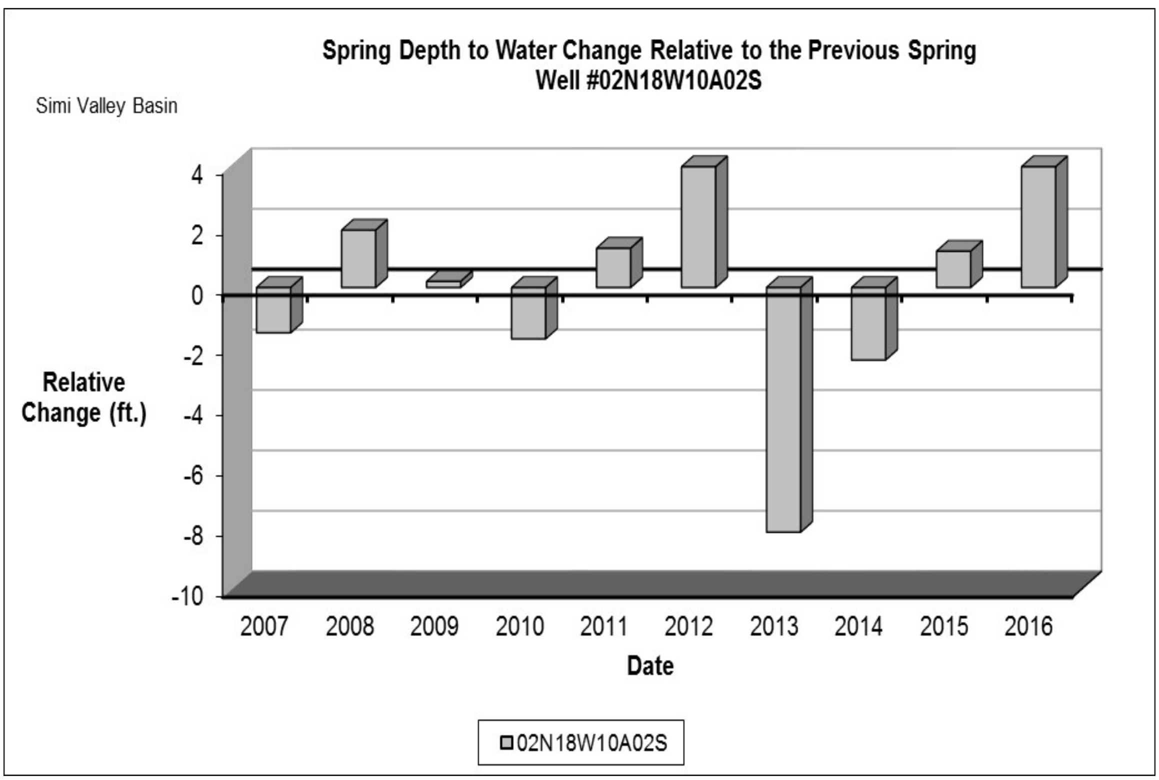

Figure B-19: Simi Valley Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

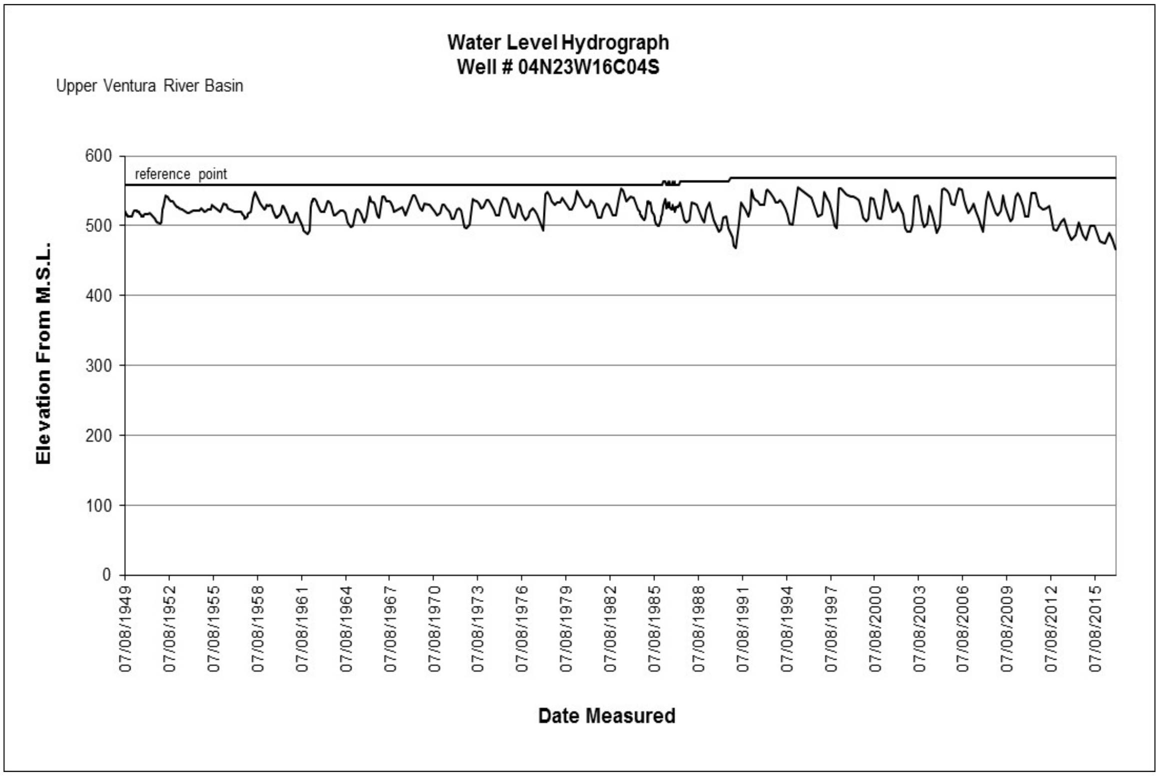

Figure B-20: Upper Ventura River Basin key well hydrograph.

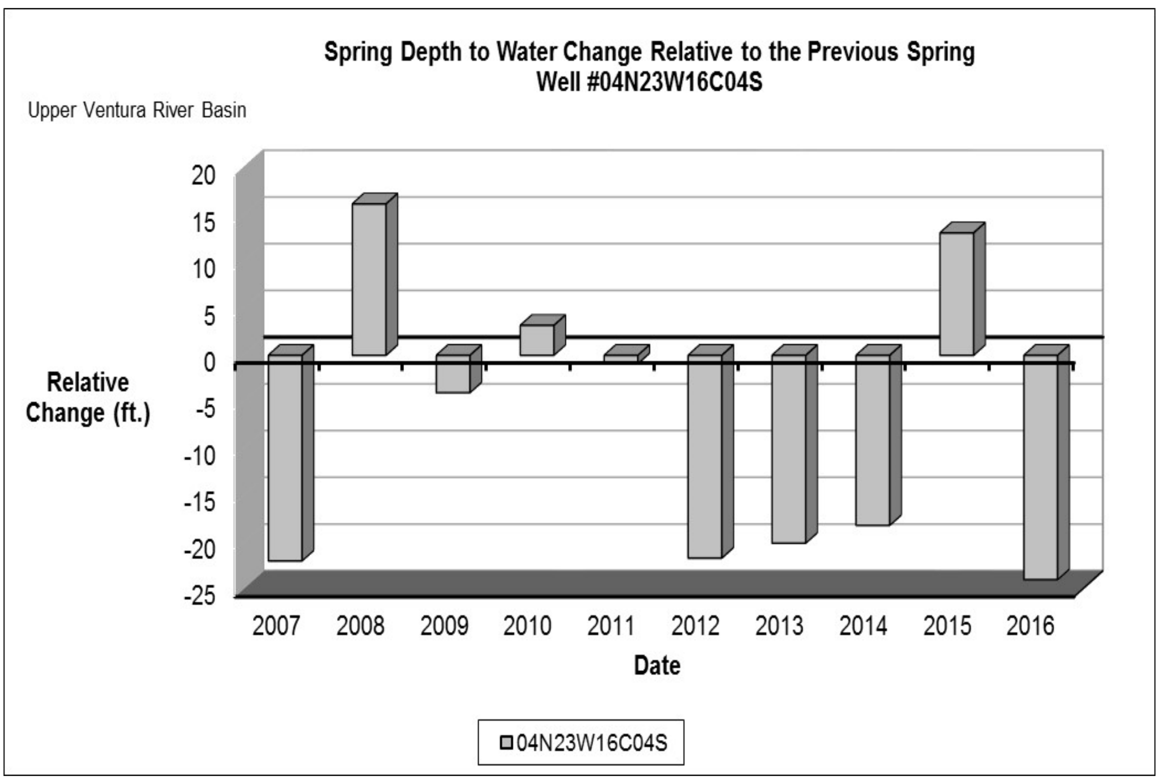

Figure B-21: Upper Ventura River Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

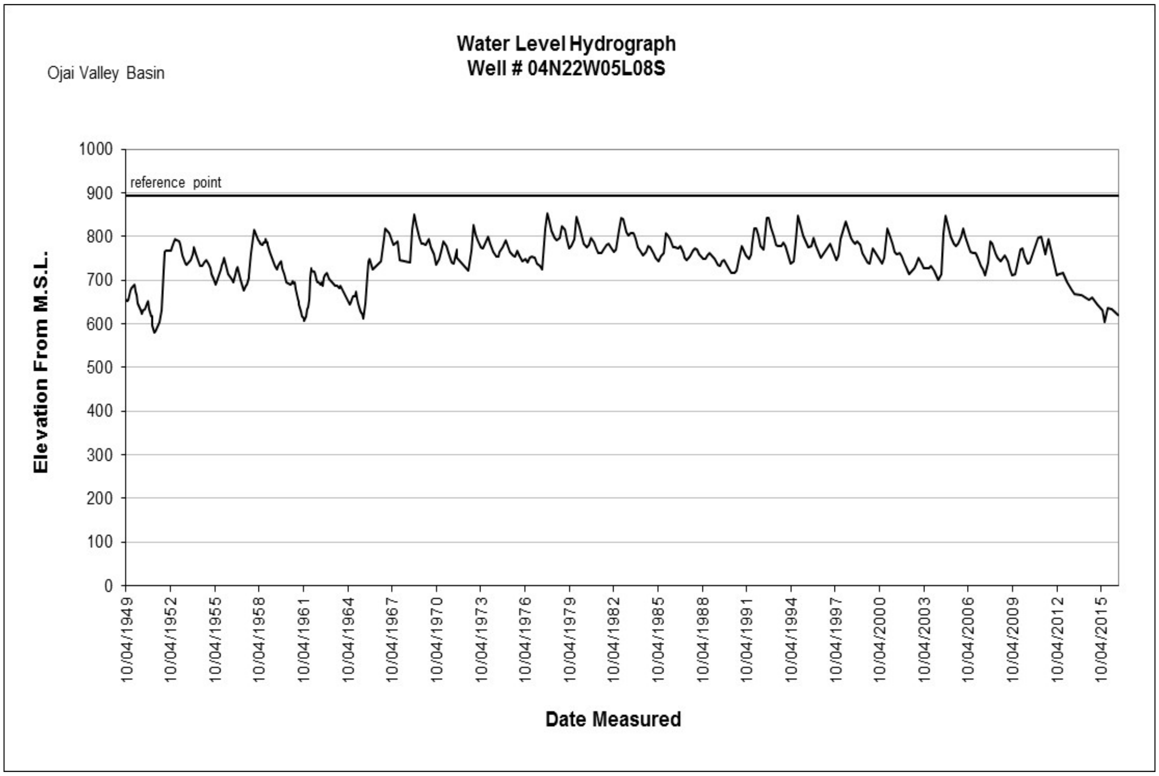

Figure B-22: Ojai Valley Basin key well hydrograph.

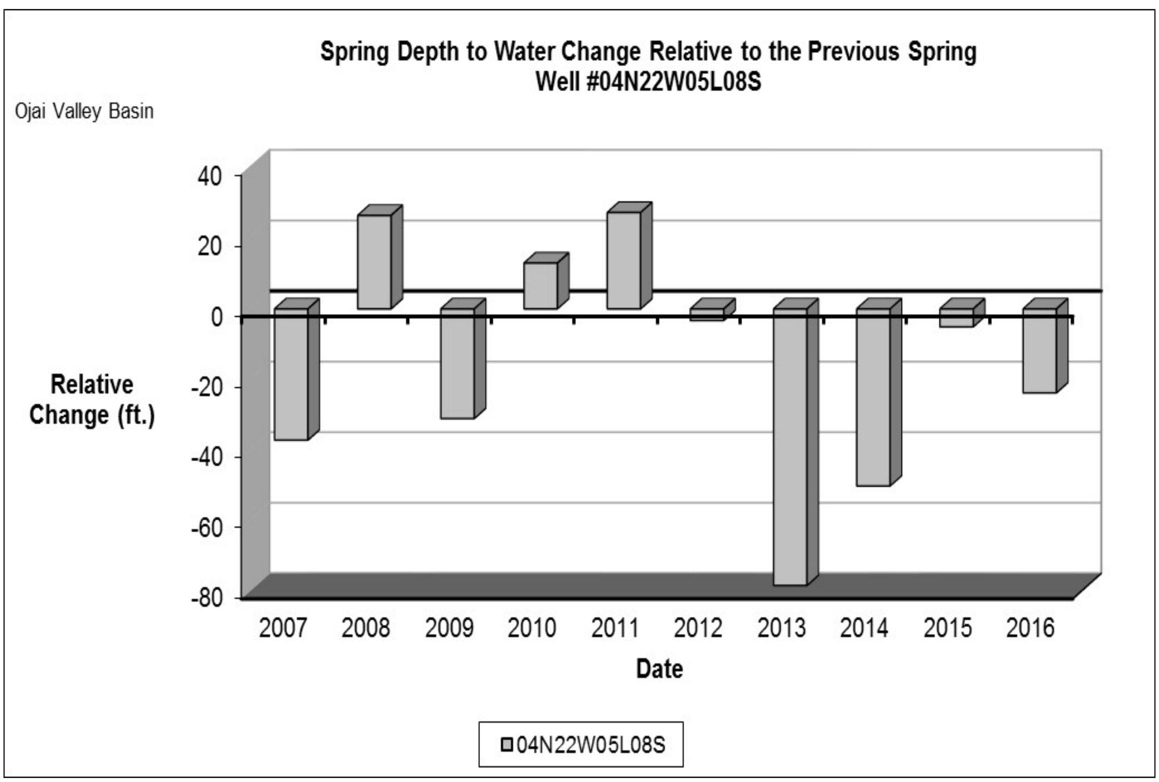

Figure B-23: Ojai Valley Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

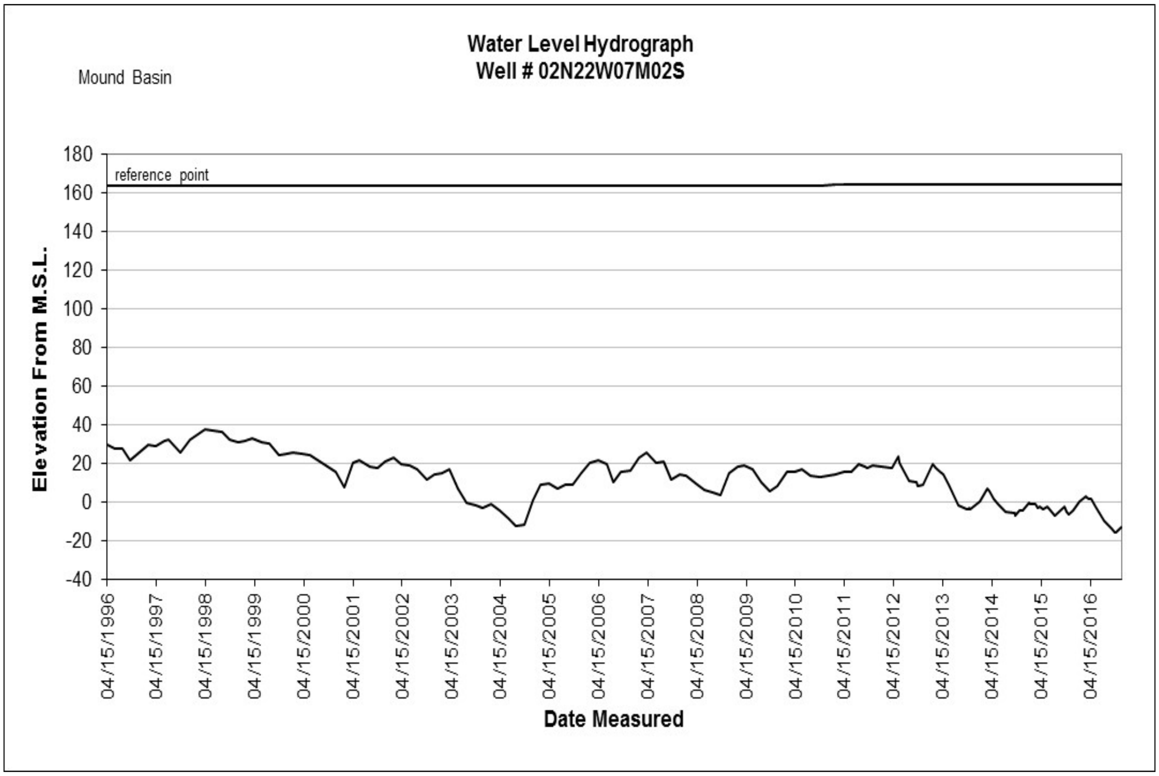

Figure B-24: Mound Basin key well hydrograph.

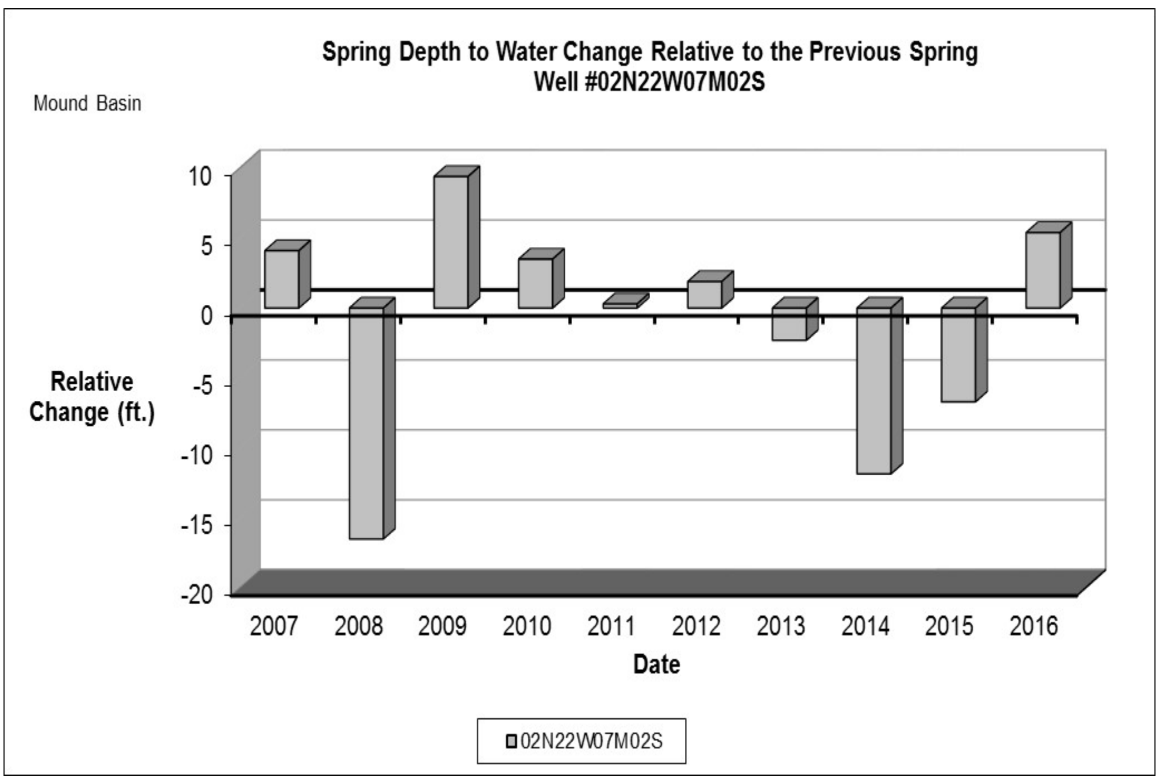

Figure B-25: Mound Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

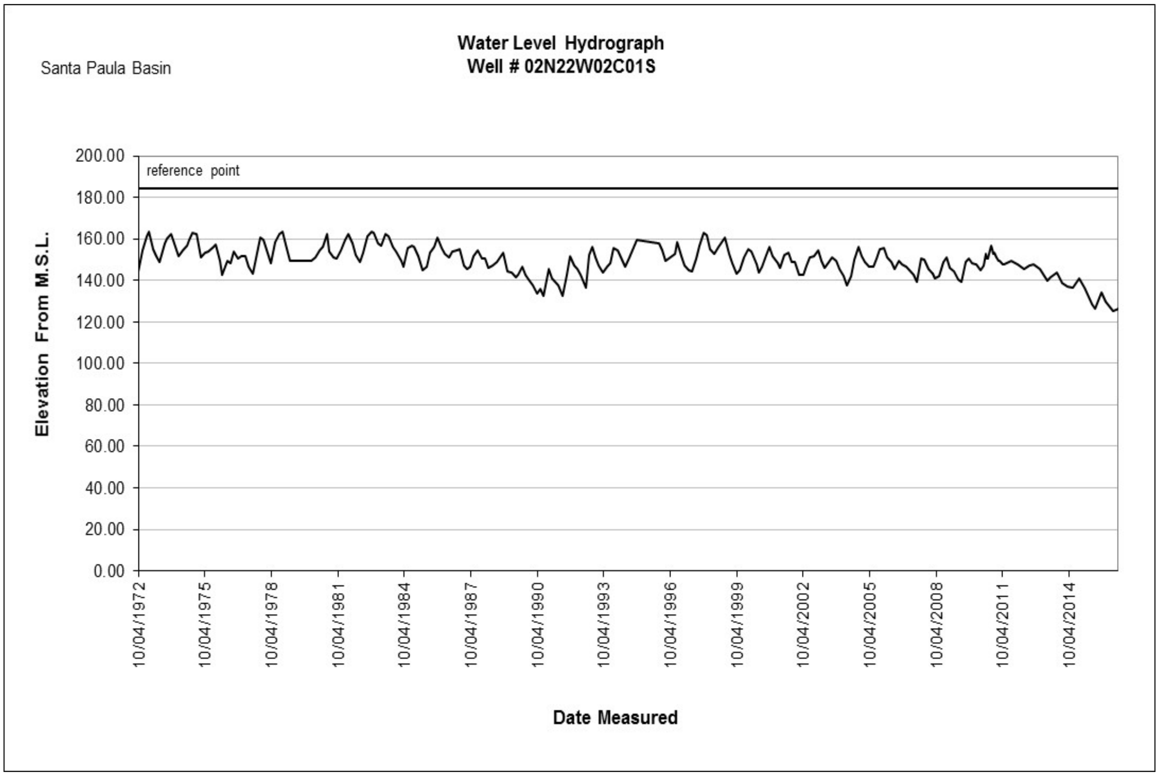

Figure B-26: Santa Paula Basin key well hydrograph.

