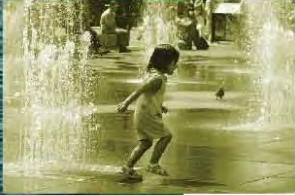


APPENDIX E

WATER SUPPLY ASSESSMENT

Amoruso Ranch Specific Plan Water Supply Assessment



Prepared for
City of Roseville

February 2016



415-12-15-24

WEST YOST ASSOCIATES
consulting engineers

Amoruso Ranch Specific Plan Water Supply Assessment

Prepared for

City of Roseville

February 2016



415-12-15-24



James P. Connell

Table of Contents



Executive Summary	1
1.0 Introduction	2
1.1 Legal Requirements for the Water Supply Assessment.....	2
1.2 Need For and Purpose of Water Supply Assessment.....	3
1.3 Water Supply Assessment Preparation, Format and Organization.....	3
2.0 Description of Proposed Project	3
2.1 Proposed Project Location	3
2.2 Proposed Land Uses	5
2.3 Proposed Project Projected Water Demand	7
2.4 Projected Water Supply for Proposed Project.....	11
3.0 Required Determinations	11
3.1 Does SB 610 apply to the Proposed Project?	11
3.2 Does SB 221 apply to the Proposed Project?	12
3.3 Who is the identified public water system?	12
3.4 Does the City have an adopted Urban Water Management Plan (UWMP) and does the UWMP include the projected water demand for the Proposed Project?	13
4.0 City of Roseville and PCWA Water Service Areas	14
4.1 City of Roseville Water Service Area	14
4.2 PCWA Water Service Area.....	15
5.0 City of Roseville and PCWA Water Demands	16
5.1 City of Roseville Existing and Projected Water Demand	16
5.2 PCWA Existing and Projected Water Demand.....	16
5.3 Dry Year Water Demand	22
6.0 City of Roseville and PCWA Water Supplies	23
6.1 Regulatory Background	23
6.2 Roseville Existing and Projected Potable Water Supplies	24
6.2.1 Surface Water from Folsom Lake	25
6.2.2 Surface Water Reliability.....	26
6.2.3 Additional Planned Future Potable Water Supplies.....	28
6.2.4 Groundwater Supply	28
6.3 Roseville Existing and Projected Non-Potable Water Supplies	31
6.4 PCWA Existing and Projected Potable Water Supplies	32
6.4.1 American River Middle Fork Project	32
6.4.2 Pacific Gas and Electric Contracts.....	32
6.4.3 Central Valley Project	33
6.4.4 Water Forum Agreement	34
6.4.5 Groundwater	34
6.4.6 Additional Planned Future Potable Water Supplies.....	35
6.5 PCWA Existing and Projected Non-Potable Water Supplies	35

Table of Contents



7.0 Determination of Water Supply Sufficiency Based on the Requirements of SB 610.....	36
7.1 Potable Water Supply and Demand	36
7.2 Recycled Water Supply and Demand	38
8.0 Water Supply Assessment Approval Process.....	39
9.0 Additional Material to Support CEQA Analyses	40
9.1 Surface Water Delivery Scenarios	40
9.2 Demand Reduction Scenarios.....	41
9.3 Balancing Water Supplies and Demands.....	42
9.4 Groundwater Supplies	46
9.4.1 Groundwater Needs under USBR CVP OCAP and life of the Proposed Project	46
10.0 References.....	47

List of Tables

Table 2-1. Proposed Land Uses for the Proposed Project.....	7
Table 2-2. City of Roseville Unit Water Demand Factors.....	8
Table 2-3. Amoruso Ranch Total Water Demand Projection	9
Table 2-4. Amoruso Ranch Specific Plan Projected Water Demand at Buildout, af/yr	10
Table 4-1. Historical and Projected Population for City of Roseville Water Service Area.....	15
Table 5-1. General Plan Buildout Total Water Demands with Amoruso Ranch Specific Plan.....	17
Table 5-2. Projected Future Water Demand, af/yr	18
Table 5-3. PCWA Untreated Water Demand for Western Area Wholesale Customers, af/yr.....	19
Table 5-4. PCWA Summary of Normal Year Western Area Water Demands, af/yr	20
Table 5-5. Comparison of PCWA 2010 UWMP Demand Projections and Revised Projections for Sunset Industrial Area	21
Table 5-6. Water Shortage Contingency Plan Projected Demand Reduction	22
Table 6-1. City of Roseville Surface Water Contracts, af/yr	25
Table 6-2. City of Roseville Surface Water Contracts, af/yr	26
Table 6-3. City of Roseville Surface Water Supply Reliability, Percent of Contracted Amount	27
Table 6-4. City of Roseville Surface Water Supply Reliability, af/yr	27
Table 6-5. City of Roseville Projected Potable Water Supply Reliability During Hydrologic Normal, Single Dry, and Multiple Dry Years	29
Table 6-6. PCWA Projected Potable Water Supply Reliability During Hydrologic Normal, Single Dry, and Multiple Dry Years	33
Table 7-1. Summary of Water Demand Versus Supply During Hydrologic Normal, Single Dry, and Multiple Dry Years for City of Roseville	37
Table 7-2 Potential Water Conservation, af/yr (up to 20 percent of Normal Year Demand).....	38
Table 7-3 Potential Groundwater Use to Relieve Remaining Deficit, af/yr.....	38
Table 9-1. Available Water Supplies, af/yr, Existing and Buildout Conditions	40

Table of Contents



List of Figures

Figure 2-1. Proposed Project Vicinity	4
Figure 2-2. Proposed Land Uses for Proposed Project	6
Figure 9-1. Potable Water Demands for Varying Demand Reduction Stages, Buildout Demand Conditions	43
Figure 9-2. Demand Reductions Needed for Varying Water Supply Scenarios, Buildout Demand Conditions, No Groundwater	44
Figure 9-3. Groundwater Required for Varying Water Supply Scenarios, Buildout Demand Conditions, Maximum Reductions: Stage 2	45

List of Appendices

- Appendix A: Amoruso Ranch Specific Plan Area - Water Master Plan, Kimley Horn, February 2015.
- Appendix B: Amoruso Ranch Specific Plan Area - Water Conservation Master Plan, Kimley Horn, September 2015.
- Appendix C: Amoruso Ranch Specific Plan Area - Recycled Water Master Plan, Kimley Horn, September 2015.
- Appendix D: Memorandum from Greg Young (Tully & Young) to Placer County Water Agency, Subject: PCWA demand development information, May 11, 2012.
- Appendix E: Memorandum from Brian Rickards and Tony Firenzi (PCWA) to Michele Kingsbury (Placer County) and Kelye McKinney (City of Roseville), Subject: Sunset Industrial Area Water Allocation, November 25, 2015.
- Appendix F: Hewlett-Packard/Campus Oaks Rezone & Master Plan Project Water Supply Assessment, Municipal Consulting Group, June 2015.

Table of Contents



List of Acronyms and Abbreviations

af	Acre-Feet
af/ac/yr	Acre-Feet Per Acre Per Year
af/yr	Acre-Feet Per Year
ASR	Aquifer Storage and Recovery
CEQA	California Environmental Quality Act
City	City of Roseville
CVP	Central Valley Project
EIR	Environmental Impact Report
gpd/DU	Gallons Per Day Per Dwelling Unit
GMP	Groundwater Management Plan
HDR	High Density Residential
LDR	Low Density Residential
MFP	American River Middle Fork Project
OCAP	Operations Criteria and Plan
PCWA	Placer County Water Agency
PG&E	Pacific Gas & Electric Company
Proposed Project	Amoruso Ranch Specific Plan
SB 221	California State Senate Bill 221 of 2001 (California Government Code Section 66473.7)
SB 610	California State Senate Bill 610 of 2001 (California Water Code Sections 10910 Through 10915)
SIA	Sunset Industrial Area
SJWD	San Juan Water District
SOI	Sphere of Influence
SPWA	South Placer Wastewater Authority
USBR	U.S. Bureau of Reclamation
UWMP	Urban Water Management Plan
WPWMA	Western Placer Waste Management Authority
WSA	Water Supply Assessment

City of Roseville Amoruso Ranch Specific Plan Water Supply Assessment



EXECUTIVE SUMMARY

The proposed Amoruso Ranch Specific Plan Project (Proposed Project), if approved, would be constructed on property to the northwest of, but to be annexed into, the City of Roseville (City). An Environmental Impact Report (EIR) is being prepared for the Project. The purpose of this Water Supply Assessment (WSA) is to support the Environmental Impact Report (EIR) for the Proposed Project and to perform the evaluation required by Water Code sections 10910 through 10915 in connection with the City's Proposed Project. This WSA is not intended to reserve water, or to function as a "will serve" letter or any other form of commitment to supply water (see Water Code section 10914). The provision of water service will continue to be undertaken in a manner consistent with applicable City policies and procedures, consistent with existing law.

This WSA includes discussion of the projected potable and recycled water demands of the Proposed Project (Section 2), determinations required under applicable regulations (Section 3), the City and Placer County Water Agency (PCWA) water service areas (Section 4), the City and PCWA projected potable and recycled water demands through the year 2035 (Section 5), and the City and PCWA projected water supply sources and reliability through the year 2035 (Section 6). This WSA also documents the plan to ensure that sufficient water supplies will be available to serve the Proposed Project and the other planned development in the City water service area through the planning period (Section 7). Finally, the water supply assessment approval process (Section 8) and additional information in support of the California Environmental Quality Act (CEQA) process (Section 9) are discussed.

The projected potable water demand and supplies documented in this WSA are based on the City's adopted 2010 Urban Water Management Plan (UWMP), the PCWA 2010 UWMP, and additional documents provided by the City and PCWA. Water Code section 10910(c)(4) states that:

"...the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses."

Based on the technical analyses described in this WSA, the City finds that this requirement is not met. Therefore, the City is proposing to contract with PCWA to provide the necessary additional surface water and associated treatment of water supplies to serve the Proposed Project. Documentation of the availability of this water to be allocated is provided in this WSA. The City and PCWA do find that, with the additional allocation, the City's revised total projected water supplies will meet the above requirement from Water Code section 10910(c)(4), as documented in this WSA.

1.0 INTRODUCTION

The Proposed Project, if approved, would be constructed on property northwest of, and to be annexed into, the City. The purpose of this Water Supply Assessment is to support the EIR for the Proposed Project. Key topics covered in this introduction include:

- Legal Requirements for the Water Supply Assessment
- Need For and Purpose of Water Supply Assessment
- Water Supply Assessment Preparation, Format and Organization

1.1 Legal Requirements for the Water Supply Assessment

California Senate Bill 610 (SB 610) and Senate Bill 221 (SB 221) amended state law, effective January 1, 2002, to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 and SB 221 were companion measures that sought to promote more collaborative planning between local water suppliers and cities and counties. Both statutes require that detailed information regarding water availability be provided to the city and county decision-makers prior to approval of large development projects. The purpose of providing such information is to ensure that prudent water supply planning has been conducted, and that planned water supplies are adequate to meet existing demands, anticipated demands from approved projects, and the demands of proposed projects.

