

Appendix WS-2

Water Supply Assessment

Sacramento County Water Agency

Water Supply Assessment for Jackson Township

Prepared by Sacramento County Water Agency
August 2016

Limitations:

This is a draft document and is not intended to be a final representation of the work done. Consult the final report when it is finalized and approved by the Sacramento County Water Agency Board of Directors.

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INTRODUCTION

BACKGROUND

The California Water Code (Water Code) requires coordination between land use lead agencies and public water purveyors. The purpose of this coordination is to ensure that prudent water supply planning has been conducted, and that planned water supplies are adequate to meet both existing demands and demands of planned development.

Water Code Sections 10910 – 10915 (inclusive) require land use lead agencies: 1) to identify the responsible public water purveyor for a proposed development project, and 2) to request a “Water Supply Assessment” (WSA) from the responsible purveyor. The objective of a WSA is to demonstrate the sufficiency of a purveyor's water supplies to satisfy the water demands of a proposed development project while still meeting the current and projected water demands of existing customers. Water Code Sections 10910 – 10915 delineate specific information that must be included in a WSA.

THE PROPOSED DEVELOPMENT PROJECT

The Sacramento County Planning and Environmental Review (PER) is preparing a CEQA document for the proposed project known as Jackson Township Specific Plan (Project). The Project is an area of 1,391 acres located in the eastern portion of the County of Sacramento; bounded by Jackson Road to the south, Excelsior Road to the west, on the east by the easterly boundary of a block of lands that lie westerly of Eagles Nest Road, and on the north by Kiefer Boulevard. North of Kiefer Boulevard is the Mather Field Specific Plan area and east of the Project is the proposed NewBridge Specific Plan Area and to the west is the West Jackson Plan Area. The Project also lies within the Jackson Corridor Planning Area per the County’s 2011 General Plan. See Figure 1 for project location.

PER has identified the Sacramento County Water Agency (SCWA) as the responsible water purveyor for the Project and has requested that SCWA prepare this WSA in accordance with Water Code Sections 10910 – 10915.

WATER SUPPLY ASSESSMENT OBJECTIVE

The objective of the Jackson Township Specific Plan WSA is to demonstrate that the planned water supplies for Zone 40 of SCWA are sufficient to meet the demands of the Project in addition to the existing and projected water supply obligations over the next 20 years. The findings of this WSA will be included in the Project’s CEQA review by PER.

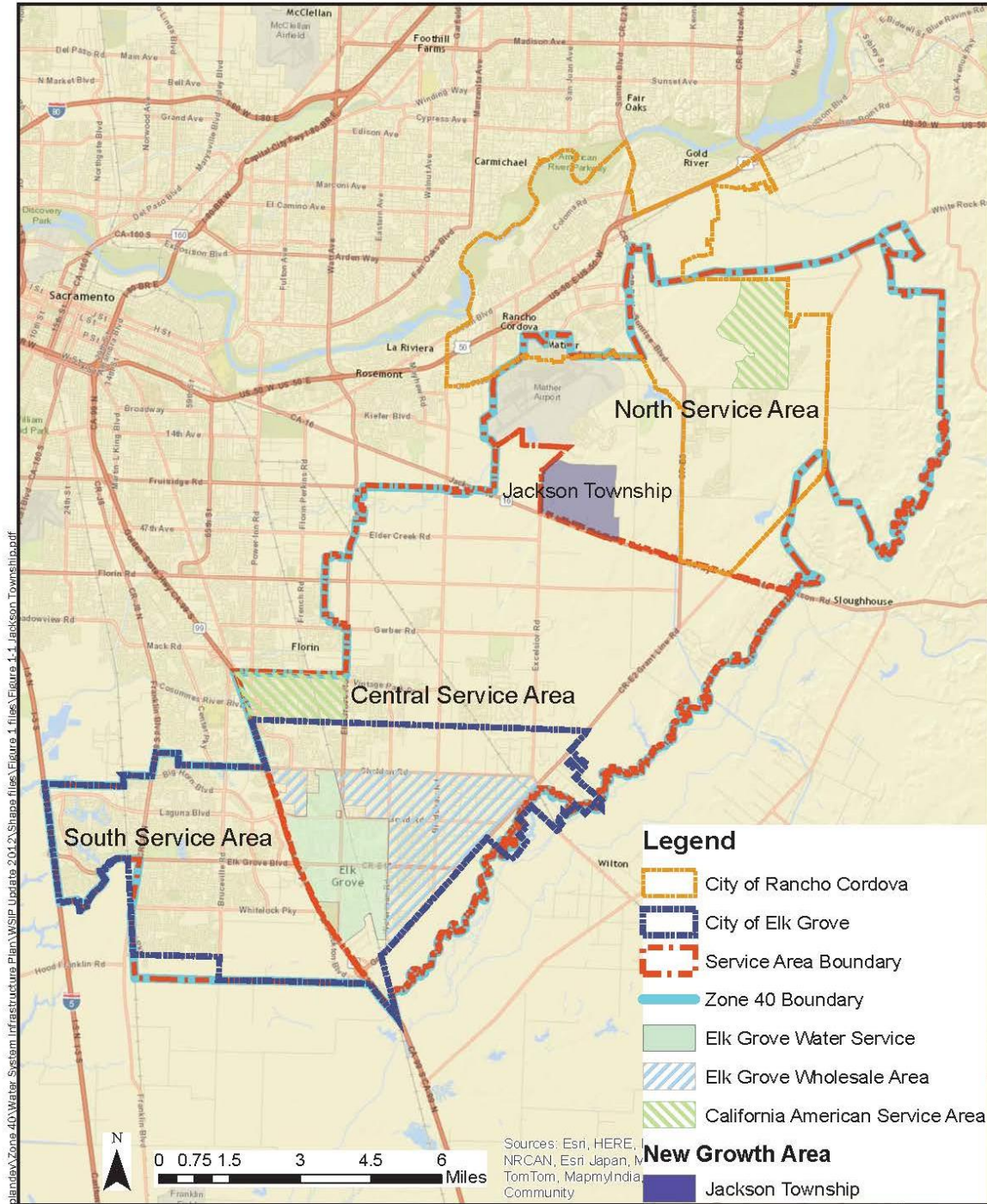


Figure 1 Jackson Township Specific Plan Location Map

OVERVIEW OF THE JACKSON TOWNSHIP WSA

The Project lies entirely within the boundaries of SCWA’s Zone 40/41 service area but outside of the 2030 Study Area of the Water Supply Master Plan (WSMP), (SCWA, 2005). An

amendment to the WSMP including the Project area has been prepared by SCWA staff and is pending Board approval. In 2016, SCWA also developed the Water System Infrastructure Plan (WSIP) (SCWA, 2016). The WSIP is a staff-level document that describes the projected water supply infrastructure needs to meet the projected built-out water demands in Zone 40, including the Project demands. Subsequently, the 2015 Urban Water Management Plan (UWMP) was developed based on water demand and supply information provided in the WSIP. Therefore, the UWMP demand projections include the estimated Project demands.

