WATER SUPPLY EVALUATION

PASO ROBLES RIVER OAKS II EXPANSION

FINAL PUBLIC REVIEW DRAFT

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TODD GROUNDWATER

2490 Mariner Square Loop, Suite 215
Alameda, CA 94501
510.747.6920
www.toddgroundwater.com

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1. INTRODUCTION

This Water Supply Evaluation (WSE) was prepared for the Paso Robles River Oaks II Expansion Project (Project) located in Paso Robles north of Highway 46 and east of Highway 101 and the Salinas River in the southern portion of Subarea A of the Borkey Area Specific Plan area (**Figure 1**). The Project is proposed by Estrella Associates, Inc., developers of the existing River Oaks residential neighborhoods that lie to the south (River Oaks I). The Project will require a General Plan Amendment and a Borkey Area Specific Plan Amendment to re-designate the land use category and rezone the property from Agriculture to planned single-family residential.

Currently, the Project site consists of a spa facility, outdoor pavilion, amphitheater, a 3.9-acre reservoir/lake that discharges to the Salinas River, and vacant land. The proposed Project encompasses nearly 130 acres and will consist of 271 homes, of which 127 will be single family homes and 144 will be deed restricted single family homes on smaller lots for adults at least 55 years old. In addition, the existing River Oaks Hot Springs Spa (Spa) is proposed to be expanded to include a fitness and wellness center, tennis courts, swimming pools, and an improved community center.

Potable water supplied by the City to the site now is approximately 18 acre-feet per year (AFY), and is expected to increase to 132 AFY when fully developed.

Residential land lies to the south and agricultural land lies to the north. Highway 101 and the Salinas River are to the west. To the east lie rural residential and agricultural lands. Currently, the existing River Oaks Hot Springs Spa and surrounding facilities receive City-supplied potable water and water from a well located along the Salinas River. Additionally, two deeper geothermal wells on the Project site supply water to the Spa's hot tubs. The proposed Project water supply will include City-supplied potable water, City-supplied recycled water (when it becomes available), and water from River Oaks' private wells (two onsite geothermal wells). A River Oaks well along the Salinas River will supply irrigation water until recycled water becomes available. The City will provide wastewater collection.

The City of Paso Robles has adopted an Urban Water Management Plan (UWMP) that details City water supplies and demands to the year 2035 (Todd, 2011). This version of the Paso Robles River Oaks II Expansion Project was not specifically included in the UWMP but prior development planning for the site was included; the annual water use set aside for the previous version (a resort) was 64 AFY (Alakel, 2010).

This WSE was prepared in accordance with the City's Rules and Regulations for implementing projects subject to the California Environmental Quality Act (CEQA). The primary purpose of this WSE is to provide an independent evaluation of the Project's water needs and impacts on City water supplies. It documents Project water demand and available water supply, and determines if there is sufficient water supply to meet future water demands within the Project area and within the City's water supply service area under normal and dry hydrologic conditions to 2040.

1.1. PROPOSED PROJECT

The proposed Project includes single family homes; a spa expansion that includes a fitness and wellness center, tennis courts, two swimming pools, and an improved community center; and open space. **Figure 2** is a conceptual plan for the Project.

The proposed residential portion of the development consists of the following:

- 127 single family homes on 15,000 to 20,000 square foot (sf) lots
- 144 residential senior homes on 8,000 to 10,000 sf lots.

The Spa expansion will include:

- a fitness and wellness center
- tennis courts
- warm mineral pool
- fresh water swimming pool
- community center (existing open air pavilion will be enclosed)
- community garden, and
- walking trails.

Acreages and water supply sources for Project components are listed in **Table 1**.

1.2. BACKGROUND

The City of Paso Robles requires that certain CEQA documents (e.g., Mitigated Negative Declaration) be informed by an independent evaluation of the project's water supply needs and impacts on the City's water supply as set forth in the current UWMP. This requirement applies to all general plan amendments that propose an increase in residential, commercial, and/or industrial intensity and all annexations that have not been approved by the City Council as of January 1, 2014. Each independent evaluation is to be prepared by a consultant of the City's choice based on demonstrated competence in water supply evaluation and familiarity with the UWMP. The City will determine the scope of work for said evaluation, which may include elements specified in California Water Code Sections 10910 et seq.

The California Water Code Section 10910 (also termed Senate Bill 610 or SB610) requires that a Water Supply Assessment be prepared for a project that is subject to CEQA and is considered a project subject to SB610 as defined in Water Code Section 10912. The River Oaks II Project is subject to CEQA, but is not subject to SB610 according to Water Code Section 10912. Therefore, this Paso Robles River Oaks II Project water supply analysis (required under the City's CEQA rules and regulations) is a water supply *evaluation* (WSE) rather than a water supply *assessment*. While a WSE may not be subject to all the requirements of SB610, the City has requested that this WSE provide information consistent with requirements of SB610.

Under SB610, documentation of water supply sources, quantification of water demands, evaluation of drought impacts, and provision of a comparison of water supply and demand are required to form the basis for an assessment of water supply sufficiency. This WSE follows the guidelines set out in the Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 and subsequent clarification posted on the California Department of Water Resources website (CDWR, 2013).

A foundational document for preparation of a Water Supply Assessment or a WSE is an UWMP; the City has prepared and adopted a 2010 UWMP (Todd, 2011) in compliance with the Water Code. This includes compliance with the Water Conservation Act of 2009, also known as Senate Bill 7, which provides the regulatory framework for a statewide 20 percent reduction in urban per capita water demand by 2020. The 2010 UWMP included projected increases in water demand of both residential and non-residential land uses located within the City limits; this report discusses these projections and the cumulative water demand increases to date. This Project is inside City limits and included in the 2010 UWMP. The City requires that any project subject to CEQA and requiring a General Plan Amendment for increased residential, commercial, or industrial intensity complete a Water Supply Assessment (if required under Water Codes Sections 10910 and 10912) or a WSE to analyze potential impacts of any new water use on a case-by-case cumulative basis.

The City's adopted 2010 UWMP included an estimated potable water demand for this Project site totaling 64 AFY[1]. That means that City water planning to date accounts for that level of water demand.

In order to enhance overall water supply reliability, new development—per City policy—is required to be served with surface and recycled water through the City's blended municipal water resources. Consequently, recycled water use is incorporated into the Project when appropriate.

1.3. WSE PURPOSE AND ORGANIZATION

The purpose of this WSE is to document the City's existing and future water supplies for its service area and to compare them to the area's future water demand, including that of the proposed Project. This comparison, conducted for both normal and drought conditions in five-year increments to 2040, is the basis for an assessment of water supply sufficiency in accordance with California Water Code Section 10910 (SB610).

The WSE incorporates current and future water supply and demand information from the City's 2010 UWMP, available City and County documents regarding water supplies

[1] In this evaluation, water demand values may be shown to the tenth or hundredth place. As a result, numbers may appear to be accurate to four or five digits, which is not the case. Estimated values (e.g., water demand) are probably accurate to one or two significant digits. In the text and tables, digits are retained to minimize rounding errors, preserve correct totals in tables, and to maintain as much accuracy as possible in subsequent computations.

(groundwater, Nacimiento supply, recycled water), current water use, and estimated water use of the Project and other approved and proposed projects. The analysis extends to 2040, addresses water demands in five-year increments, and provides information consistent with SB610 WSA requirements.

2. PROJECT WATER DEMAND

This section addresses water demands for the existing property and presents water demand estimates for the proposed development.

2.1. CURRENT PROJECT WATER USE

Currently, the Project site consists of a spa facility, outdoor pavilion, amphitheater, a 3.9-acre reservoir/lake that discharges to the Salinas River, and vacant land. River Oaks Well #4 and two deeper geothermal wells (Wells #2 and #3) provide water to the spa facility and surrounding area. Well #4 is south of the Project site along the Salinas River on land Estrella deeded to the City but Estrella has access to the wells through easements (Fugro, 2009). River Oaks Well #7 is adjacent to Well #4 and supplies water to the River Oaks Golf Course. The geothermal wells are located on the Project site (**Figure 2**). Current water use is summarized in **Table 2**. Existing potable water demand at the Project site is approximately 18 AFY.

2.2. PROPOSED PROJECT WATER DEMAND

The Project is planned to be built in phases over a six to eight year time period (Estrella, 2013). Full buildout water use conditions are documented in this WSE. The Project will use City-supplied water, water from private wells and recycled water, when it becomes available between 2020 and 2025. **Table 3** presents the buildout water use for the various Project components. Also included in the table are water sources for each of the Project components and the water use rates used to develop these estimates.

Residential Water Demands. The residential units will be supplied with City water at an estimated rate of 0.5 AFY for the single family homes on larger lots and 0.29 AFY for homes on smaller lots (Rickenbach, 2013). The total buildout residential water use is estimated at 105 AFY plus 8 AFY of non-revenue water (also called unaccounted-for losses) (add values in rows 1 and 2 in **Table 3**).

These residential demand estimates are reasonable. The 0.5 AFY and 0.29 AFY water use rates are based on single family and multifamily use projections in the City's 2010 UWMP[2]. Furthermore, these rates are similar to average water use in a similar development to the south where large lots use 0.49 AFY and small lots use 0.25 AFY[3].

[2] These rates can be compared to actual average single family home usage in the City for select years: 0.47 AFY (2005), 0.40 AFY (2010, 2012 and 2013), and 0.36 AFY (2014). Water use restrictions in the City have reduced average usage since 2009.

[3] 0.49 AFY is 2010-2015 average of select Experimental Station and Vineyard Circle Lots which are representative of large lots (0.35 acre/lot). 0.25 AFY is 2010-2015 average of Traditions Residential demand including irrigation of front yards and common turf areas. The number has been prorated for small lot size 0.20 acre/lot (from 0.29 acre/lot @ 0.37 AFY).

Recycled Water Demands. Landscape irrigation demand will be supplied by recycled water when is becomes available between 2020 and 2025 (rows 3 through 5, 7 and 8 in **Table 3**). Prior to that, water from River Oaks Well #4 will supply this irrigation water.

Spa Expansion and Surrounding Area Water Demands. City-supplied potable water will provide indoor water use and other Spa expansion and community facilities components (rows 6 and 7 in **Table 3**). Estrella estimates that City-supplied water use for the expanded Spa and community facilities will remain similar to existing amounts. Geothermal water from two onsite wells will supply the hot tubs and geothermal swimming pool (row 6 in **Table 3**). Geothermal water use will increase from 11 AFY to 30 to 40 AFY. Until recycled water becomes available, private well water would continue to be used for turf irrigation and the Lake (row 7 in **Table 3**) reportedly at the same rate as current conditions.

Once completed, the Project will need about 132 AFY of City-supplied potable water; 32.30 AFY of City-supplied recycled water; 334 AFY will be from River Oaks Well #4, and 30-40 AFY will be from the two geothermal wells (River Oaks Wells #2 and #3).