SB 610 amended California Water Code sections 10910 through 10915 to require agencies responsible for land use decisions:

1. To identify the public water purveyor(s) that may supply water for a proposed development project; and
2. To request a WSA from the identified water purveyor(s).

The City is the identified water purveyor for the Proposed Project. The purpose of the WSA is to demonstrate the sufficiency of the purveyor's water supplies to satisfy the water demands of the proposed project, while still meeting the water purveyor's obligations with regard to existing and planned future uses. Water Code sections 10910 through 10915 delineate the specific information that must be included in the WSA.

SB 221 amended State law (California Government Code section 66473.7) to require that approval by a city or county of certain residential subdivisions¹ requires an affirmative written verification of sufficient water supply. SB 221 was intended as a fail-safe mechanism to ensure that collaboration on finding the needed water supplies to serve a new large residential subdivision occurs before construction begins.

¹ Per Government Code Section 66473.7(a)(1) subdivision means a proposed residential development of more than 500 dwelling units.

1.2 Need For and Purpose of Water Supply Assessment

The purpose of this WSA is to perform the evaluation required by Water Code Sections 10910 through 10915 in connection with the City’s Proposed Project. This WSA is not intended to reserve water, or to function as a “will serve” letter or any other form of commitment to supply water (see Water Code section 10914). The provision of water service will continue to be undertaken in a manner consistent with applicable City policies and procedures, consistent with existing law.

1.3 Water Supply Assessment Preparation, Format and Organization

The format of this WSA is intended to clearly delineate compliance with the specific requirements for a WSA, per Water Code sections 10910 through 10915. This WSA includes the following sections:

- Section 1: Introduction
- Section 2: Description of Proposed Project
- Section 3: Required SB 610 Determinations
- Section 4: City of Roseville and PCWA Water Service Area
- Section 5: City of Roseville and PCWA Water Demands
- Section 6: City of Roseville and PCWA Water Supplies
- Section 7: Determination of Water Supply Sufficiency Based on the Requirements of SB 610
- Section 8: Water Supply Assessment Approval Process
- Section 9: Additional Material to Support CEQA Analyses
- Section 10: References

Relevant citations of Water Code sections 10910 through 10915 are included throughout this WSA to demonstrate compliance with the specific requirements of SB 610.

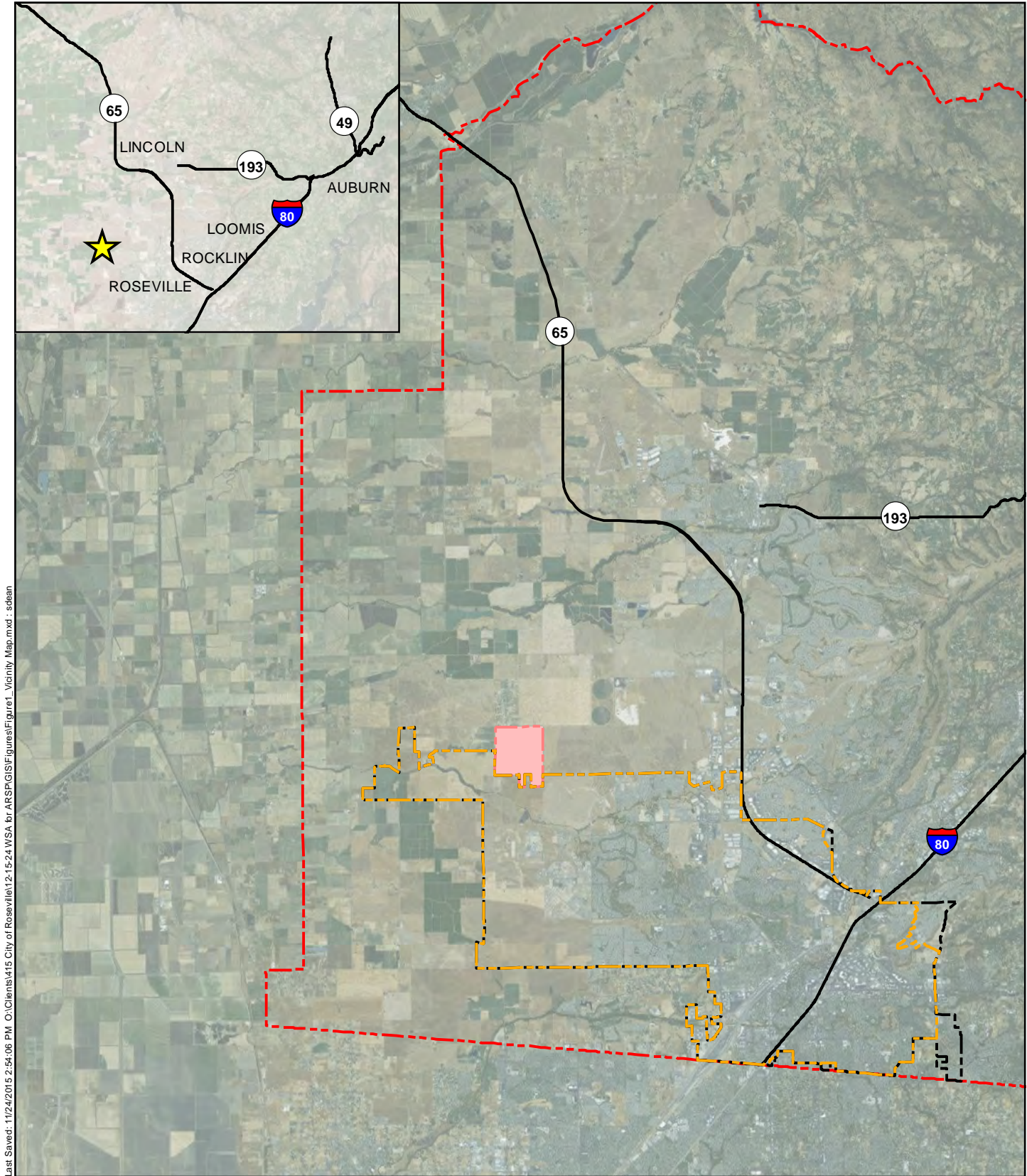
2.0 DESCRIPTION OF PROPOSED PROJECT

A general description of the Proposed Project location, proposed land uses, projected water demand, and proposed water supply is provided below.

2.1 Proposed Project Location

The location of the Proposed Project in relation to the current City Limits is shown on Figure 2-1. The Proposed Project is located outside the existing City limits and consists of approximately 694-acres that includes 20 acres of urban reserve.

Historically, the parcel had been used as a cattle ranch. The primary use was open grazing land, but included a small ranch house and outbuildings. An agricultural well is located on site and was used for rice farming on a portion of the site.



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Symbology

- Amoruso Ranch Project Location
- Roseville Water Service Area
- Roseville City Limits
- Placer County

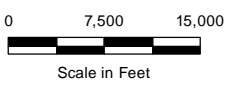


Figure 2-1
Proposed Project Vicinity

City of Roseville
Water Supply Assessment
for Amoruso Ranch

The land is gently rolling terrain, with the elevation decreasing from the northeast to the southwest. Minor drainages flow in a radial pattern from a slight rise in the northeast quadrant of the property. Site vegetation is generally limited to short, seasonal grasses. There are several oak trees located along University Creek and a number of non-native trees located around the former ranch house. Wetland conditions and associated flora and fauna are located in small areas typically along the drainage corridors and in flats along the southern boundary.

To the north is agricultural land and the existing Amoruso Estates, a rural subdivision of two to five acre parcels. To the northeast, approximately one mile away, is the Placer County Regional Landfill operation. The City of Lincoln Sphere of Influence (SOI) extends south to approximately one mile north of the Proposed Project.

To the east of the Proposed Project is another potential development area known as Placer Ranch. Placer Ranch is comprised of 2,213 acres, and, if approved, would be comprised of both residential and non-residential land uses. This project was under review by the City of Roseville, but the development application for Placer Ranch was withdrawn as of September 22, 2015. East of Fiddymont Road, encompassing a portion of the Placer Ranch project area, is the existing Sunset Industrial Area. Placer County is currently updating the master plan for that area.

To the southwest of the Proposed Project is the Al Johnson Wildlife Area project planned by the City of Roseville. The City will develop the Al Johnson Wildlife Area as a major storm water detention facility and future open space recreation facility. In addition, west of the project area is an active cattle ranch (Gleason property).

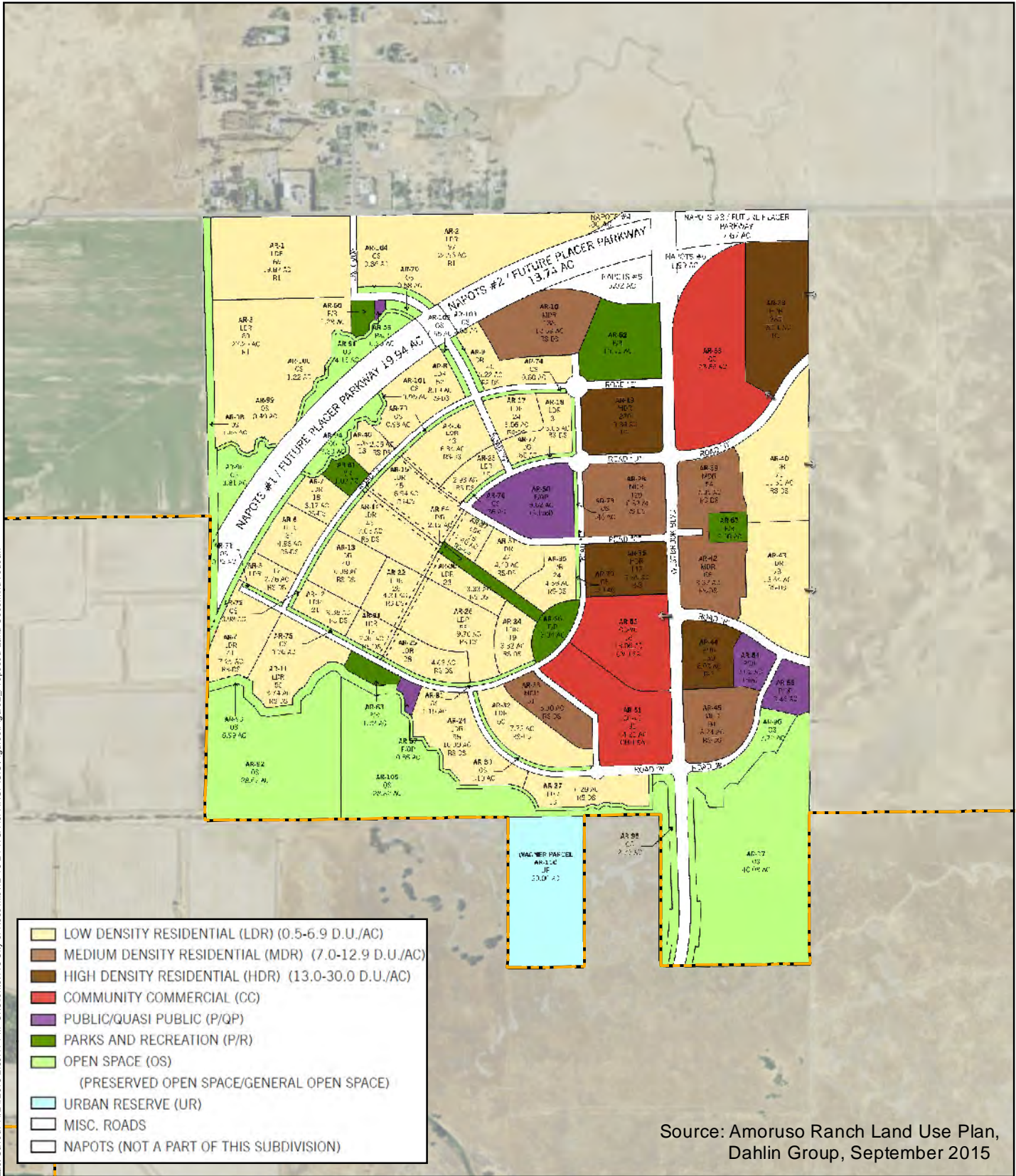
Immediately south of the Proposed Project is the Creekview Specific Plan area, and the existing City of Roseville corporate boundary. The Creekview project consists of 2,011 residential units, an elementary school and parks and open space. Access and infrastructure connections to serve the Proposed Project will be through the Creekview Specific Plan area.