In addition to the above referenced discussion, the following documents may be used in whole or in part for the water assessment for the Project:

- The Central Sacramento County Groundwater Management Plan (SCGA, February 2006);
- The Final Environmental Impact Report (FEIR) for 2002 Zone 40 Water Supply Master Plan (EDAW, December 2004);
- The Water Forum Agreement (WFA), Sacramento City-County Office of Metropolitan Water Planning, January 2000.

Figure 2 shows the land use diagram of the Project obtained from the Project proponent.

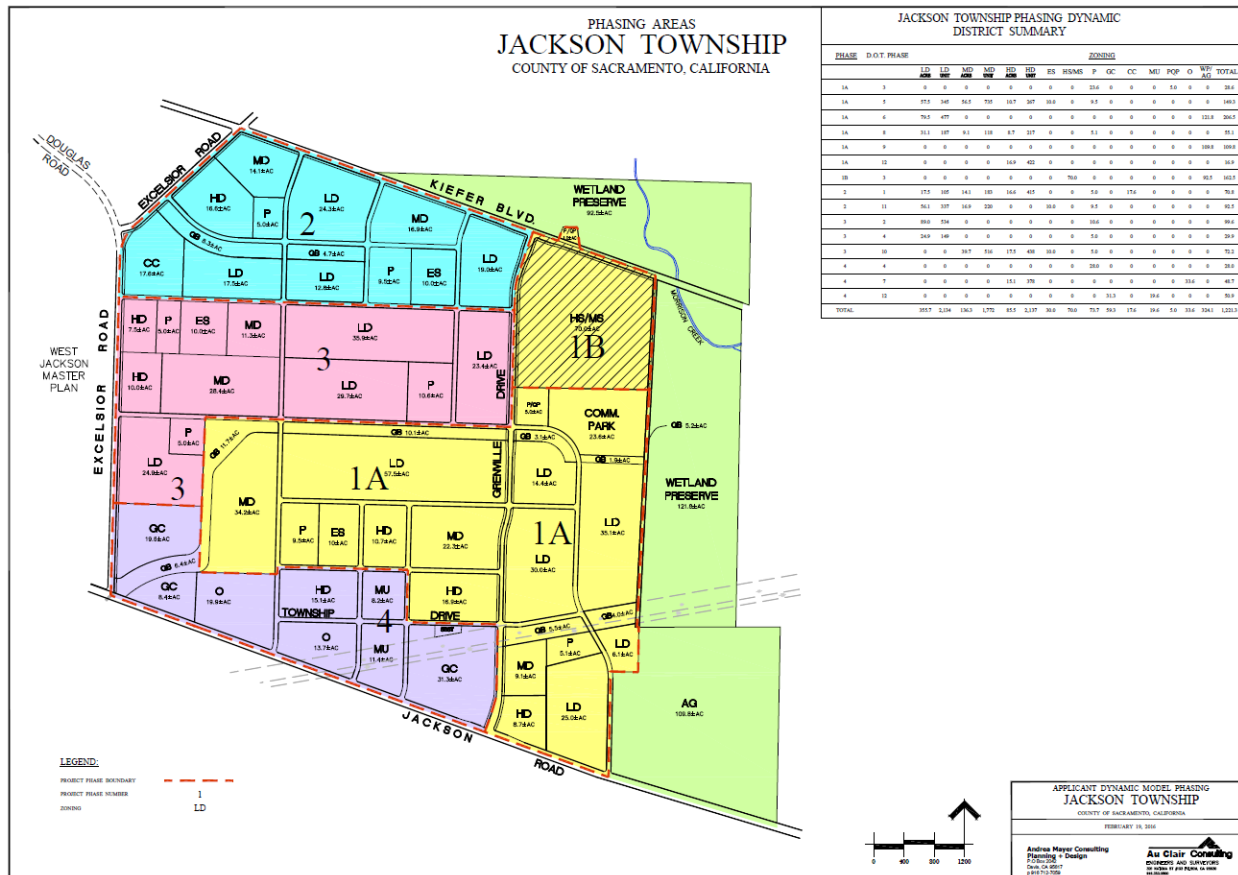


Figure 2 Jackson Township Land Use Diagram

WSA FOR THE JACKSON TOWNSHIP SPECIFIC PLAN PROJECT

Water Code Sections 10910 – 10915 delineate the specific requirements of a WSA. The WSA for the Project is structured according to these requirements.

DETERMINE IF PROJECT IS SUBJECT TO CEQA [Section 10910 (a)]

PER has made the determination that the Project is subject to CEQA.

IDENTIFY RESPONSIBLE PUBLIC WATER SYSTEM [Section 10910(b)]

PER has identified SCWA as the responsible public water provider for the Project.

DETERMINE IF UWMP INCLUDES WATER DEMANDS [Section 10910(c)]

The total area for the Project is estimated to be 1,391 acres. The projected annual water demand for the Project is 2,360.3 acre-feet per year (AF/year), including system losses. The proposed land use and projected water demand for the Project is provided in Table 1.

Table 1 Proposed Land Use and Water Demands Estimate for the Project

Land Uses	Corresponding Land Use Classification in WSMP	Unit Water Demand Factor (AF/Year/Acre)	Acreage	Water Demand (AF/Year)
Residential Designations				
LD- Low Density Residential	Single Family	2.13	355.7	757.6
MD-Medium Density Residential	Multi-Family Low Density	2.44	136.3	332.6
HD- High Density Residential	Multi-Family High Density	3.33	85.5	284.7
Subtotal		-	577.5	1,374.9
Commercial + Office Zones				
GC-General Commercial	Commercial	2.02	59.3	119.8
CC-Community Commercial	Commercial	2.02	17.6	35.6
MU-Mixed Use	Mixed Land Use	2.15	19.6	42.1
O- Office	Commercial	2.02	33.6	67.9
Subtotal		-	130.1	265.4
Public/Quasi Public Zones				
PQP-Fire Station/Comm Ctr/Tank Site	Public	0.81	6.0	4.9
PQP-High/Middle School	Public Recreation	2.80	70.0	196.0
PQP-Elementary School	Public Recreation	2.80	30.0	84.0
Subtotal		-	106.0	284.9
Park + Open Space Zones				
CP- Community Park	Public Recreation	2.80	23.6	66.1
P- Neighborhood Park	Public Recreation	2.80	49.7	139.2

OS- Wetland Preserve	Non-Irrigated	0.00	214.3	0.0
OS- Greenbelt/Drainage Corridor	Public Recreation	2.80	60.9	170.5
OS- Landscape Corridor	Public Recreation	2.80	14.5	40.6
Subtotal		-	363.0	416.4
Ag and Roads				
AG-Agriculture	-	0.00	109.8	0.0
RW- Primary Roadways	Right-of-Way	0.18	104.6	18.8
Subtotal		-	214.4	18.8
TOTAL			1,391.0	2,360.3

Note: The land-use information was provided to SCWA by the County’s Planning Department on July 25, 2016. It is slightly different from what was provided previously when the Water Supply Master Plan Amendment was being developed. However, the change to the total water demand is minimal.