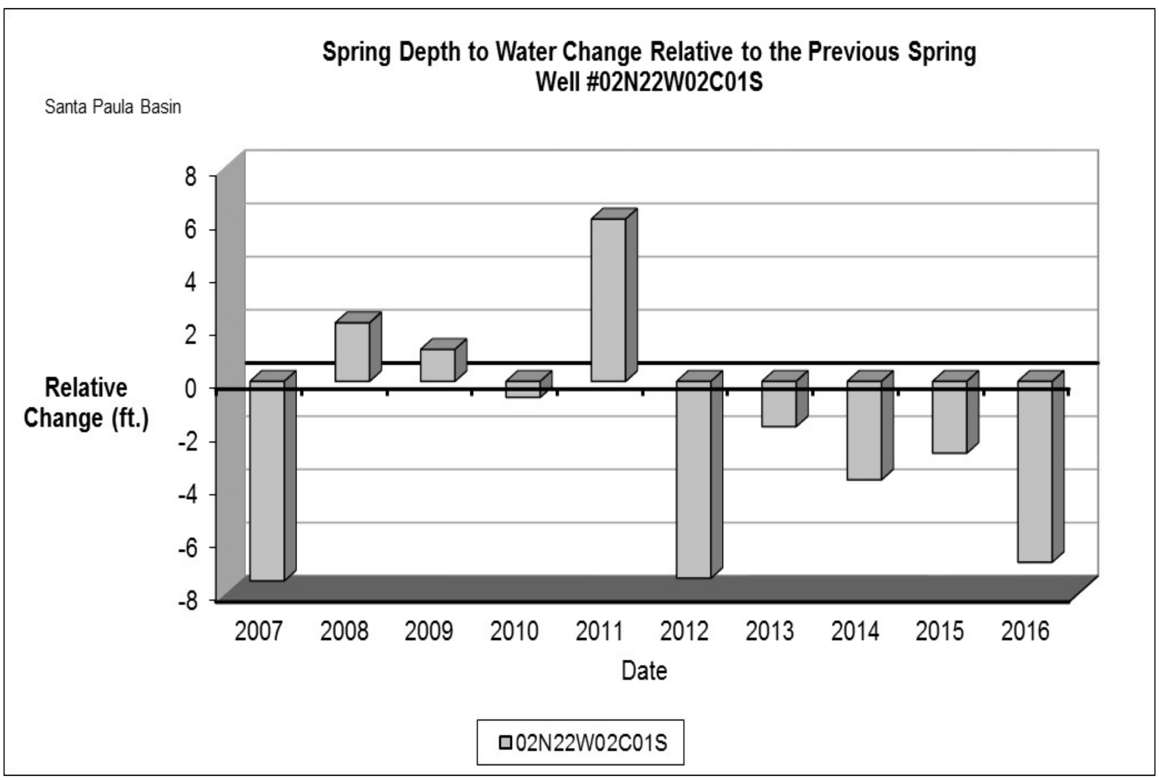

Figure B-27: Santa Paula Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

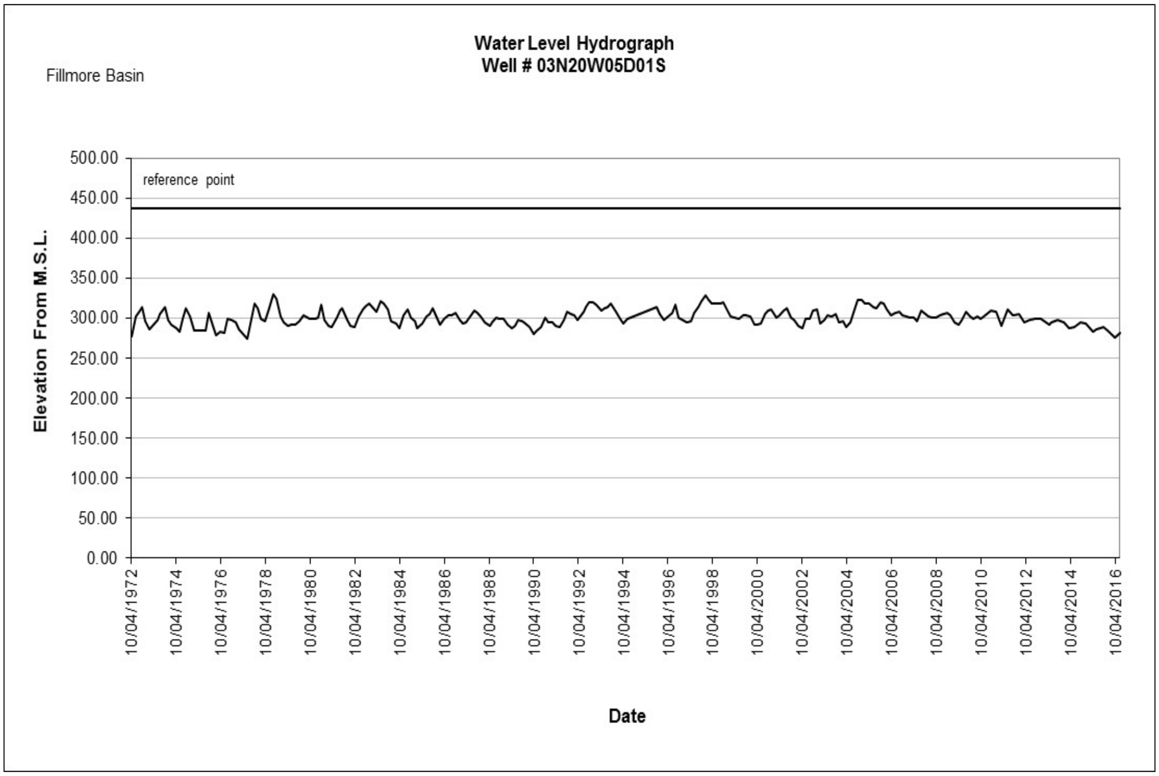

Figure B-28: Fillmore Basin key well hydrograph.

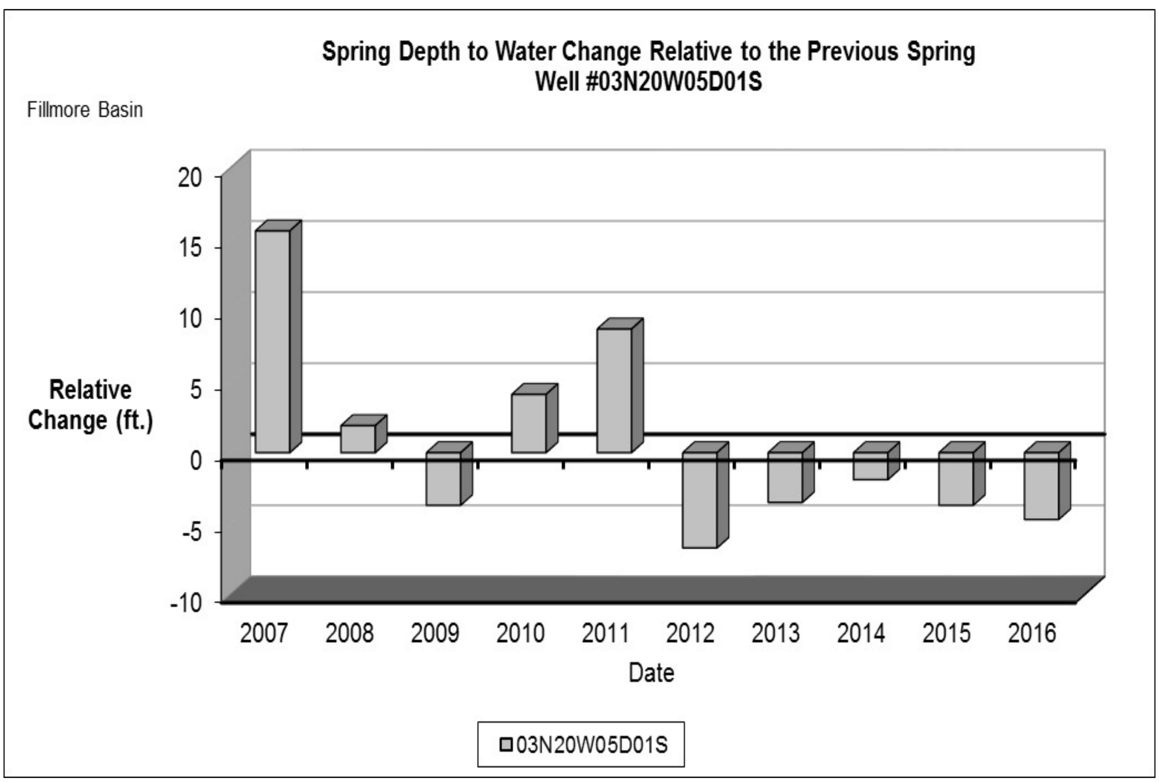

Figure B-29: Fillmore Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

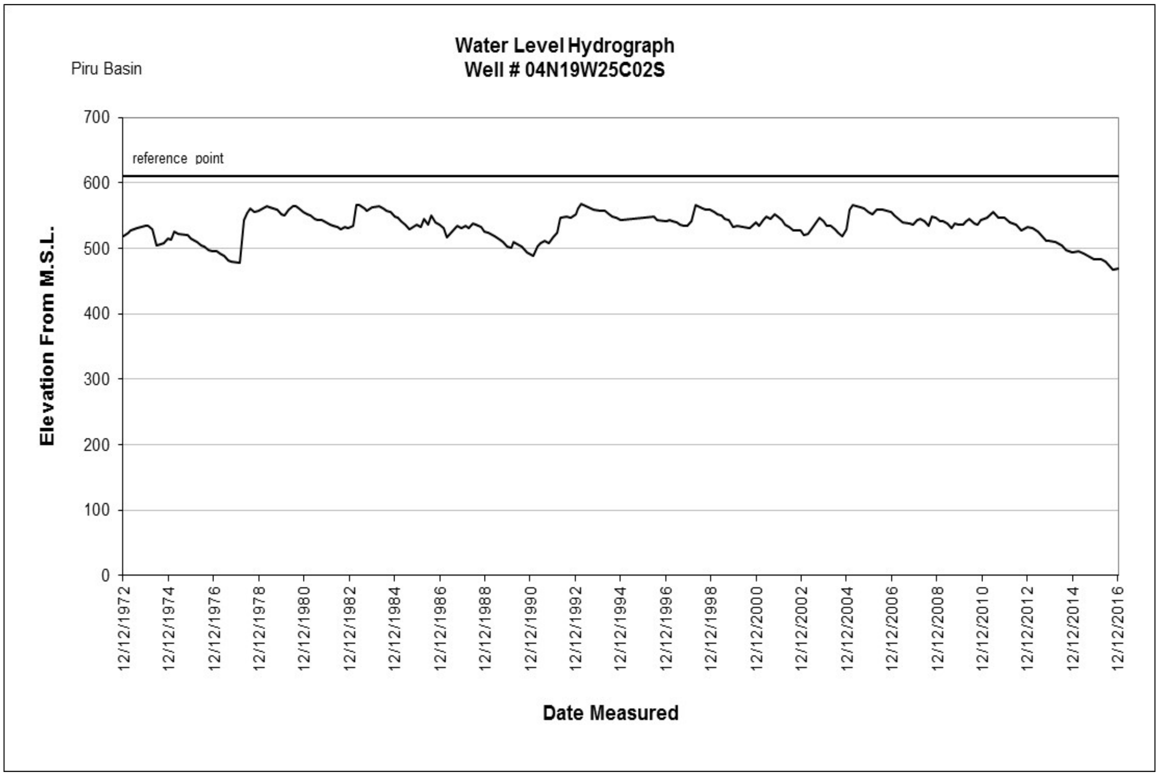

Figure B-30: Piru Basin key well hydrograph.

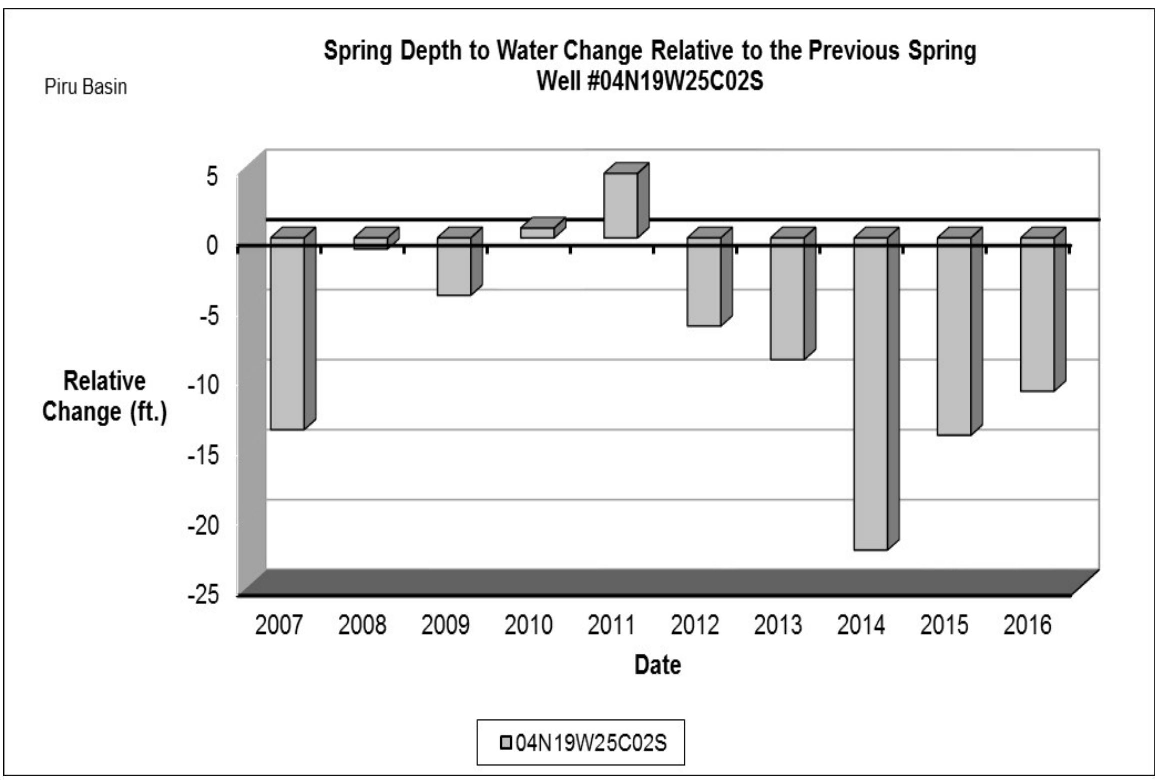

Figure B-31: Piru Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

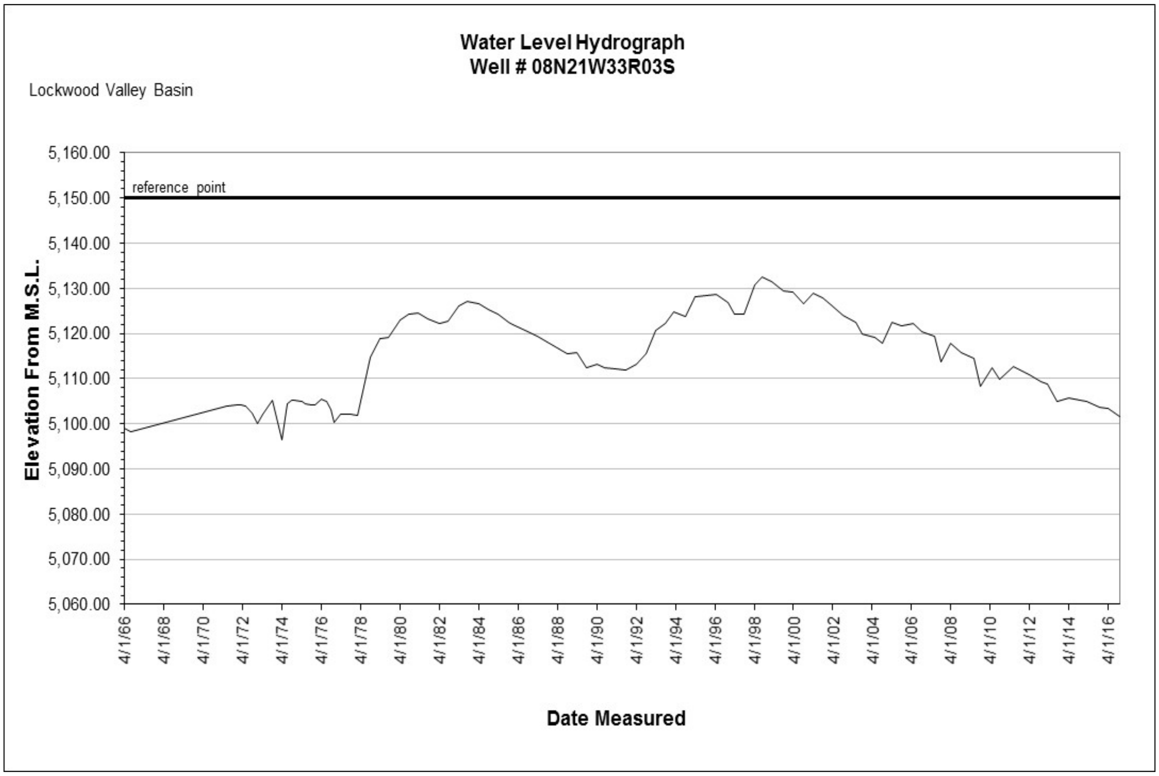

Figure B-32: Lockwood Valley Basin key well hydrograph.

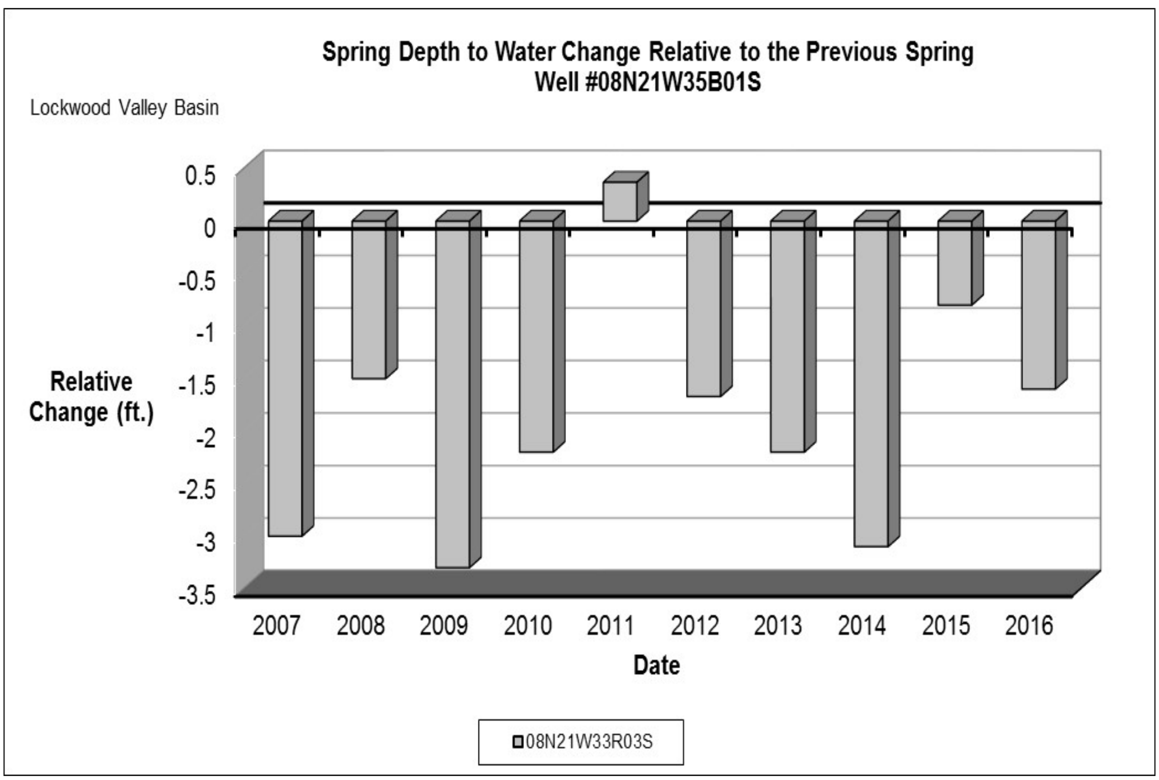

Figure B-33: Lockwood Valley Basin 10-year Spring level change Up/Down graph.

Appendix B – Key Water Level Wells

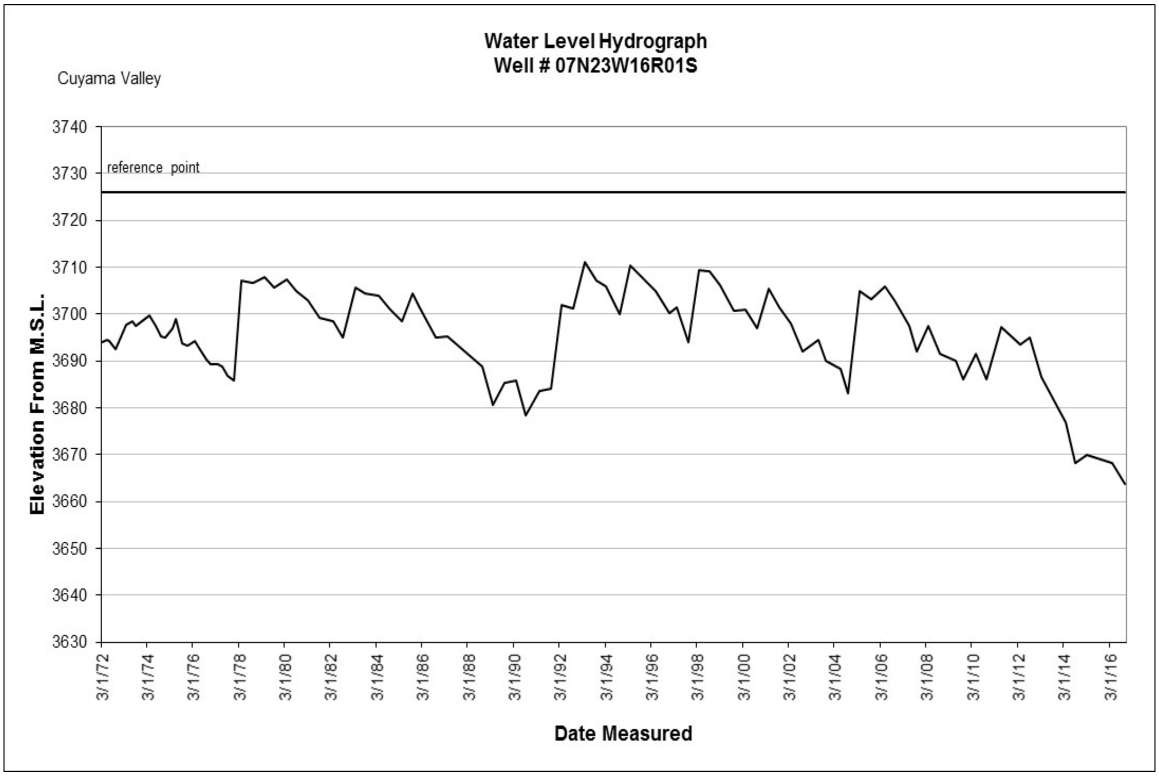

Figure B-34: Cuyama Valley Basin key well hydrograph.

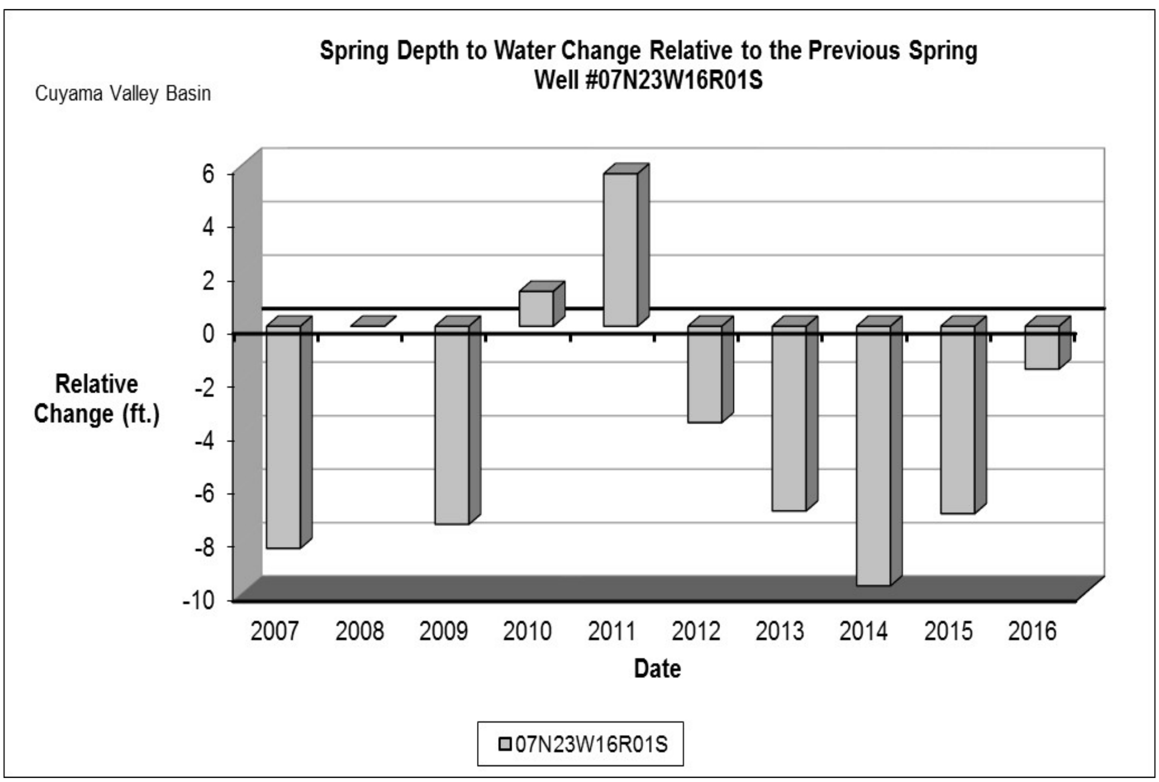

Figure B-35: Cuyama Valley Basin 10-year Spring level change Up/Down graph.