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3. CITY OF PASO ROBLES WATER DEMAND

This section summarizes the current and projected water demands for the City of Paso Robles. The subsections below describe the factors affecting total water demand, including climate and population, normal climatic conditions and droughts.

3.1. CLIMATE

Climate has a significant influence on water demand on a seasonal and annual basis. This influence increases with the portion of water demand for outside uses, specifically landscape irrigation.

Table 4 summarizes representative climate data for the Paso Robles area, including average monthly and annual rainfall, temperature, and evapotranspiration (ETo). The area has a Mediterranean climate, with moderate temperatures year-round, dry summers and wetter winters. Most of the rainfall occurs between November and April. **Figure 3** shows annual rainfall for the 1931 to 2014 period with average annual rainfall at 14.01 inches.

Climate change affects global and local climate patterns. Potential climate changes in Paso Robles by the end of this century include:

- Increased temperatures
- Changed precipitation rates
- Increased frequency and severity of storm events
- Increased burn area from wildfires (Rincon, 2013).

Climate change may affect future water supply availability by increasing temperature resulting in more demand for irrigation and greater evaporation of Lake Nacimiento water. Effects on the water system of increased irrigation demand can be minimized through water conservation measures and provision of recycled water. Full subscription is underway for Nacimiento Water Project water, resulting in a diversified water supply portfolio that increases overall City water supply reliability.

3.2. POPULATION

Paso Robles' current and projected population is shown in **Table 5**. The City's population in 2025, based upon the City's 2003 General Plan Amendment 2005-001–Resolution 05-249, is consistent with the City's 2010 UWMP (Todd, 2011) and the General Plan population threshold of 44,000 residents. However, it is recognized that with current growth rates it is likely that the build out population of 44,000 will not be reached by 2025 and may extend past 2040.

3.3. CURRENT WATER USE SECTORS AND WATER DEMAND

Tables 6 and **7** depict past and current water connections and water demand for the Paso Robles service area by water use sectors for the calendar years 2005, 2010, and 2012 to 2014. Since the summer of 2009, in response to drought and summer water production shortfalls,

City-mandated outdoor water use restrictions and other conservation programs have resulted in reduced water use. These restrictions have been successful in reducing peak demand and have enabled the City to maintain adequate reservoir storage levels for emergency and reserve uses. In 2014, the City supplied 6,269 AF of potable water citywide. This is well below prior years and is within the water conservation target threshold identified in Senate Bill 7.

City water use restrictions will likely remain in effect until current State mandated water use reductions are lifted and rainfall returns to normal or above levels and/or when deliveries of additional supply (Nacimiento Water) increase.

3.4. PROJECTED WATER DEMAND

The projected number of water service connections for water use sectors are shown in **Table 6** in five-year intervals between 2015 and 2040. These projections are based on the City's current General Plan and 2010 UWMP and assume a population threshold of 44,000 by 2025. **Table 7** provides projections for customer deliveries for the same time intervals. For City planning purposes, the top portion of **Table 7** presents projected deliveries based on baseline water usage rates prior to potential conservation and recycling savings.

The *Potential Conservation and Recycling* row in **Table 7** represents the potential conservation and recycled water required to comply with the Senate Bill 7 goal of 20 percent reduction of per capita baseline water use by 2020. Baseline per capita water use is 241 gallons per capita per day (gpcd) (Todd, 2011). Target water use in 2020 is required to be 80 percent of baseline gpcd, which equates to 193 gpcd. In 2014, actual per capita water use was 182 gpcd.

These water use projections were based on the 2010 UWMP (Todd, 2011) where the sector-specific water demands projected for 2025 are based on potential use of all land use categories. By 2025, the Paso Robles service area is projected to have a build out water use of 13,400 AFY if historic use patterns were to prevail. To achieve the State-mandated target of a 20 percent reduction by 2020, water use will need to be reduced to 9,515 AFY, or 193 gpcd.

The timing of future water demand is dependent on customer usage, success in sustained water conservation, approval and construction of prospective projects, market forces and other factors. **Table 8** lists major projects that are under construction, possess active permits, or have applied for permits. Water use for the projects has been estimated in the table and summed at the bottom for a total of 577 AFY. Many factors may influence the timing of construction and operation of the noted projects. Nonetheless, addition of the **Table 8** projected water use of 577 AFY to the City's 2014 water use of 6,269 AFY results in 6,846 AFY. This is below the estimated 2015 water use of 8,550 AFY (baseline) and 7,570 AFY (20 percent reduction target), indicating that the City is within the 2010 UWMP water planning horizon for the near future.

4. WATER SUPPLY

The City of Paso Robles has historically relied on the Paso Robles Groundwater Basin and the Salinas River underflow for its municipal water supply. This has been supplemented in recent years with imported water from Lake Nacimiento[5] and recycled water is planned for the future. **Table 9** lists the City's current and planned water supply sources. This section describes the water supplies available to the City.

4.1. PASO ROBLES GROUNDWATER BASIN

Figure 1 shows the boundaries of the Paso Robles Groundwater Basin, which encompasses about 790 square miles in San Luis Obispo County and southern Monterey County. The Paso Robles Groundwater Basin (DWR Basin No. 3-4.06) is the water-bearing portion of the upper Salinas River drainage area. The Salinas River system drains the basin area and surrounding uplands, and flows north along the western edge of the drainage area.

4.1.1. Geology

The major aquifers (or water-bearing units) in the basin include alluvial deposits and the Paso Robles Formation. The alluvial deposits are up to 100 feet in depth and include recent stream-laid sands and gravels along the floodplains of the Salinas River and its tributaries, and older finer-grained terrace deposits along the Salinas River and Estrella River. Wells in alluvium typically produce in excess of 1,000 gallons per minute (gpm) (Fugro, 2002).

The Paso Robles Formation is the most extensive aquifer and consists of sedimentary layers extending from the surface to depths of more than 2,000 feet. It is typically unconsolidated and generally poorly sorted. The water bearing sediments in the basin are 700 to 1,200 feet thick and typically extend to sea level. Paso Robles Formation sediments are relatively thin, often discontinuous sand and gravel layers interbedded with thick layers of silt and clay. Wells generally produce several hundred gpm (Fugro, 2002).

4.1.2. Groundwater Quality

A general measure of groundwater quality is total dissolved solids (TDS). For drinking water purposes, water with a TDS concentration of 500 milligrams per liter (mg/L) or less is recommended, but can be usable up to 1,000 mg/L. In Paso Robles Groundwater Basin wells, TDS concentrations generally range from 300 to 1,000 mg/L (Fugro, 2002 and 2005). Wells screened along the Salinas River in the recent alluvium generally have TDS concentrations between 300 and 800 mg/L, reflecting the quality of stream recharge water.

A survey of local groundwater quality was conducted by the United States Geological Survey (USGS) as part of its Groundwater Ambient Monitoring and Assessment (GAMA) Program

[5] Since the summer of 2013, the City has been using some Lake Nacimiento water to recharge its Salinas River well field in response to drought. In late 2015, the City's NWP water treatment plant came online to supply treated NWP water to the City.

(USGS, 2007). The USGS sampled eleven randomly-selected wells located along the major river valleys, including four in or near the City. While trace amounts of pesticides, arsenic, and boron were reported, no constituents of concern were detected above regulatory thresholds.

In general, City water quality is good, but has relatively high TDS and hardness. In response to the hardness, many residents use home water softeners. However, use of water softeners results in addition of salts to the City's wastewater, which is treated and discharged to the groundwater basin. This situation should be improved in the future with the introduction of Lake Nacimiento water. Lake Nacimiento water is lower in hardness and TDS than groundwater, and obviates the need for water softeners. If citizens reduce or eliminate the use of water softeners, they will not only enjoy cost savings, but will also help preserve the quality of local groundwater and advance the use of recycled water for irrigation.

4.1.3. Groundwater Levels and Flow

Groundwater levels in the Paso Robles Groundwater Basin range between above 1,500 feet above mean sea level (msl) around the basin margins to below 600 feet msl in the Estrella subarea and along the Salinas River north of the City (Todd, 2007 and GEI, 2011). Groundwater depths range from less than 20 feet below ground surface near the Salinas River to over 300 feet below ground surface. Groundwater flows generally from the margins toward the center of the basin and to the northwest, where the outlet to the lower Salinas Valley is located. Review of regional maps indicates that groundwater flow beneath the Project site is generally to the northwest (GEI, 2011 and Fugro, 2005).

4.1.4. City Wells

The City has 7 river wells, 12 basin wells, and 1 Nacimiento water recovery well (**Figure 4**). With regard to river wells, the City's Thunderbird well field is located near the Salinas River. The wells range in depth from 140 to 215 feet, are screened mostly in the alluvium, and yield underflow from the Salinas River. Water levels have remained generally constant, at about 20 to 40 feet below ground surface. The City's Ronconi Wells 1 and 4 are also located near the Salinas River. These wells are 76 and 70 feet deep, respectively, and yield underflow from the Salinas River. Water levels typically are about 15 feet below ground surface. The Borcherdt well, also classified as a river well but more distant from the main stem, typically has water levels about 50 to 65 feet below ground surface. This well has not been pumped in the last few years.

The 12 City basin wells are dispersed across the City east of the Salinas River. All are screened in the Paso Robles Formation as are the many nearby rural residential and agricultural wells surrounding the City. A groundwater depression is centered in the Estrella subarea, reflecting agricultural, golf course, municipal, rural and other pumping. This pumping depression is characterized by declining groundwater levels, which are also apparent in City wells which in some cases have declined more than 100 feet since 1997, with recent annual rates of decline generally between 5 to 9 feet per year. Water level declines are expected to continue into the near future unless overall pumping in the Estrella subarea across water use sectors is reduced or supplemental recharge is achieved.

The Nacimiento recovery well was recently installed in the Thunderbird well field to recover percolated Nacimiento water (not native river underflow) in both dry and normal years. This additional well allows for increased use of Nacimiento water that is discharged and infiltrated into the Salinas River channel adjacent to the well field.

Annual pumping totals for basin and river wells between 2005 and 2014 are shown in **Table 11**. Because of the mandatory water use restrictions and successful conservation, water use since 2009 has been reduced. Future pumping in five-year increments is shown in **Table 12**. The City does not plan to increase basin pumping from historical highs of around 4,000 AFY to support additional growth. New development will be served with Lake Nacimiento water and recycled water.

4.1.5. Local Wells

Fugro (April, 2009) conducted a wellfield assessment for Estrella, the Project applicant, for wells associated with the River Oaks properties. Ten wells within the Project vicinity were identified (see **Figure 2**). Two of these wells pump shallow groundwater (Wells #4 and #7) and lie south of the River Oaks II property near River Road on the eastern bank of the Salinas River. Well #4 currently supplies the River Oaks II property, is 76 feet deep and is screened between depths of 15 and 55 feet. Well #4 pumped 334 AFY in 2012 (Rickenback, 2015). Well #7 is 25 feet south of Well #4 and supplies water to the River Oaks Golf Course which is south of the Project site. It is 57 feet deep and screened between depths of 17 and 57 feet.