The water demand for the proposed Project is included in the current UWMP, which describes SCWA’s existing and projected water demands through 2040. Therefore, the UWMP can serve as the base document for preparing the WSA for the proposed Project. The water demand growth shown in the UWMP is based on the estimated gallons per capita per day (GPCD) target and the projected population growth. Establishing a GPCD target is a requirement for the UWMP in accordance with Senate Bill (SB) x7-7, adopted in November 2009, so that each purveyor would achieve 20 percent reduction in water use by 2020. The target for SCWA is determined to be 236 GPCD in the 2015 UWMP.

The projected population growth for Zone 40 was based on the estimated annual number of new connections. First, the buildout population was estimated based on the projected number of dwelling unit connections at buildout. Then the annual number of new connection was estimated. The details of population projection for Zone 40 are documented in the WSIP. The WSIP developed buildout land use acreage by type of land use, which was used to quantify the buildout number of dwelling units and water system connections. That assessment included those in the 2030 Study Area and the new growth areas such as the Project. The UWMP adopts the findings and results of the WSIP, and presents the population growth projection in 5-year interval from 2020 to 2040. Note that buildout is projected to occur after 2040 in Zone 40. The 5-year interval population projection is shown in **Table 2** below (or **Table 3-2 of the UWMP**).

With the population projection and the established GPCD target, the UWMP estimates the water demands for SCWA’s service areas in 5-year increments for the 20-year projection (2020 to 2040), as shown in Table 4-3 of the UWMP. A summary of the pertinent data from these tables is presented in **Table 3** below.

Table 2 Population Projection for SCWA Service Areas

SCWA Service Areas (Table 3-2 of UWMP)	2015 ³	2020	2025	2030	2035	2040
Zone 40 - North Service Area, Central Service Area, South Service Area ¹		186,347	220,402	256,900	295,843	337,229
Arden Park Vista		9,372	9,372	9,372	9,372	9,372
East Walnut Grove		428	432	436	440	440
Hood		256	256	256	256	256
Metro Air Park ²		0	0	0	0	0
Northgate 880 ²		0	0	0	0	0
Southwest Track		157	157	157	157	157
Total		165,895	196,560	230,619	306,068	347,454

¹ Population developed in the WSIP (SCWA, 2016). The UWMP also identifies Zone 40 as Laguna Vineyard and Mather-Sunrise system. The more commonly used subarea names are used in this document: North Service Area, Central Service Area, and South Service Area. The proposed project is located in the North Service Area of Zone 40.

² Metro Air Park and Northgate 880 customers are non-residential and have no population associated with them.

³ Total Current population in 2015 was provided in the UWMP. The population for each service area was not quantified separately using DWR population pool.

Table 3 Water Demands for SCWA Service Areas in Five-Year Increments – Normal Year (AF/Year)

	2020	2025	2030	2035	2040
RETAIL					
Zone 40	41,312	48,881	56,816	64,786	72,921
Arden Park Vista	3,630	3,527	3,412	3,315	3,315
East Walnut Grove	132	133	132	133	133
Hood	62	60	59	57	57
Northgate 880	1,264	1,168	1,148	1,131	1,131
Southwest Tract	21	21	21	21	21
Retail Subtotal	46,421	53,790	61,588	69,443	77,578
RECYCLED/RAW WATER	1,700	1,700	1,700	1,700	1,700
Retail + Recycled/Raw Water	48,121	55,490	63,288	71,143	79,278

The water demands for single dry, and multiple dry water year are provided in **Table 4**. The water supply allocation from the CVP supply in 2015 was a historical low. The CVP allocation for the three-year period from 2013 to 2015 was also the lowest historical three year sequence.

The UWMP (**Table 7-1 of UWMP**) identifies 2013 as an average year, 2015 as a single dry year. For the drought period 2013-2015, 2013 is identified as the first year of multiple-dry years, 2014 as the second year, and 2015 as the third year.

Table 4 SCWA Zone 40 Water Demands in Five-Year Increments in Normal, Single Dry, and Multiple Dry Years (AF/Year)

Water Year	2020	2025	2030	2035	2040
Normal Year (See Table 7-4 of UWMP)	48,121	55,490	63,288	71,143	79,278
Single Dry Year (See Table 7-6 of UWMP)	48,121	55,490	63,288	71,143	79,278
Multiple Dry Year 1(See Table 7-8 of UWMP)	48,121	55,490	63,288	71,143	79,278
Multiple Dry Year 2 (See Table 7-8 of UWMP)	48,121	55,490	63,288	71,143	79,278
Multiple Dry Year 3 (See Table 7-8 of UWMP)	48,121	55,490	63,288	71,143	79,278

The water demands associated with the proposed Project are substantially included in the table above. **Table 5** shows the estimated water demand growth for the proposed Project.

Table 5 Projected Water Demand Growth in Five-Year Increments for the Proposed Project (AF/Year)

	2020	2025	2030	2035	2040
Projected Water Demand	712.4	1,543.5	2,018.4	2,374.6	2,374.6

Note: the growth projection information was provided by the project proponent on September 20, 2016 via email. The built-out demand is slightly different than the calculation based on the land-use information was provided to SCWA by the County’s Planning Department on July 25, 2016. However, the change to the total water demand is minimal.

IDENTIFY EXISTING WATER SUPPLIES FOR THE PROJECT [Section 10910(d)]

SECTION 10910(d)(1)

Section 10910(d)(1) requires identification of existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed Project and a description of the quantities of water obtained by SCWA pursuant to these water supply entitlements, water rights, or water service contracts in previous years.

Use of Groundwater

The Project water demands, as part of the Zone 40 water demand, will ultimately be met by conjunctive use of groundwater and surface water and a small portion of recycled water, as described in the WSMP and UWMP. SCWA currently exercises, and will continue to exercise, its rights as a groundwater appropriator to extract groundwater from the groundwater basin (Central Basin) underlying Zone 40 for delivery to its customers¹. Currently, the NSA pipeline Phase A is under construction and expected to be online in 2016. The NSA pipeline Phase A will convey treated surface water from the Vineyard SWTP to fill the existing Anatolia Storage Tanks. The water pumped out of the Anatolia Storage Tanks would serve the proposed Project through the NSA system distribution system. There will be a small amount of groundwater use from the Mather Housing wells located at Mather Field as part of the NSA water supply. Ultimately, the NSA pipelines (Phase A and Phase B, see WSIP) will convey treated surface water from the VSWTP to the NSA.

SCWA has a remediated groundwater supply of 8,900 AF/Year in accordance with the terms and conditions in the agreement entitled “Agreement between Sacramento County, SCWA, and Aerojet-General Corporation With Respect To Transfer of GET Water” dated May 18, 2010. The timing and amount of remediated groundwater available is subject to change as a result of on-going negotiations with water purveyors affected by groundwater contamination and with Aerojet/Boeing as their remediation plans may change as directed by various regulatory agencies. This remediated groundwater supply is diverted by SCWA from the Sacramento River at Freeport along with SCWA’s surface water supplies.

A bigger portion of groundwater is used in the CSA and SSA of Zone 40. There is also some groundwater pumping in other SCWA service areas outside of Zone 40. The UWMP has identified SCWA’s groundwater availability in the next 20 years, as shown in **Table 6** (see **Table 6-12 of UWMP**).