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elevation**	Depth***	WL Elevation**	Note
Arroyo Santa Rosa	02N19W20L01S	03/29/2016	307.66	88.70	218.96	
		06/09/2016	307.66	0.00	307.66	Pumping
		09/22/2016	307.66	0.00	307.66	Pumping
		12/22/2016	307.66	104.45	203.21	
	02N20W23G01S	03/29/2016	370.80	286.50	84.30	
		06/09/2016	370.80	284.97	85.83	
		09/22/2016	370.80	287.00	83.80	
		12/22/2016	370.80	284.40	86.40	
	02N20W23K01S	03/29/2016	274.11	201.37	72.74	
		06/09/2016	274.11	0.00	274.11	Pumping
		09/22/2016	274.11	209.82	64.29	
		12/22/2016	274.11	200.30	73.81	
	02N20W23R01S	03/29/2016	235.21	0.00	235.21	Pumping
		06/09/2016	235.21	0.00	235.21	Pumping
		09/22/2016	235.21	87.67	147.54	
		12/22/2016	235.21	0.00	235.21	Tape Hung Up
	02N20W26B03S*	04/04/2016	205.87	46.70	159.17	
		06/09/2016	205.87	46.33	159.54	
		10/18/2016	205.87	58.00	147.87	
		12/22/2016	205.87	55.90	149.97	
Conejo Valley	01N19W07K16S	03/14/2016	635.46	10.20	625.26	
		06/28/2016	635.46	11.10	624.36	
		09/21/2016	635.46	12.40	623.06	
		12/13/2016	635.46	12.10	623.36	
	01N20W03J01S	03/15/2016	764.40	57.10	707.30	
		06/28/2016	764.40	59.50	704.90	
		09/21/2016	764.40	61.50	702.90	
		12/13/2016	764.40	63.10	701.30	
Cuyama Valley	07N23W16R01S*	04/13/2016	3,726.00	57.70	3,668.30	
		11/09/2016	3,726.00	62.30	3,663.70	
	07N23W16R02S	04/13/2016	3,726.00	0.00	3,726.00	Inaccessible
		11/09/2016	3,726.00	59.80	3,666.20	
	07N24W13C03S	04/13/2016	3,435.00	50.90	3,384.10	
		11/09/2016	3,435.00	53.80	3,381.20	
	09N24W33J03S	04/13/2016	3,130.00	162.20	2,967.80	
		11/09/2016	3,130.00	161.80	2,968.20	
Fillmore	03N19W06D02S	03/21/2016	434.60	0.00	434.60	Pumping
		06/06/2016	434.60	0.00	434.60	Pumping
		09/21/2016	434.60	0.00	434.60	Pumping
		12/19/2016	434.60	106.60	328.00	
	03N20W01C04S	03/21/2016	404.58	59.90	344.68	
		06/06/2016	404.58	62.55	342.03	
		09/21/2016	404.58	67.77	336.81	
		12/19/2016	404.58	68.80	335.78	

* - Denotes basin keywell.
** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Note
Fillmore	03N20W05D01S*	03/21/2016	437.12	148.00	289.12	
		06/06/2016	437.12	152.30	284.82	
		09/22/2016	437.12	161.75	275.37	
		12/20/2016	437.12	155.57	281.55	
	03N20W09D01S	03/21/2016	325.20	18.75	306.45	
		06/06/2016	325.20	0.00	325.20	Pumping
		09/21/2016	325.20	0.00	325.20	Pumping
		12/19/2016	325.20	30.90	294.30	
	03N20W11C01S	03/21/2016	397.11	69.75	327.36	
		06/06/2016	397.11	0.00	397.11	Pumping
		09/21/2016	397.11	80.00	317.11	
		12/19/2016	397.11	82.52	314.59	
	03N21W01P02S	03/21/2016	301.85	41.75	260.10	
		06/06/2016	301.85	53.25	248.60	
		09/21/2016	301.85	58.00	243.85	
		12/19/2016	301.85	50.80	251.05	
	03N21W11B01S	03/22/2016	336.24	89.52	246.72	
		06/06/2016	336.24	103.33	232.91	
		09/22/2016	336.24	107.50	228.74	
		12/20/2016	336.24	99.00	237.24	
	04N19W30D01S	03/21/2016	434.43	71.60	362.83	
		06/06/2016	434.43	67.33	367.10	
		09/21/2016	434.43	0.00	434.43	Pumping
		12/19/2016	434.43	77.48	356.95	
	04N19W31R01S	03/21/2016	448.85	0.00	448.85	Pumping
		06/06/2016	448.85	0.00	448.85	Pumping
		09/21/2016	448.85	107.57	341.28	
		12/19/2016	448.85	110.30	338.55	
	04N19W32M02S	03/21/2016	449.46	40.20	409.26	
		06/06/2016	449.46	0.00	449.46	Pumping
		09/21/2016	449.46	0.00	449.46	Pumping
		12/19/2016	449.46	0.00	449.46	Pumping
	04N19W33D03S	03/21/2016	477.43	25.42	452.01	
		06/06/2016	477.43	29.86	447.57	
		09/21/2016	477.43	34.90	442.53	
		12/19/2016	477.43	36.80	440.63	
	04N20W23Q02S	03/21/2016	513.88	150.37	363.51	
		06/06/2016	513.88	158.45	355.43	
		12/20/2016	513.88	161.90	351.98	
	04N20W26C02S	03/21/2016	505.35	148.60	356.75	
		06/06/2016	505.35	154.75	350.60	
		09/22/2016	505.35	164.50	340.85	
		12/20/2016	505.35	158.33	347.02	
	04N20W33C03S	03/21/2016	526.87	177.00	349.87	
		06/06/2016	526.87	185.10	341.77	
		09/22/2016	526.87	0.00	526.87	Pumping
		12/20/2016	526.87	188.43	338.44	

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

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Note
Las Posas - East	02N20W01M01S	03/07/2016	470.05	0.00	470.05	Inaccessible
		06/21/2016	470.05	0.00	470.05	Inaccessible
		09/08/2016	470.05	0.00	470.05	Inaccessible
		12/12/2016	470.05	0.00	470.05	Inaccessible
	02N20W03K03S	03/07/2016	485.50	0.00	485.50	Inaccessible
		06/21/2016	485.50	0.00	485.50	Inaccessible
		09/08/2016	485.50	0.00	485.50	Inaccessible
		12/12/2016	485.50	0.00	485.50	Inaccessible
	02N20W10D02S	03/11/2016	459.53	0.00	459.53	Inaccessible
		06/23/2016	459.53	319.70	139.83	
		09/14/2016	459.53	326.10	133.43	
		12/12/2016	459.53	317.80	141.73	
	02N20W10G01S	03/03/2016	415.47	163.80	251.67	
		06/23/2016	415.47	167.30	248.17	
		09/09/2016	415.47	169.50	245.97	
		12/13/2016	415.47	169.20	246.27	
	02N20W10J01S	03/03/2016	406.87	125.30	281.57	
		06/22/2016	406.87	124.00	282.87	
		09/09/2016	406.87	126.90	279.97	
		12/13/2016	406.87	129.20	277.67	
	03N19W17Q01S	03/15/2016	1,311.06	1,088.80	222.26	
		06/21/2016	1,311.06	0.00	1,311.06	Inaccessible
		09/14/2016	1,311.06	0.00	1,311.06	Inaccessible
		11/22/2016	1,311.06	1,092.80	218.26	
		12/14/2016	1,311.06	0.00	1,311.06	Inaccessible
	03N19W19J01S	03/07/2016	1,026.90	849.20	177.70	
		06/21/2016	1,026.90	852.60	174.30	
		09/14/2016	1,026.90	855.80	171.10	
		03/07/2016	1,057.94	0.00	1,057.94	Inaccessible
	03N19W19P02S	06/21/2016	1,057.94	0.00	1,057.94	Inaccessible
		09/12/2016	1,057.94	0.00	1,057.94	Inaccessible
	03N19W29F06S	03/11/2016	855.20	254.10	601.10	
		06/21/2016	855.20	258.40	596.80	
		09/12/2016	855.20	273.10	582.10	
	03N19W29K04S	03/11/2016	843.32	0.00	843.32	Inaccessible
		06/21/2016	843.32	0.00	843.32	Inaccessible
		09/12/2016	843.32	0.00	843.32	Inaccessible
	03N20W23L01S	03/28/2016	970.30	775.80	194.50	
		06/22/2016	970.30	775.50	194.80	
		09/14/2016	970.30	0.00	970.30	Pumping
	03N20W25H01S	03/07/2016	823.84	218.20	605.64	
		06/22/2016	823.84	220.60	603.24	
		09/12/2016	823.84	219.40	604.44	

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

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Note
Las Posas - East	03N20W26R03S*	03/07/2016	717.81	577.30	140.51	
		06/22/2016	717.81	594.10	123.71	
		09/14/2016	717.81	0.00	717.81	Pumping
		12/22/2016	717.81	577.9	139.9	
	03N20W27H03S	03/03/2016	840.25	636.20	204.05	
		06/22/2016	840.25	640.80	199.45	
		09/12/2016	840.25	640.00	200.25	
		12/12/2016	840.25	642.20	198.05	
	03N20W34G01S	03/15/2016	680.48	536.50	143.98	
		06/22/2016	680.48	538.90	141.58	
		09/12/2016	680.48	542.30	138.18	
		12/13/2016	680.48	545.10	135.38	
	03N20W35R02S	03/03/2016	572.67	308.50	264.17	
		06/22/2016	572.67	308.90	263.77	
		09/14/2016	572.67	309.70	262.97	
		12/12/2016	572.67	310.10	262.57	
	03N20W35R03S	03/03/2016	572.67	432.30	140.37	
		06/22/2016	572.67	436.70	135.97	
		09/14/2016	572.67	440.80	131.87	
		12/12/2016	572.67	426.00	146.67	
	03N20W35R04S	03/03/2016	572.67	439.80	132.87	
		06/22/2016	572.67	444.90	127.77	
		09/14/2016	572.67	448.70	123.97	
		12/12/2016	572.67	426.70	145.97	
Las Posas - South	02N19W05K01S*	03/11/2016	497.80	28.50	469.30	
		06/22/2016	497.80	28.70	469.10	
		09/14/2016	497.80	28.50	469.30	
		12/14/2016	497.80	29.50	468.30	
	02N19W08H02S	03/15/2016	494.87	23.90	470.97	
		06/21/2016	494.87	0.00	494.87	Inaccessible
		09/14/2016	494.87	25.80	469.07	
		12/14/2016	494.87	0.00	494.87	Inaccessible
Las Posas - West	02N20W05D01S	03/28/2016	569.00	691.80	-122.80	
		06/22/2016	569.00	697.20	-128.20	
		09/14/2016	569.00	0.00	569.00	Inaccessible
	02N20W06R01S	03/03/2016	461.19	594.90	-133.71	
		06/06/2016	461.19	620.30	-159.10	
		09/14/2016	461.19	616.50	-155.31	
		12/12/2016	461.19	0.00	461.19	Pumping
	02N20W07R02S	03/07/2016	395.00	502.10	-107.10	
		06/21/2016	395.00	517.40	-122.40	
		09/08/2016	395.00	524.80	-129.80	
		12/13/2016	395.00	0.00	395.00	Destroyed
	02N20W07R03S	12/13/2016	395.00	522.20	-127.20	
	02N21W08H03S	03/14/2016	334.21	379.40	-45.19	
		06/21/2016	334.21	399.40	-65.19	
		09/12/2016	334.21	410.10	-75.89	
		12/12/2016	334.21	420.80	-86.59	

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

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Note
Las Posas - West	02N21W09D02S	03/08/2016	323.75	291.50	32.25	
		06/21/2016	323.75	298.40	25.35	
		09/29/2016	323.75	234.30	89.45	
		12/12/2016	323.75	0.00	323.75	Pumping
	02N21W10G03S	03/03/2016	381.01	379.30	1.71	
		06/21/2016	381.01	0.00	381.01	Pumping
		09/15/2016	381.01	0.00	381.01	Pumping
		12/14/2016	381.01	405.60	-24.59	
	02N21W11J03S	03/03/2016	379.39	441.00	-61.61	
		06/21/2016	379.39	438.70	-59.31	
		09/15/2016	379.39	459.30	-79.91	
		12/12/2016	379.39	445.30	-65.91	
	02N21W11J04S	03/03/2016	379.39	394.10	-14.71	
		06/21/2016	379.39	395.90	-16.51	
		09/15/2016	379.39	406.20	-26.81	
		12/12/2016	379.39	399.70	-20.31	
	02N21W11J05S	03/03/2016	379.39	206.00	173.39	
		06/21/2016	379.39	209.10	170.29	
		09/15/2016	379.39	218.30	161.09	
		12/12/2016	379.39	215.70	163.69	
	02N21W11J06S	03/03/2016	379.39	178.60	200.79	
		06/21/2016	379.39	177.70	201.69	
		09/15/2016	379.39	180.90	198.49	
		12/12/2016	379.39	182.80	196.59	
	02N21W12H01S*	03/03/2016	417.89	0.00	417.89	Inaccessible
		06/23/2016	417.89	0.00	417.89	Inaccessible
		09/08/2016	417.89	0.00	417.89	Inaccessible
		12/14/2016	417.89	0.00	417.89	Pumping
	02N21W15M03S	03/03/2016	263.87	309.60	-45.73	
		06/21/2016	263.87	326.50	-62.63	
		09/08/2016	263.87	332.30	-68.43	
		12/12/2016	263.87	315.60	-51.73	
	02N21W16J01S	03/03/2016	259.90	17.80	242.10	
		06/21/2016	259.90	17.70	242.20	
		09/08/2016	259.90	18.30	241.60	
		12/12/2016	259.90	18.60	241.30	
	03N20W32H03S	03/07/2016	673.00	793.70	-120.70	
		06/22/2016	673.00	807.60	-134.60	
		09/15/2016	673.00	0.00	673.00	Inaccessible
	03N21W35P02S	03/03/2016	564.11	533.30	30.81	
		06/21/2016	564.11	517.50	46.61	
		09/08/2016	564.11	0.00	564.11	Inaccessible
		12/13/2016	564.11	546.90	17.21	
Little Cuddy Valley	08N20W08B01S	04/13/2016	5,300.00	16.10	5,283.90	
		11/09/2016	5,300.00	16.00	5,284.00	

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

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Lockwood Valley	08N21W33R03S	04/13/2016	5,150.00	46.70	5,103.30	
		11/09/2016	5,150.00	48.40	5,101.60	
	08N21W35B01S*	04/13/2016	5,029.20	0.00	5,029.20	Inaccessible
		11/09/2016	5,029.20	0.00	5,029.20	Tape Hung Up
	08N21W36G02S	04/13/2016	4,922.00	0.00	4,922.00	Inaccessible
		11/09/2016	4,922.00	35.20	4,886.80	
Mound	02N22W08P01S	03/22/2016	213.79	208.00	5.80	
		06/09/2016	213.79	212.83	0.96	
		10/05/2016	213.79	221.50	-7.71	
		12/20/2016	213.79	0.00	213.79	Inaccessible
	02N22W09L03S	03/22/2016	251.25	199.00	52.25	
		06/07/2016	251.25	197.70	53.55	
		09/22/2016	251.25	201.95	49.30	
		12/20/2016	251.25	201.24	50.01	
	02N22W09L04S	03/22/2016	251.25	179.07	72.18	
		06/07/2016	251.25	197.17	54.08	
		09/22/2016	251.25	195.35	55.90	
		12/20/2016	251.25	188.10	63.15	
	02N22W16K01S	03/22/2016	149.37	185.25	-35.88	
		06/07/2016	149.37	189.03	-39.66	
		09/22/2016	149.37	192.88	-43.51	
		12/20/2016	149.37	193.10	-43.73	
	02N23W13K03S	03/23/2016	68.71	72.80	-4.09	
		06/07/2016	68.71	0.00	68.71	Pumping
		09/20/2016	68.71	86.40	-17.69	
		12/20/2016	68.71	0.00	68.71	Pumping
Ojai Valley	04N22W04Q01S	03/09/2016	1,045.50	105.10	940.40	
		06/16/2016	1,045.50	112.50	933.00	
		09/12/2016	1,045.50	0.00	1,045.50	Pumping
		12/07/2016	1,045.50	117.80	927.70	
	04N22W05D03S	03/09/2016	895.97	0.00	895.97	Tape Hung Up
		06/16/2016	895.97	0.00	895.97	Tape Hung Up
		09/07/2016	895.97	0.00	895.97	Tape Hung Up
		12/08/2016	895.97	0.00	895.97	Tape Hung Up
	04N22W05H04S	03/10/2016	950.22	0.00	950.22	Inaccessible
		06/16/2016	950.22	0.00	950.22	Tape Hung Up
		09/12/2016	950.22	0.00	950.22	Tape Hung Up
		12/08/2016	950.22	0.00	950.22	Tape Hung Up
	04N22W05L08S*	03/09/2016	892.09	255.10	636.99	
		06/16/2016	892.09	258.70	633.39	
		09/13/2016	892.09	0.00	892.09	Pumping
		12/08/2016	892.09	272.50	619.59	
	04N22W05M01S	03/09/2016	843.47	209.70	633.77	
		06/16/2016	843.47	0.00	843.47	Pumping
		09/07/2016	843.47	226.10	617.37	
		12/08/2016	843.47	233.80	609.67	

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

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Ojai Valley	04N22W06D01S	03/02/2016	846.66	150.50	696.16	
		06/15/2016	846.66	151.20	695.46	
		09/08/2016	846.66	156.90	689.76	
		12/08/2016	846.66	153.20	693.46	
	04N22W06D05S	03/10/2016	853.21	152.10	701.11	
		06/15/2016	853.21	139.70	713.51	
		09/13/2016	853.21	192.60	660.61	
		12/08/2016	853.21	192.40	660.81	
	04N22W06K03S	03/02/2016	801.80	288.00	513.80	
		06/13/2016	801.80	204.00	597.80	
		12/08/2016	801.80	198.00	603.80	
		01/20/2017	801.80	195.00	606.80	
	04N22W06K12S	03/02/2016	812.70	231.80	580.90	
		06/15/2016	812.70	218.90	593.80	
		09/12/2016	812.70	208.20	604.50	
		12/08/2016	812.70	226.90	585.80	
	04N22W06M01S	03/08/2016	794.78	99.20	695.58	
		06/15/2016	794.78	0.00	794.78	Tape Hung Up
		09/13/2016	794.78	0.00	794.78	Inaccessible
		12/05/2016	794.78	98.70	696.08	
	04N22W07B02S	03/01/2016	773.77	152.10	621.67	
		06/15/2016	773.77	167.70	606.07	
		09/07/2016	773.77	169.60	604.17	
		12/06/2016	773.77	170.90	602.87	
	04N22W07G01S	03/01/2016	771.20	54.70	716.50	
		06/17/2016	771.20	60.60	710.60	
		09/07/2016	771.20	61.30	709.90	
		12/05/2016	771.20	63.90	707.30	
	04N22W08B02S	03/09/2016	870.57	217.30	653.27	
		06/16/2016	870.57	234.20	636.37	
		09/12/2016	870.57	240.00	630.57	
		12/08/2016	870.57	236.90	633.67	
	04N23W01K02S	03/08/2016	786.38	65.20	721.18	
		06/15/2016	786.38	66.70	719.68	
		09/06/2016	786.38	69.10	717.28	
		12/05/2016	786.38	69.20	717.18	
	04N23W02K01S	03/09/2016	869.49	4.10	865.39	
		06/15/2016	869.49	8.30	861.19	
		09/07/2016	869.49	11.80	857.69	
		12/05/2016	869.49	0.00	869.49	D
	04N23W12H02S	03/08/2016	716.61	55.80	660.81	
		06/16/2016	716.61	56.40	660.21	
		09/06/2016	716.61	60.10	656.51	
		12/05/2016	716.61	61.80	654.81	

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

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Ojai Valley	04N23W12L02S	03/10/2016	682.50	19.40	663.10	
		06/16/2016	682.50	0.00	682.50	Inaccessible
		09/06/2016	682.50	0.00	682.50	Inaccessible
		12/05/2016	682.50	0.00	682.50	Inaccessible
	05N22W32J02S	03/08/2016	1,139.80	55.40	1,084.40	
		06/16/2016	1,139.80	58.20	1,081.60	
		09/07/2016	1,139.80	57.90	1,081.90	
		12/07/2016	1,139.80	59.90	1,079.90	
Oxnard Plain Forebay	02N21W07P04S	03/16/2016	138.78	186.90	-48.12	
		06/23/2016	138.78	0.00	138.78	Pumping
		09/15/2016	138.78	0.00	138.78	Pumping
		12/14/2016	138.78	0.00	138.78	Pumping
	02N22W11A01S	03/22/2016	133.44	98.90	34.54	
		06/07/2016	133.44	104.65	28.79	
		09/20/2016	133.44	108.35	25.09	
		12/20/2016	133.44	104.75	28.69	
	02N22W26E01S	03/28/2016	86.96	109.40	-22.44	
		06/09/2016	86.96	111.10	-24.14	
		09/30/2016	86.96	114.15	-27.19	
		12/22/2016	86.96	0.00	86.96	Temporarily Inaccessible
Oxnard Plain Pressure	01N21W04N02S	03/24/2016	43.33	144.00	-100.67	
		06/08/2016	43.33	171.05	-127.72	
		09/19/2016	43.33	181.05	-137.72	
		12/20/2016	43.33	160.40	-117.07	
	01N21W06L04S	03/24/2016	47.85	0.00	47.85	Inaccessible
		06/08/2016	47.85	0.00	47.85	Inaccessible
		09/19/2016	47.85	0.00	47.85	Inaccessible
		12/21/2016	47.85	0.00	47.85	Inaccessible
	01N21W07H01S*	03/24/2016	40.87	57.57	-16.70	
		06/08/2016	40.87	62.42	-21.55	
		09/19/2016	40.87	63.17	-22.30	
		12/20/2016	40.87	58.83	-17.96	
	01N21W08N03S	09/19/2016	31.50	165.17	-133.67	
		12/20/2016	31.50	138.50	-107.00	
	01N21W09C04S	03/24/2016	39.96	132.34	-92.38	
		06/08/2016	39.96	160.64	-120.68	
		09/19/2016	39.96	172.85	-132.89	
		12/20/2016	39.96	148.10	-108.14	
	01N21W16M01S	03/23/2016	22.79	126.60	-103.81	
		06/07/2016	22.79	152.27	-129.48	
		09/19/2016	22.79	168.68	-145.89	
		12/20/2016	22.79	136.42	-113.63	
	01N21W16P03S	03/23/2016	19.39	124.70	-105.31	
		06/07/2016	19.39	155.70	-136.31	
		09/19/2016	19.39	164.14	-144.75	
		12/20/2016	19.39	131.80	-112.41	

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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	01N21W17D02S	03/24/2016	28.21	45.50	-17.29	
		06/10/2016	28.21	47.42	-19.21	
		09/19/2016	28.21	50.82	-22.61	
		12/20/2016	28.21	47.67	-19.46	
	01N21W20N07S	03/23/2016	16.98	0.00	16.98	Inaccessible
		06/09/2016	16.98	0.00	16.98	Inaccessible
		09/19/2016	16.98	0.00	16.98	Inaccessible
		12/21/2016	16.98	0.00	16.98	Inaccessible
	01N21W21N01S	03/23/2016	15.74	82.60	-66.86	
		06/08/2016	15.74	101.20	-85.46	
		09/19/2016	15.74	115.15	-99.41	
		12/21/2016	15.74	97.45	-81.71	
	01N21W28D01S	04/04/2016	14.75	111.07	-96.32	
		06/13/2016	14.75	126.51	-111.76	
		09/19/2016	14.75	0.00	14.75	Pumping
		12/21/2016	14.75	112.50	-97.75	
	01N21W29B03S	03/30/2016	18.19	39.23	-21.04	
		06/08/2016	18.19	37.17	-18.98	
		09/19/2016	18.19	40.50	-22.31	
		12/21/2016	18.19	36.67	-18.48	
	01N21W32K01S*	03/14/2016	10.00	89.00	-79.00	
		06/13/2016	10.00	108.90	-98.90	
		09/12/2016	10.00	119.70	-109.70	
		12/12/2016	10.00	106.60	-96.60	
	01N22W12N03S	03/30/2016	38.46	121.00	-82.54	
		06/10/2016	38.46	0.00	38.46	Pumping
		09/20/2016	38.46	138.40	-99.94	
		12/21/2016	38.46	0.00	38.46	Pumping
	01N22W12R01S	03/30/2016	34.00	103.17	-69.17	
		06/10/2016	34.00	115.20	-81.20	
		09/20/2016	34.00	118.40	-84.40	
		12/21/2016	34.00	104.57	-70.57	
	01N22W14K01S	03/23/2016	33.97	52.95	-18.98	
		06/08/2016	33.97	55.00	-21.03	
		09/20/2016	33.97	58.40	-24.43	
		12/21/2016	33.97	57.20	-23.23	
	01N22W21B03S	03/23/2016	15.28	49.47	-34.19	
		06/08/2016	15.28	53.80	-38.52	
		09/20/2016	15.28	58.84	-43.56	
		12/21/2016	15.28	56.20	-40.92	
	01N22W24C02S	03/23/2016	29.10	29.88	-0.78	
		06/08/2016	29.10	41.10	-12.00	
		09/20/2016	29.10	50.00	-20.90	
		12/21/2016	29.10	39.15	-10.05	
	01N22W26K03S	03/23/2016	13.06	0.00	13.06	Pumping
		06/08/2016	13.06	0.00	13.06	Pumping
		09/20/2016	13.06	110.50	-97.44	
		12/21/2016	13.06	86.70	-73.64	

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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	03/23/2016	13.00	0.00	13.00	Pumping
		06/08/2016	13.00	0.00	13.00	Pumping
		09/20/2016	13.00	0.00	13.00	Pumping
		12/21/2016	13.00	0.00	13.00	Pumping
	01N22W36B02S	03/23/2016	11.50	0.00	11.50	Pumping
		06/08/2016	11.50	0.00	11.50	Pumping
		09/20/2016	11.50	0.00	11.50	Pumping
		12/21/2016	11.50	0.00	11.50	Pumping
	02N21W18H03S	04/04/2016	118.41	125.20	-6.79	
		06/13/2016	118.41	132.30	-13.89	
		09/26/2016	118.41	136.00	-17.59	
		12/20/2016	118.41	123.50	-5.09	
	02N21W18H12S	04/04/2016	117.88	164.40	-46.52	
		06/13/2016	117.88	176.90	-59.02	
		09/26/2016	117.88	185.30	-67.42	
		12/20/2016	117.88	173.70	-55.82	
	02N21W19A03S	03/03/2016	102.70	145.80	-43.10	
		06/21/2016	102.70	154.30	-51.60	
		09/08/2016	102.70	152.80	-50.10	
		12/14/2016	102.70	145.70	-43.00	
	02N21W19B02S	03/28/2016	101.80	116.17	-14.37	
		06/07/2016	101.80	122.45	-20.65	
		09/20/2016	101.80	124.30	-22.50	
		12/20/2016	101.80	121.70	-19.90	
	02N21W20F02S	03/03/2016	113.36	179.70	-66.34	
		06/21/2016	113.36	185.70	-72.34	
		09/08/2016	113.36	189.80	-76.44	
		12/14/2016	113.36	185.80	-72.44	
	02N21W20M06S	03/28/2016	92.09	0.00	92.09	Pumping
		06/07/2016	92.09	0.00	92.09	Pumping
		09/20/2016	92.09	0.00	92.09	Pumping
		12/20/2016	92.09	0.00	92.09	Pumping
	02N21W31P02S	03/24/2016	57.75	79.07	-21.32	
		06/08/2016	57.75	78.33	-20.58	
		09/19/2016	57.75	80.30	-22.55	
		12/20/2016	57.75	80.30	-22.55	
	02N21W31P03S	03/24/2016	55.17	147.49	-92.32	
		06/08/2016	55.17	167.80	-112.63	
		09/19/2016	55.17	172.25	-117.08	
		12/20/2016	55.17	159.25	-104.08	
	02N22W24P01S	03/28/2016	94.30	0.00	94.30	Pumping
		06/07/2016	94.30	0.00	94.30	Pumping
		09/20/2016	94.30	0.00	94.30	Pumping
		12/20/2016	94.30	0.00	94.30	Pumping
	02N22W30K01S	03/23/2016	42.38	68.05	-25.67	
		06/08/2016	42.38	69.15	-26.77	
		09/20/2016	42.38	74.00	-31.62	
		12/21/2016	42.38	72.00	-29.62	