Two basin wells (Wells #1 and #5) exist on the northern portion of the River Oaks II site (Well #1) or to the north (Well #5). Both wells were installed in 1989 to depths of 500 feet. As of 2009, Well #1 had likely been used little and Well #5 had no pump and likely never used (Fugro, 2009). Three College Station wells to the east of the Project are also screened in the Paso Robles Formation. Limited data indicate that two of these wells are 6 inches in diameter and one is 362 feet deep (Fugro, 2009). None of these basin wells are intended to provide water supply to the Project.

For the purposes of the WSE, it is understood that Well #4 is most likely to be pumped to provide nonpotable irrigation water supply for the Project until recycled water becomes available. Accordingly, its average annual pumping would increase from 334 AFY in 2012 to 366 AFY and then back 334 AFY when recycled water becomes available between 2020 and 2025 (see **Table 3**). It is reasonable to presume that Well #4 (or a replacement) can accommodate this temporary increase.

Two geothermal wells (Wells #2 and #3) are on the River Oaks II site and supply the Spa hot tubs. Both wells are 960 feet deep. Well #6 to the north also is most likely a geothermal well. It is 831 feet deep and has been historically used to supply a nearby hot springs with water temperatures above 90° F. These geothermal wells probably produce water from the Pancho Rico Formation below the Paso Robles Formation (Fugro, April 2009). These two geothermal wells (Wells #2 and #3) currently supply and are expected to continue to supply the Spa. Current pumping is estimated at 11.2 AFY and future planned pumping is estimated between 30 and 40 AFY. The capability of these two wells to produce at the future rates has not been

documented. If the two wells cannot provide adequate supply, additional deep geothermal wells would be needed.

Use of these private wells is subject to the recently passed City's Private Water Well Ordinance (Ordinance No. 1021 N.S.) which has permit requirements for the development and use of private wells, policies for switching over to recycled water use, and requirements to follow the City's Water Conservation and Water Shortage Contingency Plan program. Section 4.1.11 provides further detail on the Private Well Ordinance.

4.1.6. Groundwater Balance and Perennial Yield

Local water users have recognized the seriousness of local groundwater declines and have sponsored investigations to understand the groundwater basin and lay the groundwork for improved management. Specifically, a series of recent studies have addressed the water balance of the Paso Robles Basin and its perennial yield. The *Paso Robles Groundwater Basin Study* (Fugro, 2002) included basic data compilation and review, definition of the basin and subareas, aquifer characterization, assessment of water quality conditions, and a water balance study as of 1997. The *Phase II Numerical Model Development* report (Fugro, 2005) involved development of a groundwater flow model of the basin and summarized its development, calibration, and application to specific issues. Objectives included refining the basin's water balance and perennial yield, and simulating impacts to groundwater levels resulting from projected build out conditions in the basin. Important conclusions included estimation of the perennial yield for the Paso Robles Groundwater Basin at 97,700 AFY with basin pumping in 2000 estimated at 82,600 AF. By comparison, City deep well pumping in 2014 was approximately 3,500 AFY.

The *Paso Robles Groundwater Basin Study* documented groundwater level conditions up to 1997. Subsequently, the City and County sponsored a series of studies to provide updates on groundwater level conditions and the water balance (e.g., Todd, 2007; Todd, 2009; Fugro, 2010; and Yates, 2010). The County and basin stakeholders subsequently cooperated in the development of the 2011 Groundwater Management Plan, which presents basin management objectives and actions to fulfill those objectives, foremost of which is stabilization of groundwater levels. The Groundwater Basin Model and perennial yield estimate were updated with the current perennial yield estimated at 90,215 AFY (Geoscience, 2015).

The City of Paso Robles' planned recycled water program and additional entitlement for the Nacimiento Water Project (i.e., "full subscription") are positive steps that the City is taking to deliver in lieu supplies to areas of concern.

4.1.7. Groundwater Basin Monitoring and Management

The City recognizes that groundwater level declines are continuing locally, most notably in the Estrella subarea, which provides a portion of the City's groundwater supply as well as supply for farmers, domestic users, and other communities. Accordingly, the City participates actively in groundwater basin monitoring and management planning and activities, in cooperation with San Luis Obispo County and other water users. A Groundwater Management Plan (GWMP) was completed in March 2011 (GEI, 2011).

The City also has taken direct supplemental water actions. Those actions include construction of a water treatment plant enabling direct delivery of treated Nacimiento Water to customers, joining in full subscription of the Nacimiento Project thereby securing more entitlement for the City, and embarking on the recycled water program. The City's policy is to support additional growth with Nacimiento Project water and recycled water.

4.1.8. County Resource Management System (RMS) and Resource Conservation Study (RCS)

The San Luis Obispo County Planning and Building Department is responsible for the County Resource Management System, which provides information to the County Board of Supervisors to guide decisions about balancing land development with needed resources (e.g., water, schools, and roads). Under the Resource Management System, County staff collects available information, identifies resource problems, and recommends solutions to 1) expand the resource, 2) conserve the resource, or restrict/redirect development.

Findings under the County's Resource Management System led to the Paso Robles Groundwater Basin Urgency Ordinance, which was effective August 27, 2013 through August 27, 2015. The ordinance, with some exceptions, applied to unincorporated portions of the Paso Robles Groundwater Basin and prohibited new or expanded irrigated crop production and new development dependent on a well in the Basin. It provided some exemptions, specified some activities that were not subject to the ordinance, and allowed 1:1 offsets.

On October 27, 2015 the County Board of Supervisors adopted the Countywide Water Conservation Program. The amendments became effective November 26, 2015 and include:

- Water waste prevention measures apply to all unincorporated areas where a similar program is not already operated by a water purveyor
- Agricultural best management practices are encouraged in all unincorporated areas
- New buildings and new irrigated agriculture must offset new water use in the Paso Robles Groundwater Basin
- New buildings must offset new water use in the Nipomo Mesa Water Conservation Area.

These amendments focus on halting the increase in groundwater pumping throughout the Paso Robles Groundwater Basin and other critical areas in the County; they allow new development and new or altered irrigated agriculture only when demonstrated to fully offset water use.

4.1.9. Sustainable Groundwater Management Act

In September 2014, Governor Brown signed three legislative bills (AB 1739, SB 1168, and SB1319) that together are known as the Sustainable Groundwater Management Act. The legislation provides a framework for sustainable management of groundwater resources by local agencies, defined as a local public agency with water supply, water management, or land use responsibilities within a groundwater basin.

The legislation lays out a process and timeline for local agencies to achieve sustainability, including:

- Local agencies must form local Groundwater Sustainability Agencies (GSAs) within two years (i.e., 2017);
- Local agencies in basins deemed medium- and high-priority must prepare groundwater sustainability plans (GSPs) within five to seven years (2020 or 2022 depending on the overdraft status of the basin); and
- When plans are in place, local agencies must implement the GSPs and achieve sustainability within 20 years.

The Sustainable Groundwater Management Act is directed at groundwater basins or subbasins that have been designated by the State Department of Water Resources as medium- or high-priority through the California Statewide Groundwater Elevation Monitoring program. The Paso Robles Groundwater Basin was assigned a high priority; moreover, it has been designated as critically overdrafted, and thus is subject to the accelerated timeline.

The legislation also provides local agencies with the tools to achieve sustainability, including specific authorities and procedures. Among other powers, local agencies may:

- Conduct investigations to carry out the requirements of the Act;
- Require registration of wells and measurement of extractions;
- Require annual extraction reports;
- Impose well spacing requirements and limits on extractions from individual groundwater wells; and
- Assess fees to implement local groundwater management plans.

The County, City of Paso Robles and other agencies in the Paso Robles Groundwater Basin are moving forward with planning the formation of a Groundwater Sustainability Agency for the Paso Robles Groundwater Basin. In November 2015 the County Board of Supervisors called for an election by landowners to approve the formation of a proposed water district, water district Board of Directors, and a special tax assessment. The election will be held on March 8, 2016.

The City is committed to being actively involved in managing local water resources sustainably as the City's water supply is dependent upon the sustainability of the Paso Robles Groundwater Basin. More information about SGMA and the Paso Robles Groundwater Basin district formation process can be found at pasobasin.org.

4.1.10. Water Rights

The City's well supply is categorized into two sources according to water rights. These are Salinas River underflow and percolating water of the Paso Robles Groundwater Basin.

- Salinas River Underflow – River underflow is subject to appropriative water rights and permitting by the State Water Resources Control Board and the City's Permit number 5956 issued November 6, 1981, allows the City to extract up to eight cubic feet per second (3,590 gpm) with a maximum extraction of 4,600 AFY (January 1 to December 31). The permit includes moveable points of diversion. The City is currently in the

process of converting this permit to a license from the State Water Resources Control Board.

- Percolated Basin Water – The City operates deep wells that pump from DWR Basin No. 3-4.06 (Paso Robles Groundwater Basin) and like other pumpers in the basin, no court ordered pumping restrictions apply.

4.1.11. City's Private Well Policy

On January 6, 2016, the City passed and adopted the Private Well Policy Ordinance (Ordinance No. 1021 N.S. Relating to Recycled Water Service and Private Wells within the City). The City is committed to prudent City-wide use of water and water conservation and is developing a City recycled water system to offset potable water demand, consistent with statewide water recycling goals and the City's water planning documents.

The Ordinance has permit requirements for use of private wells, policies for switching over to recycled water use, and requirements to follow the City's Water Conservation and Water Shortage Contingency Plan. It allows for operation of private wells under the following circumstances:

- Domestic use in an Agricultural zone where City water is not available.
- Agricultural use in an Agricultural zone where recycled water is not available.
- Irrigation use on golf courses or athletic fields in Agricultural or Parks and Open Space zones where recycled water is not available.

Use of the private River Oaks' wells to supply water to this Project would be subject to requirements of this ordinance. The City intends to extend the recycled water infrastructure close to the River Oaks II property and is in the process of developing an agreement with the River Oaks II applicant regarding use of recycled water and temporary use of private wells for the River Oaks II property.

The ordinance requires installation of a meter (at the City's expense) on any private well that has been operating in the three-year period immediately before its effective date and requires the City to be allowed to enter the property for periodic meter inspection. Furthermore, use of recycled water could be required in lieu of potable water or private well use at the discretion of the public works department if it can feasibly be provided to the area for particular uses and in compliance with all applicable federal, states, and local laws.

This WSE is based on the assumption that recycled water will be used to supply Project irrigation needs (other than historical) until recycled water becomes available (rows 3, 4, 5, 7 and 8 in **Table 3**).