Table 6 SCWA Projected Groundwater Supply Availability (AF/Year)

	2020	2025	2030	2035	2040
Groundwater	47,000	47,000	52,000	62,000	62,000
Remediated Groundwater	8,900	8,900	8,900	8,900	8,900
Total	55,900	55,900	60,900	70,900	70,900

¹ The groundwater basin underlying Zone 40 has not been adjudicated.

Use of Surface Water

The SCWA conjunctive use program includes the delivery of surface water within the Zone 40 boundaries as part of a comprehensive program to maintain the long-term, regional balance of the groundwater basin (see WSMP). The UWMP uses the terms “purchased water” and “surface water” to describe surface water supply. DWR defines purchased water as water purchased from other suppliers, including non-self supplied surface water. Surface water is defined by DWR as self-supplied water that is drawn from streams, lakes, and reservoirs.

- **Purchased Water**

SCWA has two sources of purchased surface water supplies, as described below.

1. Central Valley Project

The Central Valley Project (CVP) water supply consists of the CVP contract held by SCWA and the two Sacramento Municipal Utilities District (SMUD) assignments that total 45,000 AF/Year. Most of the CVP water is diverted at the Freeport diversion on the Sacramento River and treated at the Vineyard SWTP. Some of the CVP supplies are diverted from the Sacramento River and treated at the City’s Sacramento River Surface Water Treatment Plant and delivered to SCWA at the Franklin Intertie.

SCWA entered into a contract in April 1999 with the Reclamation for 22,000 AF/Year of CVP supplies pursuant to Public Law (PL) 101-514. This contract is often referred to as “Fazio Water” in recognition of the efforts by Congressman Vic Fazio to secure this contract. Of this 22,000 AF/Year, 7,000 AF/Year has been subcontracted to the City of Folsom for diversion from Folsom Lake, with 15,000 AF/Year available for SCWA through the Freeport diversion or Franklin Intertie.

SCWA has entered into an agreement with SMUD for the assignment to SCWA of a total of 30,000 AF/Year of water from SMUD’s existing contract with Reclamation.

SCWA’s total CVP supply is subject to reductions in dry years. The water supply allocations are defined by Reclamation on a year to year basis and are expressed as a percentage of either the contract amount or amount of average use. For the 21 year period of 1995 to 2015, the lowest allocation was in 2015 when it was established as 25 percent of the previous three years average unconstrained use.

The water supply allocations are based on a draft policy that defines water shortage terms and conditions. Reclamation initiated the development of a Municipal and Industrial (M&I) Water Shortage Policy in 1992, with several proposals prepared through 2001. The 2001 draft water shortage policy states that Reclamation would reduce M&I water to a contractor once irrigation water allocations are reduced below 75 percent of the contract amount. Reclamation has a provision in the draft policy for a minimum M&I shortage allocation of 75 percent that is applied to the last three years of historical use with certain adjustments, although the actual allocation in 2014

was 75 percent and in 2015 it was 25 percent of the use during the previous three unconstrained years. In 2010, Reclamation convened several workshops that will lead to the development of an Environmental Impact Statement that could potentially modify the existing policy or develop a new policy (US, 2011). This process has not been completed.

2. City of Sacramento's American River Place of Use Water Supply

A portion of Zone 40 lies within the City of Sacramento's American River Place of Use (POU). The City of Sacramento has a pre-1914 water right to the American River with a POU boundary that extends beyond the City's boundary and includes a portion of Zone 40. The amount of water available to serve the POU area within Zone 40 is estimated to be 9,300 AF/Year. SCWA is planning for the future wholesale delivery of American River water within the POU. A connection would be constructed to supply the portion of Zone 40 in the POU area, with the timing based on when the supply is actually needed.

The City of Sacramento's diversions from the American River at the Fairbairn Water Treatment Plant are reduced when American River flows are less than the Hodge Flow Criteria, which would likely result in no POU water being available for SCWA in these circumstances. The City of Sacramento may decide to divert water during these restricted times at their Sacramento River diversion, although additional infrastructure might need to be constructed by the City of Sacramento to be able to convey this water to SCWA. It might be possible for SCWA to divert the POU water at the Freeport diversion. Given the uncertainty of the availability of POU water during dry periods, a supply allocation of zero percent is assumed for dry years and 100 percent for normal climate years.

- **Surface Water**

SCWA has an appropriative water supply that is self-supplied surface water that is drawn from the Sacramento River. In February 2008, the State Water Resources Control Board (SWRCB) approved SCWA's appropriative right permit application to divert water from the American and Sacramento Rivers (Permit 21209). The amount of appropriated water available for use could range up to 71,000 AF/Year in wet years, primarily during the winter months. This water would be diverted at the Freeport diversion on the Sacramento River. Since SCWA's demands are low in the winter months, it is possible that not all of this supply could be utilized without the ability to store the water.

Contract documents, agreements, and applications for appropriative water and CVP water supplies are available for review. **Table 7** (see **Table 6-12** in UWMP) shows all the surface water entitlements, water rights, and water services contracts to meet the build-out water demand.

Table 7 Surface Water Supply Entitlements, Water Rights, and Water Service Contracts to Meet SCWA Build-out Water Demand (AF/Year)

Water Supply Sources	Description	Wholesaler Supplied (Yes/No)	Status of Contract, Permit, and Agreement	Quantity (AF/Year)
Purchased Water	Wholesaler – (City of Sacramento) to serve portion of Zone 40 in City of Sacramento’s American river POU	yes	Planned	9,300
Purchased Water	Supplier-produced surface water to Serve Zone 40: U.S. Bureau of Reclamation – CVP Supply (SMUD 1, SMUD 2, and Fazio Water)	yes	Existing	45,000
Surface Water	Supplier-produced surface water to Serve Zone 40: Appropriative Water – SWRCB Permit 21209	no	Existing	71,000
TOTAL	-	-	-	125,300

Table 8 (see **Table 6-12** of UWMP) presents the quantities of surface water supply pursuant to these water rights and contract entitlements in five-year increments from 2020 to 2040. The projected volume takes into consideration facility constraints and hydrological constraints.

Table 8 Projected Reasonably Available Surface Water Supply in Five-Year Increments (AF/Year)

Water Supply	Description	2020	2025	2030	2035	2040
Purchased Water	Wholesaler – (City of Sacramento) to serve portion of Zone 40 in City of Sacramento’s American river POU	0	0	0	0	0
Purchased Water	Supplier-produced surface water to Serve Zone 40: U.S. Bureau of Reclamation – CVP Supply (SMUD 1, SMUD 2, and Fazio Water)	21,300	21,300	21,300	21,300	21,300
Surface Water	Supplier-produced surface water to Serve Zone 40: Appropriative Water – SWRCB Permit 21209	4,000	4,000	4,000	4,000	4,000
TOTAL		25,300	25,300	25,300	25,300	25,300

• Recycled Water

A small amount of recycled water is being used in the SSA of Zone 40 for public landscape irrigation, such as parks, schools, commercial, and streetscapes. In 2015 the recycled water

use was 575 AF/Year. Recycled water use is projected to increase to 1,700 AF/Year after 2020 (see **Table 4-6** of UWMP).