The Proposed Project consists of a mixture of residential, commercial and mixed-use areas, with supporting public facilities, including parks and schools. The project will require an approval by the Placer County Local Agency Formation Commission of an annexation to the City of Roseville.

2.2 Proposed Land Uses

Proposed land uses for the Proposed Project are shown in Figure 2-2 and summarized in Table 2-1. The goal of the Proposed Project is to provide a livable community where housing, recreation, education, retail and employment opportunities are integrated into an urban village. This village is envisioned as a contemporary version of a small walkable town, where walking and biking to recreation opportunities and to perform everyday errands such that automobile use can be minimized.

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Symbology

- Roseville Water Service Area
- Roseville City Limits

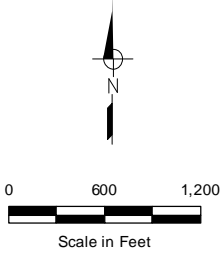


Figure 2-2
Proposed Land Uses
for Proposed Project

City of Roseville
Water Supply Assessment
for Amoruso Ranch

The Proposed Project includes up to 2,827 residential dwelling units, with housing types including low density residential (LDR), medium density residential (MDR), and high density residential (HDR). Non-residential land uses include 145 acres set aside for permanent open space; 22 acres for parks; 17 acres of public/quasi-public uses (elementary school, substation, well site, and recycling drop off areas); and 27 acres for a mixed use commercial (commercial, office, residential) village center. One non-participating parcel is located on the south end of the site and is referred to as the Wagner Property. It is proposed that this parcel be designated for urban reserve, and would be annexed as part of the Proposed Project.

Table 2-1. Proposed Land Uses for the Proposed Project^(a)

Proposed Land Use	Land Use Abbreviation	Amoruso Ranch Specific Plan Land Use, Acres	Dwelling Units
Low Density Residential/Single Family	LDR	248.77	1,302
Medium Density Residential/Single Family	MDR	50.27	542
High Density Residential/Multi-Family	HDR	38.13	873
Community Commercial – Village Center	CMU-SA	27.27	109
Community Commercial	CC	23.85	—
Open Space (Paseos)	OS	10.71	—
Open Space (General)	OS	37.24	—
Open Space (Preserve)	OS	97.58	—
Parks and Recreation	PR	22.14	—
Public/Quasi-Public (School)	P/QP	9.62	—
Public/Quasi-Public (Fire Station and Utility)	P/QP	7.61	—
Urban Reserve (Wagner Ranch)	UR	20.00	—
Road Right-of-Way, etc.	ROW	52.04	—
Not a Part of this Subdivision	NAPOTS	49.16	—
Total Proposed Project		694.39	2,827

^(a) Land Use area and Development Intensity as included in Table 3 of the Water Conservation Master Plan, Kimley Horn, September 2015.

2.3 Proposed Project Projected Water Demand

Water use factors and assumptions, and the projected water demand for the Proposed Project, were based on the Amoruso Ranch Water Master Plan (Kimley Horn, February 2015, Appendix A), Water Conservation Plan (Kimley Horn, September 2015, Appendix B), and Recycled Water Master Plan (Kimley Horn, September 2015, Appendix C) and are described below. City standard land use based water use factors shown in Table 2-2 were applied to the proposed land uses shown in Table 2-1 to develop total water demands.

Table 2-2. City of Roseville Unit Water Demand Factors	
Residential Land Use Categories	Unit Demand Factor, gpd/DU
LDR1 (<3.5 DUs / Acre)	728
LDR2 (3.5 to 5 DUs / Acre)	600
LMDR1 (>5.0 to 6.0 DUs / Acre)	521
LMDR2 (>6.0 to 8.0 DUs / Acre)	430
MDR (>8.0 to 12.0 DUs / Acre)	323
HDR1 (>12.0 to 16.0 DUs / Acre)	288
HDR2 (>16.0 DUs / Acre)	177
Non Residential Land Use Categories	Unit Demand Factor, gpd/AC
Community Commercial / Retail	2,598
Business Professional	2,598
Light Industrial	2,598
Industrial	2,562
Railyard	109
Elementary School	3,454
High School	4,069
Pubic / Quasi-Public	1,780
Parks	2,988
Open Space / Right of Way	0

The Proposed Project total water demand projection is shown in Table 2-3. As shown in that table, the total water demand is 1,503 acre-feet per year (af/yr), based on the City’s water demand factors and an assumed water loss factor of 2 percent. The total water demand was then modified to account for proposed potable and recycled water conservation measures and recycled water use, as shown in Table 2-4. The result is a projected net potable water demand of 1,061 af/yr using a projected net recycled water use of 224 af/yr and conservation of 218 af/yr.

Table 2-3. Amoruso Ranch Total Water Demand Projection^(a)

Land Use	Abbreviation/Zoning	Total Area, acres	Dwelling Unit Count	Water Use Factor, gpd/du or gpd/acre	Daily Water Demand, gpd	Annual Water Demand, af/yr
Residential						
< 3.5 DU / Acre	LDR1		148	728	107,744	120.7
> 3.5 to 5 DU / Acre	LDR2		116	600	69,600	78.0
> 5 to 6 DU / Acre	LMDR1		401	521	208,921	234.0
> 6 to 8 DU / Acre	LMDR2		757	430	325,510	364.6
> 8 to 12 DU / Acre	MDR		155	323	50,065	56.1
> 12 to 16 DU / Acre	HDR1		380	288	109,440	122.6
> 16 DU / Acre	HDR2		760	177	134,520	150.7
Subtotal - Residential			2,717		1,005,800	1,126.6
Non-Residential						
Community Commercial - Village Center Non-Residential	CMU-SA	27.27		2,598	70,847	79.4
Community Commercial - Village Center Residential	CMU-SA		109	288	31,392	35.2
Community Commercial	CC	23.85		2,598	61,962	69.4
Elementary Schools	P/QP (School)	9.62		3,454	33,227	37.2
Public (Fire Station, Utility, etc.)	P/QP	7.61		1,780	13,546	15.2
Parks & Recreation	PR	22.14		2,988	66,154	74.1
Open Space (Paseos)	OS	10.71		2,988	32,001	35.8
Open Space (General)	OS	37.24		0	-	-
Open Space (Preserve)	OS	97.58		0	-	-
Rights-of-Way	ROW	52.04		0	-	-
Not a Part of This Subdivision	NAPOTS	49.16		0	-	-
Urban Reserve	UR	20.00	1	728	728	0.8
Subtotal Non-Residential			110.00		309,859	347.09
Total Metered Water Demand			2,827		1,315,659	1,473.7
Unaccounted for System Losses (2%)						29.5
Total Water Demand						1,503.2

^(a) From Amoruso Ranch Water Master Plan, Kimley Horn, February 2015.

Table 2-4. Amoruso Ranch Specific Plan Projected Water Demand at Buildout, af/yr

Land Use Type	Total Annual Water Demand ^(a)	Potable Water Conservation ^(b)			Recycled Water Use			Net Potable Water Demand ^(e)
		Modified Turf	Smart Irrigation Timers	Insta-Hot Water	Base Recycled Water Use ^(c)	Recycled Water Conservation ^(b)	Net Recycled Water Use ^(d)	
Residential								
Low Density Residential	432.7	41.4	67.2	5.6	-	-	-	318.5
Medium Density Residential	420.7	11.2	18.2	7.7	-	-	-	383.7
High Density Residential	273.3	-	-	9.6	54.8	15.7	39.1	208.9
Subtotal Residential	1,126.6	52.6	85.4	22.8	54.8	15.7	39.1	911.0
Mixed Use and Urban Reserve								
Community Commercial - Village Center - Residential	35.2	-	-	0.9	-	-	-	34.2
Urban Reserve (Wagner Property)	0.8	-	-	0.0	-	-	-	0.8
Subtotal Mixed Use and Urban Reserve	36.0	-	-	0.9	-	-	-	35.1
Non-Residential								
Community Commercial - Village Center Non-Residential	79.4	-	-	-	29.4	-	29.4	50.0
Community Commercial	69.4	-	-	-	25.8	-	25.8	43.6
Open Space (Paseos)	35.8	-	-	-	30.1	12.2	17.9	-
Open Space (General)	-	-	-	-	-	-	-	-
Open Space (Preserve)	-	-	-	-	-	-	-	-
Parks & Recreation	74.1	-	-	-	67.7	24.7	43.0	-
Elementary Schools	37.2	-	-	-	17.3	-	17.3	-
Public (Fire Station, Utility, etc.)	15.2	-	-	-	13.1	-	13.1	-
Rights-of-Way	-	-	-	-	33.7	-	33.7	-
Subtotal Non-Residential	311.1	-	-	-	217.1	36.9	180.3	94.0
Total Metered Demand	1,473.7	52.6	85.4	23.7	271.9	52.5	219.4	1,040.1
Unaccounted for System Losses (2%)	29.5	1.1	1.7	0.5	5.4	1.1	4.4	20.8
Total Water Supply Required	1,503.2	53.6	87.1	24.2	277.3	53.6	223.7	1,060.9

^(a) See Table 2-3.

^(b) From Amoruso Ranch Water Conservation Plan, Kimley Horn, September 2015.

^(c) From Amoruso Ranch Recycled Water Master Plan, Kimley Horn, September 2015.

^(d) Base Recycled Water Use minus Recycled Water Conservation.

^(e) Total Annual Water Demand minus Potable Water Conservation and Base Recycled Water Use.