4.2. LAKE NACIMIENTO WATER

In 1959, San Luis Obispo County Flood Control and Water Conservation District (District) signed an agreement with what is now Monterey County Water Resources Agency entitling the District to no less than 17,500 acre-feet annually from Lake Nacimiento for uses in San Luis Obispo County; of this amount, 1,750 AFY is set aside for lakeside uses. The Nacimiento Water

Project (NWP), completed in 2010, consists of approximately 45 miles of pipeline to deliver raw water from Lake Nacimiento to communities in San Luis Obispo County. Participants in the Nacimiento Water Project are the City of El Paso de Robles, Templeton Community Services District (TCSD), Atascadero Mutual Water Company (AMWC), the City of San Luis Obispo, and County Service Area 10A in Cayucos. Combined delivery entitlements to these participants total 9,655 AFY as listed in the table below.

The City of Paso Robles' Nacimiento delivery entitlement is now 4,000 AFY and an additional 1,400 AFY was identified as a future supplemental water need in the 2010 Urban Water Management Plan (Todd, 2011).

The Nacimiento Water Project has capacity to deliver the full 17,500 AFY entitlement (less the lakeside set-aside) even though initial participants did not initially seek entitlement to that full amount. The difference is referred to as "Reserve Water" (6,095 AFY). In October 2015, Paso Robles joined other participants in calling for their proportionate share of Reserve Water. This step is referred to as "fully subscribing" the Nacimiento Water Project and as of January 2016, likely distribution of entitlement resulting from fully subscribing is as follows:

Participant	Current Delivery Entitlement, AFY	Proposed Additional Entitlement, AFY	Totals at Full Subscription, AFY
City of Paso Robles	4,000	2,488	6,488
City of San Luis Obispo	3,380	2,102	5,482
Atascadero MWC	2,000	1,244	3,244
Templeton CSD	250	156	406
CSA 10A Cayucos	25	15	40
Bella Vista MHP (Cayucos)	0	10	10
Santa Margarita Ranch MWC	0	80	80
Subtotal	**9,655**	**6,095**	**15,750**
Reserve Capacity	**6,095**	**-**	**-**
Lakeside Setaside	**1,750**	**-**	**1,750**
Total	**17,500**	**-**	**17,500**

Once formalized, Paso Robles' entitlement to Lake Nacimiento water will increase to 6,488 AFY. Lake water requires treatment before introduction into the City's drinking water system and a 2.4 million gallons per day treatment plant came into operation in late 2015. Capital planning calls for expanding that treatment capacity by an additional 4 million gallons per day in the coming years.

Use of Lake Nacimiento water confers water quality benefits to the City. Lake Nacimiento water has lower hardness as compared to groundwater, with TDS concentrations in the range of 150 to 300 mg/L, while TDS concentrations in City wells average over 300 mg/L.

In addition, Lake Nacimiento supply is independent of local groundwater supplies, resulting in a diversified water supply portfolio that increases overall City water supply reliability. Use of Lake Nacimiento water by the City and others in the North County supplements supply such that less water is pumped from the groundwater basin. The Paso Robles Groundwater Basin Management Plan (GEI, 2011) has identified use of Nacimiento water in the Estrella and Atascadero subareas as a key objective to stabilizing groundwater levels. Importation of Nacimiento water may also provide some return flows from irrigation landscaping that would otherwise not occur. Now that the City's water treatment plant is operational, the City will ramp up its initial use of Nacimiento Water to 1,120 AFY (**Table 10**).

Since the summer of 2013, the City began using Nacimiento water to recharge its Salinas River. Nacimiento releases proved to sustain pumping water levels in the City's river wells, which was particularly important in response to drought. Initially, an additional 1.5 million gallons per day (mgd) of water was recharged (Paso Robles, November 13, 2013) increasing to approximately 4.5 mgd (~3,200 gpm) in 2015. The operation of the water treatment plant will allow more direct delivery of Nacimiento water and is expected to be the primary means of benefitting from Nacimiento supplies over time.

4.3. RECYCLED WATER

The City's wastewater treatment plant (WWTP) uses a trickling filter treatment process to treat about 3 mgd. Approximately 3,300 AFY of treated effluent is discharged to a series of ponds before entering the Salinas River channel, recycling it to the groundwater basin. Recognizing wastewater as an important resource, the City is taking steps to improve its quality. These steps include upgrading of the wastewater treatment plant, use of Nacimiento water, and implementation of programs to reduce salt loading (e.g., from water softeners and industrial uses.) The City also is planning a recycled water program including recycled water irrigation, possible groundwater recharge, and discharge to the river. The Recycled Water Master Plan (AECOM, 2014) identified potential recycled water customers, estimated recycled water quality and blending needs, identified recycled water distribution system options, and developed preliminary cost options. The City recently approved a contract to prepare the final plans and specifications for a wastewater tertiary treatment plant allowing treated recycled water to be used on golf courses and potentially vineyards, lessening the impact on the groundwater basin. The next steps include developing a financial plan and meeting with potential larger customers to discuss delivery and water quality.

4.4. WATER SUPPLY IN NORMAL AND DROUGHT PERIODS

Table 10 summarizes current and planned water supply for the City of Paso Robles. As shown in the top portion of the table, potable water supply is projected to come from three sources: groundwater through the basin wells, Salinas River water through the river wells, and Lake Nacimiento water. The table does not reflect the total groundwater supply (basin wells) available to the City, but the water that the City anticipates pumping to meet demands. Recycled water is considered a demand reduction measure rather than a supply source in the table. The projected build out demand is 13,400 AFY if historical usage patterns persist.

This demand may be reduced by potential water conservation efforts as shown in **Table 10**. Future recycled water is grouped with water conservation as a means of reducing water use on a per capita basis to comply with Senate Bill 7, which requires total daily per capita water use to be reduced 10 percent by 2015 and 20 percent by 2020 as compared to historical high usage. Note that 2014 actual usage complies with Senate Bill 7 targets.

Table 10 shows total potential conservation savings from conservation programs (BMP=best management practices and DMM=demand management measures). These are discussed in the 2010 UWMP (Todd, 2011). Conservation savings are estimated to increase from 364 AFY in 2015 to 1,617 AFY in 2025.

Potential conservation savings from price elasticity impacts of planned water rate increases are also shown on **Table 10,** reflecting the additional conservation that may occur due to increased consumer costs for water. By 2025, the City's UWMP (Todd, 2011) had anticipated that 650 AFY of recycled water will be used to offset potable supply. More recently, the Recycled Water Master Plan (AECOM, 2014) estimated that recycled water could provide a potential potable water use offset of 475 AFY and an additional potential use of 1,048 AFY within City limits. The 475 AFY recycled water use value is used in the tables in this WSE. Additional recycled water (3,970 AFY) would also be available for uses outside City boundaries. These additional recycled water deliveries could include irrigation of golf courses, medians, vineyards, and other agricultural uses, offsetting groundwater pumping.

If these conservation and recycled water savings are achieved and full utilization of Nacimiento water is possible, basin well pumping will most likely be reduced. In recent years, basin wells have provided as much as 4,103 AF (in 2007, see **Table 11**). **Table 12** shows projected groundwater production without additional conservation program savings and recycled water use. **Table 13** shows future water supply projects. Starting in late 2015, Nacimiento water use started to ramp up with the treatment plant's operational capacity at 2,400 to 2,600 AFY. Between 2025 and 2035, the plant will be upgraded to up to 6,488 AFY; timing will depend on demands.

Year-round, the amount of groundwater available in times of drought is considered to be the same as a normal year (and within historical pumping volumes). However, there is potential for peak summer water production shortfalls. The availability of Lake Nacimiento water will lessen future summer peaking problems and provide resilience to droughts. Lake Nacimiento water is a reliable and stable source of water as San Luis Obispo County has a contractual first

priority to 17,500 AFY of the reservoir yield which is over 200,000 AFY. Modeling of Nacimiento Lake levels and Nacimiento Water Project deliveries indicates that NWP deliveries are not a significant contributor to lake level changes as compared to historical records (1958-2001) and, that even during historical drought periods, the total annual San Luis Obispo County entitlement could have been delivered (Boyle, 2002 and Paso Robles, 2014). In addition, future use of recycled water—a nearly constant source—will also increase supply reliability. Drought water supplies of future water supply projects are summarized in **Table 13**.

5. COMPARISON OF SUPPLY AND DEMAND

Table 14 compares water supply to water demand in five year increments between 2015 and 2040 for a normal year for the City with and without the Paso River Oaks II. The demands listed in **Tables 14** through **16** can be reduced with the additional conservation program and recycled water use savings listed in the middle portion of **Table 10**.

As specified in the 2010 UWMP (Todd, 2011), future demand totals are to incorporate the projected water reduction targets of 10 percent per capita reduction by 2015 and 20 percent reduction by 2020. The City is meeting its 2015 reduction goal but mandatory conservation is in effect. However, it is difficult to guarantee that these target reductions can be met considering uncertainties related to future customer water uses, program funding limitations, and competing fiscal responsibilities that cities are facing today.

The demands projected in **Tables 14** through **16** can be reduced with the potential conservation program and recycled water use savings listed in the middle portion of **Table 10** and any future potential savings will provide a necessary supply cushion to handle uncertainties related to both supplies and future demands.

Table 15 presents the same estimates for a single dry year. The supply will be the same as that available during normal years (**Table 10**); groundwater can be pumped at similar rates on an annual basis during dry years and Lake Nacimiento water and recycled water will still be available. Any future potential conservation and recycled water use savings will provide a necessary supply cushion.

A table was generated to compare annual supply and demand during multiple-dry year periods for five year periods between 2015 and 2040. This information is presented in **Table 16**. In this table, supply and demand values were kept the same as those for normal years (**Tables 10** and **14**) and for a single dry year (**Table 15**). Any future potential conservation and recycled water use savings will provide a necessary supply cushion. The City can also initiate various levels of its Water Shortage Contingency Plan to reduce water demands, as discussed in the 2010 UWMP (Todd, 2011).

6. CONCLUSIONS

The findings of this WSE are summarized below.

- The proposed Paso River Oaks II Project is on 128.9 acres in the northeastern part of the City.
- The Project is planned to be built in phases and include 271 new single family homes with 127 of these single family residences on larger lots and 144 single family homes on smaller lots deed restricted for adults over 55. The Spa and community facilities will be expanded.
- Water supply for the project will include City-supplied potable water, City-supplied recycled water, and applicant's private wells. Recycled water will be available between 2020 and 2025.
- Existing potable water demand at the Project site is 18 AFY.
- The City-supplied potable water supply for this Project is included in the existing UWMP (Todd, 2011) and the City's adopted General Plan forecasted development water needs at 64 AFY.
- The buildout water use of the Project is estimated at 132 AFY of City-supplied potable water, 32 AFY of recycled water, 334 AFY continued use from the River well and 30 to 40 AFY of water from onsite geothermal wells.
- The additional 68 AFY (132 – 64 AFY) of potable supply is accounted for in General Plan Amendment 2012-002 which takes vacancy rates into account and identifies water supply associated with 594 dwelling units citywide as available to assign to development.