SECTION 10910(d)(2)

Section 10910(d)(2) requires SCWA to demonstrate that water supplies required to serve the Project actually exist. Section 10910(d)(2) defines what constitutes “proof.”

Section 10910(d)(2)(A)

This subsection requires written contracts or other proof of entitlement to the water supplies identified for the Project. The contracts and agreements for the surface water supplies are available for review at the offices of the County of Sacramento, Department of Water Resources.

Initial water demands in the Project will be met with either groundwater or surface water. SCWA will exercise its right as a groundwater appropriator to extract groundwater from the basin for delivery to the Project; surface water will be from existing entitlements diverted from the Sacramento River and treated at the VSWTP. In the long-term, the water demands of the Project will be met in accordance with the conjunctive use program described in the WSMP.

Section 10910(d)(2)(B)

This subsection requires a copy of the capital outlay program for financing the delivery of the identified water supply to the Project. The documents described below are available for review at the offices of the County of Sacramento, Department of Water Resources.

A financing plan for the construction of groundwater and surface water facilities needed to realize the conjunctive use program identified in the WSMP has been approved by SCWA’s Board of Directors (Board). The financing plan, as outlined in Chapter 7 of the WSMP, identifies the necessary water facility projects and estimated costs associated with implementation of said conjunctive use program (Capital Improvement Program or CIP).

In addition to the WSMP, the Feasibility Report for Sacramento County Water Financing Authority Series 2007 Revenue Bonds (Sacramento County Water Agency Freeport Project) (MWH, April 2007), and the Sacramento County Water Agency FY 2009/10 Water Rate Study Report (FCS Group) evaluated and updated the total cost and fee requirements of the Zone 40 conjunctive use program incorporating all future Zone 40 expenditures for major capital facilities (i.e., surface water treatment plants, groundwater treatment plants, major transmission mains, etc.) and annual operation and maintenance costs. Funding to meet SCWA’s capital and annual funding requirements was then implemented by the Board through the issuance of revenue bonds for certain projects and the adoption of user fee and development fee increases over time (most recently in 2009).

SCWA’s capital outlay program includes the means for financing facilities to deliver the identified water supply to the Project. Specifically, all facilities needed to serve the Project are included in the CIP that was financed through the above described revenue bonds, user fee, and development fee. The development fee and user fee, as described in Titles 3 and 4 of the Sacramento County Water Agency Code, will continue to provide revenue to finance all aspects

of the Zone 40 conjunctive use program, including repayment of debt financing. Both fee programs are evaluated annually and adjusted, if necessary, to accommodate changes in the service area, water demands, needed capital projects, and required debt financing. Based on the CIP, a 10-year CIP is annually updated by the Board of Directors.

Section 10910(d)(2)(C)

This subsection requires identification of any federal, state, and local permits required for construction of the facilities identified for delivering the water supply to the Project.

Since adoption of the WSMP, SCWA has made significant progress in the development of its conjunctive use water supply program. SCWA, in cooperation with East Bay Municipal Utility District (EBMUD), has completed the Freeport Regional Water Project (FRWP). SCWA's portion of the project consists of participation in a large diversion facility on the Sacramento River just north of the community of Freeport and a recently completed transmission pipeline that conveys surface water to:

1. SCWA's recently completed VSWTP at the northeast corner of the intersection of Florin Road and Knox Road for treatment prior to delivery to SCWA's customers, and
2. The Folsom South Canal where EBMUD will discharge their flows for conveyance to their service area in the East Bay.

Initial surface water deliveries to the Project and the broader NSA will be made through NSA Pipeline Phase A - the conversion of the existing Anatolia raw water pipeline, which is expected to go online in 2016. Ultimately, surface water for the Project and other surrounding projects, will be conveyed through the both NSA Pipeline Phase A and Phase B, as outlined in the WSIP. SCWA approved an initial study/mitigated negative declaration for the NSA pipeline project pursuant to CEQA in September 2010. It is SCWA's intent to secure approval of the necessary permits and construction documents for NSA Phase B so that it can be constructed prior to demand for water within the NSA exceeding the capacity of the system currently serving customers in this area. The timing of construction of the NSA Phase B Pipeline cannot be precisely predicted at this time, as it will be dependent on demand growth in the NSA.

Construction of the NSA pipeline and related facilities required for the delivery of surface water to the Project will require a variety of permits. Additional site-specific environmental review and approval may also be needed for water storage tanks and other appurtenances that will be constructed in conjunction with the NSA pipeline. Any additional conveyance pipelines needed to complete the treated water system will be constructed within existing and future public right-of-way and easements. At this time, SCWA does not foresee any regulatory or legal impediments to completing further environmental review and obtaining the permits.

Section 10910(d)(2)(D)

This subsection requires identification of any regulatory approvals required for delivery of the water supply to the Project.

Water production, treatment, and storage facilities will be added to SCWA's public water system permit issued by the California Department of Public Health (DPH) and the design of these facilities will require review and approval by DPH. No other regulatory approvals are anticipated.

New water service and discretionary approval of any project may be withheld until compliance with the Endangered Species Act (ESA) is demonstrated. Depending upon the source of water, compliance may be demonstrated by one of the following: participation in the South Sacramento Habitat Conservation Plan (SSHCP); a letter from the US Fish and Wildlife Service (USFWS) to the Project proponent and/or federal agency indicating the Project is not likely to adversely affect or result in a take of listed species; incidental take coverage through a biological opinion for the Project; or, incidental take coverage through an ESA section 10(a)(1)(B) permit for the Project. This requirement may be a condition of approval for any discretionary action taken by the local land use authority.

IDENTIFY PARTIES DEPENDENT UPON PROPOSED SUPPLY [Section 10910(e)]

SECTION 10910(e)

Section 10910(e) states:

"If no water has been received in prior years by the public water system..., under the existing water supply entitlements, water rights, or water service contracts [identified to serve the proposed project], the public water system, ...shall also include in its water supply assessment pursuant to subdivision (c), an identification of the other public water systems or water service contract holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts to the same source of water as the public water system, ..., has identified as a source of water supply within its water supply assessments."

The intent of this section is to identify any potential conflicts that may arise from the exercise of a water supply entitlement, water right, or water service contract to serve a proposed project if such water supply entitlement, water right, or water service contract has not been previously exercised.

Use of Groundwater

The water demands of Zone 40 (including the Project) will be met with groundwater and surface water. SCWA has previously exercised its rights as a groundwater appropriator to meet the water demands of its customers and will continue to exercise those rights to provide treated groundwater supplies to the Project.

Use of Surface Water

The surface water supplies associated with SCWA's conjunctive use program fall into three categories:

- 1) Purchased water supplies available through a current USBR CVP contract.

- 2) Purchased water available through the City of Sacramento for use within the American River Place of Use (POU).
- 3) Water supplies available through SWRCB Permit 21209.

For USBR CVP purchased water and SWRCB Permit 21209 surface water, the parties that could most directly be affected are other CVP contractors, State Water Project (SWP) contractors, water rights holders subject to Term 91 conditions, and riparian diverters downstream of SCWA's point of diversion. The point of diversion is at a site near the community of Freeport on the Sacramento River.