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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	03/23/2016	42.30	65.55	-23.25	
		06/08/2016	42.30	0.00	42.30	Inaccessible
		09/20/2016	42.30	70.34	-28.04	
		12/21/2016	42.30	68.45	-26.15	
	02N22W32Q03S	03/23/2016	40.10	65.45	-25.35	
		06/08/2016	40.10	66.76	-26.66	
		09/20/2016	40.10	68.66	-28.56	
		12/21/2016	40.10	69.75	-29.65	
	02N23W25G02S	03/23/2016	23.22	47.05	-23.83	
		06/08/2016	23.22	0.00	23.22	Inaccessible
		09/20/2016	23.22	0.00	23.22	Tape Hung Up
		12/21/2016	23.22	0.00	23.22	Tape Hung Up
	02N23W36C04S	03/23/2016	27.73	50.75	-23.02	
		06/08/2016	27.73	53.33	-25.60	
		09/20/2016	27.73	56.20	-28.47	
		12/21/2016	27.73	55.05	-27.32	
Piru	04N18W19R01S	03/21/2016	655.63	165.10	490.53	
		06/06/2016	655.63	166.70	488.93	
		09/21/2016	655.63	175.80	479.83	
		12/19/2016	655.63	178.60	477.03	
	04N18W20R01S	03/21/2016	661.29	0.00	661.29	Pumping
		06/06/2016	661.29	0.00	661.29	Pumping
		09/21/2016	661.29	165.60	495.69	
		12/19/2016	661.29	172.60	488.69	
	04N18W28C02S	03/21/2016	676.44	177.75	498.69	
		06/06/2016	676.44	0.00	676.44	Pumping
		09/21/2016	676.44	189.00	487.44	
		12/19/2016	676.44	189.20	487.24	
	04N18W30J05S	09/21/2016	623.30	134.55	488.75	
		12/19/2016	623.30	137.82	485.48	
	04N19W25C02S*	03/21/2016	611.09	127.25	483.84	
		06/06/2016	611.09	131.55	479.54	
		09/21/2016	611.09	143.05	468.04	
		12/19/2016	611.09	141.60	469.49	
	04N19W25K04S	03/21/2016	593.97	43.05	550.92	
		06/06/2016	593.97	0.00	593.97	Pumping
		09/21/2016	593.97	0.00	593.97	Pumping
		12/19/2016	593.97	44.82	549.15	
	04N19W26P01S	03/21/2016	563.00	82.85	480.15	
		06/06/2016	563.00	0.00	563.00	Pumping
		09/21/2016	563.00	0.00	563.00	Pumping
		12/19/2016	563.00	96.75	466.25	
	04N19W34K01S	03/21/2016	519.51	50.25	469.26	
		06/06/2016	519.51	53.60	465.91	
		09/21/2016	519.51	0.00	519.51	Pumping
		12/19/2016	519.51	62.73	456.78	
	04N19W35L02S	03/21/2016	541.08	64.35	476.73	
		06/06/2016	541.08	71.75	469.33	
		09/21/2016	541.08	79.80	461.28	
		12/19/2016	541.08	76.92	464.16	

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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	01N21W02J02S	03/24/2016	89.51	98.15	-8.64	
		06/07/2016	89.51	107.56	-18.05	
		09/19/2016	89.51	119.53	-30.02	
		12/21/2016	89.51	116.20	-26.69	
	01N21W02P01S	03/24/2016	67.98	131.20	-63.22	
		06/07/2016	67.98	154.91	-86.93	
		09/19/2016	67.98	166.50	-98.52	
		12/21/2016	67.98	148.08	-80.10	
	01N21W03C01S*	03/23/2016	72.28	156.50	-84.22	
		06/07/2016	72.28	181.45	-109.17	
		09/19/2016	72.28	195.20	-122.92	
		12/21/2016	72.28	185.00	-112.72	
	01N21W04K01S	03/24/2016	47.52	134.50	-86.98	
		06/13/2016	47.52	155.17	-107.65	
		09/19/2016	47.52	0.00	47.52	Pumping
		12/21/2016	47.52	157.40	-109.88	
	01N21W09J03S	03/24/2016	30.56	138.24	-107.68	
		06/10/2016	30.56	159.00	-128.44	
		09/27/2016	30.56	184.40	-153.84	
		12/21/2016	30.56	133.60	-103.04	
	01N21W10G01S	04/04/2016	38.72	154.50	-115.78	
		06/13/2016	38.72	168.52	-129.80	
		09/21/2016	38.72	165.00	-126.28	
		12/21/2016	38.72	146.76	-108.04	
	01N21W14A01S	03/24/2016	50.11	23.48	26.63	
		06/07/2016	50.11	27.25	22.86	
		09/19/2016	50.11	27.00	23.11	
		12/21/2016	50.11	27.05	23.06	
	01N21W15H01S	03/24/2016	33.17	17.50	15.67	
		06/07/2016	33.17	20.42	12.75	
		09/19/2016	33.17	22.70	10.47	
		12/21/2016	33.17	20.54	12.63	
	01N21W16A04S	03/24/2016	25.69	121.57	-95.88	
		06/07/2016	25.69	149.10	-123.41	
		09/19/2016	25.69	168.00	-142.31	
		12/21/2016	25.69	128.30	-102.61	
	02N20W19M05S	03/28/2016	200.47	184.27	16.20	
		06/09/2016	200.47	184.50	15.97	
		09/19/2016	200.47	181.00	19.47	
		12/22/2016	200.47	183.60	16.87	
	02N20W28G02S	03/30/2016	170.60	0.00	170.60	Inaccessible
		06/09/2016	170.60	0.00	170.60	Inaccessible
		09/20/2016	170.60	0.00	170.60	Inaccessible
		12/21/2016	170.60	0.00	170.60	Inaccessible

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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	02N21W33P02S	03/23/2016	64.63	118.00	-53.37	
		06/07/2016	64.63	130.15	-65.52	
		09/19/2016	64.63	141.14	-76.51	
		12/20/2016	64.63	127.85	-63.22	
	02N21W35M02S	03/24/2016	90.60	178.18	-87.58	
		06/07/2016	90.60	200.40	-109.80	
		09/19/2016	90.60	213.54	-122.94	
		12/21/2016	90.60	193.75	-103.15	
	02N21W36N01S	03/24/2016	111.18	103.63	7.55	
		06/07/2016	111.18	112.65	-1.47	
		09/19/2016	111.18	124.17	-12.99	
		12/21/2016	111.18	117.00	-5.82	
Santa Paula	02N22W02C01S*	03/22/2016	184.38	50.00	134.38	
		06/07/2016	184.38	54.83	129.55	
		09/22/2016	184.38	59.33	125.05	
		12/20/2016	184.38	57.82	126.56	
	02N22W03K02S	03/22/2016	248.75	140.00	108.75	
		06/07/2016	248.75	140.75	108.00	
		09/22/2016	248.75	144.45	104.30	
		12/20/2016	248.75	145.57	103.18	
	02N22W03M02S	03/22/2016	291.50	213.40	78.10	
		06/07/2016	291.50	213.57	77.93	
		09/22/2016	291.50	217.35	74.15	
		12/20/2016	291.50	219.16	72.34	
	03N21W09K02S	03/22/2016	362.18	178.95	183.23	
		06/07/2016	362.18	186.60	175.58	
		09/27/2016	362.18	194.23	167.95	
		12/20/2016	362.18	190.00	172.18	
	03N21W17Q01S	03/22/2016	283.35	113.10	170.25	
		06/07/2016	283.35	0.00	283.35	Pumping
		09/22/2016	283.35	0.00	283.35	Pumping
		12/20/2016	283.35	119.15	164.20	
	03N21W19R01S	03/21/2016	235.39	70.20	165.19	
		06/07/2016	235.39	86.50	148.89	
		09/22/2016	235.39	89.30	146.09	
		12/20/2016	235.39	82.00	153.39	
	03N21W30F01S	03/22/2016	221.21	0.00	221.21	Pumping
		06/07/2016	221.21	0.00	221.21	Pumping
		09/22/2016	221.21	86.90	134.31	
		12/20/2016	221.21	0.00	221.21	Pumping
	03N22W34R01S	03/22/2016	266.61	135.75	130.86	
		06/07/2016	266.61	141.17	125.44	
		09/22/2016	266.61	0.00	266.61	Destroyed
	03N22W36K05S	03/22/2016	180.89	45.83	135.06	
		06/07/2016	180.89	50.90	129.99	
		09/20/2016	180.89	54.55	126.34	
		12/20/2016	180.89	53.20	127.69	

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

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Sherwood	01N19W19L02S	03/15/2016	1,082.00	0.00	1,082.00	Tape Hung Up
		06/28/2016	1,082.00	348.30	733.70	
		09/21/2016	1,082.00	0.00	1,082.00	Tape Hung Up
		12/13/2016	1,082.00	0.00	1,082.00	Inaccessible
	01N19W30A01S	03/15/2016	999.98	57.50	942.48	
		06/28/2016	999.98	58.60	941.38	
		09/21/2016	999.98	61.60	938.38	
		12/13/2016	999.98	59.20	940.78	
Simi Valley	02N18W04R02S	03/29/2016	870.00	45.83	824.17	
		06/09/2016	870.00	52.00	818.00	
		09/22/2016	870.00	53.05	816.95	
		12/22/2016	870.00	52.70	817.30	
	02N18W10A02S	03/01/2016	926.40	76.90	849.50	
		06/01/2016	926.40	88.40	838.00	
		09/30/2016	926.40	88.90	837.50	
		12/23/2016	926.40	84.40	842.00	
Thousand Oaks	01N19W14K04S	03/15/2016	908.79	25.20	883.59	
		06/28/2016	908.79	26.00	882.79	
		09/21/2016	908.79	26.90	881.89	
		12/13/2016	908.79	27.10	881.69	
Tierra Rejada Valley	02N19W10R01S	03/29/2016	619.29	128.50	490.79	
		06/09/2016	619.29	132.15	487.14	
		10/10/2016	619.29	138.35	480.94	
		12/22/2016	619.29	137.25	482.04	
	02N19W12M03S	03/29/2016	718.95	94.24	624.71	
		06/09/2016	718.95	96.35	622.60	
		09/22/2016	718.95	96.00	622.95	
		12/22/2016	718.95	96.73	622.22	
	02N19W14P01S	03/29/2016	678.12	33.67	644.45	
		06/09/2016	678.12	34.17	643.95	
		09/22/2016	678.12	0.00	678.12	Pumping
		12/22/2016	678.12	39.20	638.92	
U N D E F I N E D	01N19W02L01S	03/15/2016	945.42	51.20	894.22	
		06/28/2016	945.42	52.90	892.52	
		09/21/2016	945.42	52.10	893.32	
		12/13/2016	945.42	52.60	892.82	
	01N19W15E01S	03/15/2016	903.53	27.30	876.23	
		06/28/2016	903.53	28.50	875.03	
		09/21/2016	903.53	30.80	872.73	
		12/13/2016	903.53	30.20	873.33	
	01N20W24H02S	03/15/2016	1,126.54	0.00	1,126.54	Tape Hung Up
		06/28/2016	1,126.54	0.00	1,126.54	Tape Hung Up
		09/21/2016	1,126.54	0.00	1,126.54	Tape Hung Up
		12/13/2016	1,126.54	0.00	1,126.54	Inaccessible
	02N20W18A01S	06/23/2016	375.60	513.90	-138.30	
		09/15/2016	375.60	513.20	-137.60	
		12/14/2016	375.60	508.20	-132.60	
	02N21W13A01S	03/07/2016	440.00	531.50	-91.50	
		06/22/2016	440.00	538.40	-98.40	
		09/15/2016	440.00	545.30	-105.30	
		12/14/2016	440.00	489.90	-49.90	
	04N22W21F01S	06/30/2016	2,570.00	174.50	2,395.50	
	04N22W22K01S	06/30/2016	2,400.00	0.00	2,400.00	Pumping

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

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Upper Ojai	04N22W09Q02S	03/10/2016	1,278.80	31.90	1,246.90	
		06/17/2016	1,278.80	29.70	1,249.10	
		09/01/2016	1,278.80	30.60	1,248.20	
		12/06/2016	1,278.80	30.90	1,247.90	
	04N22W10K02S	03/10/2016	1,325.90	30.50	1,295.40	
		06/17/2016	1,325.90	39.70	1,286.20	
		09/01/2016	1,325.90	40.70	1,285.20	
		12/06/2016	1,325.90	40.80	1,285.10	
	04N22W11P02S	03/10/2016	1,420.60	20.30	1,400.30	
		06/17/2016	1,420.60	26.30	1,394.30	
		09/06/2016	1,420.60	35.40	1,385.20	
		12/06/2016	1,420.60	18.10	1,402.50	
	04N22W12F04S	03/10/2016	1,616.90	178.30	1,438.60	
		06/17/2016	1,616.90	165.80	1,451.10	
		09/07/2016	1,616.90	210.80	1,406.10	
		12/06/2016	1,616.90	175.40	1,441.50	
Ventura River - Lower	03N23W08B07S	03/01/2016	239.19	19.80	219.39	
		06/14/2016	239.19	16.10	223.09	
		09/01/2016	239.19	20.10	219.09	
		12/05/2016	239.19	22.80	216.39	
	03N23W32Q03S	03/08/2016	50.86	31.70	19.16	
		06/17/2016	50.86	0.00	50.86	Pumping
		09/09/2016	50.86	41.10	9.76	
		12/06/2016	50.86	0.00	50.86	Pumping
	03N23W32Q07S	03/08/2016	46.10	26.60	19.50	
		06/17/2016	46.10	0.00	46.10	Pumping
		09/09/2016	46.10	36.70	9.40	
		12/06/2016	46.10	0.00	46.10	Pumping
Ventura River - Upper	03N23W05B01S	03/01/2016	293.20	36.90	256.30	
		06/14/2016	293.20	35.00	258.20	
		09/01/2016	293.20	39.90	253.30	
		12/05/2016	293.20	47.90	245.30	
	03N23W08B02S	03/01/2016	249.30	0.00	249.30	Inaccessible
		06/14/2016	249.30	0.00	249.30	Inaccessible
		09/01/2016	249.30	0.00	249.30	Inaccessible
	04N23W03M01S	03/02/2016	760.85	102.80	658.05	
		06/14/2016	760.85	102.00	658.85	
		09/13/2016	760.85	104.60	656.25	
		12/06/2016	760.85	106.00	654.85	
	04N23W04J01S	03/02/2016	713.04	67.00	646.04	
		06/16/2016	713.04	68.30	644.74	
		09/06/2016	713.04	75.80	637.24	
		12/06/2016	713.04	78.80	634.24	

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

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Ventura River - Upper	04N23W09B01S	03/02/2016	662.30	50.00	612.30	
		06/14/2016	662.30	61.90	600.40	
		09/13/2016	662.30	69.20	593.10	
		12/06/2016	662.30	67.90	594.40	
	04N23W14M04S	03/08/2016	554.50	0.00	554.50	
		06/16/2016	554.50	0.00	554.50	
		09/06/2016	554.50	0.00	554.50	
		12/06/2016	554.50	0.00	554.50	F
	04N23W15A02S	03/09/2016	680.90	92.20	588.70	
		06/15/2016	680.90	93.50	587.40	
		09/06/2016	680.90	95.20	585.70	
		12/05/2016	680.90	95.30	585.60	
	04N23W15D02S	03/10/2016	634.30	160.40	473.90	
		06/14/2016	634.30	175.40	458.90	
		09/01/2016	634.30	189.10	445.20	
		12/05/2016	634.30	165.80	468.50	
	04N23W16C04S	03/01/2016	569.10	93.90	475.20	
		06/14/2016	569.10	78.60	490.50	
		09/01/2016	569.10	90.00	479.10	
		12/05/2016	569.10	101.90	467.20	
	04N23W16P01S	03/01/2016	619.89	73.60	546.29	
		06/14/2016	619.89	73.70	546.19	
		09/01/2016	619.89	75.40	544.49	
		12/05/2016	619.89	75.00	544.89	
	04N23W20A01S	03/01/2016	488.89	30.50	458.39	
		06/14/2016	488.89	29.10	459.79	
		09/01/2016	488.89	31.90	456.99	
		12/05/2016	488.89	39.50	449.39	
	04N23W28G01S	03/08/2016	402.37	18.70	383.67	
		06/16/2016	402.37	27.00	375.37	
		09/06/2016	402.37	0.00	402.37	
		12/06/2016	402.37	0.00	402.37	D
	04N23W29F02S	03/01/2016	396.58	48.60	347.98	
		06/14/2016	396.58	41.50	355.08	
		09/01/2016	396.58	54.80	341.78	
		12/05/2016	396.58	47.20	349.38	

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** - feet msl
*** - feet bgs

Appendix C – Groundwater Level Measurement Data

Basin	SWN	Date	RP Elev.**	Depth***	WL Elev.**	Notes
Ventura River - Upper	04N23W33M03S	03/01/2016	331.80	14.00	317.80	
		06/14/2016	331.80	19.70	312.10	
		09/01/2016	331.80	23.50	308.30	
		12/05/2016	331.80	24.10	307.70	
	04N24W13J04S	03/01/2016	626.45	11.20	615.25	
		06/14/2016	626.45	10.60	615.85	
		09/13/2016	626.45	15.80	610.65	
		12/05/2016	626.45	16.00	610.45	
	04N24W13N01S	03/09/2016	642.12	10.10	632.02	
		06/14/2016	642.12	9.40	632.72	
		09/13/2016	642.12	12.00	630.12	
		12/05/2016	642.12	12.70	629.42	
	05N23W33B03S	03/02/2016	829.00	23.30	805.70	
		06/16/2016	829.00	31.40	797.60	
		09/06/2016	829.00	37.20	791.80	
		12/06/2016	829.00	28.70	800.30	
	05N23W33G01S	03/02/2016	816.21	21.50	794.71	
		06/16/2016	816.21	0.00	816.21	Pumping
		09/06/2016	816.21	0.00	816.21	Pumping
		12/06/2016	816.21	0.00	816.21	Pumping

* - Denotes basin key 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	10/18/2016	0.2	340	66	ND	106	ND	1140	0.5	40	1	65	ND	69.8	64	113	825	ND	7
Arroyo Santa Rosa	02N19W20L01S	09/22/2016	0.2	390	91	ND	130	ND	1420	0.2	50	ND	85	ND	84.4	75	163	1020	ND	5
Arroyo Santa Rosa	02N20W23G03S	09/22/2016	0.1	310	67	ND	166	ND	1240	0.2	50	1	71	ND	79.7	77	83.5	855	ND	7
Arroyo Santa Rosa	02N20W25C02S	10/18/2016	0.3	320	78	ND	152	ND	1390	0.2	ND	1	71	ND	61.5	93	176	953	ND	7
Arroyo Santa Rosa	02N20W25C06S	10/18/2016	0.3	250	64	ND	155	ND	1240	0.3	ND	1	52	ND	24.7	103	173	823	ND	7
Conejo Valley	01N20W03J01S	09/20/2016	0.1	310	48	ND	68	ND	867	0.3	180	ND	51	ND	0.5	49	113	640	60	7
Cuyama Valley	07N23W15P01S	11/17/2016	0.2	200	265	ND	8	ND	2230	1	900	4	122	ND	3.9	98	1230	1930	ND	7
Cuyama Valley	08N24W17G02S	11/17/2016	0.5	270	17	ND	114	ND	1220	0.4	510	2	2	30	ND	255	191	851	230	8
Cuyama Valley	09N23W30E05S	11/17/2016	0.6	360	79	ND	203	ND	1570	0.9	70	3	14	ND	5.1	245	183	1090	ND	7
Cuyama Valley	09N24W33J03S	11/17/2016	0.5	310	79	ND	117	ND	1370	0.5	80	3	13	ND	12.8	213	221	969	ND	7
Fillmore	03N19W06D02S	09/21/2016	0.6	270	131	ND	64	ND	1420	0.7	50	5	54	ND	10.9	98	451	1080	ND	7
Fillmore	03N20W01D03S	08/09/2016	0.6	240	139	ND	62	ND	1460	0.8	100	5	54	ND	16.4	95	480	1090	40	7
Fillmore	03N20W01F05S	08/09/2016	0.6	250	133	ND	61	20	1360	0.8	30	5	50	10	11.4	95	434	1040	60	8
Fillmore	03N20W02R05S	11/29/2016	1.4	420	308	ND	228	ND	3010	0.6	ND	9	92	20	45.1	262	1100	2460	ND	7
Fillmore	03N21W01P08S	11/29/2016	0.3	340	172	ND	55	ND	1450	0.4	ND	3	73	550	54.2	78	401	1150	20	7
Fillmore	04N19W30D01S	09/21/2016	0.6	490	281	ND	68	ND	2310	0.6	80	4	110	750	24.1	115	931	2020	ND	7
Fillmore	04N19W31F01S	08/09/2016	0.7	270	137	ND	74	ND	1450	0.8	30	5	55	ND	7.8	100	467	1120	110	7
Fillmore	04N19W31R01S	09/21/2016	0.6	240	129	ND	58	ND	1380	0.7	50	5	50	50	6.9	91	462	1040	20	7
Fillmore	04N19W32M02S	09/21/2016	0.6	240	129	ND	58	ND	1380	0.7	60	5	50	50	6.9	92	453	1030	ND	4
Fillmore	04N20W31P01S	11/29/2016	0.1	400	167	ND	46	ND	1420	0.4	ND	2	51	ND	76.6	61	331	1140	ND	7
Fillmore	04N20W32R03S	10/21/2016	0.4	290	159	ND	51	ND	1430	0.3	ND	3	35	20	33.9	94	450	1120	ND	7
Fillmore	04N20W34H01S	11/29/2016	0.7	300	167	ND	53	ND	1490	0.5	60	4	45	20	43.9	88	467	1170	1300	7
Fillmore	04N20W36D06S	11/29/2016	0.7	290	152	ND	69	ND	1520	0.7	70	4	56	ND	11.1	94	513	1190	30	7
Fillmore	04N20W36P04S	10/21/2016	0.6	290	132	ND	56	10	1460	0.4	140	5	51	ND	10.3	100	442	1090	2130	7
Las Posas - East	02N20W09Q07S	10/05/2016	0.7	250	190	ND	210	ND	2220	0.5	ND	5	64	220	28	195	737	1680	ND	5
Las Posas - East	02N20W16B06S	10/11/2016	0.7	260	135	ND	188	ND	1970	0.4	80	6	59	50	1.8	194	587	1430	ND	7
Las Posas - East	03N19W29K06S	10/05/2016	ND	80	44	ND	44	ND	486	0.3	ND	1	7	80	77.4	28	24.1	306	ND	7
Las Posas - East	03N19W29K08S	10/05/2016	0.1	210	74	ND	30	ND	715	0.4	50	3	17	ND	15.9	40	138	528	30	5
Las Posas - East	03N20W26H01S	10/05/2016	ND	190	57	ND	31	ND	592	0.4	30	3	14	ND	5.5	32	87.5	420	ND	5
Las Posas - East	03N20W28J04S	10/05/2016	0.2	270	65	ND	50	ND	896	0.6	50	2	29	ND	60.4	65	119	661	30	6
Las Posas - East	03N20W34G01S	10/05/2016	ND	210	66	ND	11	ND	618	0.3	570	3	16	140	0.5	30	130	467	ND	7
Las Posas - East	03N20W36P01S	10/11/2016	ND	150	49	ND	20	ND	489	0.3	ND	2	10	ND	19.3	28	47.3	326	50	7
Las Posas - South	02N19W07B02S	09/15/2016	0.9	260	106	ND	164	ND	1840	0.8	50	4	50	10	5.7	229	494	1310	ND	7
Las Posas - South	02N19W07D02S	10/05/2016	0.7	280	140	ND	149	ND	1740	0.4	ND	3	37	ND	21.4	169	400	1200	ND	5
Las Posas - South	02N20W01L01S	10/11/2016	0.7	240	150	ND	161	ND	1940	0.4	1780	6	48	70	26.2	186	572	1390	1740	7
Las Posas - South	02N20W01Q01S	10/11/2016	0.8	300	146	ND	147	ND	1750	0.5	70	3	41	ND	34.9	158	430	1260	ND	7
Las Posas - South	02N20W01Q02S	10/11/2016	0.9	270	130	ND	168	ND	1960	0.7	50	4	47	ND	16.4	221	575	1430	ND	7
Las Posas - West	02N20W06J01S	10/05/2016	0.1	290	84	ND	18	ND	935	0.4	160	5	31	110	0.4	58	241	728	ND	7
Las Posas - West	02N21W01L01S	10/05/2016	0.2	250	175	ND	145	ND	1850	0.5	ND	3	63	ND	252	98	392	1380	ND	5
Las Posas - West	02N21W08H03S	09/26/2016	0.3	300	79	ND	72	ND	1150	0.3	40	3	32	40	11.2	121	230	848	ND	7