2.4 Projected Water Supply for Proposed Project

The water demands for the Proposed Project will be served using the City's existing and future portfolio of potable and non-potable (recycled) water supplies, as discussed below. As documented herein, the City does not have sufficient water supply contracts in place to serve the Proposed Project. For projects where existing City water supply contracts are inadequate, the City's General Plan Land Use Element, on page II-52, states:

“Any development proposal west of Roseville that does not have a sufficient supply of surface water shall secure additional supplies above what the City currently has available. Development proposals shall also provide financial assistance to incorporate the new source of supply into the City's water supply portfolio (surface water, groundwater and recycled water); and development proposals shall include measures to reduce water demand by implementing the use of conservation best management practices, recycled water and other off-sets.”

Therefore, this provision requires the Proposed Project proponents to seek additional sources of surface water supplies. PCWA has determined that it has sufficient water supplies to serve the Proposed Project. The City and PCWA intend to enter into an agreement such that PCWA will wholesale potable water to serve the Proposed Project.

3.0 REQUIRED DETERMINATIONS

The following determinations must be made, pursuant to SB 610.

3.1 Does SB 610 apply to the Proposed Project?

Water Code sections 10910 and 10912 state:

10910 (a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.

10912 (a) “Project” means any of the following:

- (1) A proposed residential development of more than 500 dwelling units.*
- (2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.*
- (3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.*
- (4) A proposed hotel or motel, or both, having more than 500 rooms.*
- (5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.*

- (6) *A mixed-use project that includes one or more of the projects specified in this subdivision.*
- (7) *A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project.*

Based on the following, SB 610 does apply to the Proposed Project.

1. The City of Roseville has determined that the Proposed Project is subject to the CEQA and that an EIR is required.
2. The Proposed Project, with its proposed 2,827 residential dwelling units, and other non-residential land uses, meets the definition of a “Project” as specified in Water Code section 10912(a) paragraph (1) as defined for residential development.

The Proposed Project has not been the subject of a previously adopted WSA and has not been included in an adopted WSA for a larger project. Therefore, according to Water Code section 10910(a), a WSA is required for the Proposed Project.

3.2 Does SB 221 apply to the Proposed Project?

In 2001, SB 221 amended State law to require that approval by a city or county of certain residential subdivisions requires an affirmative written verification of sufficient water supply. Per California Government Code section 66473.7(a)(1), a subdivision means a proposed residential development of more than 500 dwelling units. The Proposed Project, with its proposed 2,827 residential dwelling units, is therefore subject to the requirements of SB 221.

3.3 Who is the identified public water system?

Water Code sections 10910 and 10912 state:

10910(b) The city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project subject to the California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources Code, shall identify any water system that is, or may become as a result of supplying water to the project identified pursuant to this subdivision, a public water system, as defined by Section 10912, that may supply water for the project

10912 (c) “Public water system” means a system for the provision of piped water to the public for human consumption that has 3,000 or more service connections...

As shown on Figure 2-1, the Proposed Project is not currently located within the City of Roseville City Limits. The property is proposed to be annexed into the City limits as part of the approval process. The City’s water system service area includes all areas within the City Limits as they are annexed into the City. Therefore, the City is the identified public water system for the Proposed Project.

3.4 Does the City have an adopted Urban Water Management Plan (UWMP) and does the UWMP include the projected water demand for the Proposed Project?

Water Code section 10910 states:

10910(c)(1) The city or county, at the time it makes the determination required under Section 21080.1 of the Public Resources Code, shall request each public water system identified pursuant to subdivision (b) to determine whether the projected water demand associated with a proposed project was included as part of the most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610).

The City's most recently adopted UWMP (the City's 2010 UWMP) was adopted in August 2011 and is incorporated by reference into this WSA². The City's 2010 UWMP included existing and projected water demands for existing and projected future land uses to be developed within the City's General Plan SOI through the year 2035. The water demand projections in the City's 2010 UWMP included existing City water demands (as of 2010), plus projected water demands for future developments, but did not include water demand projections for the Proposed Project because the Proposed Project was not yet part of the City's development planning process. Therefore, the City will contract with PCWA to provide additional water to serve the Proposed Project, as described in Section 6.

PCWA's most recently adopted UWMP (PCWA's 2010 UWMP) was adopted in June 2011³. PCWA's 2010 UWMP included existing and projected water demands for existing and projected future land uses to be developed within the PCWA water service area, which encompasses the entire Placer County area. The water demand projections in PCWA's 2010 UWMP included existing PCWA water demands (as of 2010), plus projected water demands for future developments. The Proposed Project was not specifically included in PCWA's UWMP, but the demand projections in that document do include sufficient capacity to accommodate the Proposed Project. A technical memoranda, described below, provides greater detail on the volume of water and the area that has been included in the PCWA 2010 UWMP.

The City's and PCWA's ability to meet the projected water demands for the Proposed Project is described in Section 7.0 of this WSA.

² City of Roseville 2010 Urban Water Management Plan, August 2011.

³ Placer County Water Agency 2010 Urban Water Management Plan, Adopted June 16, 2011, prepared by Tully & Young.

4.0 CITY OF ROSEVILLE AND PCWA WATER SERVICE AREAS

Because the Proposed Project will be served from the City's water system, but with water to be provided by PCWA, brief descriptions of both the City's and PCWA water service areas are included in this section.

4.1 City of Roseville Water Service Area

The City of Roseville is located approximately 16 miles northeast of Sacramento and has an estimated population of 128,382 residents (as of January 1, 2015). Roseville incorporated on April 10, 1909 and is a charter city operating under a City Manager-Council form of government.

Roseville is bordered on the east by the City of Rocklin and Granite Bay and on the south by the Sacramento County line and the Dry Creek West Placer Community Plan Area. The north and west city boundaries are bordered by mostly undeveloped and unincorporated Placer County land that has the potential for future development and annexation.

As documented in the City's 2010 UWMP, projections for population, employment, and dwelling units within the City's water service area were completed for buildout as part of the City's General Plan. Those projections are only for the current City of Roseville Water Service Area boundary, including the newly annexed Sierra Vista and Creekview Specific Plan areas.

According to the City's 2010 UWMP, most of the residents within the City Limits are served by the City's water system. There are a few small areas within the City that are served by Placer County Water Agency, San Juan Water District (SJWD), and Citrus Heights Water District.

The City's water service area is currently divided into six pressure zones. With the exception of Pressure Zone 4, which utilizes pressure reducing stations, all other pressure zones (Pressure Zones 1, 2, 3, and 5) are either served by gravity, require boosting, or are served by adjacent water agencies that have sufficient pressure to serve these areas. The Proposed Project area would be located in City Pressure Zone 4. As noted above, the Proposed Project is located north of and outside the City's existing City limits, but is expected to be annexed into the City as part of the land use approval process.

There are two primarily residential areas on the east side of the City that are within the incorporated City limits but are not within the Water Service Area boundary. Department of Finance and Roseville General Plan estimates for dwelling units were adjusted to account for areas within the City limits but outside the City Water Service Area boundary.

The historical and projected water service area populations are summarized in Table 4-1.

Table 4-1. Historical and Projected Population for City of Roseville Water Service Area

Calendar Year	Estimated Population ^(a)
1995	56,026
2000	77,627
2005	95,143
2010	114,078
2015	122,946
2020	135,317
2025	160,938
2030	166,021
2035	168,718

^(a) Data from City's 2010 UWMP, Tables 2.6 (2010-2035), 3.2 (1995, 2000), and 3.3 (2005). Updated value from City staff for 2015.

4.2 PCWA Water Service Area

As documented in PCWA’s 2010 UWMP, PCWA is a public water agency that provides untreated, treated, and irrigation water directly and indirectly to wholesale and retail customers throughout Placer County and a portion of Sacramento County.

PCWA’s Eastern Water System provides groundwater to the Martis Valley area of Placer County adjacent to the City of Truckee. This service area is also designated as PCWA Zone 4.

The area served by the Western Water System extends from the community of Alta on the east, down the Interstate 80 corridor, to the Sutter and Sacramento county lines on the west and south. The service area includes retail treated water deliveries to the communities of Alta, Monte Vista, Applegate, Colfax, Auburn, Loomis and Rocklin and much of the surrounding unincorporated areas. PCWA also provides wholesale treated water to the City of Lincoln, California American Water Company for use in their franchise area west of Roseville and south of Baseline Road, and to several relatively small mutual water companies throughout PCWA’s western service area.

In addition to treated water service, PCWA provides irrigation water through its extensive canal system to individual customers, and untreated water for treatment and resale by other retail water purveyors, including the City of Roseville. Irrigation water comprises about two-thirds of PCWA’s Western Water System deliveries.

The Western Water System is a financial and operational amalgamation of four separate systems acquired or developed over time. Each of these underlying systems is designated as a PCWA Zone; numbered 1, 2, 3 and 5.

PCWA also provides untreated water from its Middle Fork American River Project into Folsom Lake for delivery to the SJWD, the City of Roseville, and Sacramento Suburban Water District (SSWD), each of which are required to prepare their own UWMPs. Deliveries to these customers are grouped under the general term of “Sales to Other Agencies.” PCWA’s Place of Use for its Middle Fork American River Project water rights extends outside of the PCWA/Placer County boundary and includes groundwater recharge areas in northern Sacramento County that are partially overlain by the San Juan Water District and the SSWD.

5.0 CITY OF ROSEVILLE AND PCWA WATER DEMANDS

Water Code section 10910 states:

10910(c)(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g).

The descriptions provided below for the City’s and PCWA’s water demands have been primarily taken from the City’s 2010 UWMP, which was adopted in August 2011, and PCWA’s 2010 UWMP, which was adopted in June 2011. As indicated above, the Proposed Project was not included in the City’s 2010 UWMP, but the demand projections in PCWA’s 2010 UWMP include sufficient capacity to accommodate the Proposed Project.

The following topics are covered in this section:

- City of Roseville Existing and Projected Water Demand
- PCWA Existing and Projected Water Demand
- Dry Year Water Demand

5.1 City of Roseville Existing and Projected Water Demand

The projected total (potable and recycled) water demand for the City at buildout, based on the 2015 HPCO WSA⁴, without and with the ARSP water demands is shown in Table 5-1. The projected future total water demand in 5-year increments through 2035 and at buildout, without and with the ARSP, is shown in Table 5-2.

5.2 PCWA Existing and Projected Water Demand

The projected untreated water demand for wholesale water supply customers located within the PCWA western area (Zones 1 and 5), including the City are shown in Table 5-3.

⁴ Hewlett Packard/Campus Oaks Rezone and Master Plan Project Water Supply Assessment, Municipal Consulting Group, June 2015.