The source of POU water supply is wholesale water from the City of Sacramento to serve the area that lies within the POU. Delivery of this water to SCWA has been included in the City of Sacramento's long-range plan for perfecting their American River water rights. The diversion location, timing, and volume of delivery are currently under negotiation.

DOES SUPPLY FOR PROJECT INCLUDE GROUNDWATER? [Section 10190(f)]

SECTION 10910(f)

As stated earlier, the water supply for Zone 40 (including the Project) include groundwater. Section 10910(f) requires additional information about groundwater to be presented in this WSA.

Section 10910(f)(1)

Section 10910(f)(1) requires a review of groundwater information contained in the UWMP relevant to the identified water supply for the Project. Section 6.3 of UWMP provides a description of the applicable groundwater basins, the status of groundwater management, overdraft conditions, historical groundwater pumping, and the remediated groundwater supply.

Section 10910(f)(2)

Section 10910(f)(2) requires a description of the groundwater basin and the efforts being taken to prevent long-term overdraft.

- **South American Subbasin (5-21.65)**

For the Project, SCWA would pump groundwater from the South American Sub-basin as defined by the California Department of Water Resources (DWR) Bulletin 118. According to Bulletin 118, the South American Sub-basin is defined as the area bounded on the west by Interstate 5 and the Sacramento River, on the north by the American River, on the south by the Cosumnes and Mokelumne rivers and on the east by the Sierra Nevada. The Central Basin covers a major portion of this basin.

Groundwater in the Central Basin is generally classified as occurring in a shallow aquifer (Laguna or Modesto Formation) and in a deep aquifer (Mehrtens Formation). The Laguna or Modesto Formation consists of older alluvial deposits of loosely to moderately compacted sand, silt, and gravel deposited in alluvial fans. These deposits are moderately permeable and have a

thickness of about 100 to 650 feet. The deeper Mehrten Formation is a sequence of fragmented volcanic rocks which crops out in a discontinuous band along the eastern margin of the basin. It is composed of black volcanic sands, stream gravels, silt, and clay inter-bedded with intervals of dense tuff breccia. The sand and gravel intervals are highly permeable and the tuff breccia intervals act as confining layers. The thickness of the Mehrten Formation is between 200 and 1,200 feet. Groundwater is located from 20 to 100 feet below the ground surface depending on when and where the measurement is taken. The base of the potable water portion of the deep aquifer is located approximately 1,400 feet below the ground surface.

Intensive use of groundwater over the past 60 years has resulted in a general lowering of groundwater elevations. Over time, isolated groundwater depressions have grown and coalesced into a single cone of depression that is centered in the southwestern portion of the basin, approximately 15 miles southwest of the project site. Groundwater level trends through much of the basin have generally declined consistently from the 1950s and 1960s to about 1980 by 20 to 30 feet. From 1980 through 1983, water levels recovered by about 10 feet and remained stable until the beginning of the 1987-1992 drought; however, wells in the vicinity of Rancho Cordova appear to have recovered less than other wells in the basin since 1995 (generally less than 10 feet). From 1995 to 2003 most groundwater levels recovered to levels that were generally higher than levels prior to the 1987 through 1992 drought. Much of this recovery can be attributed to the increased use of surface water in the Central Basin, and the fallowing of previously irrigated agricultural lands transitioning into new urban development areas. In the central portion of the Central Basin, where the Project site is located, groundwater level trends observed in California Department of Water Resources monitoring wells generally vary between 40 feet above to 40 feet below mean sea level over the period of the 1950's through the 2000's.

Recharge of the aquifer system occurs along active river and stream channels where extensive sand and gravel deposits exist, particularly along the American, Cosumnes, and Sacramento rivers. Additional recharge occurs along the eastern boundary of Sacramento County at the transition point from the consolidated rocks of the Sierra Nevada to the alluvial-deposited basin sediments. This recharge is classified as subsurface recharge along with underground flow into and out of the basin with adjacent groundwater basins. Other sources of recharge include deep percolation from applied surface water and precipitation.

As mentioned previously, the estimated long term annual sustainable yield of groundwater from the Central Basin is 273,000 AF/year. The determination of the sustainable yield of the Central Basin (273,000 acre-feet per year) was negotiated by the Water Forum Groundwater Negotiating Team (GWNT) and involved a complex process that developed the long-term average annual pumping limit of the basin. The long-term average annual pumping limit is described as the hydro-geologic process under which groundwater can be pumped and not exceed average natural recharge over a long-term period of time. Under sustainable conditions, natural recharge is said to be able to make up for variations in the amount of pumping that occurs over the long-term, given wet and dry periods in the hydrologic record.

First, the GWNT developed future land and water use projections. Then the impacts associated with increased water demands, assuming that demand is met solely by groundwater, were

described. These results were then compared with 1990 baseline conditions to provide the level of impact that could be expected if groundwater pumping were increased beyond baseline conditions.

Four quantifiable factors were used to determine the level of impact:

- 1) Water quality degradation
- 2) Dewatering of wells
- 3) Higher cost of pumping
- 4) Ground subsidence

Based on these four factors, a series of groundwater model runs quantified each condition in 10-year increments, beginning in 1990 and ending in 2030. Each model run was set up to reflect future land and water use conditions; then 70 years of historical hydrology were applied to each model run to determine how the aquifer might behave under wet and dry conditions.

After comprehensive review and analysis of the resulting data, the GWNT concluded that using 2005 levels of groundwater pumping (interpolated from the 2000 and 2010 modeling results) would provide the highest quantity of groundwater yield from the basin while minimizing impacts associated with the four factors of concern. Accordingly, the GWNT determined the 2005 pumping rates equated to a long-term pumping average annual pumping limit of approximately 273,000 acre-feet per year for the Central Basin.

- **SCWA Conjunctive Use Program**

Section 3.2 and Appendix E of the WSMP provide detailed descriptions of the Zone 40 conjunctive use program. SCWA's operational approach for preventing overdraft of the groundwater basin underlying Zone 40 and optimizing the use of both groundwater and surface water is discussed in detail in these sections. The FEIR for 2002 Zone 40 Water Supply Master Plan includes an extensive analysis of the effects of the Zone 40 conjunctive use program on the groundwater basin and on various recharge sources. A summary of the conjunctive use program is as follows:

SCWA's conjunctive use program is a coordinated approach to manage surface water and groundwater supplies to maximize the yield of available water resources. The conjunctive use program for SCWA includes the use of groundwater, surface water, remediated water, and recycled water supplies. The program also includes the construction of a surface water diversion structure, a surface-water treatment plant, and water conveyance pipelines, as well as groundwater extraction, treatment, and distribution facilities.

This conjunctive use program relies on an abundance of surface water in wet years when as much surface water as possible will be diverted, within entitlement limitations, minimizing the use of groundwater. During these years the groundwater aquifer will be allowed to naturally replenish. In dry years, when surface water availability is reduced, SCWA will pump more groundwater from the replenished aquifer. Using surface water and groundwater conjunctively

makes it easier for SCWA to meet demands in a single dry year or in multiple dry years. The goal of the conjunctive use program is to meet all demands during wet and dry years.