Table D-1 General Minerals (continued)

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	02N21W09D02S	09/26/2016	0.3	280	92	ND	77	ND	1070	0.4	110	3	28	50	33.1	85	138	736	ND	7
Las Posas - West	02N21W11A02S	10/05/2016	0.2	240	185	ND	135	ND	1860	0.3	ND	3	65	ND	225	98	478	1430	ND	4
Las Posas - West	02N21W11A03S	10/05/2016	0.2	300	68	ND	34	ND	915	0.3	150	5	28	50	1.8	72	158	667	20	5
Las Posas - West	02N21W12H01S	10/05/2016	0.2	230	95	ND	59	ND	1060	0.3	180	4	30	70	1.6	68	266	754	100	5
Las Posas - West	02N21W15M04S	09/09/2016	0.4	280	115	ND	69	ND	1360	0.3	40	6	40	70	9.9	149	367	1040	ND	7
Las Posas - West	02N21W17F05S	09/07/2016	0.6	320	106	ND	67	ND	1540	0.3	240	6	40	60	1.1	172	470	1180	ND	8
Las Posas - West	03N20W32H03S	10/05/2016	0.2	400	196	ND	31	20	1690	0.3	1890	6	63	660	ND	88	626	1410	120	5
Las Posas - West	03N21W35P02S	10/05/2016	0.2	250	76	ND	70	10	1100	0.5	170	4	35	ND	65.1	84	156	741	20	5
Las Posas - West	03N21W36Q01S	10/05/2016	0.2	290	75	ND	62	ND	1040	0.5	30	3	36	ND	81.2	74	122	744	40	5
Little Cuddy Valley	08N20W04N02S	11/17/2016	0.1	310	65	ND	15	20	559	0.3	50	2	9	ND	1.3	43	14.6	460	ND	7
Lockwood Valley	08N21W23Q10S	11/17/2016	11.3	390	1	10	8	ND	1100	2	ND	ND	ND	ND	2.8	271	154	839	ND	9
Lockwood Valley	08N21W29N02S	11/17/2016	2.4	290	135	ND	8	ND	1290	0.8	2000	3	58	20	3.6	66	486	1050	300	7
Lockwood Valley	08N21W29Q05S	11/17/2016	7.5	230	47	ND	12	ND	2490	1.4	60	3	11	ND	3.7	568	1030	1910	30	8
Lockwood Valley	08N21W29R07S	12/07/2016	11.7	360	43	ND	12	ND	1160	1.1	70	2	9	ND	1.4	192	286	906	180	8
Lockwood Valley	08N21W29R09S	11/17/2016	0.8	220	55	ND	6	ND	813	1	60	2	9	ND	3.9	109	214	620	280	8
Lockwood Valley	08N21W30R03S	11/17/2016	1.1	260	41	ND	9	ND	1280	0.5	50	2	6	ND	12.7	250	370	951	250	7
Lockwood Valley	08N21W33R03S	11/17/2016	0.8	250	95	ND	21	ND	814	0.5	70	1	22	ND	11.5	42	172	615	20	7
Mound	02N22W09K01S	09/22/2016	0.6	290	164	ND	75	ND	1850	0.3	50	6	59	370	8.5	203	722	1530	ND	7
Mound	02N22W09K05S	09/22/2016	0.5	230	146	ND	76	ND	1560	0.2	280	4	28	30	2.9	174	573	1230	110	7
Mound	02N22W10N02S	10/06/2016	0.5	230	126	ND	48	ND	1370	0.6	ND	4	42	ND	10.8	107	470	1040	ND	5
Mound	02N23W13F02S	11/15/2016	0.6	380	700	ND	68	40	2760	0.3	440	6	41	350	ND	160	1510	2870	820	7
Mound	02N23W13K03S	11/15/2016	0.7	360	174	ND	86	ND	1880	0.5	50	6	54	140	9.1	188	628	1510	ND	7
North Coast	04N25W25N04S	10/20/2016	0.3	420	136	ND	119	ND	1500	0.3	30	2	60	30	13.3	107	302	1160	20	7
North Coast	04N25W25N06S	10/20/2016	0.4	420	141	ND	100	10	1570	0.4	60	2	65	ND	10.1	120	355	1210	200	7
Ojai Valley	04N22W04P05S	12/07/2016	ND	240	111	ND	28	ND	978	0.4	60	ND	30	ND	45.4	37	203	695	ND	6
Ojai Valley	04N22W04Q01S	11/16/2016	ND	230	105	ND	23	80	886	0.5	40	ND	29	ND	46.6	34	196	664	40	7
Ojai Valley	04N22W06E06S	11/16/2016	ND	310	111	ND	67	ND	959	0.3	ND	1	29	ND	30	44	124	716	130	7
Ojai Valley	04N22W06J09S	12/07/2016	ND	270	109	ND	23	ND	905	0.3	ND	1	24	ND	12.9	31	197	668	ND	7
Ojai Valley	04N22W06K10S	11/16/2016	0.2	280	119	ND	86	ND	1130	0.3	ND	1	27	ND	22.9	73	206	815	ND	7
Ojai Valley	04N22W07B02S	12/06/2016	ND	280	103	ND	20	10	894	0.4	ND	1	19	10	23.5	44	189	680	50	7
Ojai Valley	04N22W07C05S	11/16/2016	0.2	290	109	ND	65	ND	1040	0.4	1100	1	23	420	2	76	214	780	70	7
Ojai Valley	04N23W01J03S	11/16/2016	0.1	280	67	ND	24	ND	899	0.6	50	ND	15	110	0.6	115	182	684	ND	7
Ojai Valley	04N23W01K02S	11/16/2016	ND	330	103	ND	34	ND	974	0.6	160	ND	24	10	1	71	190	754	ND	7
Ojai Valley	04N23W12B03S	11/16/2016	ND	300	172	ND	371	ND	1910	0.4	50	2	37	1220	0.4	156	140	1180	ND	7
Ojai Valley	04N23W12H02S	12/06/2016	ND	280	121	ND	20	ND	948	0.3	ND	1	25	ND	32.5	32	188	700	20	7
Ojai Valley	05N22W33J01S	11/16/2016	ND	290	145	ND	40	ND	1180	0.9	400	2	37	110	0.4	52	332	899	ND	7
Oxnard Plain Forebay	02N21W07P04S	09/14/2016	0.5	270	135	ND	55	ND	1520	0.5	550	6	50	120	ND	113	471	1100	ND	7
Oxnard Plain Forebay	02N22W23D06S	10/06/2016	0.6	250	147	ND	60	ND	1420	0.7	50	4	50	ND	46.5	90	486	1130	ND	7
Oxnard Plain Forebay	02N22W23H03S	09/07/2016	1	330	339	ND	89	ND	2780	0.5	30	7	117	ND	159	151	1190	2380	70	8
Oxnard Plain Pressure	01N21W04D04S	09/26/2016	0.5	370	63	ND	141	ND	1340	0.2	80	9	25	30	ND	191	196	995	ND	7
Oxnard Plain Pressure	01N21W08R01S	09/08/2016	0.4	280	73	ND	67	ND	1080	0.4	80	6	32	10	ND	117	262	837	ND	8

Table D-1 General Minerals (continued)

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	01N21W16M03S	09/08/2016	0.5	320	61	ND	139	ND	1400	0.3	50	6	25	20	ND	187	285	1020	ND	8
Oxnard Plain Pressure	01N21W17B02S	09/27/2016	0.4	260	88	ND	40	10	1170	0.2	2350	8	34	110	ND	115	319	864	80	7
Oxnard Plain Pressure	01N21W19J05S	09/08/2016	0.5	300	36	ND	43	ND	737	0.3	ND	5	23	ND	ND	75	68.3	551	ND	8
Oxnard Plain Pressure	01N21W20B01S	09/27/2016	0.5	250	97	ND	37	ND	1090	0.2	270	7	37	70	ND	89	317	834	ND	7
Oxnard Plain Pressure	01N21W20K03S	10/18/2016	0.4	270	68	ND	69	ND	1060	0.3	70	5	26	30	ND	113	214	765	ND	7
Oxnard Plain Pressure	01N21W21H02S	09/08/2016	0.5	290	67	ND	131	ND	1310	0.4	120	5	33	20	ND	153	290	969	ND	7
Oxnard Plain Pressure	01N21W21K03S	09/08/2016	0.4	260	72	ND	55	ND	1050	0.1	280	4	29	90	ND	99	267	786	ND	8
Oxnard Plain Pressure	01N21W21N02S	10/18/2016	0.4	290	120	ND	89	ND	1320	0.3	170	4	40	720	ND	102	336	981	ND	7
Oxnard Plain Pressure	01N21W22C01S	09/08/2016	0.3	270	62	ND	59	ND	916	0.2	230	2	25	100	ND	86	168	672	ND	7
Oxnard Plain Pressure	01N21W28D01S	09/08/2016	0.5	250	66	ND	82	ND	1130	0.4	70	5	35	10	ND	159	300	897	ND	8
Oxnard Plain Pressure	01N21W28H03S	10/18/2016	0.4	330	67	ND	128	ND	1210	0.2	180	4	35	60	0.4	128	163	856	30	7
Oxnard Plain Pressure	01N21W29B03S	09/08/2016	0.5	240	113	ND	87	ND	1360	0.3	80	4	40	810	ND	102	390	976	ND	7
Oxnard Plain Pressure	01N21W33A01S	10/18/2016	0.3	290	118	ND	166	ND	1410	0.2	360	3	39	330	ND	114	272	1000	ND	7
Oxnard Plain Pressure	01N22W03F05S	09/07/2016	0.7	250	135	ND	48	ND	1390	0.7	60	5	45	20	16	96	427	1020	ND	7
Oxnard Plain Pressure	01N22W03F07S	09/07/2016	0.7	280	182	ND	68	ND	1720	0.7	30	5	62	20	17.6	104	561	1280	ND	8
Oxnard Plain Pressure	01N22W06B01S	11/15/2016	0.9	300	160	ND	60	ND	1620	0.6	320	5	57	30	11.8	118	548	1260	40	7
Oxnard Plain Pressure	01N22W06R02S	11/15/2016	0.9	290	187	ND	70	ND	1790	0.5	ND	6	65	10	8.2	134	699	1460	ND	7
Oxnard Plain Pressure	01N22W12N03S	10/18/2016	0.4	250	103	ND	40	ND	1200	0.2	450	6	36	130	ND	104	380	919	ND	7
Oxnard Plain Pressure	01N22W16D04S	11/10/2016	0.7	190	115	ND	42	20	1160	0.7	920	4	37	100	0.4	86	375	850	ND	7
Oxnard Plain Pressure	01N22W19A01S	11/10/2016	0.7	200	105	ND	39	ND	1090	0.7	3560	6	34	150	ND	85	341	811	1430	7
Oxnard Plain Pressure	01N22W23R02S	11/15/2016	0.6	240	114	ND	48	ND	1190	0.4	560	6	37	160	0.5	87	354	887	ND	7
Oxnard Plain Pressure	01N22W24B04S	09/08/2016	0.6	220	114	ND	43	ND	1180	0.3	120	4	33	150	ND	81	401	896	ND	7
Oxnard Plain Pressure	01N22W24C02S	09/08/2016	0.7	40	372	ND	330	ND	3100	0.2	ND	16	118	530	ND	182	1490	2550	ND	7
Oxnard Plain Pressure	01N22W24C03S	09/08/2016	0.6	240	119	ND	42	ND	1200	0.5	320	4	36	140	ND	83	411	936	ND	7
Oxnard Plain Pressure	01N22W24M03S	09/08/2016	0.6	230	159	ND	221	ND	1610	0.4	40	5	50	240	ND	96	390	1150	ND	7
Oxnard Plain Pressure	01N22W25K01S	09/08/2016	0.7	240	297	ND	750	ND	3460	0.3	ND	11	104	940	ND	279	597	2280	ND	7
Oxnard Plain Pressure	01N22W25K02S	09/08/2016	0.6	250	88	ND	39	ND	1090	0.3	320	4	39	80	ND	82	345	847	ND	7
Oxnard Plain Pressure	01N22W26D05S	09/08/2016	0.5	240	118	ND	54	ND	1250	0.1	250	6	38	150	0.6	94	413	964	ND	7
Oxnard Plain Pressure	01N22W26M03S	09/08/2016	0.5	210	112	ND	47	ND	1240	0.2	300	5	34	170	2	88	410	908	ND	7
Oxnard Plain Pressure	01N22W26P02S	09/08/2016	0.4	250	84	ND	41	ND	1110	0.1	ND	6	34	10	ND	89	328	832	ND	7
Oxnard Plain Pressure	02N21W17N03S	10/06/2016	0.4	280	84	ND	63	ND	1090	0.4	70	3	26	140	9.2	100	218	784	ND	5
Oxnard Plain Pressure	02N21W18H03S	09/26/2016	0.6	280	231	ND	177	ND	2270	0.3	110	5	86	ND	119	151	664	1710	ND	7
Oxnard Plain Pressure	02N21W18H12S	09/26/2016	0.6	260	130	ND	54	20	1340	0.3	740	4	45	130	1.6	109	471	1070	ND	7
Oxnard Plain Pressure	02N21W18H14S	09/26/2016	0.4	310	87	ND	48	ND	1280	0.1	340	6	37	50	0.6	151	379	1020	30	7
Oxnard Plain Pressure	02N21W19G03S	10/06/2016	0.5	220	111	ND	45	ND	1240	0.4	410	4	39	130	0.5	97	445	962	ND	7
Oxnard Plain Pressure	02N21W20M06S	10/06/2016	0.5	260	99	ND	56	ND	1280	0.3	190	4	38	100	0.7	122	401	981	30	7
Oxnard Plain Pressure	02N21W20Q05S	10/06/2016	0.6	250	97	ND	64	10	1310	0.4	700	6	33	90	ND	128	379	957	ND	7
Oxnard Plain Pressure	02N22W19J03S	11/15/2016	0.6	250	134	ND	54	ND	1400	0.5	100	4	41	160	0.6	119	472	1080	ND	7
Oxnard Plain Pressure	02N22W24P01S	09/07/2016	0.6	230	123	ND	51	ND	1270	0.7	ND	4	43	ND	6.9	83	415	957	40	8
Oxnard Plain Pressure	02N22W24P02S	10/06/2016	0.6	240	124	ND	49	ND	1320	0.7	ND	4	42	ND	8.3	91	454	1010	ND	7
Oxnard Plain Pressure	02N22W25E01S	10/06/2016	1	290	213	ND	85	ND	2180	0.6	ND	6	89	ND	52.8	154	878	1770	ND	7

Table D-1 General Minerals (continued)

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	02N22W30F03S	11/15/2016	0.6	250	121	ND	45	ND	1270	0.5	910	4	36	150	0.4	99	402	958	ND	7
Oxnard Plain Pressure	02N22W31B01S	11/15/2016	0.7	180	137	ND	58	ND	1460	0.7	40	5	46	ND	20.4	109	498	1050	ND	7
Oxnard Plain Pressure	02N22W32C04S	11/10/2016	0.7	250	144	ND	57	ND	1410	0.7	120	4	51	ND	27.4	100	480	1110	ND	7
Oxnard Plain Pressure	02N22W36E02S	09/07/2016	0.7	240	134	ND	48	ND	1360	0.7	90	5	44	10	7.6	98	427	1000	ND	8
Oxnard Plain Pressure	02N22W36E04S	09/07/2016	0.9	280	204	ND	64	ND	1960	0.6	50	6	69	ND	62	145	767	1600	40	8
Oxnard Plain Pressure	02N22W36E05S	09/07/2016	1	280	219	ND	61	ND	2090	0.6	100	6	83	50	64.5	147	767	1630	50	8
Oxnard Plain Pressure	02N22W36F01S	09/07/2016	0.9	280	173	ND	62	ND	1760	0.7	1500	6	62	40	ND	137	683	1400	110	8
Oxnard Plain Pressure	02N22W36F02S	09/07/2016	0.9	270	173	ND	61	ND	1780	0.7	40	6	61	50	6.1	135	679	1390	ND	8
Oxnard Plain Pressure	02N23W25H01S	11/15/2016	0.6	290	226	ND	109	ND	2150	0.4	50	6	65	610	27.6	185	790	1700	ND	7
Oxnard Plain Pressure	02N23W25M01S	11/15/2016	0.5	250	143	ND	61	ND	1520	0.4	ND	4	41	380	6.5	133	504	1140	ND	7
Piru	04N18W30J04S	10/21/2016	0.6	270	126	ND	105	ND	1520	0.4	120	6	48	ND	16.4	128	447	1150	80	7
Piru	04N19W25H01S	10/21/2016	0.7	350	349	ND	110	ND	2830	0.3	ND	8	108	ND	67.6	142	1230	2360	ND	7
Piru	04N19W25K04S	10/21/2016	0.6	280	138	ND	99	ND	1560	0.4	ND	5	49	ND	38.4	109	413	1130	ND	7
Piru	04N19W25M03S	10/21/2016	0.9	450	319	ND	73	20	2990	0.5	ND	6	135	660	48.2	184	1330	2550	ND	7
Piru	04N19W26H01S	10/21/2016	0.7	300	141	ND	110	ND	1720	0.4	ND	5	58	ND	18	119	470	1220	60	7
Piru	04N19W26J03S	10/21/2016	0.6	250	104	ND	84	ND	1280	0.5	40	5	39	ND	13.7	103	312	911	ND	7
Piru	04N19W26J05S	10/21/2016	1	440	300	ND	68	ND	2570	0.5	100	6	118	660	30.4	157	1110	2230	ND	7
Piru	04N19W26P01S	09/21/2016	0.7	320	191	ND	72	ND	1860	0.7	70	5	78	70	19.8	114	675	1480	ND	7
Piru	04N19W34J04S	08/09/2016	0.6	240	132	ND	65	ND	1340	0.9	ND	5	52	ND	55.3	85	406	1040	ND	7
Piru	04N19W34K01S	09/21/2016	0.6	240	107	ND	55	ND	1190	0.9	130	4	42	ND	9.2	73	339	870	50	7
Pleasant Valley	01N21W01M02S	09/14/2016	0.3	370	69	ND	164	ND	1530	0.3	70	6	64	50	ND	140	208	1020	ND	7
Pleasant Valley	01N21W03D01S	09/26/2016	0.3	240	134	ND	87	ND	1280	0.3	50	4	37	10	39	94	354	989	ND	7
Pleasant Valley	01N21W03K01S	09/08/2016	0.8	330	93	ND	205	ND	1800	0.2	70	7	33	20	33.3	258	389	1350	ND	7
Pleasant Valley	01N21W03R01S	09/08/2016	0.5	230	203	ND	215	ND	2270	0.3	ND	5	66	20	35	179	621	1550	ND	7
Pleasant Valley	01N21W04K01S	09/08/2016	0.6	330	125	ND	217	20	1840	0.5	260	6	44	130	14.2	204	433	1370	ND	7
Pleasant Valley	01N21W09J03S	09/27/2016	0.3	220	92	ND	77	120	1010	0.3	340	4	29	20	1.7	88	194	706	30	7
Pleasant Valley	01N21W10A02S	09/14/2016	0.5	250	347	ND	260	ND	2880	0.2	130	5	96	1420	61.4	176	951	2150	1250	7
Pleasant Valley	01N21W10G01S	09/08/2016	0.4	300	94	ND	151	20	1490	0.3	190	5	39	40	1.1	152	285	1030	100	7
Pleasant Valley	01N21W12D01S	09/14/2016	0.7	390	270	ND	402	ND	3210	ND	130	5	126	240	0.5	279	925	2400	ND	7
Pleasant Valley	01N21W15D02S	09/08/2016	0.5	300	132	ND	207	ND	1740	0.2	600	5	46	360	1.2	159	422	1270	ND	7
Pleasant Valley	01N21W15H01S	09/14/2016	1.8	170	518	ND	711	ND	5710	0.2	2050	9	204	1850	0.4	655	2150	4420	ND	7
Pleasant Valley	01N21W15J04S	09/26/2016	0.3	310	71	ND	130	ND	1150	0.1	80	3	42	70	ND	105	155	816	ND	7
Pleasant Valley	02N20W17L01S	10/11/2016	0.6	250	150	ND	174	ND	1870	0.3	90	6	51	290	17.9	169	547	1370	ND	7
Pleasant Valley	02N20W19F04S	09/14/2016	0.6	260	192	ND	164	ND	1980	0.2	190	5	48	140	0.6	167	572	1410	20	7
Pleasant Valley	02N20W29B02S	10/18/2016	0.2	350	69	ND	123	ND	1220	0.4	40	2	50	50	5.4	103	164	867	ND	7
Pleasant Valley	02N21W33R02S	10/18/2016	0.3	280	86	ND	101	ND	1170	0.4	370	4	24	30	ND	123	210	828	ND	7
Pleasant Valley	02N21W34C01S	09/14/2016	0.3	270	97	ND	70	ND	1190	0.4	440	5	28	50	0.4	105	256	832	ND	7
Pleasant Valley	02N21W34G01S	09/08/2016	0.7	380	92	ND	220	ND	1860	0.4	110	7	31	30	ND	247	376	1350	ND	7
Santa Paula	02N22W03E01S	10/19/2016	0.6	290	294	ND	110	ND	2450	0.5	920	6	85	530	1.5	182	1040	2010	20	6
Santa Paula	02N22W03K02S	09/22/2016	0.5	320	138	ND	53	ND	1320	0.3	200	5	35	90	1	105	394	1050	310	7
Santa Paula	03N21W09K04S	12/02/2016	0.4	310	136	ND	50	ND	1350	0.3	310	4	33	440	ND	116	399	1050	ND	7

Table D-1 General Minerals (continued)

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
Santa Paula	03N21W17Q01S	09/27/2016	0.7	410	220	ND	73	ND	2040	0.5	ND	4	65	80	26.2	171	653	1620	ND	7
Santa Paula	03N21W20H01S	10/19/2016	0.9	410	208	ND	123	ND	1990	0.6	ND	5	66	280	11	162	618	1600	180	7
Santa Paula	03N22W34Q03S	10/19/2016	0.6	250	267	ND	95	ND	2220	0.5	970	6	69	230	0.4	172	889	1750	20	7
Santa Paula	03N22W35Q01S	10/06/2016	1.1	430	340	ND	101	ND	3110	0.4	90	7	93	790	33.9	312	1490	2810	ND	7
Sherwood	01N19W30A01S	09/20/2016	ND	270	68	ND	42	10	720	0.1	530	ND	23	ND	39.8	41	48.2	532	80	7
Simi Valley	02N18W08D04S	09/15/2016	1.1	370	225	ND	171	ND	2370	0.5	140	6	84	190	17.6	207	734	1820	ND	7
Simi Valley	02N18W08K07S	09/15/2016	1	310	282	ND	172	10	2540	0.6	80	5	86	ND	56.1	192	891	1990	ND	7
Simi Valley	02N18W09E01S	09/15/2016	0.8	300	211	ND	133	10	2090	0.7	50	4	75	ND	28.3	162	690	1600	ND	7
Simi Valley	02N18W10A02S	09/15/2016	1.2	330	241	ND	166	ND	2440	0.6	50	6	89	ND	61.5	204	817	1920	ND	7
Thousand Oaks	01N19W09N01S	09/20/2016	0.2	380	140	ND	185	ND	1950	0.4	1310	3	110	40	ND	113	552	1480	ND	7
Tierra Rejada Valley	02N19W10R01S	10/11/2016	0.1	300	69	ND	115	ND	1080	0.3	30	ND	55	10	14	58	125	736	ND	7
Tierra Rejada Valley	02N19W10R02S	09/15/2016	0.1	260	54	ND	66	ND	960	0.5	30	1	58	ND	10.7	57	150	657	ND	4
Tierra Rejada Valley	02N19W11J03S	09/15/2016	0.2	270	62	ND	62	ND	978	0.3	120	1	57	ND	23.4	54	149	679	ND	7
Tierra Rejada Valley	02N19W14F01S	09/15/2016	0.1	370	87	ND	109	ND	1210	0.2	30	ND	76	ND	67.5	47	119	876	ND	4
Tierra Rejada Valley	02N19W14P01S	09/22/2016	0.2	420	66	ND	77	ND	1130	0.2	90	ND	74	ND	49.9	65	105	857	ND	7
Tierra Rejada Valley	02N19W15G01S	09/15/2016	0.1	210	81	ND	98	ND	1020	0.3	100	ND	52	ND	62.8	40	110	654	ND	7
Tierra Rejada Valley	02N19W15J02S	09/15/2016	0.2	360	107	ND	118	ND	1410	0.3	50	2	77	ND	87.9	71	191	1010	20	4
West Las Posas	02N21W13A01S	10/11/2016	0.1	240	64	ND	14	ND	713	0.3	120	3	18	70	0.5	50	155	545	40	7
Upper Ojai	04N22W10K05S	10/19/2016	0.4	380	137	ND	116	ND	1260	0.4	ND	ND	33	1400	1.2	83	181	932	ND	7
Upper Ojai	04N22W10P04S	12/07/2016	0.7	560	124	ND	159	ND	1500	0.2	630	1	31	770	ND	148	99.2	1120	ND	7
Upper Ojai	04N22W12F04S	10/19/2016	ND	220	90	ND	18	ND	741	0.5	ND	1	24	ND	20.9	32	162	568	ND	7
Ventura River - Lower	02N23W05F01S	09/09/2016	0.7	520	55	ND	67	ND	1320	1	5680	7	19	140	0.6	219	138	1030	15200	8
Ventura River - Lower	02N23W05F02S	09/09/2016	0.6	410	91	ND	64	ND	1350	0.3	380	7	24	120	0.4	196	296	1090	20	8
Ventura River - Lower	02N23W05F03S	09/09/2016	1	460	203	ND	264	ND	2480	0.5	330	9	76	220	12.9	282	563	1870	20	7
Ventura River - Lower	02N23W05K01S	10/20/2016	0.9	310	153	ND	246	ND	1750	0.4	580	5	53	250	0.5	193	383	1340	ND	7
Ventura River - Lower	03N23W32Q10S	09/09/2016	1.1	410	194	ND	334	ND	2480	0.8	770	7	72	50	7.1	279	489	1790	ND	7
Ventura River - Upper	04N23W04H01S	12/06/2016	0.8	300	125	ND	82	ND	1200	0.5	ND	2	34	ND	30.1	54	209	837	ND	7
Ventura River - Upper	04N23W09G03S	10/20/2016	0.5	240	130	ND	87	ND	1180	0.2	ND	2	38	ND	32.1	60	176	765	ND	7
Ventura River - Upper	04N23W33M02S	10/20/2016	0.7	520	228	ND	173	140	1980	0.2	ND	4	62	ND	0.6	133	456	1580	70	7