Table 5-1. General Plan Buildout Total Water Demands with Amoruso Ranch Specific Plan

Land Use Type	Demand, AFY		
	Without ARSP ^(a)	ARSP ^(b)	With ARSP
Low Density Residential	26,714	433	27,147
Medium Density Residential	8,712	421	9,133
High Density Residential	3,838	273	4,111
Commercial	7,341	184	7,525
Commercial Business Park	2,494	-	2,494
Industrial	1,526	-	1,526
Light Industrial	2,933	-	2,933
Public/Quasi Public	1,236	15	1,251
Parks and Paseo	6,835	110	6,945
Rail Road	70	-	70
Schools	2,110	37	2,147
Open Space	-	-	-
Urban Reserve	4	1	5
Subtotal (w/o losses)	63,813	1,474	65,287
2% for Losses	1,276	29	1,306
Subtotal (w/losses)	65,089	1,503	66,592
Remove Corporate Centers Reserve	(313)	-	(313)
Water Conservation Reduction (SVSP)	(729)	-	(729)
Water Conservation Reduction (CSP)	(205)	-	(205)
Water Conservation Reduction (WSP)	(178)	-	(178)
Water Conservation Reduction (Pearl Creek Apts)	(5)	-	(5)
Water Conservation Reduction (WP Phase 4)	(133)	-	(133)
Water Conservation Reduction (Fiddymont Ranch SPA 3)	(370)	-	(370)
Water Conservation Reduction (HPCO)	(75)	-	(75)
Water Conservation Reduction (ARSP) ^(c)	-	(219)	(219)
Total Water Demand	63,081	1,285	64,366

^(a) Table 5 of Hewlett Packard/Campus Oaks Rezone and Master Plan Project Water Supply Assessment, Municipal Consulting Group, June 2015.

^(b) Total Annual Water Demand from Table 2-4.

^(c) Sum of Modified Turf, Smart Irrigation Timers, and Insta-Hot Water from Table 2-4.

Table 5-2. Projected Future Water Demand, af/yr

	2015 ^(a)	2020	2025	2030	2035	Buildout (w/out ARSP)	Buildout (w/ ARSP)
Potable Water Demand ^(b)	39,342	37,097	39,416	41,908	44,771	57,418	58,459
Potable Water System Unaccounted-for System Losses ^(c)	787	742	788	838	895	1,172	1,193
Total Potable Water Demand ^(d)	40,129	37,839	40,204	42,746	45,666	58,590	59,651
Total Recycled Water Demand ^(d)	2,216	2,722	3,071	3,481	3,653	4,491	4,715
Total Water Demand	47,957	52,164	58,051	59,904	61,625	63,081	64,366

^(a) Demand for 2015 is a projected value assuming no demand reductions (see footnote c). With Stage 3 demand reductions, the City's actual 2015 total water use was 22,991 af/yr.

^(b) Potable water demand is Total Potable Water Demand minus Potable Water System Unaccounted-for System Losses.

^(c) Unaccounted-for system losses are assumed to be 2 percent of Total Potable Water Demand.

^(d) Based on Table 10 of Hewlett Packard Campus Oaks Water Supply Assessment for 2015 through 2035; HPCO WSA page 22 for Buildout w/out ARSP; Buildout w/ ARSP includes values from Table 2-4. All values assume no demand reductions (Normal Year).

Table 5-3. PCWA Untreated Water Demand for Western Area Wholesale Customers, af/yr^(a)

Wholesale Customer	2015	2020	2025	2030	2035	2040	Buildout
San Juan Water District	14,967	15,652	16,370	16,411	17,941	19,470	21,000
San Juan Water District to City of Roseville ^(b)	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Sacramento Suburban Water District ^(c)	29,000	29,000	29,000	29,000	29,000	29,000	29,000
City of Roseville ^(d)	10,000	20,000	30,000	30,000	30,000	30,000	30,000
Normal Year Total	57,967	68,652	79,370	79,411	80,941	82,470	84,000

^(a) Based on PCWA 2010 UWMP, Table 4-9.

^(b) Deliveries from SJWD to Roseville are zero in Single Dry and Multi-Dry years.

^(c) PCWA deliveries to SSWD are zero in Single Dry and Multi-Dry years.

^(d) City of Roseville demand values represent the contracted volume.

The water supply to SSWD effectively goes to zero during dry years when the unimpaired flow into Folsom Reservoir is less than 1.6 million acre-feet (af). Similarly, flow deliveries to Roseville from SJWD also go to zero during dry years when the unimpaired flow into Folsom Reservoir is less than 950,000 af, although this restriction does not affect deliveries from PCWA to SJWD.

Prior to 2010, the City’s contract with PCWA provided for 10,000 acre-feet, with options for an additional 20,000 acre-feet. In 2010, the City exercised the options and entered a new consolidated contract with PCWA. This contract identified an agreed-upon increase in the contract quantity over the next several years, capping at 30,000 acre-feet annually after July 1, 2024. Between now and July 2024, the contract has several incremental steps that do not directly correspond to the 5-year planning increments of this UWMP. For purposes of long-term planning, PCWA has represented the City’s contracted volume as the demand shown in Table 5-3.

In addition to wholesale customers, PCWA provides retail water service to meet other water demands within western Placer County. Total projected demand for all PCWA water supply types and customers in the Western Area are summarized in Table 5-4. The values for Zone 1 wholesale untreated in Table 5-4 match the Normal Year Total in Table 5-3.

Because the planning horizon assumed by the land-planning authorities throughout the County is not always consistent (e.g., projections vary from 2030 to 2050), future land-planning updates may identify growth in the Western Area not currently contemplated. To accommodate this potential additional demand, PCWA has established a placeholder “buffer” value of 10,000 af of annual demand beginning in 2040. This value is also shown in Table 5-4 as a separate line item.

Water Type by Zone	2015	2020	2025	2030	2035	2040	Buildout
Zone 1 Water Demands							
Retail Treated	32,166	33,854	36,039	38,238	41,309	44,400	69,701
Irrigation	56,295	56,295	56,295	56,295	56,295	56,295	56,295
Wholesale Treated	16,515	20,944	25,374	29,805	31,608	33,410	35,213
Wholesale Untreated ^(b)	57,967	68,652	79,370	79,411	80,941	82,470	84,000
Subtotal Zone 1 Demand	162,944	179,745	197,078	203,749	210,152	216,575	245,209
Zone 5 Demand	11,038	9,483	7,928	6,373	4,803	3,263	1,699
Zone 1 and 5 Buffer	--	--	--	--	--	10,000	10,000
Total Western Area Demand	173,981	189,228	205,005	210,122	214,955	229,838	256,908

(a) From PCWA 2010 UWMP, Table 4-10, with math corrected for 2040 and Buildout conditions.
(b) From Table 5-3.

In 2012, PCWA prepared a memorandum (2012 PCWA Memo⁵ in Appendix D) further clarifying the demand projections documented in the PCWA 2010 UWMP. In the 2012 PCWA Memo, Table 7 indicates that the projected water demand for the Sunset Industrial Area (SIA) was 12,701 af/yr (8,086 af/yr in Zone 1 and 4,615 af/yr in Zone 5). This demand was projected to be served through the Zone 1 Retail Treated Water Demand found in Table 4-10 of the PCWA 2010 UWMP, and shown in Table 5-4 above. At that time, the Proposed Project had not been included in the SIA water demand projection.

In 2015, PCWA prepared a memorandum (2015 PCWA Memo⁶ in Appendix E) documenting the revised water demand projections for the SIA and indicating that, because the revised water demand projections for the SIA are lower than projected for the PCWA 2010 UWMP, the projected potable water demand of the Proposed Project is now considered to be part of the water demand projected for the SIA. This reasoning is summarized in Table 5-5, which is based on the 2015 PCWA Memo.

⁵ Memorandum - PCWA demand development information, from Greg Young of Tully & Young to Placer County Water Agency, May 11, 2012.

⁶ Memorandum – Sunset Industrial Area Water Allocation, from Brian Rickards and Tony Firenzi of PCWA to Michele Kingsbury of PCWA and Kelye McKinney of City of Roseville, November 25, 2015.

Table 5-5. Comparison of PCWA 2010 UWMP Demand Projections and Revised Projections for Sunset Industrial Area^(a)				
Planning Area	Area, acres	Dwelling Units	Existing and Projected Annual Water Demand, af/yr	Existing and Projected Total Annual Water Demand with Losses, af/yr ^(b)
Revised SIA Projection, 2015				
Existing SIA	490	—	1,300	1,404
Formica Plant ^(c)	209	—	455	491
Existing WPWMA ^(d)	314	—	48	52
Future Industrial	1,122	—	2,352	2,540
Future Public (WPWMA)	70	—	157	169
Future Landfill (WPWMA)	553	—	9	10
SIA Undevelopable	3,346	—	—	—
Placer Ranch Specific Plan ^(e)	2,213	5,400	4,500	4,860
Amoruso Ranch Specific Plan ^(f)	674	2,785	1,100	1,188
Total Revised SIA Projection, 2015	8,991	8,185	9,921	10,714
SIA Water Demand Projection from PCWA 2010 UWMP ^(g)	8,100	—	11,760	12,701
Difference (Revised minus PCWA 2010 UWMP)	891^(h)	8,185	-1,839	-1,987
<p>(a) Based on 2015 PCWA Memo, Table 2-3 and 2-4, and 2012 PCWA Memo Table 7.</p> <p>(b) Includes an 8 percent unaccounted-for system loss factor.</p> <p>(c) The Formica plant closed in 2006, but the property retains the entitlement to 455 af/yr water use (491 af/yr including 8 percent unaccounted-for system losses).</p> <p>(d) WPWMA = Western Placer Waste Management Authority</p> <p>(e) The application for Placer Ranch Specific Plan has recently been withdrawn.</p> <p>(f) Proposed Project. Note that projected potable water demand in the 2015 PCWA Memo is greater than projected in Table 2-4 of this WSA.</p> <p>(g) Sunset Industrial Area (SIA) as documented in 2012 PCWA Memo.</p> <p>(h) Formica Plant and Proposed Project had not been included in previous SIA planning documents.</p>				

As indicated in Table 5-5, the revised water demand projection for the SIA, including the Formica Plant and the Proposed Project, is 1,987 af/yr less than had been included in the PCWA 2010 UWMP. Much of the difference is caused by the determination that a large portion of the SIA planning area cannot be developed. The reasons for the determination of portions of the SIA being unavailable for development vary. Some of the land is already developed, other land is assumed to be undevelopable due to the higher cost of wetlands mitigation, and the remainder is allocated to right-of-way for the planned Placer Parkway and for other purposes.

5.3 Dry Year Water Demand

The City currently has a Water Shortage Contingency Plan in place, as described in Section 5 of the City’s 2010 UWMP. The City’s Water Shortage Contingency Plan describes five stages of short-term water demand reduction measures that would be required during years when potable water supply is reduced. The water shortage stages, and their respective anticipated reduction in potable water demand, are shown in Table 5-6.

Water Shortage Stage Description	Projected Demand Reduction, percent
Baseline Water Conservation	0
Stage 1 Drought	10
Stage 2 Drought	20
Stage 3 Drought	30
Stage 4 Drought	40
Stage 5 Drought	50

^(a) See Table 5.3 and Appendix H of the City’s 2010 Urban Water Management Plan.