SCWA has adopted policies to insure systematic, incremental implementation of its conjunctive use program. These policies are also consistent with the terms of the WFA, which is intended to maintain a long-term sustainable groundwater supply. The policies are included in the SCWA's UWMP and WSMP, which include specific action items to assure implementation. Action items include development of additional surface water supply and treatment facilities to provide water during wet years, development of groundwater facilities to provide groundwater during dry years, in-lieu "banking" of groundwater during wet years, development and implementation of demand management and water conservation strategies, development of water reclamation facilities to meet non-potable demands, and development of a financing plan to implement these action items.

- **Groundwater Management Plan (GMP)**

As a part of the Groundwater Authority, SCWA has committed to the implementation of the Central Basin GMP. The Central Basin GMP contains five Basin Management Objectives (BMOs) designed to maintain a safe, sustainable and high quality groundwater resource within the Central Basin. These BMOs, in conjunction with the program component action items, focus on managing and monitoring the basin to benefit all groundwater users in the basin and are intended to be specific enough to result in numerical criteria for the basin, but also flexible enough to be modified or adapted to new information on groundwater basin behavior over time. The five BMOs are summarized below:

1. Maintain the long-term average groundwater extraction rate at or below 273,000 acre-feet per year.
2. Maintain specific groundwater elevations within all areas of the basin consistent with the Water Forum "solution."
3. Protect against any potential inelastic land surface subsidence by limiting subsidence to no more than 0.007 feet per 1 foot of drawdown in the groundwater basin.
4. Protect against any adverse impacts to surface water flows in the American, Cosumnes and Sacramento rivers.
5. Water quality objectives:
 - a. Total Dissolved Solids (TDS) concentration of less than 1,000 milligrams per liter (mg/l).
 - b. Nitrate (NO₃) concentration of less than 45 mg/l.
 - c. Volatile Organic Compounds (VOC).

The Groundwater Authority intends to achieve these objectives by implementing the following program component action items:

1. Stakeholder involvement; including public outreach, involving other agencies inside and adjacent to the basin, developing relationships with state and federal agencies, and pursuing partnership opportunities.
2. Monitoring program; including groundwater elevation monitoring, groundwater quality monitoring, land surface elevation monitoring, surface water/groundwater interaction

- monitoring, establishing protocols for collection of groundwater data, and establishing a data management system.
3. Groundwater resource protection; including well construction policies, well abandonment and destruction policies, wellhead protection measures, protection of recharge areas, control of the migration and remediation of contaminated groundwater, and control of saline water intrusion.
 4. Groundwater sustainability; including demand reduction.
 5. Planning integration; including existing integrated planning efforts, urban water management planning, Drinking Water Source Assessment and Protection (DWSAP) program, land use planning, and integrated groundwater and surface water modeling.

The Central Basin GMP also has an implementation plan that defines specific actions or trigger points and associated remedy activities linked with each of the BMOs. Once a trigger point has been reached, the Groundwater Authority must decide on a course of action.

Water quality analysis of the aquifers underling the Central Basin has shown that groundwater quality found in the upper aquifer system is of higher quality than that found in the lower aquifer system. This is principally because the lower aquifer system (specifically the Mehrten Formation) contains higher concentrations of iron and manganese and higher concentrations of total dissolved solids (TDS). Notwithstanding these findings, the lower aquifer typically meets water quality standards as a potable water source. Water from the upper aquifer (specifically the Laguna Formation) generally does not require treatment, unless high arsenic values are encountered, other than disinfection for public drinking water systems.

- **Sustainable Groundwater Management Act (SGMA)**

The Sustainable Groundwater Management Act (SGMA) was enacted by the legislature in 2014, with subsequent amendments in 2015. SGMA requires groundwater management in priority groundwater basins, which includes the formation of Groundwater Sustainability Agencies (GSAs) and the development of Groundwater Sustainability Plans (GSPs) for groundwater basins or subbasins that are designated by DWR as medium or high priority.

The designation of the priority of groundwater basins was done as part of the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. CASGEM was developed in response to legislation enacted in California's 2009 Comprehensive Water package. The CASGEM Groundwater Basin Prioritization is a statewide ranking of groundwater basin importance that incorporates groundwater reliance and focuses on basins producing greater than 90 percent of California's annual groundwater. The CASGEM Program has ranked the South American Subbasin (5-21.65) as high priority.

SGMA directs DWR to identify groundwater basins and subbasins in conditions of critical overdraft. DWR identified such basins in Bulletin-118, 1980 and Bulletin 118, Update 2003. DWR issued an updated draft list of critically over drafted basins in July 2015. Neither of the two subbasins that supply SCWA is on the list.

Groundwater basins designated as high or medium priority and identified as critically over-drafted must be managed under GSPs, adjudications, or alternatives by January 31, 2020. All other high and medium priority basins not identified as critically over-drafted must be managed under a GSP by January 31, 2022. The two subbasins that supply SCWA are covered by the latter deadline.

A GSA must be formally established by June 30, 2017. SCGA is currently in discussions with other groundwater basin users of the South American Subbasin (5-21.65) to evaluate options for GSA formation and GSP development for SGMA compliance.

Section 10910(f)(3)

Section 10910(f)(3) requires a description of the volume and geographic distribution of groundwater extractions from the basin for the last five years.

Table 9 (see UWMP **Table 6-2**) identifies past volumes of groundwater extracted by SCWA in Zone 40 between 2011 –2015.

Through the water supply master planning process, SCWA identified a system of sixteen separate well fields throughout Zone 40. A distributed groundwater extraction strategy was selected because it would minimize drawdown effects of pumping by spreading extraction over a wide geographic area. The spatial distribution of the SCWA’s current and future well fields is shown in **Figure 3**.

Table 9 Historical Groundwater Pumping in Zone 40, 2011 – 2015

Year	(Acre-Feet)
2011	29,972
2012	30,629
2013	28,828
2014	27,781
2015	24,652

Section 10910(f)(4)

Section 10910(f)(4) requires a description of the projected volume and geographic distribution of groundwater extractions from the basin.

Groundwater use has declined since the VSWTP has come online, but it will increase over time as water demand continues to grow in Zone 40. In wet and normal years, groundwater pumping will be minimized because surface water becomes the major water supply source. In dry years, groundwater pumping will increase significantly as surface water availability is considerably

reduced. **Table 6** identifies projected potential maximum groundwater pumping necessary to meet Zone 40’s water demands from 2020-2040.