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	02N20W25C02S	10/18/2016	ND	ND	3	16.7	ND	ND	10	ND	ND	7	4	ND	ND	61
Cuyama Valley	07N23W15P01S	11/17/2016	ND	ND	ND	9.6	ND	0.4	3	ND	ND	ND	2	ND	ND	ND
Cuyama Valley	08N24W17G02S	11/17/2016	ND	ND	ND	23	ND	0.4	2	0.8	ND	ND	ND	ND	ND	ND
Cuyama Valley	09N23W30E05S	11/17/2016	ND	ND	ND	31.2	ND	0.3	4	ND	ND	ND	9	ND	ND	2
Fillmore	03N20W01F05S	08/09/2016	ND	ND	ND	20.7	ND	ND	2	ND	0.03	1	4	ND	ND	3
Fillmore	03N20W02R05S	11/29/2016	ND	ND	2	24.4	ND	0.6	3	ND	ND	3	19	ND	ND	3
Fillmore	04N19W30D01S	09/21/2016	ND	ND	ND	20.3	ND	1.4	2	ND	ND	3	26	ND	ND	3
Fillmore	04N20W31P01S	11/29/2016	ND	ND	ND	23.5	ND	ND	4	ND	ND	2	5	ND	ND	ND
Fillmore	04N20W32R03S	10/21/2016	ND	ND	ND	45.3	ND	ND	2	ND	ND	ND	5	ND	ND	ND
Fillmore	04N20W36D06S	11/29/2016	ND	ND	ND	15.7	ND	0.2	3	ND	ND	2	8	ND	ND	ND
Fillmore	04N20W36P04S	10/21/2016	20	ND	ND	23.7	ND	ND	3	1.1	ND	ND	5	ND	ND	3
Las Posas - South	02N20W01Q02S	10/11/2016	ND	ND	2	19.1	ND	ND	3	ND	0.89	8	7	ND	ND	7
Las Posas - West	02N21W01L01S	10/05/2016	ND	ND	6	71.1	ND	ND	8	ND	0.03	ND	203	ND	ND	6
Las Posas - West	02N21W08H03S	09/26/2016	ND	ND	2	55	ND	ND	4	0.6	ND	ND	18	ND	ND	5
Las Posas - West	02N21W09D02S	09/26/2016	ND	ND	2	52.6	ND	ND	5	ND	ND	ND	19	ND	ND	6
Las Posas - West	02N21W15M04S	09/09/2016	ND	ND	ND	42	ND	ND	4	ND	0.03	ND	12	ND	ND	2
Las Posas - West	03N20W32H03S	10/05/2016	10	ND	ND	31.8	ND	ND	1	0.7	ND	1	ND	ND	ND	ND
Las Posas - West	03N21W35P02S	10/05/2016	ND	ND	2	54.1	ND	ND	6	0.9	0.03	ND	65	ND	ND	3
Little Cuddy Valley	08N20W04N02S	11/17/2016	ND	ND	ND	141	ND	ND	3	0.5	ND	ND	1	ND	ND	2
Lockwood Valley	08N21W23Q10S	11/17/2016	10	ND	76	19.6	ND	0.2	4	ND	ND	ND	15	ND	ND	126
Lockwood Valley	08N21W29N02S	11/17/2016	ND	ND	3	30.6	ND	0.4	3	2.6	ND	ND	2	ND	ND	ND
Lockwood Valley	08N21W29Q05S	11/17/2016	ND	ND	9	12.5	ND	ND	3	ND	ND	ND	11	ND	ND	16
Lockwood Valley	08N21W29R07S	12/07/2016	30	ND	4	37.3	ND	ND	6	ND	ND	ND	ND	ND	ND	6
Lockwood Valley	08N21W29R09S	11/17/2016	ND	ND	8	18.3	ND	0.4	3	ND	0.02	ND	2	ND	ND	16
Lockwood Valley	08N21W30R03S	11/17/2016	ND	ND	4	21.2	ND	0.8	4	0.8	ND	ND	3	ND	ND	13
Lockwood Valley	08N21W33R03S	11/17/2016	ND	ND	ND	25	ND	ND	3	ND	ND	ND	8	ND	ND	5
Mound	02N22W09K01S	09/22/2016	ND	ND	ND	19	ND	0.3	3	ND	ND	2	5	ND	ND	3
Mound	02N22W10N02S	10/06/2016	ND	ND	ND	15.9	ND	ND	ND	ND	0.03	1	18	ND	ND	2
North Coast	04N25W25N06S	10/20/2016	ND	ND	ND	27.3	ND	ND	ND	3	ND	1	10	ND	ND	3
Ojai Valley	04N22W04P05S	12/07/2016	ND	ND	ND	36.7	ND	ND	1	ND	ND	ND	4	ND	ND	ND
Ojai Valley	04N22W07B02S	12/06/2016	ND	ND	ND	55.4	ND	ND	3	1.3	ND	ND	ND	ND	ND	ND
Ojai Valley	04N22W07C05S	11/16/2016	900	ND	ND	36.9	ND	ND	2	2.7	0.07	1	1	ND	ND	2
Ojai Valley	04N23W01K02S	11/16/2016	70	ND	ND	44.2	ND	ND	2	ND	ND	ND	ND	ND	ND	ND
Ojai Valley	04N23W12H02S	12/06/2016	ND	ND	ND	29.6	ND	ND	3	ND	ND	ND	4	ND	ND	ND
Oxnard Plain Forebay	02N22W23D06S	10/06/2016	ND	ND	ND	26.9	ND	ND	1	ND	ND	ND	7	ND	ND	2
Oxnard Plain Forebay	02N22W23H03S	09/07/2016	ND	ND	5	53.3	ND	0.3	4	ND	0.02	3	80	ND	ND	3
Oxnard Plain Pressure	01N21W08R01S	09/08/2016	70	ND	5	95.1	ND	ND	2	ND	0.02	ND	2	ND	ND	ND
Oxnard Plain Pressure	01N21W20K03S	10/18/2016	ND	ND	ND	42.6	ND	ND	3	ND	ND	ND	5	ND	ND	ND
Oxnard Plain Pressure	01N21W22C01S	09/08/2016	70	ND	3	50.2	ND	ND	2	0.6	0.02	ND	2	ND	ND	ND
Oxnard Plain Pressure	01N22W03F05S	09/07/2016	ND	ND	ND	21.2	ND	ND	2	ND	ND	ND	13	ND	ND	3

Table D-2 Metals (continued)

GW Basin	SWN	Date	Al	Sb	As	Ba	Be	Cd	Cr	Pb	Hg	Ni	Se	Ag	Tl	V
Oxnard Plain Pressure	01N22W03F07S	09/07/2016	ND	ND	ND	42.4	ND	0.3	3	1.2	ND	2	16	ND	ND	4
Oxnard Plain Pressure	01N22W06R02S	11/15/2016	ND	ND	ND	28.7	ND	ND	6	ND	ND	1	11	ND	ND	5
Oxnard Plain Pressure	01N22W16D04S	11/10/2016	140	ND	ND	23.7	ND	ND	6	1.6	ND	ND	2	ND	ND	2
Oxnard Plain Pressure	01N22W24M03S	09/08/2016	ND	ND	ND	42.2	ND	ND	1	ND	ND	ND	3	ND	ND	ND
Oxnard Plain Pressure	01N22W26M03S	09/08/2016	ND	ND	ND	37.4	ND	ND	2	ND	ND	ND	1	ND	ND	ND
Oxnard Plain Pressure	02N21W19G03S	10/06/2016	ND	ND	ND	28.2	ND	ND	ND	ND	ND	ND	1	ND	ND	ND
Oxnard Plain Pressure	02N22W30F03S	11/15/2016	30	ND	ND	21.5	ND	ND	6	ND	ND	ND	1	ND	ND	2
Oxnard Plain Pressure	02N23W25M01S	11/15/2016	ND	ND	ND	18.5	ND	0.4	5	ND	ND	1	4	ND	ND	4
Piru	04N18W30J04S	10/21/2016	ND	ND	ND	34.9	ND	ND	2	ND	ND	2	4	ND	ND	2
Piru	04N19W25H01S	10/21/2016	ND	ND	ND	36.8	ND	0.5	3	ND	ND	2	11	ND	ND	4
Piru	04N19W25K04S	10/21/2016	ND	ND	ND	23.9	ND	ND	2	ND	ND	2	5	ND	ND	3
Piru	04N19W25M03S	10/21/2016	ND	ND	7	23.3	ND	1.2	4	ND	ND	9	300	ND	ND	4
Piru	04N19W26H01S	10/21/2016	ND	ND	ND	22.8	ND	ND	2	ND	ND	2	3	ND	ND	2
Piru	04N19W26J03S	10/21/2016	ND	ND	ND	21.1	ND	ND	2	ND	ND	2	3	ND	ND	3
Piru	04N19W26J05S	10/21/2016	ND	ND	7	21.4	ND	1	4	ND	ND	9	327	ND	ND	3
Piru	04N19W34J04S	08/09/2016	ND	ND	ND	22	ND	ND	2	ND	ND	ND	6	ND	ND	3
Piru	04N19W34K01S	09/21/2016	ND	ND	ND	18	ND	ND	2	ND	ND	ND	5	ND	ND	4
Pleasant Valley	01N21W01M02S	09/14/2016	ND	ND	ND	153	ND	ND	4	ND	ND	ND	7	ND	ND	ND
Pleasant Valley	01N21W03R01S	09/08/2016	ND	ND	2	35.8	ND	ND	3	ND	0.02	ND	16	ND	ND	6
Pleasant Valley	01N21W10A02S	09/14/2016	ND	ND	2	46.1	ND	0.2	2	0.7	ND	4	21	ND	ND	4
Pleasant Valley	01N21W15J04S	09/26/2016	ND	ND	2	63.3	ND	ND	5	ND	ND	ND	7	ND	ND	6
Pleasant Valley	02N20W19F04S	09/14/2016	ND	ND	ND	41.8	ND	ND	3	0.9	ND	6	3	ND	ND	ND
Pleasant Valley	02N21W33R02S	10/18/2016	20	ND	ND	46.5	ND	ND	3	0.6	ND	ND	2	ND	ND	ND
Pleasant Valley	02N21W34G01S	09/08/2016	ND	ND	ND	39.6	ND	ND	3	0.5	ND	ND	5	ND	ND	ND
Santa Paula	02N22W03E01S	10/19/2016	ND	ND	3	27.2	ND	ND	2	ND	ND	ND	5	ND	ND	ND
Santa Paula	03N21W09K04S	12/02/2016	ND	ND	4	27.7	ND	ND	2	ND	ND	ND	1	ND	ND	ND
Santa Paula	03N21W17Q01S	09/27/2016	ND	ND	ND	28.1	ND	0.3	2	ND	ND	1	30	ND	ND	3
Simi Valley	02N18W08K07S	09/15/2016	ND	ND	3	16.8	ND	ND	3	1.9	ND	1	57	ND	ND	9
Simi Valley	02N18W10A02S	09/15/2016	ND	ND	3	16.9	ND	ND	4	ND	ND	ND	56	ND	ND	11
Tierra Rejada Valley	02N19W14P01S	09/22/2016	ND	ND	3	4	ND	ND	9	0.6	ND	1	4	ND	ND	90
Tierra Rejada Valley	02N19W15J02S	09/15/2016	ND	ND	3	17	ND	ND	4	1.3	ND	ND	15	ND	ND	36
Upper Ojai	04N22W10K05S	10/19/2016	ND	ND	4	53.8	ND	5.9	2	ND	ND	5	8	ND	ND	17
Upper Ojai	04N22W10P04S	12/07/2016	ND	ND	10	228	ND	ND	8	ND	ND	ND	10	ND	ND	3
Upper Ojai	04N22W12F04S	10/19/2016	ND	ND	ND	37.6	ND	ND	1	ND	ND	ND	ND	ND	ND	ND
Ventura River - Lower	02N23W05F01S	09/09/2016	320	ND	2	158	ND	ND	12	ND	0.03	5	5	ND	ND	3
Ventura River - Lower	02N23W05F03S	09/09/2016	ND	ND	3	32.9	ND	ND	7	ND	0.03	2	13	ND	ND	3
Ventura River - Lower	02N23W05K01S	10/20/2016	ND	ND	5	30.3	ND	ND	5	ND	ND	3	7	ND	ND	ND
Ventura River - Upper	04N23W09G03S	10/20/2016	ND	ND	ND	41.7	ND	ND	ND	ND	ND	ND	2	ND	ND	ND
Ventura River - Upper	04N23W33M02S	10/20/2016	ND	ND	ND	109	ND	0.2	ND	1.1	ND	3	6	ND	ND	5

Table D-3 Radiochemistry

GW Basin	SWN	Date	Alpha pCi/L	CE	Uranium pCi/L	CE
Little Cuddy Valley	08N20W04N02S	11/17/2016	7.14	2.14	2.75	1.17
Lockwood Valley	08N21W29N02S	11/17/2016	5.95	2.36	5.5	1.58
Lockwood Valley	08N21W29Q05S	11/17/2016	23.2	6.01	15.1	2.53
Lockwood Valley	08N21W29R09S	11/17/2016	15.7	3.4	16	2.6
Lockwood Valley	08N21W30R03S	11/17/2016	47.2	5.54	30.3	3.55
Lockwood Valley	08N21W33R03S	11/17/2016	4.89	2.06	5.39	1.56
Oxnard Plain Pressure	01N21W08R01S	09/08/2016	0.125	2.06		
Oxnard Plain Pressure	01N22W24C03S	09/08/2016	3.56	2.7		
Pleasant Valley	01N21W01M02S	09/14/2016	1.03	2.34		

* CE – Counting Error

Appendix E – Piper Diagrams

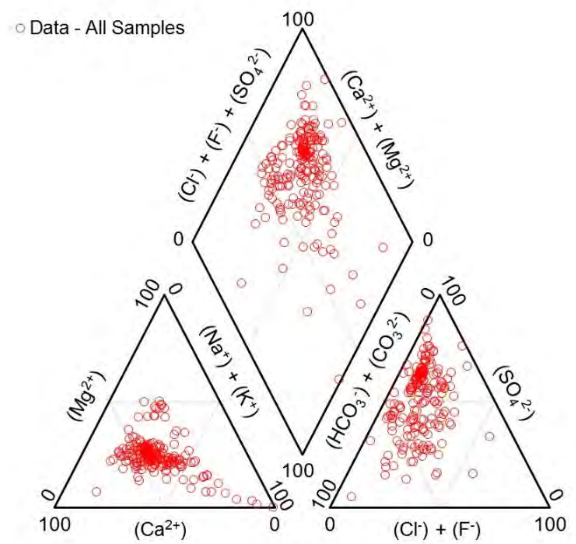

Figure E-1: Piper Diagram for All Samples.

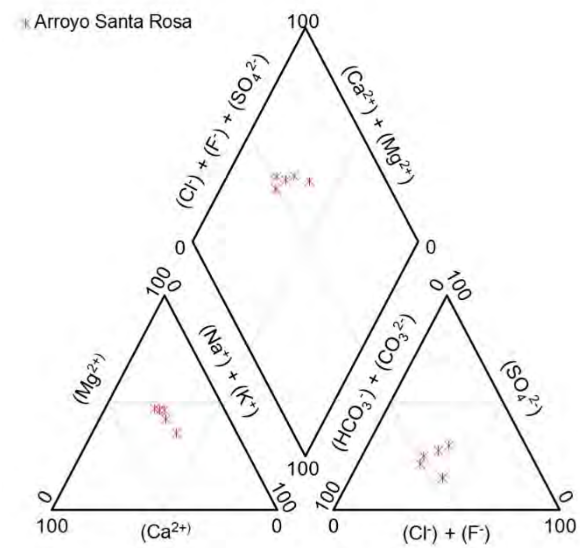

Figure E-2: Arroyo Santa Rosa Basin Piper Diagram.

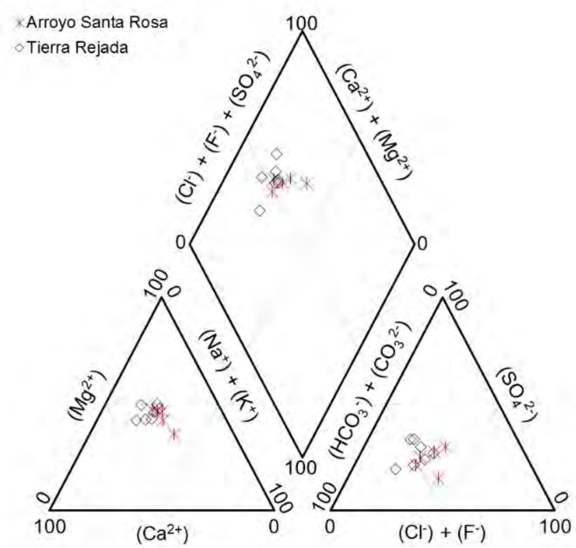

Figure E-3: Arroyo Santa Rosa & Tierra Rejada Basins Piper Diagram.

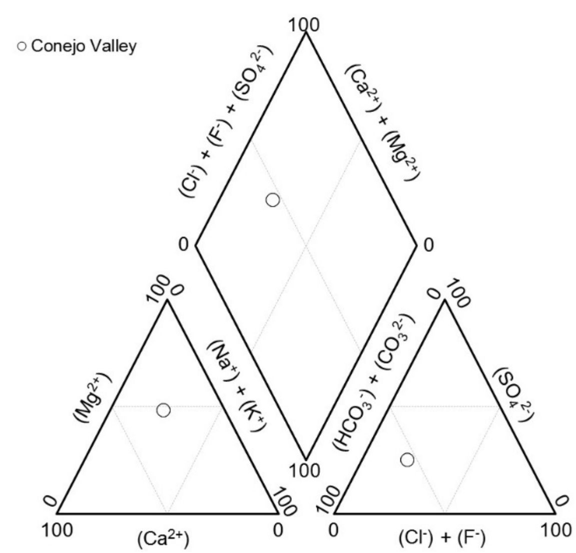

Figure E-4: Conejo Valley Basin Piper Diagram.

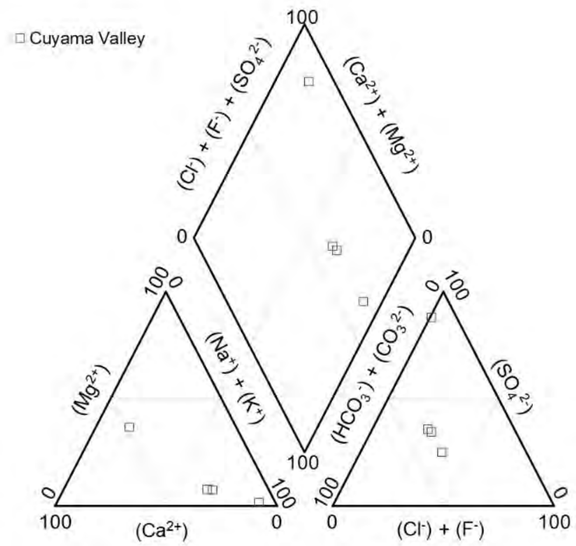

Figure E-5: Cuyama Valley Basin Piper Diagram.

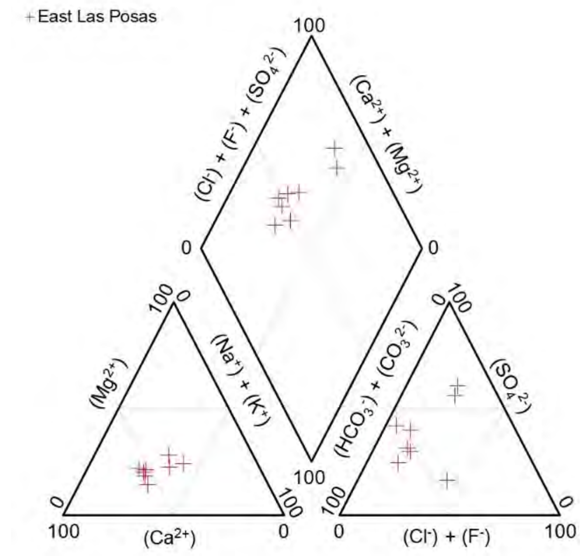

Figure E-6: East Las Posas Basin Piper Diagram.

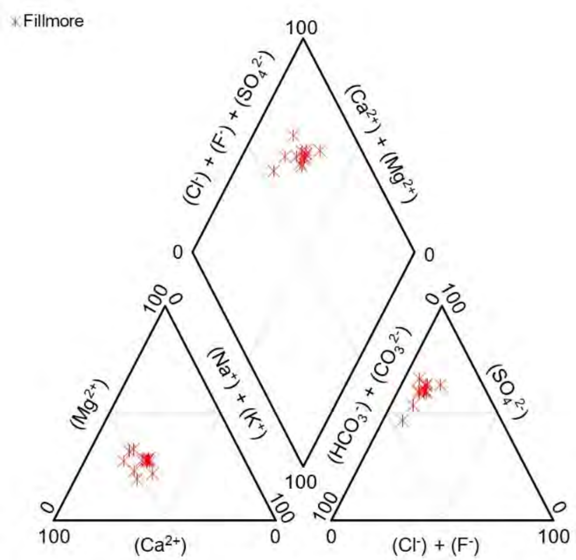

Figure E-7: Fillmore Basin Piper Diagram.

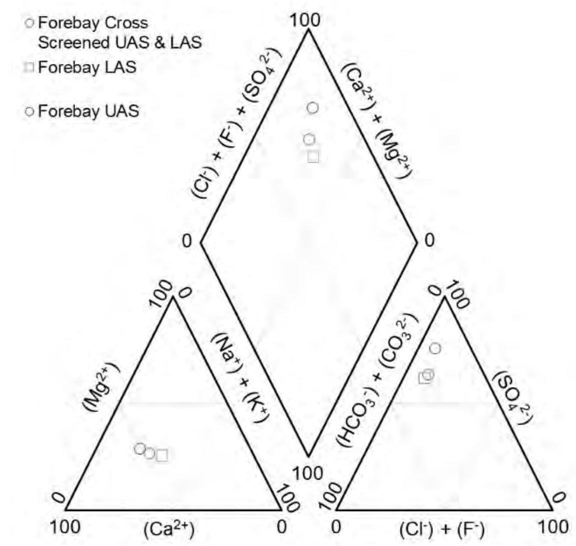

Figure E-8: Oxnard Plain Forebay Basin Piper Diagram.

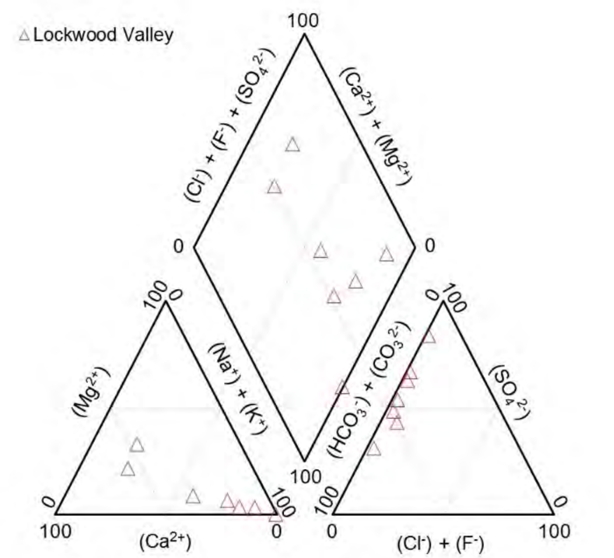

Figure E-9: Lockwood Valley Basin piper diagram.