In conclusion:

- The City has adequate potable supply to provide a reliable long-term water supply for the Project under normal and drought conditions. This supply is accounted for in the 2010 UWMP and General Plan (64 AFY) and from General Plan Amendment 2012-002 which takes vacancy rates into account (68 AFY).
- The Project may use private wells (Well #4 and the geothermal wells) provided use complies with the City's Ordinance No. 1021 N.S. (Relating to Recycled Water Service and Private Wells within City Limits) as well as future legal and City policy decisions.
- The Project will need to use recycled water when it becomes available.

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TABLES

Table 1
Project Description
Paso Robles River Oaks II Project

Project Component	Area[1] (Acres)	Existing or Proposed Component	Water Source[2]
Residential Areas			
Single Family Larger Lots - 127 units (2.86 units/acre)	44.38	Proposed	City Water
Single Family Small Lots (Senior) - 144 units (5 units/acre)	28.79	Proposed	City Water
Residential Streetscape	2.55	Proposed	Recycled Water[3]
Irrigated and Non-Irrigated Open Space Areas			
Area North of Small Lot (Senior) Residential Units	1.33	Proposed	Recycled Water[3]
Area North of Large Lot Residential Units	2.42	Proposed	Recycled Water[3]
Bluff Area West of Senior Residential	8.25	Existing	Not Irrigated
Open Space on Western Side of Property	17.26	Existing	Not Irrigated
Resort and Community Areas			
Health and Wellness Center	5.58	Existing (and proposed expansion)	City Water and Private Geothermal Wells
Turf Area/Amphitheater/Pavilion	5.26	Existing (and proposed expansion)	City Water and Recycled Water[3]
Lake	5.93	Existing	Recycled Water[3]
Community Farm	7.15	Proposed	Recycled Water[3]
Total Project Area (acres)	**128.90**	-	-

1. Acreages from RMM (2015)
2. Water source from City of Paso Robles staff
   City Water is potable water provided by the City
   Recycled water is tertiary treated effluent from the City's treatment plant. Anticipated to be available between 2020 and 2025.
   Geothermal water from applicant's River Oaks Wells 2 and 3.
3. Private well water will supply these areas until Recycled water becomes available between 2020 and 2025. Private well water is from the applicant's River Oaks Well 4.

Table 2
Current Water Use
Paso Robles River Oaks II Project

Current Water Use on Project Site	Current Total Water Use, AFY	Current Water Use Sources, AFY					Water Use Rate and Notes
		Direct City Supplied Water	Non-Revenue City Water[2]	Recycled Water Use	PrivateWell[3]	Private Geothermal Wells[4]	
Health and Wellness Center[1]	17.95	16.69	1.26	-	-	-	Average 2012-2014 use
Spa - Geothermal use	11.20	-	-	-	-	11.20	10 tubs at 10,000 gallons/day
Turf Area/Amphitheater/Pavilion and Lake	334.00	-	-	-	334.00	-	2012 water diversion
Total Current Water Use	**363.15**	**16.69**	**1.26**	**0.00**	**334.00**	**11.20**	**-**
Current City Water Use =		**17.95**					

AFY=acre-feet/year

1. City water use is 2012-2014 annual average (Rickenbach, 2015)
2. Assumes that non-revenue (unaccounted-for) water is 7% of total water use: (e.g., 16.7 AFY x 0.07/0.93 = 1.26 losses). Non-revenue water typically includes unmetered use (e.g. main flushing or firefighting), meter error, and leaks.
3. River Oaks Well #4. 2012 water use.
4. River Oaks Geothermal Wells #2 and #3. Assumes 10 hot tubs in full operation at 10,000 gallons/day (11.2 AFY) (Fugro, 2009).

Table 3
Future Water Use
Paso Robles River Oaks II Project

	Project Component	Buildout Total Water Use, AFY	Buildout Water Use Sources,[1] AFY				Private Well	Water Use Rate and Notes
			Direct City Supplied Water	Non-Revenue City Water[2]	Recycled Water Use[3]	Private Geothermal Wells[4]		
1	Single Family-Larger Lots - 127 units	68.28	63.50	4.78	-	-		0.5 AFY/unit[5]
2	Single Family/Senior- Small Lots - 144 units	44.90	41.76	3.14	-	-		0.29 AFY/unit[5]
3	Residential Streetscape - 2.55 acres	7.01	-	-	7.01	-		2.75 AFY/acre[6]
4	Area North of Small Lot (Senior) Residential Units - 1.33 acres	2.00	-	-	2.00	-		1.50 AFY/acre[6]
5	Area North of Large Lot Residential Units - 2.42 acres	3.63	-	-	3.63	-		1.50 AFY/acre[6]
6	Health and Wellness Center, Spa	16.45	15.30	1.15	-	30-40		From Rickenbach
7	Pavilion, Lake, neighborhood pool, park and turf areas, community facilities	335.88	1.75	0.13	-	-	334.00	Assume river well use same as past use
8	Community Farm - 7.15 acres	19.66	-	-	19.66	-		2.75 AFY/acre[6]
	Buildout Water Use[8]	**497.82**	**122.31**	**9.21**	**32.30**	**30-40**	334.00	
	City Water Use =		**131.52**					

AFY=acre-feet/year

1. Preliminary water use estimates may be refined during the Project planning process. Does not include construction water demands.
2. Assumes that non-revenue (unaccounted-for) water is 7% of total water use: (e.g., 63.5 AFY x 0.07/0.93 = 4.78 losses). Non-revenue water typically includes unmetered use (e.g. main flushing or firefighting), meter error, and leaks.
3. Recycled water will be available between 2020 and 2025. Private well water will be used for irrigation in these areas in the interim. Private well water will be from the applicant's River Oaks Well 4.
4. River Oaks Geothermal Wells 2 and 3
5. Typical usage from 2010 UWMP and similar developments to the south.
6. From AECOM (2014)

Table 4
Climate Data

	Average Rainfall[1] (inches)	Average ETo[2] (inches)	Average Temperature[3] (°F)
January	3.18	1.73	46.78
February	2.89	2.23	49.98
March	2.36	3.68	52.93
April	0.94	4.74	56.53
May	0.32	6.15	61.68
June	0.05	6.56	67.34
July	0.04	6.63	71.45
August	0.05	6.39	71.20
September	0.16	4.98	68.04
October	0.58	3.48	61.12
November	1.24	2.01	52.59
December	2.45	1.48	46.75
Average Calendar Year Total	**14.01**	**50.06**	**-**
Monthly Average	**1.17**	**4.17**	**58.87**

1. Precipitation data from Paso Robles Station 046730 (Jan 1894-Aug 2015) (WRCC, 2015). Note that Average Calendar Year Total is not the sum of numbers above but rather historical (1894-2014) annual average.

2. ETo=Average Evapotranspiration data from CIMIS Station 163 Atascadero (CIMIS, 2015).

3. Temperature data from Paso Robles Station 046730 (Jan 1894-Aug 2015) (WRCC, 2015).

Table 5
Population Projections

	2010	2015	2020	2025	2030	2035	2040
Service Area Population[1]	30,072	30,770	37,385	44,000	44,000	44,000	44,000

Population estimates from 2010 UWMP (Todd, 2011). Assumes linear growth between 2015 and 2025. City population in 2025 consistent with General Plan population planning threshold of 44,000 residents as per City's 2003 General Plan Amendment 2005-001 (City Council Resolution 05-249). The City is in the process of reviewing future population growth projections and it is likely that the build out population of 44,000 will not be reached before 2040..

1. Service area population is the population served by the distribution system and is approximately the same as the City population.

Table 6
Past, Current and Projected Water Connections as per 2010 UWMP

Water Use Sectors	Past				Current	Projected			
	2005	2010	2012	2013	2014	2015	2020	2025	2030-2040
Single Family	8,273	8,661	8,781	8,995	8,785	8,882	10,653	12,425	12,425
Multi-family	386	401	408	426	406	502	600	696	696
Commercial	682	676	776	799	824	703	1,383	2,063	2,063
Industrial	64	71	72	75	74	74	81	89	89
Institutional/ Governmental	Included in Other sector	76	Included in Commercial & Other sectors	Included in Commercial & Other sectors	Included in Commercial & Other sectors	76	76	76	76
Parks, Landscape	331	391	404	442	537	392	393	393	393
Total Connections	**9,736**	**10,276**	**10,441**	**10,737**	**10,626**	**10,629**	**13,186**	**15,742**	**15,742**

Data from 2010 UWMP (Todd, 2011) and 2012 to 2014 DWR Public Water System Statistics provided by City of Paso Robles.
Note that the City is in the process of reviewing future population growth predictions.

Table 7
Past, Current and Projected Water Demand as per 2010 UWMP (AFY)

Water Use Sectors	Past				Current	Projected			
	2005	2010[1]	2012[1]	2013[1]	2014[1]	2015	2020	2025	2030-2040
Single Family	3,865	3,435	3,537	3,635	3,158	4,441	5,326	6,180	6,180
Multi-family	794	573	658	708	632	847	1,020	1,195	1,195
Commercial	1,197	656	795	840	799	1,234	2,427	3,620	3,620
Industrial	69	154	179	186	209	161	176	194	194
Institutional/ Governmental	Included in Other sector	91	Included in Commercial & Other sectors	Included in Commercial & Other sectors	Included in Commercial & Other sectors	91	91	91	91
Parks, Landscape	1,238	840	984	1,138	1,031	1,176	1,180	1,180	1,180
Total Deliveries (no further conservation)	**7,163**	**5,749**	**6,153**	**6,507**	**5,829**	**7,950**	**10,220**	**12,460**	**12,460**
Non-Revenue Water	250	577	541	493	440	600	770	940	940
Potential Conservation and Recycling	-	-	-	-	-	980	2,865	3,885	3,885
Total Demands[3]	**7,413**	**6,326**	**6,694**	**7,000**	**6,269**	**7,570**	**8,125**	**9,515**	**9,515**

Data from 2010 UWMP (Todd, 2011) and 2012 to 2014 DWR Public Water System Statistics provided by City of Paso Robles.

1. Water use was reduced by approximately 20 percent due to City-wide mandatory water use restrictions.

2. Other category on DWR Public Water System Statistic forms includes hydrant meters. In 2005 and 2010, "Landscape Irrigation" category included some accounts that provided water to commercial/industrial and Institutional/Govt water use.

3. Total Demands to Comply with Senate Bill 7 20% Demand Reduction by 2020. SB-7 target water use calculated to be 193 gpcd [2010 UWMP (Todd, 2011)]

Note that the City is in the process of reviewing future population growth predictions.