The City entered a Drought Stage 3 in May 2015, which was precipitated by a State-wide mandate for water conservation. Specifically, a 28 percent demand reduction target relative to 2013 water usage was imposed by the State.

The projected future water demand shown above in Table 5-2 included continued implementation of the City’s existing water conservation program, and is based on future normal hydrologic years. Any demand reduction requirements in dry years will be based on available water supplies being insufficient to meet projected demand.

6.0 CITY OF ROSEVILLE AND PCWA WATER SUPPLIES

Key topics addressed in this section include:

- Regulatory Background
- Roseville Existing and Projected Potable Water Supplies
- Roseville Existing and Projected Non-Potable Water Supplies
- PCWA Existing and Projected Potable Water Supplies
- PCWA Existing and Projected Non-Potable Water Supplies

6.1 Regulatory Background

Water Code section 10910 states:

10910(c)(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f) and (g).

10910(d)(1) The assessment required by this section shall include an identification of any 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 received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts

10910(d)(2) An identification of existing water supply entitlements, water rights, or water service contracts held by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall be demonstrated by providing information related to all of the following:

- (A) Written contracts or other proof of entitlement to an identified water supply.*
- (B) Copies of a capital outlay program for financing the delivery of a water supply that has been adopted by the public water system.*
- (C) Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.*
- (D) Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.*

10910(e) If no water has been received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts, the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), 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, or the city or county if either is required to comply with this part pursuant to subdivision (b), has identified as a source of water supply within its water supply assessments.

It is anticipated that water supply for the Proposed Project would be made available through an agreement between the City and PCWA for treated surface water. The Proposed Project would also use recycled water supplies provided from the City. The City and PCWA are currently developing an agreement whereby PCWA will wholesale treated surface water to the City in sufficient volume to meet all water supply needs and at a level of reliability to serve the Proposed Project during normal, dry and multiple dry year conditions. The availability of surface water from PCWA to serve the Proposed Project is documented later in this section.

Proponents of the Proposed Project will provide their proportionate share of required funding to the City for the acquisition and delivery of treated potable and recycled water supplies to the Proposed Project area. This arrangement will be outlined within the Development Agreement between the project landowners and the City. The Development Agreement will be completed and approved as part of the City's formal land use actions.

The summaries of the City and PCWA water supplies provided below have been taken, for the most part, from the City's 2010 UWMP, which was adopted in August 2011, and the PCWA 2010 UWMP, which was adopted in June 2011.

6.2 Roseville Existing and Projected Potable Water Supplies

The City currently receives potable water supplies from Folsom Lake, and is also developing a groundwater supply to be used in drier and driest years when surface water supplies are insufficient to meet overall potable water demands. Key topics of interest described herein include:

- Surface Water from Folsom Lake
- Surface Water Reliability
- Additional Planned Future Potable Water Supplies
- Groundwater Supply.

6.2.1 Surface Water from Folsom Lake

Folsom Lake has been the primary source of water for the City since 1971. Through the Folsom Lake Municipal and Industrial intake, the City receives untreated water from the U.S. Bureau of Reclamation (USBR) and from PCWA. Additionally, through this same delivery point, the City receives a normal/wet year water supply from SJWD. The untreated surface water is delivered to the City's Barton Road Water Treatment Plant. The City also maintains interties with PCWA, SJWD, the California American Water Company, SSWD, and the Citrus Heights Water District. These interties allow existing distribution systems to be used to deliver treated water between purveyors in the event of water treatment plant or conveyance system disruptions. The City's three surface water contract entitlements for American River water total 66,000 acre-feet per year (af/yr), as summarized in Table 6-1. Additionally, the City, as part of the Water Forum, has agreed to limit its diversions off of the American River 58,900 af/yr during Normal/Wet Years and to between 54,900 af/yr and 39,800 af/yr in Drier and Driest Years. This is further described below.

Contracted Water Supply	Contract Amount, af/yr
USBR (Central Valley Project supply)	32,000
PCWA (Middle Fork supply)	30,000
SJWD (Middle Fork supply) ^(b)	4,000
Total Contracted Supplies	66,000
Diversion Limitations per Water Forum Agreement:	
Normal/Wet Years	58,900
Drier and Driest Years (Critically Dry)	Ranges from 54,900 to 39,800
^(a) American River diversion limitations as outlined in the City's Water Forum Agreement. From City's UWMP Table 4.1.	
^(b) San Juan Water District is only available as a normal/wet year supply, thus it is not available in drier or driest years.	

The Sacramento Water Forum is a diverse group of business and agricultural leaders, citizen groups, environmentalists, water managers, and local governments working together to balance two co-equal objectives:

- To provide a reliable and safe water supply for the Sacramento region's long-term growth and economic health; and
- To preserve the fishery, wildlife, recreational, and aesthetic values of the lower American River.

The City, along with several other Sacramento-area water suppliers are signatory to the January 2000 Water Forum Agreement which includes Purveyor Specific Agreements. The Water Forum Agreements provide the framework for how water resources, including surface water and groundwater supplies would be used in the region, through the year 2030. The City's Purveyor Specific Agreement includes limitations on City surface water diversions from the American River under various hydrologic conditions. The Water Forum categorized water years into three types,

all of which are defined in terms of the projected March through November unimpaired flow into Folsom Reservoir. These hydrologic year types are defined as follows:

- Normal/Wet Years: When the projected unimpaired flow into Folsom Reservoir is greater than or equal to 950,000 af
- Drier Years: When the projected unimpaired flow into Folsom Reservoir is between 400,000 acre fee (af) and 950,000 af
- Driest Years: When the projected unimpaired flow into Folsom Reservoir is less than 400,000 af

Although Roseville’s water contract entitlements total 66,000 af/yr, the City’s diversions from the American River are limited by the WFA in normal/wet years, drier and driest years. In normal/wet years, the City has agreed to limit surface water diversions from the American River to 58,900 af/yr. In driest years (also called critically dry years), the maximum diversion from the American River is limited to 39,800 af/yr. In drier years, the City may divert an amount between 39,800 and 54,900 af/yr from the American River, depending on the unimpaired flow into Folsom Lake.

It is important to note that during the drier and driest years, the City agreed to have PCWA release an additional 20,000 af/yr of water down the American River on the City’s behalf through re-operation of PCWA’s American River Middle Fork Project (MFP). This 20,000 af/yr of water is not part of the City’s contracted supply of 66,000 af/yr. The intent of MFP re-operational releases during drier and driest years is to mitigate environmental impacts resulting from increased diversions above 1995 baseline levels.

Table 6-2 below, shows how the City intends to make use of its current water supply contracts over time.

Table 6-2. City of Roseville Surface Water Contracts, af/yr					
Contracted Water Supply	2015	2020	2025	2030	2035+
USBR (Central Valley Project supply)	32,000	32,000	32,000	32,000	32,000
PCWA (Middle Fork supply)	15,000	20,000	30,000	30,000	30,000
SJWD (Middle Fork supply) ^(a)	4,000	4,000	4,000	4,000	4,000
Total Contracted Supplies	51,000	56,000	66,000	66,000	66,000

^(a) San Juan Water District is only available as a Normal or wetter year supply.

6.2.2 Surface Water Reliability

Tables 5.6 and 5.7 of the City’s 2010 UWMP provide the basis for the City’s water use projections through 2030. Because of the water supply uncertainty arising from the current drought, however, a more conservative approach to water supply reliability is provided in this WSA. The anticipated reliability of the surface water supplies in Normal, Single Dry, and Multi-Dry hydrologic conditions, as a percentage of contracted volume, is shown in Table 6-3. Those same results are expressed as volumes in Table 6-4. For purposes of this WSA, the WFA definitions of normal/wet,

drier, and driest years will be used as surrogates for the SB 610 required definitions of Normal, Single Dry, and Multi-Dry hydrologic conditions.

Table 6-3. City of Roseville Surface Water Supply Reliability, Percent of Contracted Amount ^(a)					
Contracted Water Supply	Normal Year	Single Dry Year ^(b)	Multiple Dry Years ^(c)		
			Year 1	Year 2	Year 3
USBR (Central Valley Project supply)	100	25 ^(d)	75	75	50
PCWA (Middle Fork supply)	100	100	100	100	100
SJWD (Normal year only – Middle Fork supply) ^(e)	100	—	—	—	—

^(a) See Table 6-1.
^(b) Minimum American River diversion as outlined in the City's Water Forum Agreement is 39,800 af/yr (See City 2010 UWMP Table 5.11). PCWA 2010 UWMP assumes full delivery of 30,000 af/yr in Single Dry Years. Although the City's 2010 UWMP assumed total American River water supply would match the WFA, the actual lowest historical allocation of USBR supply was 25% in 2015, which would not provide for the full WFA volume as shown in Table 6-1.
^(c) Based on the 1990-1992 historical hydrologic conditions.
^(d) Lowest historical allocation was 25% in 2015.
^(e) SJWD is available only as a normal or wetter year supply.

Table 6-4. City of Roseville Surface Water Supply Reliability, af/yr					
Contracted Water Supply	Normal Year	Single Dry Year ^(a)	Multiple Dry Years ^(b)		
			Year 1	Year 2	Year 3
USBR (Central Valley Project supply)	32,000	8,000	24,000	24,000	16,000
PCWA (Middle Fork supply)	30,000	30,000	30,000	30,000	30,000
SJWD (Normal year only – Middle Fork supply) ^(c)	4,000	—	—	—	—
Total Surface Water Supply Available	66,000	38,000	54,000	54,000	46,000
WFA Limitation Based on Hydrologic Record	58,900	39,800	51,394	58,900	45,426

^(a) Minimum American River diversion as outlined in the City's Water Forum Agreement is 39,800 af/yr (See City 2010 UWMP Table 5.11). PCWA 2010 UWMP assumes full delivery of 30,000 af/yr in Single Dry Years. USBR supplies vary and reached a minimum of 8,000 af/yr in 2015. Total 2015 supplies were therefore 38,000 af/yr, which is less than the WFA allowed American River diversions in critical dry years. Bold text denotes which factor (surface water supply availability or Water Forum diversion limitations) drives available water supply.
^(b) Based on the 1990-1992 historical hydrologic conditions. Unimpaired inflows during these years are used as the basis for determining water availability based on the WFA.
^(c) SJWD is available only as a normal or wetter year supply.

As noted in Table 6-4 by the bolded supply values, either total surface water supply availability or Water Forum diversion limitations drive available water reliability. For example, in a Normal Year condition, the City currently has 66,000 af/yr of water supply contracts, but the City's WFA limits diversion from the American River to 58,900 af/yr. Therefore in a Normal Wet Year the Water Forum drives City supplies. Comparatively, in a Single Dry Year, where it is assumed the City

could receive up to a 75 percent reduction in its Central Valley Project (CVP) contracted supply (as seen during 2015), surface water allocations (38,000 af/yr) drive supplies over the City's WFA that would limit surface water diversions to 39,800 af/yr.