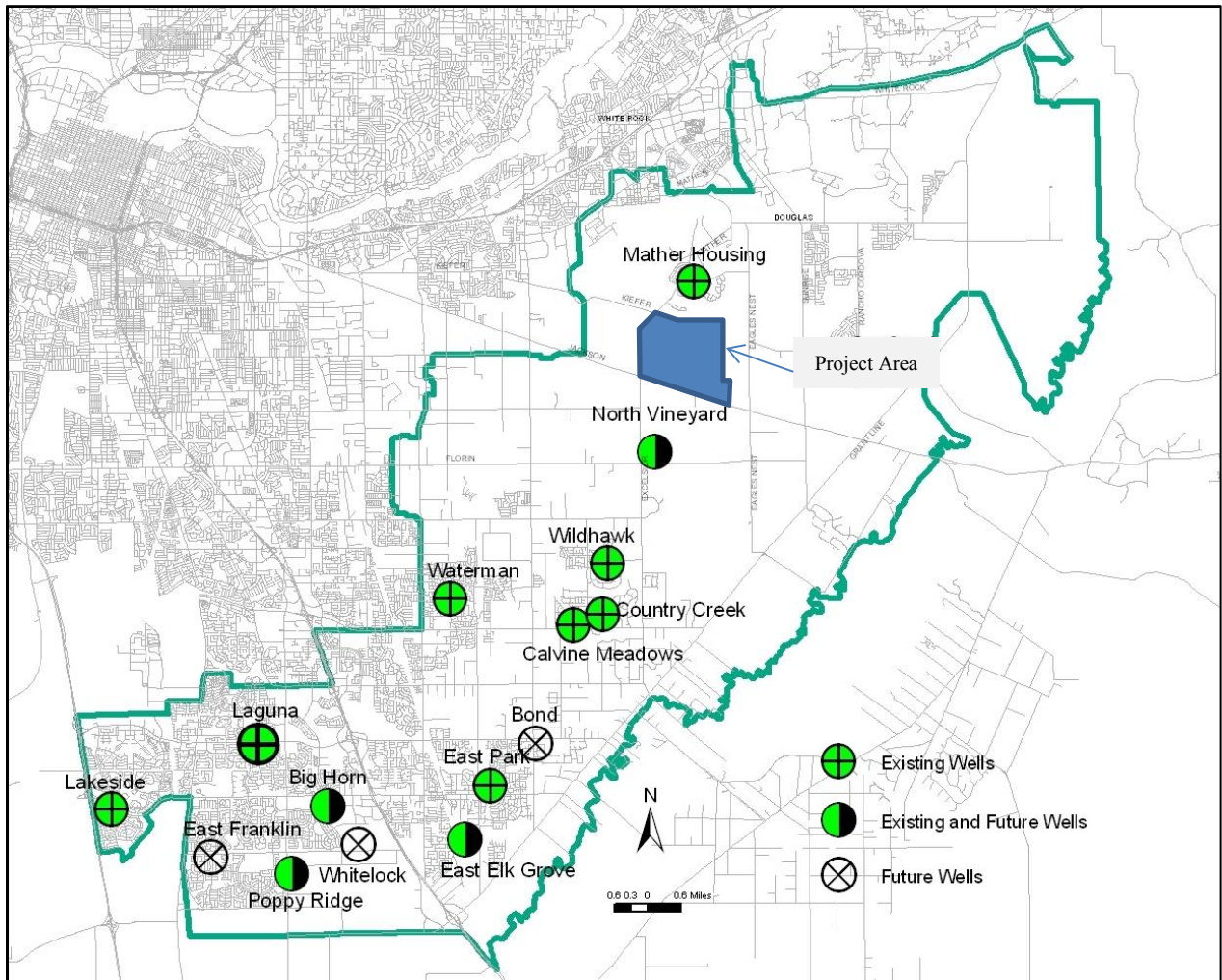


Figure 3 Spatial Distribution of SCWA’s Existing and Future Well Fields

Section 10910(f)(5)

Section 10910(f)(5) requires an analysis of the sufficiency of the groundwater basin to meet the demands associated with the Project.

The WFA defined a long-term sustainable average annual yield of 273,000 AF/year for the Central Basin and provided for SCWA’s groundwater needs as identified in the WSMP. The WSMP describes a conjunctive use program that identifies and projects a long-term average use of groundwater to meet identified water demands, including the demand associated with the Project.

SCWA’s conjunctive use program has been extensively analyzed and documented in the WSMP, the FEIR for 2002 WSMP (certified in February 2006), the FEIR – WFA (certified in 1999), and

the WFA. All referenced documents have been subjected to thorough technical peer review and public scrutiny.

DETERMINATION OF SUFFICIENCY

SCWA determines that it has identified sufficient water supplies to meet the water demands of the Project over the next 20 years during normal, single dry, and multiple dry years.

SCWA makes this determination based on the information provided in this WSA and on the following specific facts:

- SCWA’s conjunctive use program is a sustainable water supply program that provides a 100-percent reliable water supply while protecting environmental values and stabilizing the groundwater basin underlying Zone 40.
- SCWA’s conjunctive use program has been extensively analyzed and documented in the WSMP, the FEIR for 2002 WSMP (certified in February 2006), the FEIR – WFA (certified in 1999), and the WFA. All referenced documents have been subjected to thorough technical peer review and public scrutiny.
- The Project will be served by water supplies made available through SCWA’s conjunctive use program.
- A financing plan for SCWA’s conjunctive use program for constructing facilities required for delivering groundwater and surface water to the Project has been approved by the Board through its adoption of the WSMP, Bond Feasibility Reports, and the Sacramento County Water Agency Code.

The UWMP demonstrates that SCWA’s total projected water supplies during normal, single dry, and multiple dry water years meet the proposed water demands over the next 20 years, as shown in **Table 10**.

Table 10 Zone 40 Water Supply Sufficiency Analysis in Five-Year Increments (AF/year)

Water Year	2020	2025	2030	2035	2040
Normal Year (See Table 7-4, UWMP)					
Total Supply	82,900	82,900	87,900	97,900	97,900
Total Demand	48,121	55,490	63,288	71,143	79,278
Sufficiency (Supply Minus Demand)	34,779	27,410	24,612	26,757	18,622
Single Dry Year (See Table 7-6, UWMP)					
Total Supply	70,200	70,500	74,600	83,600	83,800
Total Demand	48,121	55,490	63,288	71,143	79,278
Sufficiency (Supply Minus Demand)	22,079	15,010	11,312	12,457	4,522

Multiple Dry Year (1) (See Table 7-8, UWMP)					
Total Supply	77,900	77,900	81,900	90,900	90,900
Total Demand	48,121	55,490	63,288	71,143	79,278
Sufficiency (Supply Minus Demand)	29,779	22,410	18,612	19,757	11,622
Multiple Dry Year (2) (See Table 7-8, UWMP)					
Total Supply	77,900	77,900	81,900	90,900	90,900
Total Demand	48,121	55,490	63,288	71,143	79,278
Sufficiency (Supply Minus Demand)	29,779	22,410	18,612	19,757	11,622
Multiple Dry Year (3) (See Table 7-8, UWMP)					
Total Supply	70,200	70,500	74,600	83,600	83,800
Total Demand	48,121	55,490	63,288	71,143	79,278
Sufficiency (Supply Minus Demand)	22,079	15,010	11,312	12,457	4,522

CONCLUSION

This WSA documents all required information specifically delineated by Water Code Sections 10910 – 10915. It demonstrates that SCWA's water supplies are sufficient to satisfy the water demands of the currently proposed Project while still meeting the current and projected water demands of existing customers in the next 20 years. If there are significant changes to land uses for the proposed project in the future, this WSA may need to be revisited and updated accordingly.