Table 8
Major Planned Residential and Commercial/Industrial Projects
City of Paso Robles

Project / Property	Number of Units or Area	Estimated Water Demand (AFY)	Notes
Single Family			
59 single family - Approved	59	23.6	0.40 AFY/unit. Various locations
271 single family - Applied	271	108.4	0.40 AFY/unit (2012: 3,537 AF/8,781 conn.=0.4 AF/conn.) River Oaks II
72 single family - Applied	72	28.8	0.40 AFY/unit. Experimental Station Rd
Multifamily			
79 multifamily - Approved	79	22.9	0.29 AFY/unit. Various locations
23 townhouses - Approved	23	9.2	0.40 AFY/unit. Arbor Ridge, Oak Hill Rd
23 multifamily - Applied	23	6.7	0.29 AFY/unit. Various locations
Commercial/Industrial			
Building Permit Approved			
Office Bldg.	12,835 sf	0.45	1 emp/288 sf, 10 gal/emp/day*260/365, plus 0.1 AF landscaping. 810 4th Street
Commercial Shell Bldgs.	18,516 sf	0.44	1 emp/439 sf, 10 gal/emp/day*260/365, plus 0.1 AF landscaping. 5151 Jardine Rd
Warehouse/Office	26,602 sf	0.58	1 emp/439 sf, 10 gal/emp/day*260/365, plus 0.1 AF landscaping. 3115 Propeller Dr
Commercial Shell	3,200 sf	0.19	1 emp/288 sf, 10 gal/emp/day*260/365, plus 0.1 AF landscaping. 3328 Spring St
Commercial Shell	10,000 sf	0.38	1 emp/288 sf, 10 gal/emp/day*260/365, plus 0.1 AF landscaping. 3348 Spring St
Athletic Club Addition	14,597 sf	1.02	0.00007 AF/sf from MPWMD (date unknown). 2975 Union Rd
Building Permit Applied			
Brewery expansion	25,800 sf	0.57	1 emp/439 sf, 10 gal/emp/day*260/365, plus 0.1 AF landscaping
Service Station/minimart	5,000 sf	0.88	Based on 12 months of data for Chevron on Riverside
La Quinta Inn expansion	37 rooms,15,700 sf	7.4	0.2 AF/room. Currently under construction
Commercial Center	20,500 sf	0.67	1 emp/288 sf, 10 gal/emp/day*260/365, plus 0.1 AF landscaping
Office Storage	4,982 sf	0.05	0.00001 AF/sf from MPWMD (date unknown)
New Scouts Meeting Facility	2,732 sf	1.45	0.00053 AF/sf from MPWMD (date unknown)
Pine Street Promenade Hotel	121 rooms, 200,000 sf	26.20	0.2 AF/room
PR Oak Tree Inn Addition	66 rooms	13.2	0.2 AF/room
Manufacturing Bldg.	15,600 sf	0.38	1 emp/439 sf, 10 gal/emp/day*260/365, plus 0.1 AF landscaping.
Self Storage Bldg.	66,490 sf	0.66	0.00001 AF/sf from MPWMD (date unknown)
San Antonio Winery	85,951 sf	1.66	1 emp/439 sf, 10 gal/emp/day*260/365, plus 0.1 AF landscaping
Zoning Permit Approved			
RV Park	322 spaces	41.9	0.13 AF/space based on Wine Country RV Resort
Equestrian Show Facility	67 acres	2.1	Staff estimate of annual potable uses. 28.4 AF of self-supplied irrigation
Wine Storage Bldg	66,000 sf	0.75	1 emp/814 sf, 10 gal/emp/day*260/365, plus 0.1 AF landscaping
Office on 4th St	13,000 sf	0.46	1 emp/288 sf, 10 gal/emp/day*260/365, plus 0.1 AF landscaping
Planning Permit Applied			
Resort, conference center, gardens, golf, wine tasting	280 rooms, 439,000 sf	155.9	La Entrada/Discovery Gardens; 155.9 AFY of City-supplied water plus 90.9 AFY of private well water
Hotel	127 rooms 99,800 sf	13.6	Developer's estimate (about 0.11 AF/room)
Auto Parts Store	7,800 sf	0.24	1 emp/439 sf, 10 gal/emp/day*260/365, plus 0.1 AF landscaping
Residential Care Facility	14 rooms, 10,100 sf	2.80	0.2 AF/bed
Marriott Residence Hotel	128 rooms	25.6	0.2 AF/room, S Vine St
Chrysler/Jeep Dealership	29,800 sf	2.09	assume 0.00007 AF/sf
Used Car Dealership	2,100 sf garage	1.47	assume 0.00007 AF/sf
Brewery expansion	109,000 sf	2.18	1 emp/439 sf, 10 gal/emp/day*260/365, plus 0.2 AF landscaping
San Antonio Mixed Use	12,000 sf	0.43	1 emp/288 sf, 10 gal/emp/day*260/365, plus 0.1 AF landscaping
Erskine/Wisteria Industrial Park	620,000 sf Com + Ind	11.7	Areas from preliminary planning documents. 1 emp/439 sf, 10 gal/emp/day*260/365, plus 0.5 AF landscaping
Assisted Living	100 rooms	20.0	0.2 AF/bed
San Antonio Winery Mixed Use	126,000 sf	11.3	Provided by applicant
Alder Creek Apartments	16 Units	4.64	0.29 AFY/unit
Cabernet Links & RV Resort	18 hole golf course, 370 RV spaces, restaurant, banquet room, pool, tennis courts, proshop	unknown water use	18 hole existing golf course on 5151 Jardine Rd.
Marriot Residence Inn	124 rooms	24.8	0.2 AF/room. Union Road
PR 15-0058	4 lots Planned Development, 4 Units	1.60	0.40 AFY/unit
PR 15-0081	2 Lots	0.80	0.40 AFY/unit
Subtotal		**536.5**	-
Non-Revenue Water		**40.4**	Assumes that unaccounted-for water is 7% of total water use.
Total Potential Additional Demand		**576.9**	

Project list update from City staff emails October 16 and 19, 2015.

Water demand values provided by City staff or from similar water use documents. 260 work days per year applied to employee gallons/day demand factors.

Table 9
Water Supply Sources

Supply	AFY	Right	Contract	Ever Used
Basin Wells[1]	No Limit	-	-	Yes
River Wells[2]	4,600	Appropriative Water Rights	-	Yes
Nacimiento Water[3]	4,000 / 5,400 / 6,488 (potential)	-	Yes	Yes
Recycled Water[4]	5,493	-	-	No

1. While there is currently no basin pumping limit, the City does not plan to increase basin pumping from historical highs of about 4,000 AFY to support additional growth. New development will be served with Nacimiento water and recycled water.

2. Maximum permitted rate of 8 cfs with an annual limit of 4,600 AFY. The City is in the process of finalizing this license and requested a maximum of that historically pumped (4,558 AFY). For consistency with 2010 UWMP, the 4,600 AFY value will be used in planning tables in this WSE.

3. Delivered, potable Nacimiento water will be less because of operational downtimes for cleaning, repairs, etc. The treatment plant has an operational capacity of 2.4 mgd [2.4×10^6 gal/day x 365 day/yr x AF/325,851 gallons = 2,688 AFY]. The treatment plant will be upgraded up to 6,488 AFY between 2025 and 2035, depending upon demand needs.

4.The Recycled Water Master Plan Update (AECOM, 2014) estimated potential potable use offset at 475 AFY and additional potential uses within City at 1,048 AFY (see Table 3-7). Additional recycled water (3,970 AFY) would be available for uses outside of City boundaries with 475+1,048+3,970=5,493 AFY. The 2010 UWMP had an estimated value of 650 AFY for potable offset. The 650 AFY estimate has been updated to 475 AFY in this WSE.

Table 10

Water Supplies Needed to Meet Demands (AFY)

Water Supply Sources	Past	Current	2010 UWMP Projected			
	2010	2014	2015	2020	2025	2030 to 2040
Basin Wells	2,338	3,497	2,980	4,000	3,400	3,400
River Wells	3,988	2,772	4,450	4,600	4,600	4,600
Nacimiento Water[1]	0	0	1,120	2,390	5,400	5,400
Supply/Demand Without Future Conservation	6,326	6,269	8,550	10,990	13,400	13,400
Potential Conservation and Recycled Water Savings						
BMP/DMM Conservation[2]	Not Applicable		364	1,038	1,617	1,617
Price Elasticity of Water Rates Conservation			616	1,827	1,793	1,793
Recycled Water (updated value)			0	0	475	475
SB-7 Target Water Demands to Comply with 20% Demand Reductions by 2020[3]	Not Applicable		**7,570**	**8,125**	**9,515**	**9,515**

Data from 2010 UWMP (Todd, 2011), 2012 to 2014 Groundwater Pumping datasheet (Paso Robles, 2015), and AECOM (2014).

1. The treatment plant has an operational capacity of 2.4 mgd [2.4×10^6 gal/day x 365 day/yr x AF/325,851 gallons = 2,688 AFY]. Delivered, potable water will be less because of operational downtimes for cleaning, repairs, etc. The treatment plant will initially be operated five months out of the year (high demand summer months) [2,688 AFY x 5/12 = 1,120 AFY]. It will be upgraded to up to 6,488 AFY sometime between 2025 and 2035, depending upon demand needs.

2. BMP=Best Management Practices and DMM=Demand Management Measures

3. Senate Bill 7 target water use calculated to be 193 gpcd in 2020 [2010 UWMP (Todd, 2011)]. At a 44,000 build out population target water demand = 9,515 AFY.

Table 11
Groundwater - Historical Volume Produced (AFY)

	2005	2006	2007	2008	2009[2]	2010[2]	2011[2]	2012[2]	2013[2]	2014[2]
Paso Robles Basin	2,856	3,366	4,103	3,819	2,794	2,338	2,327	2,880	3,257	3,497
Shallow Groundwater near River	4,558	4,065	4,023	4,072	3,868	3,988	4,069	3,814	3,743	2,772
Total Pumping	**7,414**	**7,431**	**8,126**	**7,891**	**6,662**	**6,326**	**6,396**	**6,694**	**7,000**	**6,269**
% of Total Supply[1]	**8.2%**	**8.2%**	**9.0%**	**8.7%**	**7.4%**	**7.0%**	**7.1%**	**7.4%**	**7.8%**	**6.9%**

1. Total Supply is defined as the updated perennial yield of the Paso Robles Basin (90,215 AFY) based on the Paso Robles Groundwater Basin Model Update (Geoscience, 2015). The perennial yield value does not differentiate shallow groundwater near the Salinas River from basin groundwater.