Based on the historical hydrologic record the Water Forum used for their analysis (and for the WFA restrictions), the 58,900 af/yr contract surface water supply is assumed to be available to the City in about 83 percent of the years. In the remaining 17 percent of years, supply quantities ranging from 54,900 af/yr to 39,800 af/yr of surface water would be available per the WFA or between 54,900 af/yr to 38,000 af/yr based on potential CVP water supply allocations. Thus, in drier and driest years; demands will be reduced through increased conservation measures and supplemental supplies (groundwater or other supplies) potentially totaling up to 20,900 af/yr (the difference between the normal/wet year supply and the single dry year supply allocation) would be needed to make up for the deficiencies in drier or critically dry years.

6.2.3 Additional Planned Future Potable Water Supplies

To serve the Proposed Project, the City will contract with PCWA to provide a new wholesale treated water supply. Currently, the City is planning to acquire from PCWA up to 1,500 af/yr (see Table 6-5).

In addition to obtaining new supplies from PCWA's future Ophir water treatment plant, the City is evaluating the possibility of participating with other water suppliers in a regional water supply project from the Sacramento River. Participation in a Sacramento River project would provide increased water supply and supply reliability for the City through the addition of a new surface water diversion point that is not on the American River. However for purposes of this assessment future supply from a Sacramento River project is not included.

A summary of the City's existing and additional planned future potable water supplies during hydrologic Normal, Single Dry, and Multiple Dry Years, including the full contracted volumes and the proposed wholesale water supply from PCWA to serve the Proposed Project, is shown in Table 6-5. PCWA has plans to construct a new Ophir water treatment plant which will be the source for this new supply. Planning for the Ophir facility is currently underway. It is likely to be available by 2025, however for purposes of this document the supply is not shown to be available until 2030.

6.2.4 Groundwater Supply

Water Code section 10910 states:

10910(f) If a water supply for a proposed project includes groundwater, the following additional information shall be included in the water supply assessment.

10910(f)(1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.

**Table 6-5. City of Roseville Projected Surface Water Contract and Supply Reliability
During Hydrologic Normal, Single Dry, and Multiple Dry Years^(a)**

Wholesale Sources	Projected Volume, af/yr					
	2015	2020	2025	2030	2035	Buildout
Existing and Planned Sources of Water - Contracted Volume, af/yr						
U.S. Bureau of Reclamation (CVP supply)	32,000	32,000	32,000	32,000	32,000	32,000
PCWA (Middle Fork supply)	30,000	30,000	30,000	30,000	30,000	30,000
PCWA (Water to Serve Proposed Project)	-	-	-	1,500	1,500	1,500
San Juan Water District	4,000	4,000	4,000	4,000	4,000	4,000
Total	66,000	66,000	66,000	67,500	67,500	67,500
Normal Year Water Supplies, af/yr - 58,900 af/yr (Water Forum Diversion Limitation, Table 6-4)						
U.S. Bureau of Reclamation (CVP supply)	32,000	32,000	32,000	32,000	32,000	32,000
PCWA (Middle Fork supply)	30,000	30,000	30,000	30,000	30,000	30,000
PCWA (Water to Serve Proposed Project)	-	-	-	1,500	1,500	1,500
San Juan Water District	4,000	4,000	4,000	4,000	4,000	4,000
Total	66,000	66,000	66,000	67,500	67,500	67,500
Single Dry Year Water Supplies, af/yr - 38,000 af/yr (Surface Water Allocation, Table 6-4)						
U.S. Bureau of Reclamation (CVP supply) ^(b)	8,000	8,000	8,000	8,000	8,000	8,000
PCWA (Middle Fork supply)	30,000	30,000	30,000	30,000	30,000	30,000
PCWA (Water to Serve Proposed Project)	-	-	-	1,500	1,500	1,500
San Juan Water District ^(c)	-	-	-	-	-	-
Total	38,000	38,000	38,000	39,500	39,500	39,500
Multi-Dry Year Water Supplies, First Year, af/yr - 51,394 af/yr (Water Forum Diversion Limitation, Table 6-4)						
U.S. Bureau of Reclamation (CVP supply) ^(d)	24,000	24,000	24,000	24,000	24,000	24,000
PCWA (Middle Fork supply)	30,000	30,000	30,000	30,000	30,000	30,000
PCWA (Water to Serve Proposed Project)	-	-	-	1,500	1,500	1,500
San Juan Water District	-	-	-	-	-	-
Total	54,000	54,000	54,000	55,500	55,500	55,500
Multi-Dry Year Water Supplies, Second Year, af/yr - 54,000 af/yr (Surface Water Allocation, Table 6-4)						
U.S. Bureau of Reclamation (CVP supply)	24,000	24,000	24,000	24,000	24,000	24,000
PCWA (Middle Fork supply)	30,000	30,000	30,000	30,000	30,000	30,000
PCWA (Water to Serve Proposed Project)	-	-	-	1,500	1,500	1,500
San Juan Water District	-	-	-	-	-	-
Total	54,000	54,000	54,000	55,500	55,500	55,500
Multi-Dry Year Water Supplies, Third Year, af/yr - 45,426 af/yr (Water Forum Diversion Limitation, Table 6-4)						
U.S. Bureau of Reclamation (CVP supply)	16,000	16,000	16,000	16,000	16,000	16,000
PCWA (Middle Fork supply)	30,000	30,000	30,000	30,000	30,000	30,000
PCWA (Water to Serve Proposed Project)	-	-	-	1,500	1,500	1,500
San Juan Water District	-	-	-	-	-	-
Total	46,000	46,000	46,000	47,500	47,500	47,500

^(a) Includes additional supply to serve Proposed Project.

^(b) Adjusted from City's 2010 UWMP to account for actual 2015 allocation of 25%.

^(c) No supply in Single and Multi-Dry hydrologic conditions.

^(d) See Table 6-4.

10910(f)(2) A description of any groundwater basin or basins from which the proposed project will be supplied. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long term overdraft condition.

10910(f)(3) A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historical use records.

A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historical use records.

10910(f)(4) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project.

A water assessment shall not be required to include the information required by this paragraph if the public water system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected water demand associated with the project was addressed in the description and analysis required by paragraph (4) of subdivision (b) of Section 10631.

Because of the expected reliability of the 1,500 af/yr PCWA water supply, the water supply for the Proposed Project will not include groundwater. However, the use of groundwater is part of the City of Roseville's long-term water supply strategy, to be potentially used as a back-up supply during dry years or for increased operational flexibility.

In August 2007, the Cities of Roseville and Lincoln, along with PCWA and the California American Water Company, completed the Western Placer Groundwater Management Plan (GMP). The GMP was prepared in an effort to maintain a safe, sustainable and high-quality groundwater resource to meet backup, emergency and peak demands within a zone of the North American River Groundwater sub-basin.

The City has recently adopted an aquifer storage and recovery (ASR) program, under which treated surface water can be injected into the aquifer during wet times (normal / wet years or during the rainy season), and withdrawn when the City needs additional water supplies. Uses include augmenting surface water supplies during droughts or to shave peak water demand periods, like those that occur during summer months. In 2013, the City received an operational permit from the Central Valley Regional Water Quality Control Board for the ASR program. The land use plan for the Proposed Project includes a dedicated groundwater well that will also be equipped to function as an ASR well so that the City has full operational flexibility.

The City currently operates six-groundwater wells, which are capable of delivering approximately 15,970 af/yr (1,650 gpm per well) if run continuously. A more realistic production amount is 40 af/day (1,500 gpm per well) over limited time frames to augment the water supply. The wells are primarily used as a backup water supply, thus improving water supply reliability. The City has plans to expand its groundwater well network to include ten additional groundwater well sites that have been identified. Once constructed, the City's groundwater facilities (16 wells) are projected to deliver of up to 106.07 af/day (6.63 af/day per well) or 38,715 af/yr, if run on a continuous basis.

6.3 Roseville Existing and Projected Non-Potable Water Supplies

The City of Roseville, along with the South Placer Municipal Utility District and Placer County, formed the South Placer Wastewater Authority (SPWA). SPWA was created in 2000 to oversee funding for regional wastewater and recycled water infrastructure. The City owns and operates two regional wastewater treatment facilities on behalf of the regional partners. These treatment facilities are the Dry Creek wastewater treatment plant and the Pleasant Grove wastewater treatment plant. Both plants produce Title 22 quality effluent that is available for recycled water applications. Recycled water for the Proposed Project will be obtained from the Pleasant Grove wastewater treatment plant.

Recycled water supply for the Proposed Project was not included in the City's 2010 UWMP; however, as documented in the Proposed Project's Recycled Water Master Plan, sufficient wastewater flow will be generated by the project in each month to satisfy the projected recycled water demands, assuming the proposed recycled water conservation practices listed in Table 2-4 are put into practice. Recycled water is expected to be available in all hydrologic year types.

The City has no other planned future sources of non-potable and recycled water except as described above.

6.4 PCWA Existing and Projected Potable Water Supplies

PCWA uses surface water as its primary supply. PCWA also produces a limited amount of groundwater for use in Zone 4, and may produce groundwater in dry hydrologic conditions to meet demands in the Zone 1 service area. As described in PCWA's 2010 UWMP, PCWA's primary surface water supplies consist of MFP water from the American River, water purchased from Pacific Gas & Electric Company (PG&E) from the Yuba and Bear Rivers, and Central Valley Project water from the American River. PCWA also uses a limited amount of surface water from small creeks under pre-1914 water rights. Historically, PCWA has purchased surplus water from the South Sutter Water District for service to PCWA Zone 5 customers under Nevada Irrigation District's water rights. Accordingly, the following topics are discussed below:

- American River Middle Fork Project
- Pacific Gas and Electric Contracts
- Central Valley Project
- Impacts of Water Forum Agreement
- Groundwater
- Additional Planned Future Potable Water Supplies

A summary of PCWA's existing and additional planned future potable water supplies during hydrologic Normal, Single Dry, and Multiple Dry Years, including the full contracted volumes, is shown in Table 6-6. The water supply source for the Proposed Project will be the Middle Fork Project, which is projected to have 100 percent reliability in all hydrologic conditions, as shown in Table 6-6. American River Middle Fork Project

The MFP began operation in 1967 and primarily provides a water supply to PCWA wholesale customers that are currently able to take delivery from Folsom Reservoir. PCWA's MFP water right allows it to divert water from the American River at both Auburn and Folsom Lake for irrigation, domestic, municipal, industrial, and recreational purposes. PCWA has signed an agreement with the USBR limiting its diversions under these permitted rights to 120,000 af/yr. PCWA may divert water directly from the American River between November and June and also re-divert water released from its MFP reservoirs during the remainder of the year.

6.4.1 Pacific Gas and Electric Contracts

PCWA has two water supply contracts with PG&E, which provide options to purchase up to 125,400 af/yr for irrigation and domestic purposes. The underlying rights for the PG&E supply are PG&E's pre-1914 appropriative rights to water in the Yuba and Bear Rivers, which were established prior to the time that PG&E developed hydroelectric facilities throughout the Yuba and Bear River watersheds.