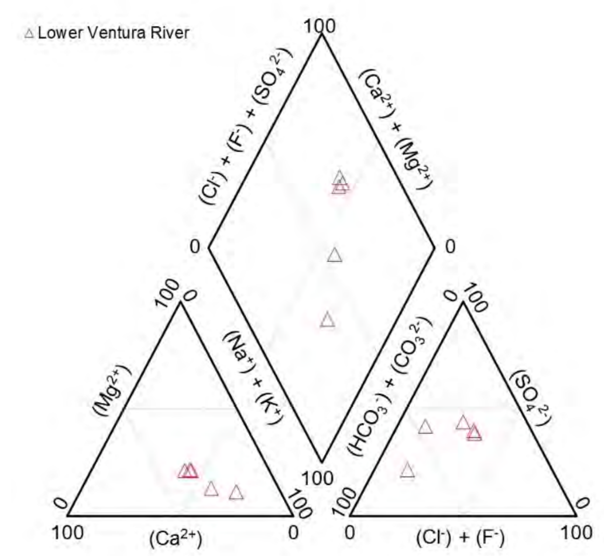

Figure E-10: Lower Ventura River Basin piper diagram.

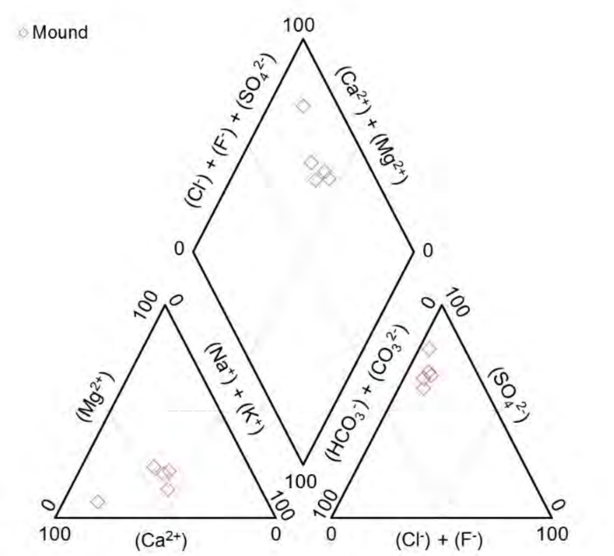

Figure E-11: Mound Basin piper diagram.

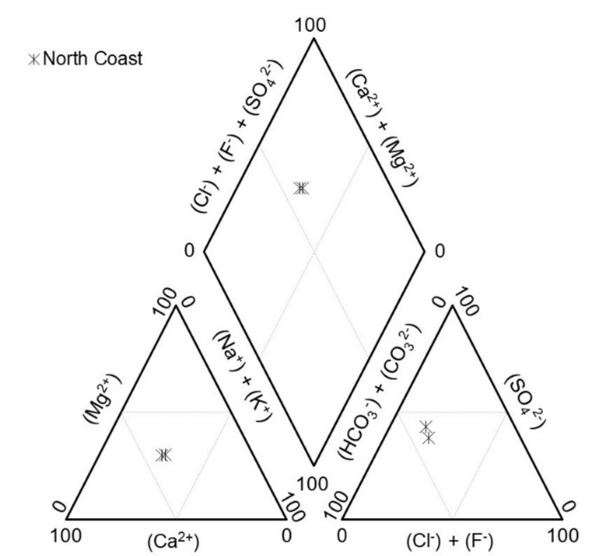

Figure E-12: North Coast Basin piper diagram.

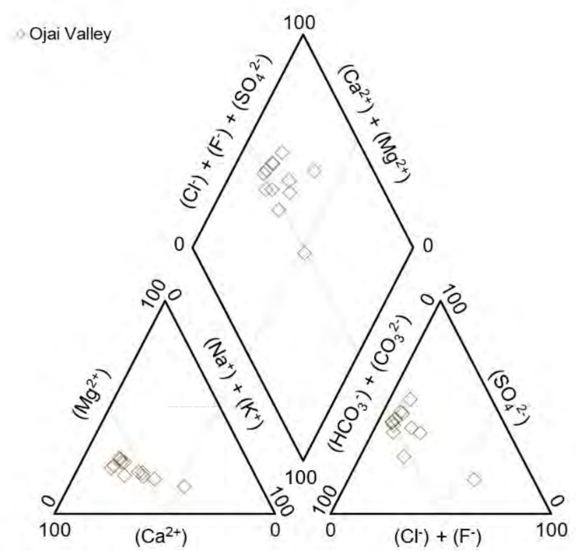

Figure E-13: Ojai Valley Basin piper diagram.

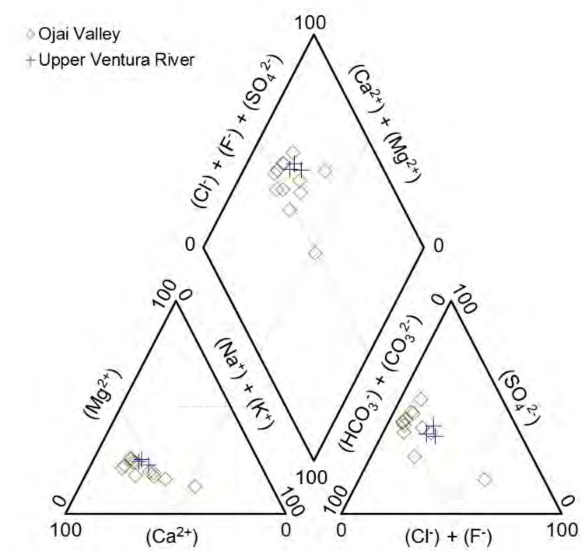

Figure E-14: Ojai Valley & Upper Ventura River Basins piper diagram.

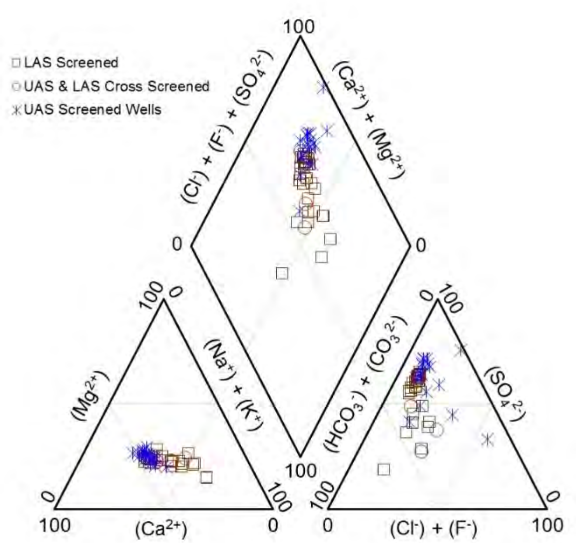

Figure E-15: Oxnard Plain Pressure Basin piper diagram.

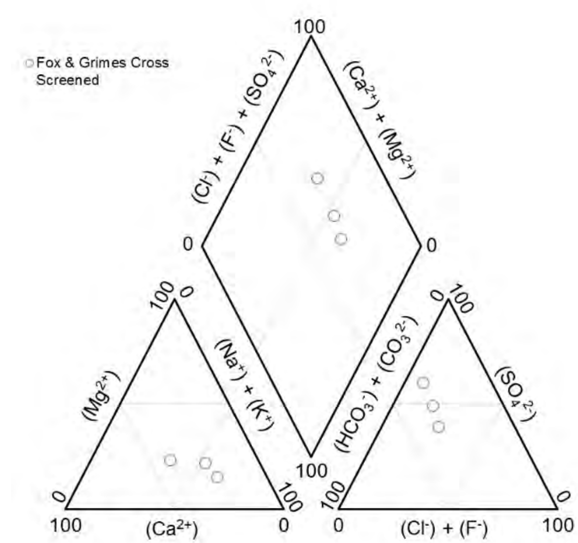

Figure E-16: Fox & Grimes cross-screened piper diagram.

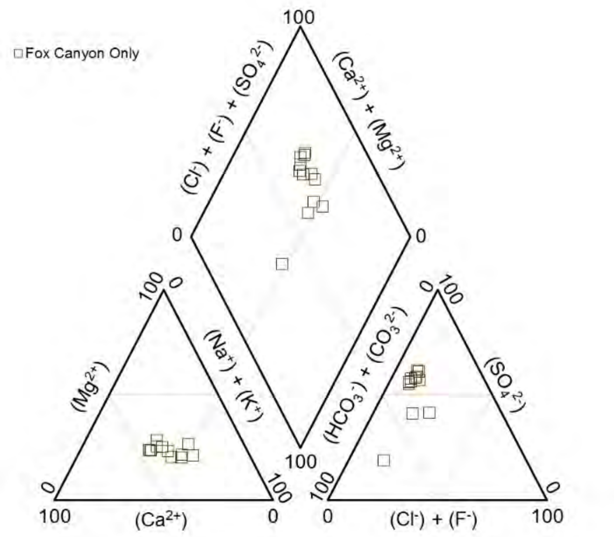

Figure E-17: Fox Canyon Aquifer piper diagram.

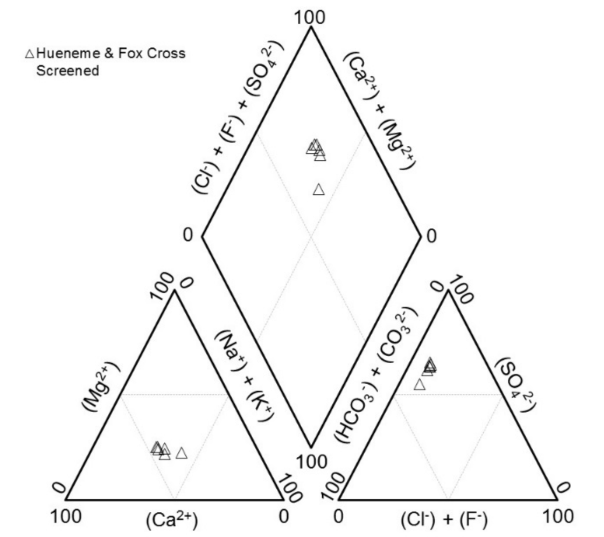

Figure E-18: Hueneme and Fox cross-screened piper diagram.

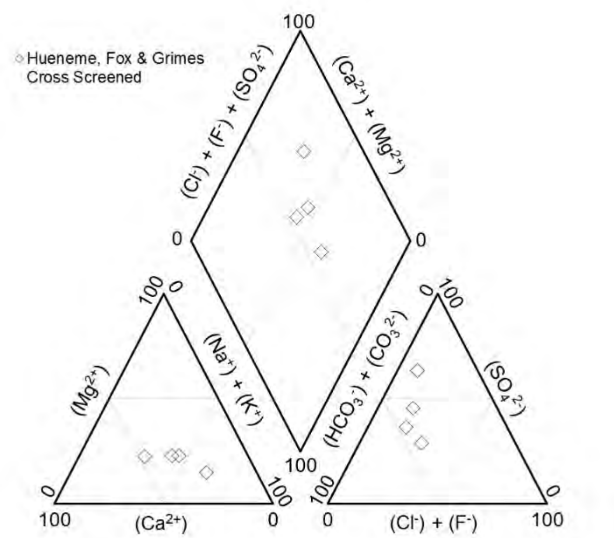

Figure E-19: Hueneme, Fox & Grimes cross-screened piper diagram.

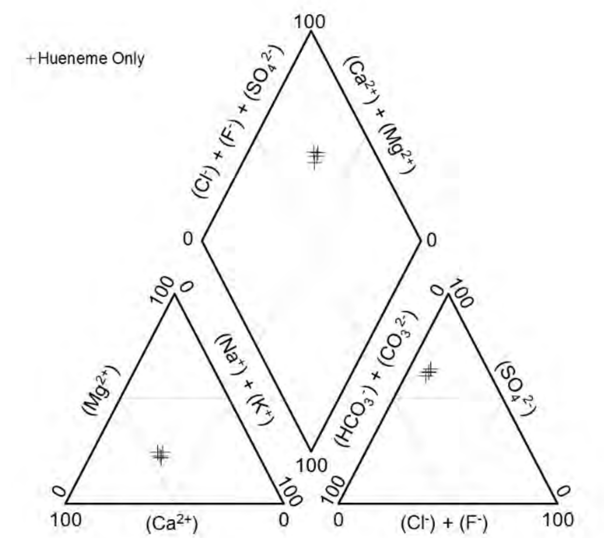

Figure E-20: Hueneme Aquifer piper diagram.

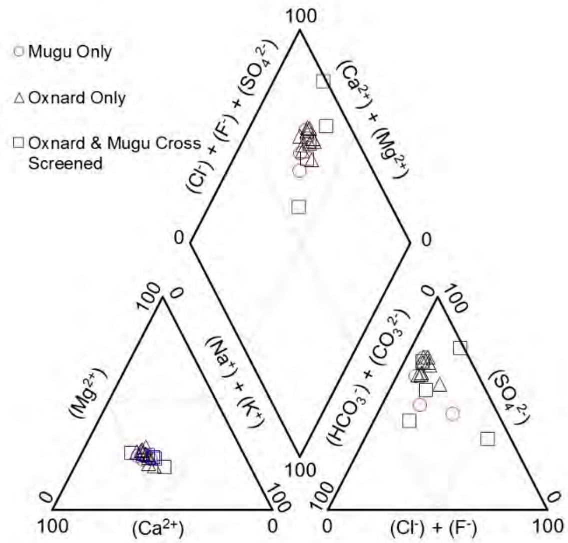

Figure E-21: All Upper Aquifer System piper diagram.

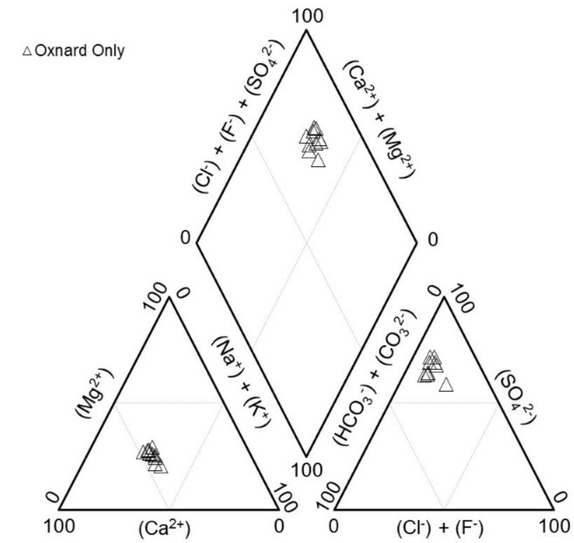

Figure E-22: Oxnard Aquifer piper diagram.

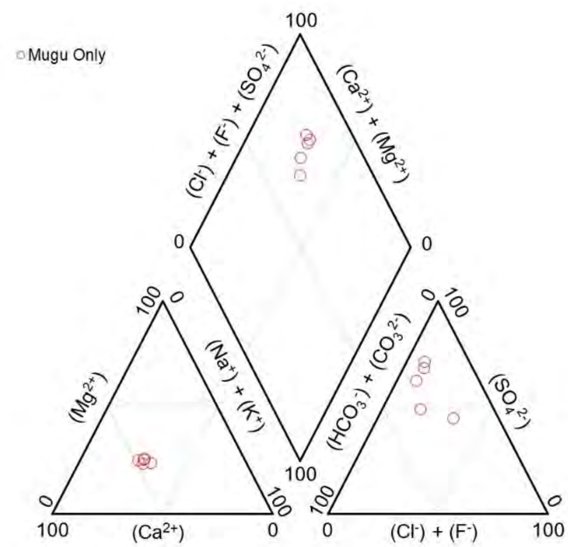

Figure E-23: Mugu Aquifer piper diagram.

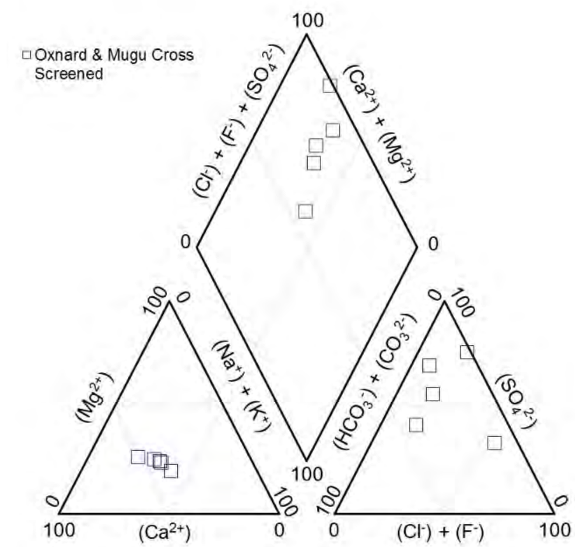

Figure E-24: Oxnard & Mugu cross-screened piper diagram.

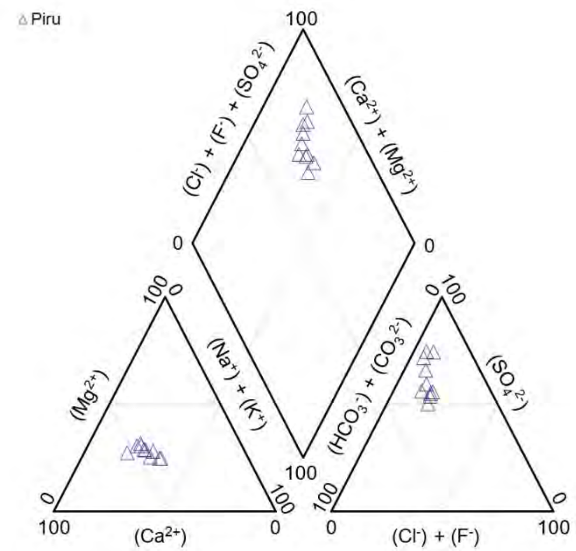

Figure E-25: Piru basin piper diagram.

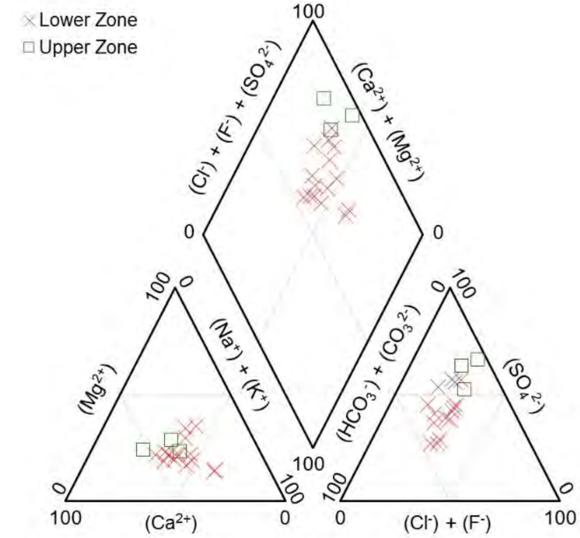

Figure E-26: Pleasant Valley Basin piper diagram.

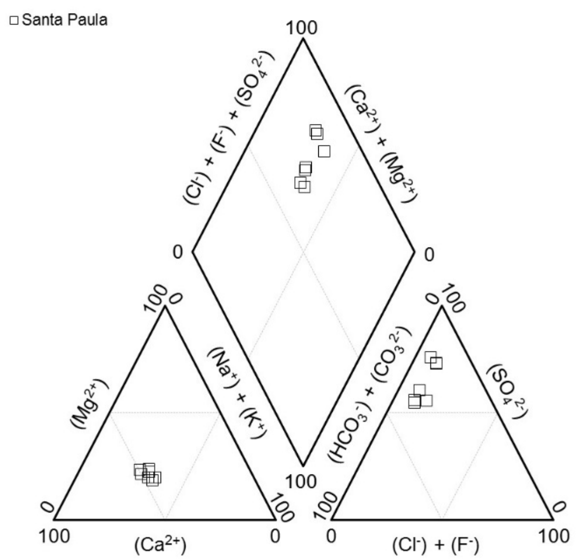

Figure E-27: Santa Paula Basin piper diagram.

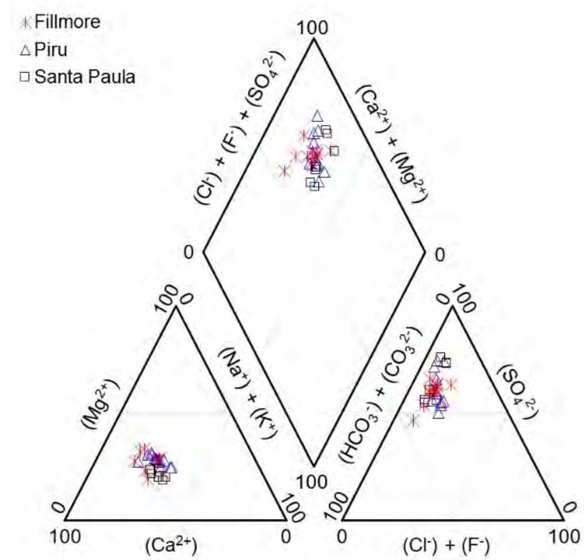

Figure E-28: Fillmore, Piru & Santa Paula piper diagram.

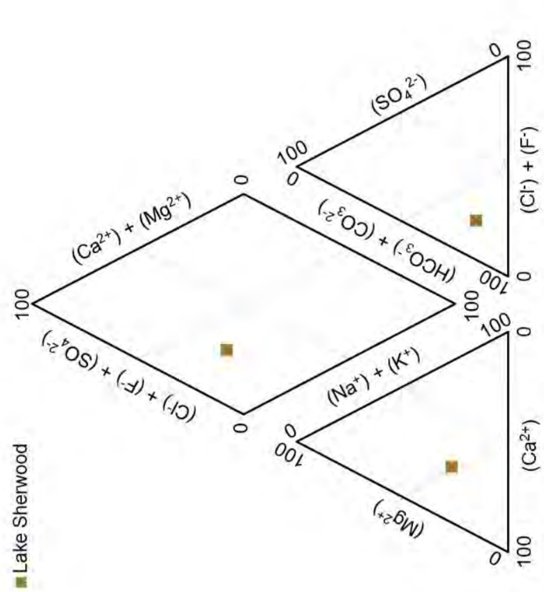

Figure E-29: Lake Sherwood Basin piper diagram.

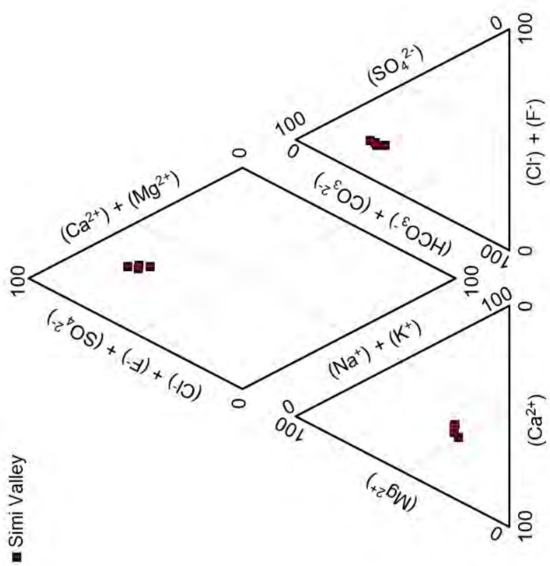

Figure E-30: Simi Valley Basin piper diagram.

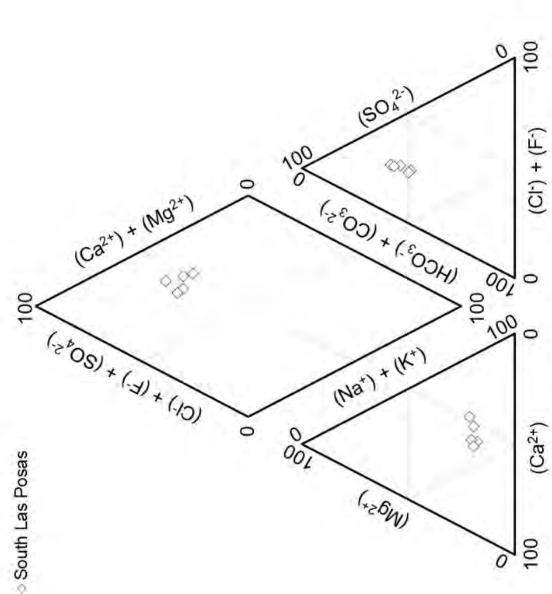

Figure E-31: South Las Posas Basin piper diagram.

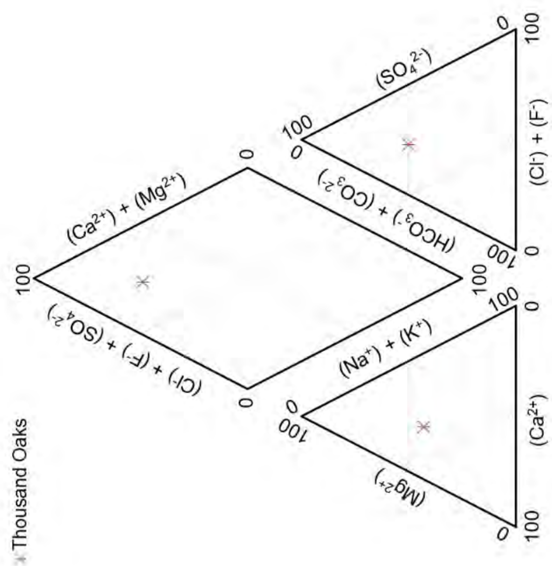

Figure E-32: Thousand Oaks Basin piper diagram.

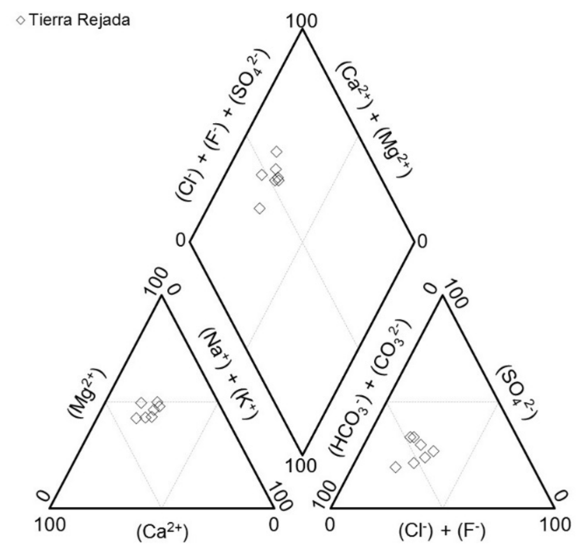

Figure E-33: Tierra Rejada Valley Basin piper diagram.