2. Water use since 2009 is reduced because of City-wide mandatory water use restrictions.

Table 12
Groundwater - Future Production Estimates (AFY)

	2015	2020	2025	2030	2035	2040
Paso Robles Basin	2,980	4,000	3,400	3,400	3,400	3,400
Shallow Groundwater near River	4,450	4,600	4,600	4,600	4,600	4,600
Total Pumping	**7,430**	**8,600**	**8,000**	**8,000**	**8,000**	**8,000**
% of Total Supply[1]	**8.2%**	**9.5%**	**8.9%**	**8.9%**	**8.9%**	**8.9%**

1. Total Supply is defined as the updated perennial yield of the Paso Robles Basin (90,215 AFY) based on the Paso Robles Groundwater Basin Model Update (Geoscience, 2015). The perennial yield value does not differentiate shallow groundwater near the Salinas River from basin groundwater.

See Table 10 for more detail on other water sources. Projected groundwater pumping may be less since values above do not include additional conservation program savings or recycled water use (see Table 10).

Table 13
Future Water Supply Projects

Project Name	Projected Completion Date	Normal-Year (AF)	Single-Dry Year (AF)	First Multiple-Dry Year (AF)	Second Multiple-Dry Year (AF)	Third Multiple-Dry Year (AF)
Nacimiento Water[1]	2015	2,400	2,400	2,400	2,400	2,400
Future Nacimiento Water for 2010 General Plan Buildout[1,2]	2025-2035	3,000	3,000	3,000	3,000	3,000
Recycled[3]	2025	475	475	475	475	475

1. City has committed to purchase 4,000 AFY with an additional potential purchase of 2,488 AFY. Initial plant operational capacity of 2.4 mgd (2,688 AFY). Delivered, potable water will be less because of operational downtimes for cleaning, repairs, etc. (0.9*2,688=~2,400 AFY).

2. Lake Nacimiento water is a reliable and stable source of water as San Luis Obispo County has a contractual first priority to 17,500 AFY of the reservoir yield which is over 200,000 AFY. Modeling of Nacimiento Lake levels and Nacimiento Water Project (NWP) deliveries indicates that NWP deliveries are not a significant contributor to lake level changes as compared to historical records and, that even during drought periods, the total annual San Luis Obispo County entitlement could have been delivered (Boyle, 2002) and Paso Robles (2014).

3. The Recycled Water Master Plan Update (AECOM, 2014) estimated potential potable use offset at 475 AFY and additional potential uses within City at 1,048 AFY (see Table 3-7). Additional recycled water (3,970 AFY) would be available for uses outside of City boundaries. The 2010 UWMP had an estimated value of 650 AFY for potable offset. The 650 AFY estimate has been updated to 475 AFY in this WSE. Recycled water will be a nearly constant source. Refinements of recycled water options, use estimates, and customers is ongoing.

Table 14
Supply and Demand Comparison - Normal Year (AFY)

	2015	2020	2025	2030-2040
Without River Oaks II Project[1]				
Supply Totals	8,550	10,990	13,400	13,400
Demand Totals (without potential conservation)	8,550	10,990	13,400	13,400
Difference (Supply-Demand)	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%
With River Oaks II Project				
Supply Totals	8,550	10,990	13,400	13,400
Demand Totals (without potential conservation)	8,550	10,990	13,400	13,400
Difference (Supply-Demand)	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%

Demand totals do not include additional potential conservation and recycling savings to meet SB 7 target demands (Table 10)

1. Water for the River Oaks II Project is already included in 2010 UWMP (64 AFY for Project and 68 AFY from General Plan Amendment 2012-002.

Table 15
Supply and Demand Comparison - Single Dry Year (AFY)

	2015	2020	2025	2030-2040
Without River Oaks II Project[1]				
Supply Totals	8,550	10,990	13,400	13,400
Demand Totals (without potential conservation)	8,550	10,990	13,400	13,400
Difference (Supply-Demand)	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%
With River Oaks II Project				
Supply Totals	8,550	10,990	13,400	13,400
Demand Totals (without potential conservation)	8,550	10,990	13,400	13,400
Difference (Supply-Demand)	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%

Demand totals do not include additional potential conservation and recycling savings to meet SB 7 target demands (Table 10)

1. Water for the River Oaks II Project is already included in 2010 UWMP (64 AFY for Project and 68 AFY from General Plan Amendment 2012-002.

Table 16

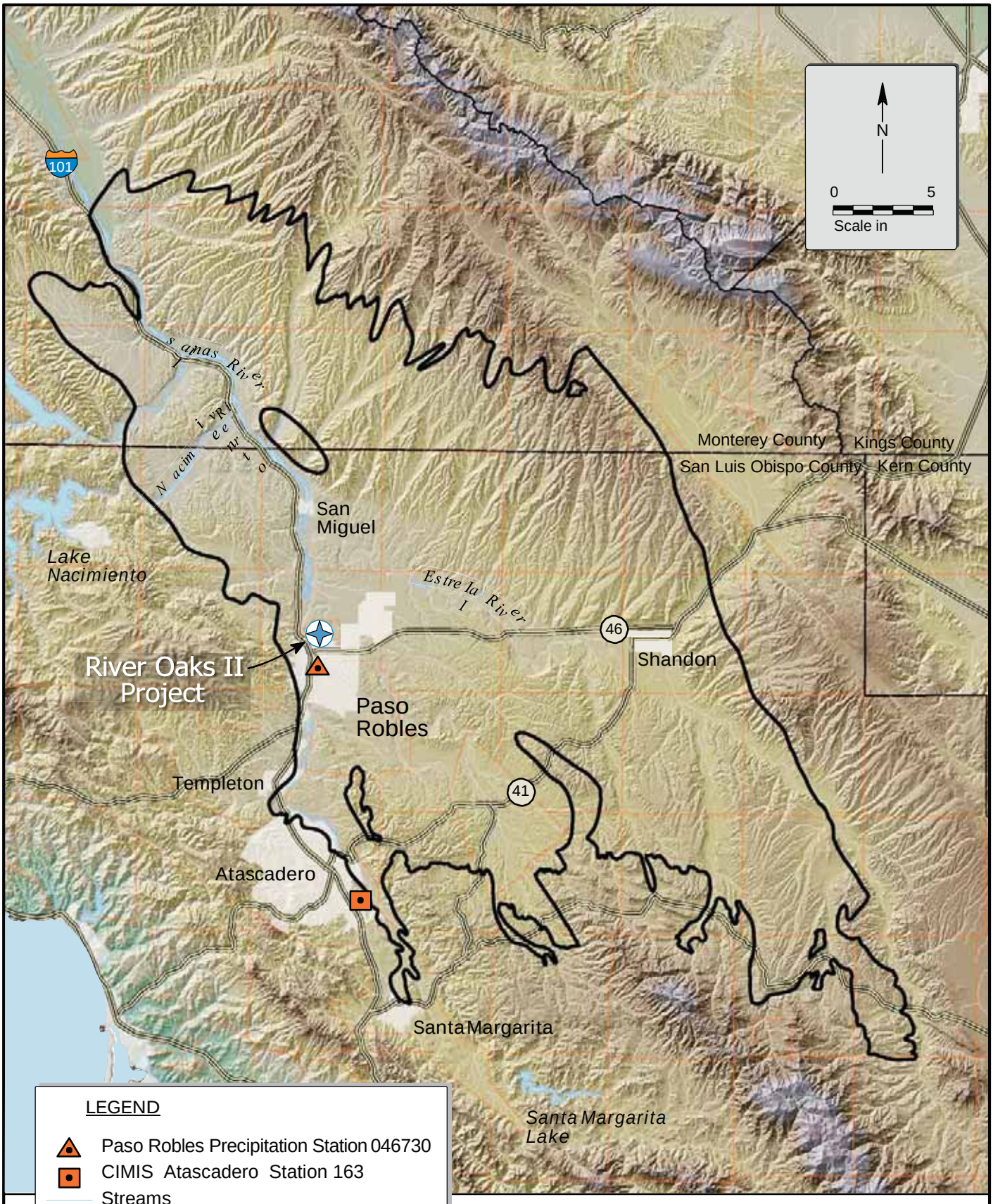
Supply and Demand Comparison — Multiple Dry-Year Events (AFY)

		2015	2020	2025	2030-2040
Without River Oaks II Project[1]					
Multiple-Dry Year First Year Supply	Supply Totals	8,550	10,990	13,400	13,400
	Demand Totals (without potential conservation)	8,550	10,990	13,400	13,400
	Difference	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%
Multiple-Dry Year Second Year Supply	Supply Totals	8,550	10,990	13,400	13,400
	Demand Totals (without potential conservation)	8,550	10,990	13,400	13,400
	Difference	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%
Multiple-Dry Year Third Year Supply	Supply Totals	8,550	10,990	13,400	13,400
	Demand Totals (without potential conservation)	8,550	10,990	13,400	13,400
	Difference	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%
With River Oaks II Project					
Multiple-Dry Year First Year Supply	Supply Totals	8,550	10,990	13,400	13,400
	Demand Totals (without potential conservation)	8,550	10,990	13,400	13,400
	Difference	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%
Multiple-Dry Year Second Year Supply	Supply Totals	8,550	10,990	13,400	13,400
	Demand Totals (without potential conservation)	8,550	10,990	13,400	13,400
	Difference	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%
Multiple-Dry Year Third Year Supply	Supply Totals	8,550	10,990	13,400	13,400
	Demand Totals (without potential conservation)	8,550	10,990	13,400	13,400
	Difference	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%

Demand totals do not include additional potential conservation and recycling savings to meet SB 7 target demands (Table 10)

1. Water for the River Oaks II Project is already included in 2010 UWMP (64 AFY for Project and 68 AFY from General Plan Amendment 2012-002.

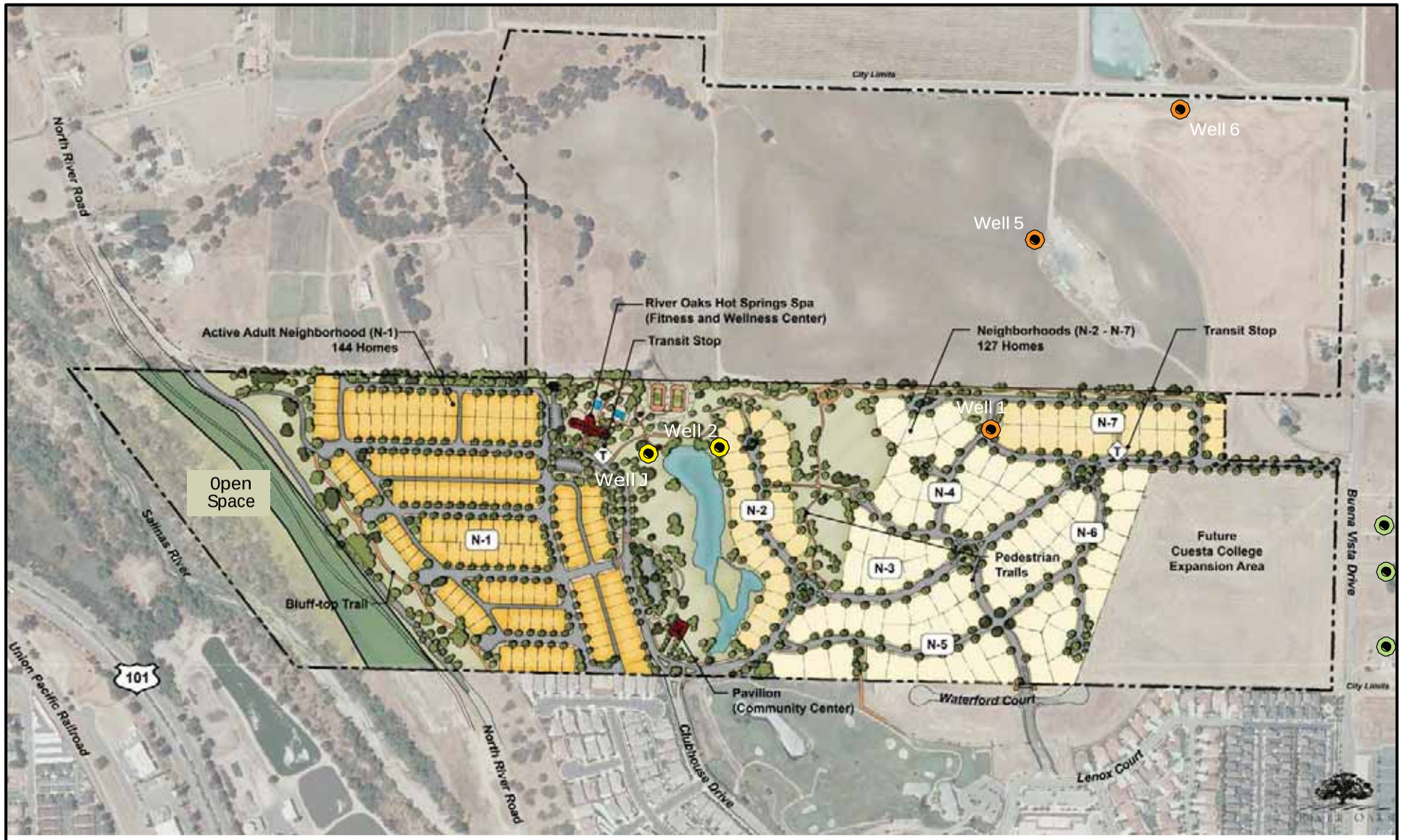
FIGURES



December 2015

TODD GROUNDWATER

Figure 1
Paso Robles
River Oaks II
Project Location

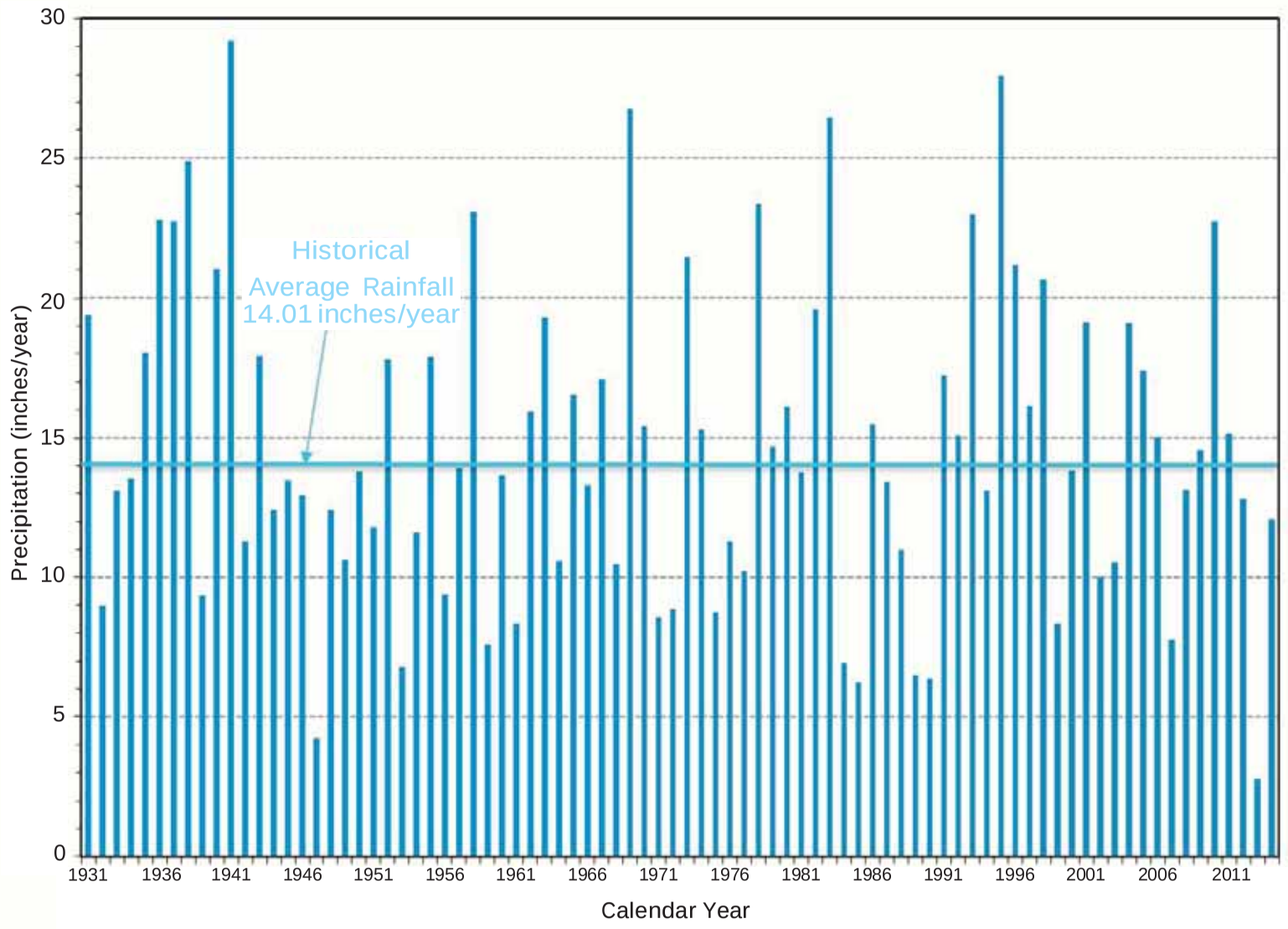


Source: Estrella, Inc. (2013) and Frugo (2009).

January 2016

TODD GROUNDWATER

Figure 2
River Oaks II
Conceptual Project

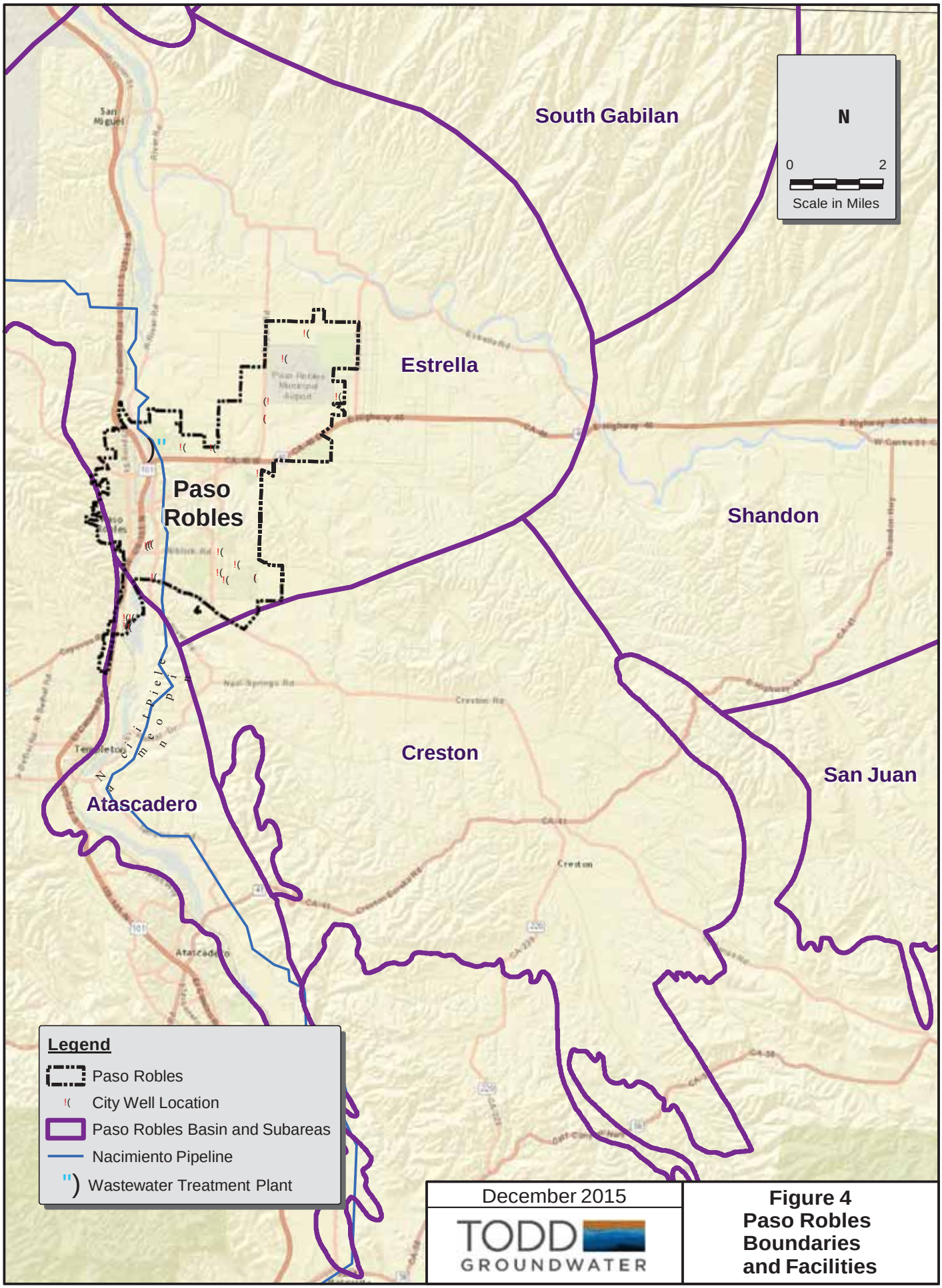


Precipitation data from Paso Robles Station 046730. See Table 4.

December 2015

TODD GROUNDWATER

Figure 3
Paso Robles
Annual Rainfall



December 2015

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Figure 4
Paso Robles Boundaries and Facilities