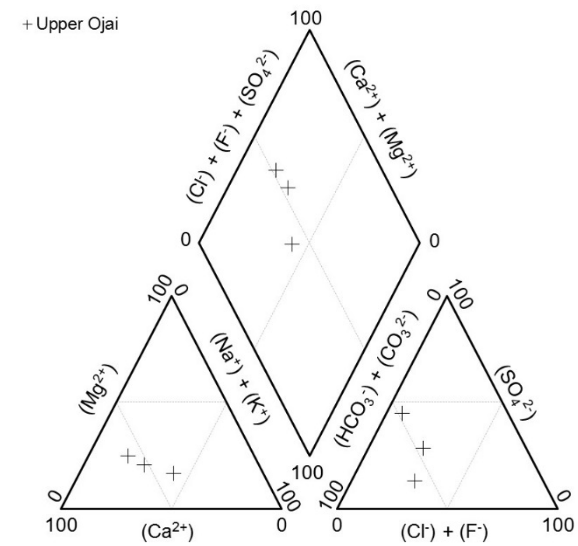

Figure E-34: Upper Ojai Basin piper diagram.

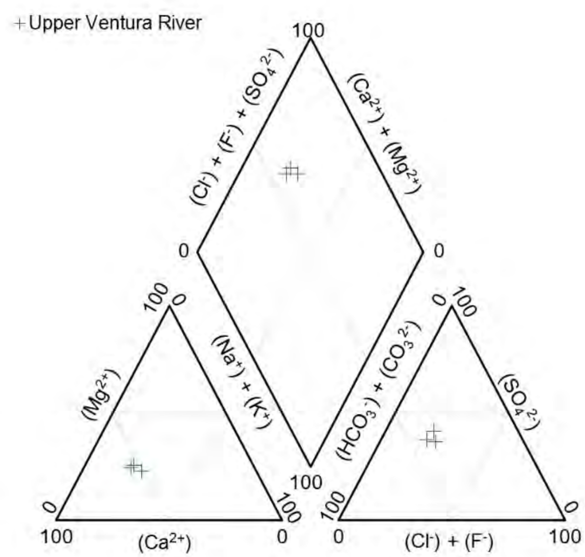

Figure E-35: Upper Ventura River Basin piper diagram.

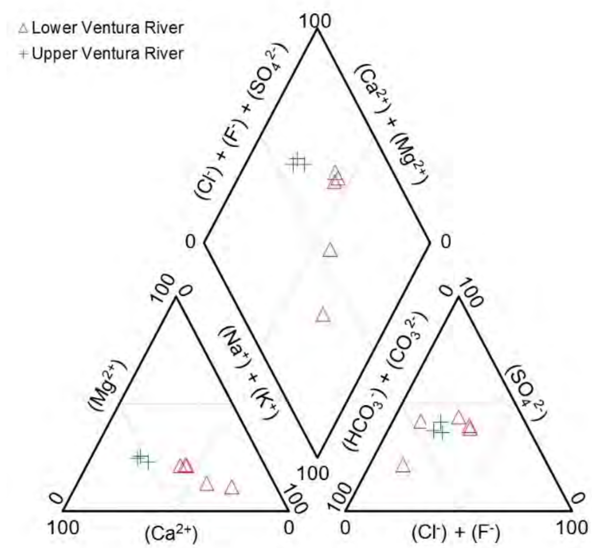

Figure E-36: Lower & Upper Ventura River Basins piper diagram.

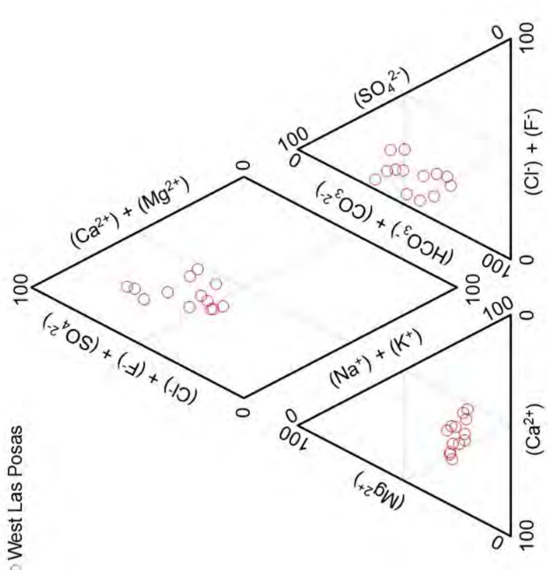

Figure E-37: West Las Posas Basin piper diagram.

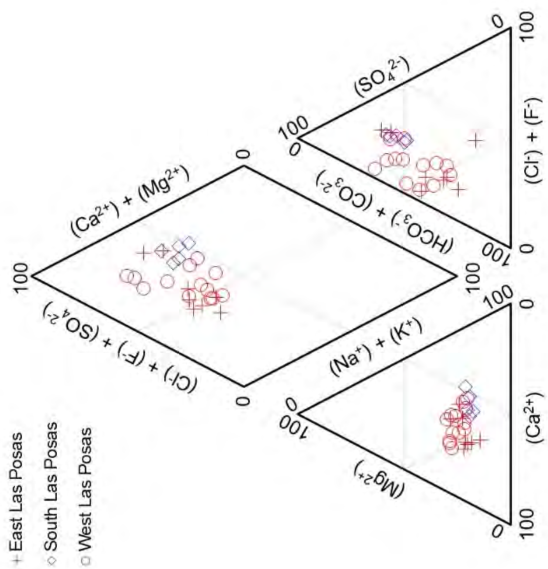

Figure E-38: All Las Posas Basins piper diagram.

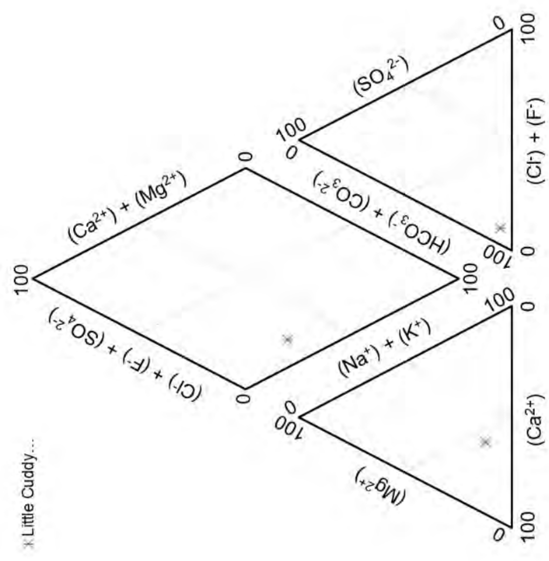

Figure E-39: Little Cuddy Valley Basin piper diagram.

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 Feb. 2017)

Number of Wells: 89
Active: 40
Destroyed: 35
Abandoned: 5
Can't Locate: 9

Self Reported Groundwater Extraction to FCGMA (as of March 27, 2017) (West part of basin only)

Agricultural Extractions - 1,202 Af/Yr
Municipal, Industrial and Domestic - 0 Af/Yr

Water Demand Estimate (Whole basin)

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

2016 Groundwater Levels in General for All Wells Gauged by County

"Key" well 02N20W26B03S - December level was down 9.20 feet from the January measurement.

In general for 4 wells measured in 2016 in the basin, water levels declined in and rose in 2 over the course of the year from the 1st quarter reading to the last quarter reading.

2016 Groundwater Quality in General for All Wells Sampled by County

(5 wells)
The water type In 1 of the wells is magnesium bicarbonate type and 4 wells are magnesium sulfate 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, 5 wells
Secondary MCL Excedances for Sulfate >250mg/l?	No

5 Year Groundwater Level Trend 2012 - 2016

"Key" well 02N20W26B03S: ↓

In general for 5 wells consistently measured: ↓

5 Year Groundwater Quality Trend 2012-2016

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 Feb. 2017)

Number of Wells: 148
Active: 110
Destroyed: 8
Abandoned: 10
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

2016 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 - Fall level was down 3.10 feet from the Spring measurement.

Both spring and fall measurements were obtained on 3 wells in the basin in 2016. The water level in two wells decreased and the water level in one well increased from the spring measurement to the fall measurement.

2016 Groundwater Quality in General for All Wells Sampled by County

(4 wells)

The water type for three samples is sodium sulfate type and 1 sample 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, 4 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 1 well

5 Year Groundwater Level Trend 2012 - 2016

"Key" well 07N23W16R01S: ↓

In general for 2 wells consistently measured: ↓

5 Year Groundwater Quality Trend 2012-2016

SWN	Nitrate	Chloride	TDS	Sulfate
09N23W30E05S	↓	↑	↑	↑
07N23W15P01S	↑	↓	↓	↓
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 Feb. 2017)

Number of Wells: 249
Active: 153
Destroyed: 61
Abandoned: 21
Can't Locate: 14

Self Reported Groundwater Extraction to FCGMA (as of March 27, 2017)

Agricultural Extractions: 20,376 AF/Yr

Municipal, Industrial, and Domestic Extractions: 1,225 AF/Yr

Total: 21,601 AF/yr

2016 Groundwater Levels in General for All Wells Gauged by County

"Key" well 03N20W26R03S - December level was down 0.6 feet from the March measurement.

In general for 11 wells measured in 2016 in the basin, water levels declined in 9 wells and rose in 11 wells over the course of the year from the 1st quarter reading to the last quarter reading.

2016 Groundwater Quality in General for All Wells Sampled by County

(8 wells)

The water type in 4 samples is calcium bicarbonate type and the remaining 4 samples are 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, 4 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 2 wells

5 Year Groundwater Level Trend 2012 - 2016

"Key" well 03N20W26R03S: ↑

The 5 year trend based on 2012 through 2016 potentiometric surface 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 2012-2016

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: 638
Active: 466
Destroyed: 77
Abandoned: 33
Can't Locate: 62

Self Reported Groundwater Extraction to UWCD (as of March 22, 2017)

Agricultural Extractions: 42,153 AF/Yr

Municipal Extractions: 2,524 AF/Yr

Total Extractions: 44,677 AF/Yr

2016 Groundwater Levels in General for All Wells Gauged by County

"Key" well 03N20W05D01S - December level was down 7.57 feet from the March measurement.

In general for 11 wells measured in the basin in 2016, water levels declined over the course of the year from the 1st quarter reading to the last quarter.

2016 Groundwater Quality in General for All Wells Sampled by County

(15 wells)

The water in the 15 samples is calcium sulfate type.

Primary MCL Exceedances for Nitrate >45mg/l?	Yes, 3 wells
Secondary MCL Excedances for Chloride >250mg/l?	No
Secondary MCL Excedances for TDS >500mg/l?	Yes, 15 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 15 wells

5 Year Groundwater Level Trend 2012 - 2016

"Key" well 03N20W05D01S: ↓

The 5 year trend based on 2012 through 2016 potentiometric surface maps is downward.

5 Year Groundwater Quality Trend 2012-2016

(*sampled by UWCD)

SWN	Nitrate	Chloride	TDS	Sulfate
03N20W01D03S	↑	→	→	↑
03N20W02R05S	↓	↑	→	→
03N21W01P08S	→	→	↓	↓
04N19W31F01S	↓	↑	↑	↑
04N20W34H01S	↑	→	↑	↑
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 ↓

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 Feb. 2017)

Number of Wells: 78
Active: 29
Destroyed: 34
Abandoned: 6
Can't Locate: 8

Self Reported Groundwater Extraction to UWCD (as of March 22, 2017)

Agricultural Extractions: 3,300 AF/Yr

Municipal Extractions: 2,821 AF/Yr

Total Extractions: 6,121 AF/Yr

2016 Groundwater Levels in General for All Wells Gauged by County

"Key" well 02N22W07M02S - December level was down 13.10 feet from the January measurement.

In general for 4 wells measured in the basin in 2016, water levels declined in all 4 wells over the course of the year from the 1st quarter reading to the last quarter reading.

2016 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?	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 2012 - 2016

"Key" well 02N22W07M02S: ↓

The 5 year trend based on 2012 through 2016 potentiometric surface maps is downward.

5 Year Groundwater Quality Trend 2012-2016

(Based on 5 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 Feb. 2017)	**2016 Self Reported Groundwater Extractions to OBGMA**	**Water Demand Estimate**
Number of Wells: 344 Active: 194 Destroyed: 82 Abandoned: 15 Can't Locate: 53	Extractions: 2,883 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

2016 Groundwater Levels in General for All Wells Gauged by County

"Key" well 04N22W05L08S: - The December reading was down 17.4 feet from the March level.

In general for 14 wells consistently measured in 2016 in the basin, water levels declined in 11 wells and rose in 3 wells over the course of the year from the 1st quarter reading to the last quarter reading.

2016 Groundwater Quality in General for All Wells Sampled by County

(12 wells)

Ojai Valley groundwater: 4 samples are calcium bicarbonate type, 1 sample is sodium bicarbonate type, and 7 samples are calcium sulfate type.

Primary MCL Exceedances for Nitrate >45mg/l?	Yes, 2 well
Secondary MCL Excedances for Chloride >250mg/l?	Yes, 1 well
Secondary MCL Excedances for TDS >500mg/l?	Yes, 12 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 1 well

5 Year Groundwater Level Trend 2012 - 2016

"Key" well 04N22W05L08S: ↓

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

5 Year Groundwater Quality Trend 2012-2016

SWN	Nitrate	Chloride	TDS	Sulfate
04N22W04P05S	↑	↑	↑	↑
04N22W06J09S	↓	↓	→	→
04N23W01K02S	↓	↓	↓	↓
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 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 Feb. 2016)

Number of Wells: 312
Active: 110
Destroyed: 151
Abandoned: 17
Can't Locate: 33

Self Reported Groundwater Extraction to FCGMA (as of March 27, 2017)

Agricultural Extractions: 6,587 AF/Yr

Municipal, Industrial, and Domestic Extractions: 11,631 AF/Yr

Total: 18,218 AF/yr

2016 Groundwater Levels in General for Wells Gauged by County and UWCD

"Key" well 02N22W12R04S - Note: Measurements from UWCD. Well is dry as of November 2016 measurement. This is an upper system well.

In general for 2 of 3 wells measured by VCWPD in 2016 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 2016.

2016 Groundwater Quality in General for All Wells Sampled by County
(3 wells)

Forebay basin: the 3 samples are 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, 3 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 3 wells

5 Year Groundwater Level Trend 2012 - 2016

"Key" well 02N22W12R04S: Well is dry as of November 2016 measurement. This is an upper sysytem well.

Upper System

The 5 year trend based on 2012 through 2016 potentiometric surface maps is downward. ↓

Lower System

The 5 year trend based on 2012 through 2016 potentiometric surface maps is downward. ↓

5 Year Groundwater Quality Trend 2012-2016

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 ↓

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 Feb. 2017)

Number of Wells: 901
Active: 375
Destroyed: 385
Abandoned: 57
Can't Locate: 84

Self Reported Groundwater Extraction to FCGMA (as of March 27, 2017)

Agricultural Extractions: 48,793 AF/Yr

Municipal, Industrial, and Domestic Extractions: 7,780 AF/Yr

Total: 56,573 AF/yr

2016 Groundwater Levels in General for All Wells Gauged by County

UAS "Key" well 01N21W07H01S - December level was down 1.26 feet from the March measurement.

LAS "Key" well 01N21W32K01S - December level was down 4.6 feet from the January measurement.

In general for 25 wells consistently measured in 2016 in the basin, water levels declined in 22 wells and rose in 3 wells over the course of the year from the 1st quarter reading to the last quarter reading.

2016 Groundwater Quality in General for All Wells Sampled by County

(53 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, 2 wells
Secondary MCL Excedances for TDS >500mg/l?	Yes, 53 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 47 wells

5 Year Groundwater Level Trend 2012 - 2016

UAS "Key" well 01N21W07H01S: ↓

LAS "Key" well 01N21W32K01S: ↓

Upper System

The 5 year trend based on 2012 through 2016 potentiometric surface maps is downward.

Lower System

The 5 year trend based on 2012 through 2016 potentiometric surface maps is downward.

5 Year Groundwater Quality Trend 2012-2016

Upper System

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

Lower System

SWN	Nitrate	Chloride	TDS	Sulfate
01N21W08R01S	→	↑	→	→
01N21W16M03S	→	↑	↑	↑
01N21W19J05S	→	↑	↓	↑
01N21W20K03S	→	→	↓	↓
01N21W21H02S	→	↑	↑	↑
01N21W28D01S	→	↓	↑	→
01N22W03F05S	↑	→	↓	↓
01N22W16D04S	→	↑	↓	↑
01N22W19A01S	→	→	↓	→
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 Feb. 2017)	**Self Reported Groundwater Extraction to UWCD (as of March 22, 2017)**
Number of Wells: 192 Active: 153 Destroyed: 20 Abandoned: 6 Can't Locate: 13	Agricultural Extractions: 12,375 AF/Yr Municipal Extractions: 430 AF/Yr Total Extractions: 12,805 AF/Yr

2016 Groundwater Levels in General for All Wells Gauged by County

"Key" well 04N19W25C02S - December level was up 15.8 feet from the March measurement.

In general for 4 wells consistently measured in 2016 in the basin, water levels declined in 2 wells and rose in 2 wells over the course of the year from the 1st quarter reading to the last quarter reading.

2016 Groundwater Quality in General for All Wells Sampled by County

(10 wells)

Piru basin groundwater is mainly calcium sulfate type.

Primary MCL Exceedances for Nitrate >45mg/l?	Yes, 3 wells
Secondary MCL Excedances for Chloride >250mg/l?	No
Secondary MCL Excedances for TDS >500mg/l?	Yes, 10 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 10 wells

5 Year Groundwater Level Trend 2012 - 2016

"Key" well 04N19W25C02S: ↓

The 5 year trend based on 2012 through 2016 potentiometric surface maps is downward.

5 Year Groundwater Quality Trend 2012-2016

(* sampled by UWCD)

SWN	Nitrate	Chloride	TDS	Sulfate
04N18W30J04S	↑	↑	↑	↑
04N19W25H01S	↑	↑	↑	↑
04N19W26H01S	↓	↑	↓	→
04N19W26J05S	↑	→	↑	↓
04N19W34J04S	↑	↑	↓	→
04N18W20R01S*	↑	↑	→	↑
04N18W27B01S*	↑	↑	↑	↑

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 Feb. 2017)

Number of Wells: 336
Active: 93
Destroyed: 172
Abandoned: 27
Can't Locate: 44

Self Reported Groundwater Extraction to FCGMA (as of March 27, 2017)

Agricultural Extractions: 11,974 AF/Yr

Municipal, Industrial, and Domestic Extractions: 4,485 AF/Yr

Total: 16,459 AF/yr

2016 Groundwater Levels in General for All Wells Gauged by County

"Key" well 01N21W03C01S - December level was down 28.5 feet from the January measurement.

In general for 13 wells measured in 2016 in the basin, water levels declined in 10 wells and rose in 3 wells over the course of the year from the 1st quarter reading to the last quarter reading.

2016 Groundwater Quality in General for All Wells Sampled by County

(18 wells)

Pleasant Valley basin groundwater: 2 samples are sodium sulfate type, and 16 samples are are calcium sulfate type

Primary MCL Exceedances for Nitrate >45mg/l?	Yes, 1 wells
Secondary MCL Excedances for Chloride >250mg/l?	Yes, 3 wells
Secondary MCL Excedances for TDS >500mg/l?	Yes, 18 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 13 wells

5 Year Groundwater Level Trend 2012 - 2016

"Key" well 01N21W03C01S: ↓

Upper System

The 5 year trend based on 2012 through 2016 potentiometric surface maps is downward.

Lower System

The 5 year trend based on 2012 through 2016 potentiometric surface maps is downward.

5 Year Groundwater Quality Trend 2012-2016

Upper System

SWN	Nitrate	Chloride	TDS	Sulfate
01N21W15H01S	→	↓	↓	↓

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 Feb. 2017)

Number of Wells: 286
Active: 154
Destroyed: 76
Abandoned: 11
Can't Locate: 45

Self Reported Groundwater Extraction to UWCD (as of March 3, 2015)

Agricultural Extractions: 18,204 AF/Yr

Municipal Extractions: 7,141 AF/Yr

Total Extractions: 25,345 AF/Yr

2016 Groundwater Levels in General for All Wells Gauged by County

"Key" well 02N22W02C01S - December level was down 7.82 feet from the March measurement.

In general for 7 wells measured in 2016 in the basin, water levels declined over the course of the year from the 1st quarter reading to the last quarter reading.

2016 Groundwater Quality in General for All Wells Sampled by County

(7 wells)

The water type for the 7 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, 7 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 7 wells

5 Year Groundwater Level Trend 2012 - 2016

"Key" well 02N22W02C01S: ↓

The 5 year trend based on 2012 through 2016 potentiometric surface maps is downward.

5 Year Groundwater Quality Trend 2012-2016

(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 Feb. 2017)

Number of Wells: 169
Active: 27
Destroyed: 79
Abandoned: 21
Can't Locate: 42

Self Reported Groundwater Extraction to FCGMA (as of March 27, 2017)

Agricultural Extractions: 1,499 AF/Yr

Municipal, Industrial, and Domestic Extractions: 94 AF/Yr

Total: 1,593 AF/yr

2016 Groundwater Levels in General for All Wells Gauged by County

"Key" well 02N19W05K01S - December level was down 1.0 foot from the January measurement.

In general for 2 wells measured in 2016 in the basin, water level decreased in one well over the course of the year from the 1st quarter reading to the last quarter reading. The second well was not measured in the last quarter of 2016.

2016 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?	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 2012 - 2016

"Key" well 02N22W05K01S: ↓

In general 1 wells measured has a slight downward trend amd 1 well has a slight upward trend.

5 Year Groundwater Quality Trend 2012-2016

SWN	Nitrate	Chloride	TDS	Sulfate
02N19W07B02S	↑	↑	↓	→
02N19W07D02S	↑	→	↓	↓
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 Feb. 2017)	**Water Demand Estimate**
Number of Wells: 52 Active: 32 Destroyed: 8 Abandoned: 1 Can't Locate: 11	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

2016 Groundwater Levels in General for All Wells Gauged by County

No key well is in this basin.

In general for 3 wells measured in 2016 in the basin, water levels increased over the course of the year from the 1st quarter reading to the last quarter reading.

2016 Groundwater Quality in General for All Wells Sampled by County

(7 wells)

Tierra Rejada groundwater: 2 samples are magnesium bicarbonate type, 5 samples are magnesium sulfate type.

Primary MCL Exceedances for Nitrate >45mg/l?	Yes, 4 wells
Secondary MCL Exceedances for Chloride >250mg/l?	No
Secondary MCL Exceedances for TDS >500mg/l?	Yes, 7 wells
Secondary MCL Exceedances for Sulfate >250mg/l?	No

5 Year Groundwater Level Trend 2012 - 2016

In general for 3 wells consistently measured: ↓

5 Year Groundwater Quality Trend 2012-2016

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 Feb. 2017)	**Water Demand Estimate**
Number of Wells: 296	Irrigation Demand @ 2 AF/Ac: 2,412 AF/Yr
Active: 171	
Destroyed: 43	Municipal Demand @ 0.5AF/person/Yr: 7,980 AF/Yr
Abandoned: 13	
Can't Locate: 69	Total Demand Estimate: 10,392 AF/Yr

2016 Groundwater Levels in General for All Wells Gauged by County

"Key" well 04N23W16C04S - December level was down 8.0 feet from the March measurement.

In general for 14 wells measured in 2016 in the basin, water levels declined in 13 wells and rose in 1 well over the course of the year from the 1st quarter reading to the last quarter reading.

2016 Groundwater Quality in General for All Wells Sampled by County

(3 wells)

Upper Ventura River basin: The groundwater in the 3 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, 3 wells
Secondary MCL Excedances for Sulfate >250mg/l?	Yes, 1 wells

5 Year Groundwater Level Trend 2012 - 2016

"Key" well 04N23W16C04S: ↓

In general for 14 wells consistently measured: (13 wells) ↓ (1 well) →

5 Year Groundwater Quality Trend 2012-2016

(*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 Feb. 2017)

Number of Wells: 117
Active: 65
Destroyed: 40
Abandoned: 6
Can't Locate: 6

Self Reported Groundwater Extraction to FCGMA (as of March 27, 2017)

Agricultural Extractions: 10,693 AF/Yr

Municipal, Industrial, and Domestic Extractions: 1,841 AF/Yr

Total: 12,534 AF/yr

2016 Groundwater Levels in General for All Wells Gauged by County

"Key" well 02N21W11J04S - December level was down 5.6 feet from the January measurement.

In general for 11 wells measured in 2016 in the basin, water levels declined over the course of the year from the 1st quarter reading to the last quarter reading.

2016 Groundwater Quality in General for All Wells Sampled by County

(13 wells)

The water type in 10 samples is calcium sulfate type, 3 samples are calcium 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, 6 wells

5 Year Groundwater Level Trend 2012 - 2016

"Key" well 02N21W11J04S: ↓

The 5 year trend based on 2012 through 2016 potentiometric surface maps is downward.

5 Year Groundwater Quality Trend 2012-2016

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 ↓