**Table 6-6. PCWA Projected Potable Water Supply Reliability
During Hydrologic Normal, Single Dry, and Multiple Dry Years^(a)**

Wholesale Sources	Projected Volume, af/yr				
	2015	2020	2025	2030	2035
Existing and Planned Sources of Water - Contracted Volume, af/yr					
Pacific Gas & Electric	100,400	100,400	100,400	100,400	100,400
Middle Fork Project	120,000	120,000	120,000	120,000	120,000
Central Valley Project	-	31,000	31,000	31,000	31,000
Pre-1914 Appropriative Water Rights	3,400	3,400	3,400	3,400	3,400
Total	223,800	254,800	254,800	254,800	254,800
Normal Year Water Supplies, af/yr					
Pacific Gas & Electric	100,400	100,400	100,400	100,400	100,400
Middle Fork Project	120,000	120,000	120,000	120,000	120,000
Central Valley Project	-	31,000	31,000	31,000	31,000
Pre-1914 Appropriative Water Rights	3,400	3,400	3,400	3,400	3,400
Total	223,800	254,800	254,800	254,800	254,800
Single Dry Year Water Supplies, af/yr					
Pacific Gas & Electric ^(b)	50,200	50,200	50,200	50,200	50,200
Middle Fork Project ^(c)	120,000	120,000	120,000	120,000	120,000
Central Valley Project ^(d)	-	23,250	23,250	23,250	23,250
Pre-1914 Appropriative Water Rights ^(e)	1,700	1,700	1,700	1,700	1,700
Total	171,900	195,150	195,150	195,150	195,150
Multi-Dry Year Water Supplies, First Year, af/yr					
Pacific Gas & Electric	75,300	75,300	75,300	75,300	75,300
Middle Fork Project	120,000	120,000	120,000	120,000	120,000
Central Valley Project	-	23,250	23,250	23,250	23,250
Pre-1914 Appropriative Water Rights	1,700	1,700	1,700	1,700	1,700
Total	197,000	220,250	220,250	220,250	220,250
Multi-Dry Year Water Supplies, Second Year, af/yr					
Pacific Gas & Electric	75,300	75,300	75,300	75,300	75,300
Middle Fork Project	120,000	120,000	120,000	120,000	120,000
Central Valley Project	-	23,250	23,250	23,250	23,250
Pre-1914 Appropriative Water Rights	1,700	1,700	1,700	1,700	1,700
Total	197,000	220,250	220,250	220,250	220,250
Multi-Dry Year Water Supplies, Third Year, af/yr					
Pacific Gas & Electric	75,300	75,300	75,300	75,300	75,300
Middle Fork Project	120,000	120,000	120,000	120,000	120,000
Central Valley Project	-	23,250	23,250	23,250	23,250
Pre-1914 Appropriative Water Rights	1,700	1,700	1,700	1,700	1,700
Total	197,000	220,250	220,250	220,250	220,250

^(a) Based on PCWA 2010 UWMP Table 3-8 and supply reduction discussion in PCWA 2010 UWMP text.

^(b) Assumes 50% supply reduction in Single Dry Years, and 25% supply reduction in Multi-Dry Years.

^(c) Assumes no supply reduction in Single Dry Years or Multi-Dry Years. Proposed Project will be served from the Middle Fork water supply.

^(d) Assumes 25% supply reduction in Single Dry Years and in Multi-Dry Years.

^(e) Assumes 50% supply reduction in Single Dry Years and Multi-Dry Years due to lack of flow in streams.

6.4.2 Central Valley Project

PCWA has a CVP water contract with the USBR for delivery of no more than 35,000 af/yr. This long-term renewal contract provides an indication of the reliability of the CVP water supply by stating that, for modeling purposes, the average quantity of water made available to PCWA in the most recent five years was 32,000 af/yr. According to the agreement, the CVP water may be used for municipal and industrial purposes. PCWA's point of diversion for CVP water is Folsom Dam, but it has taken minimal amounts of CVP water to date.

The current CVP contract expired in 2011. A Long Term Renewal Contract is awaiting formal approval by the USBR.

6.4.3 Water Forum Agreement

PCWA approved the *Memorandum of Understanding for the Water Forum Agreement* in the year 2000. The WFA has two stated objectives: (1) to provide a reliable and safe water supply for the region's economic health and planned development to the year 2030, and (2) to preserve the fish, wildlife, recreational, and aesthetic values of the lower American River. Under the WFA, PCWA has agreed to limit its annual diversions of MFP water to 35,500 acre-feet in Normal Years. In normal years, PCWA will also divert and use 35,000 acre-feet from the Sacramento and/or Feather Rivers if exchanges of equal amounts can be made with others. If PCWA is unable to develop a diversion from the Sacramento and/or Feather Rivers, the Water Forum members will negotiate with PCWA to find a mutually agreeable solution.

In the drier and driest years, when Folsom Reservoir inflow is less than 950,000 acre-feet, PCWA agreed to divert and use 35,500 acre-feet from the American River. The WFA commits PCWA to additional releases of water from MFP reservoirs to mitigate for additional diversions at its Auburn and Folsom Lake points of diversion above WFA baseline volumes.⁷ The releases are made on a sliding scale basis and begin when projected March through November Folsom inflow is 950,000 acre-feet or less, and PCWA diversions increase above the baseline volumes. The releases are only made if there is a water transfer agreement in place with an entity that can divert the water for beneficial use below the confluence of the American and Sacramento Rivers. The maximum additional volume potentially released for Water Forum purposes in the driest year on record (1977) at PCWA's maximum use of MFP water is 47,000 acre-feet. PCWA will also divert and use 35,000 acre-feet from the Sacramento and/or Feather River if it can secure exchanges as described under normal conditions.

6.4.4 Groundwater

PCWA does not plan on using groundwater to provide water to the City of Roseville and is not proposing to use groundwater to serve the Proposed Project.

⁷ PCWA's baseline volume is 8,500 af/yr. The City of Roseville's baseline volume is 19,800 af/yr.

PCWA has historically produced a limited quantity of groundwater. Historical pumping by PCWA in western Placer County has been limited to pumping for Bianchi Estates (Zone 2) and for the Sunset Industrial Area. Pumping for Bianchi Estates ceased in 2004, and since that time, PCWA has served Bianchi Estates with surface water under PCWA's PG&E and MFP water supplies. PCWA maintains the Sunset Industrial well, though it has not been used for several years due to customer concerns regarding water quality related to industrial use.

PCWA has historically produced groundwater for Zone 4 in eastern Placer County, and continues to do so. Zone 4 is physically separate from the water service area that includes the City of Roseville, the Proposed Project, and the Sunset Industrial Area.

6.4.5 Additional Planned Future Potable Water Supplies

PCWA is pursuing a transfer of a portion of its American River supplies to the Sacramento River, such that it would be able to divert water from the Sacramento River for service in PCWA Zone 1. While PCWA projects that it is possible that water might be available from a Sacramento River diversion by 2020, this potential future water supply source is not included in PCWA's projections of available water supply.

6.5 PCWA Existing and Projected Non-Potable Water Supplies

As documented in its 2010 UWMP, PCWA is projecting a recycled water supply and demand of 9,089 af/yr in its retail service area by 2040, provided by the cities of Lincoln and Roseville. However, recycled water from PCWA is not projected to be a water supply source for the Proposed Project and is therefore not discussed in detail in this WSA.

7.0 DETERMINATION OF WATER SUPPLY SUFFICIENCY BASED ON THE REQUIREMENTS OF SB 610

Water Code section 10910 states:

10910(c)(4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.

To address this requirement, the following topics are covered in this section:

- Potable Water Supply and Demand
- Recycled Water Supply and Demand

7.1 Potable Water Supply and Demand

The comparison of projected potable water demand and supplies for the 20-year planning period, and at Buildout, is shown in Table 7-1. Depending on the water supply available from USBR, and in accordance with the WFA, potential deficits in water supply will occur in Single Dry Years beginning in 2025 and Multi-Dry Years at Buildout. To alleviate the potential deficits, the City will require short term demand reductions (water conservation) and/or pump groundwater. The City would prefer to not require water conservation greater than 20 percent of Normal Year demands. However, as evident by actions taken by the State Water Resources Control Board in 2015, the City was mandated a 28 percent conservation target during the 2015 water year. To date the City has exceeded this water conservation target.

One potential strategy to alleviate the potential water deficits shown in Table 7-1 is indicated in Tables 7-2 and 7-3. In Table 7-2, water demand reductions of up to 20 percent of Normal Year demands are shown. The remaining deficit would be alleviated by groundwater pumping, as shown in Table 7-3. The City will determine the needed balance between water conservation and groundwater pumping on a case-by-case basis.

Table 7-1. Summary of Potable Water Demand Versus Supply During Hydrologic Normal, Single Dry, and Multiple Dry Years for City of Roseville, af/yr^(a)

Hydrologic Condition		Supply and Demand Comparison					
		2015	2020	2025	2030	2035	Buildout
Normal Year							
Available Surface Water Supply		58,900	58,900	58,900	60,400	60,400	60,400
Potable Water Demand without Proposed Project		40,129	37,839	40,204	42,746	45,666	58,590
Proposed Project Demand		0	1,061	1,061	1,061	1,061	1,061
Potential Surplus (Deficit)		18,771	20,000	17,635	16,593	13,673	749
Single Dry Year							
Available Surface Water Supply		38,000	38,000	38,000	39,500	39,500	39,500
Potable Water Demand without Proposed Project		40,129	37,839	40,204	42,746	45,666	58,590
Proposed Project Demand		0	1,061	1,061	1,061	1,061	1,061
Potential Surplus (Deficit)		(2,129)	(900)	(3,265)	(4,307)	(7,227)	(20,151)
Multiple Dry Years							
Multiple-Dry Year First Year Supply	Available Surface Water Supply	51,394	51,394	51,394	52,894	52,894	52,894
	Potable Water Demand without Proposed Project	40,129	37,839	40,204	42,746	45,666	58,590
	Proposed Project Demand	0	1,061	1,061	1,061	1,061	1,061
	Potential Surplus (Deficit)	11,265	12,494	10,129	9,087	6,167	(6,757)
Multiple-Dry Year Second Year Supply	Available Surface Water Supply	54,000	54,000	54,000	55,500	55,500	55,500
	Potable Water Demand without Proposed Project	40,129	37,839	40,204	42,746	45,666	58,590
	Proposed Project Demand	0	1,061	1,061	1,061	1,061	1,061
	Potential Surplus (Deficit)	13,871	15,100	12,735	11,693	8,773	(4,151)
Multiple-Dry Year Third Year Supply	Available Surface Water Supply	45,426	45,426	45,426	46,926	46,926	46,926
	Potable Water Demand without Proposed Project	40,129	37,839	40,204	42,746	45,666	58,590
	Proposed Project Demand	0	1,061	1,061	1,061	1,061	1,061
	Potential Surplus (Deficit)	5,297	6,526	4,161	3,119	199	(12,725)

^(a) Demands from Table 5-2 and 5-5, Supply from Table 6-4. Note that the demand value for 2015 is based on a projected value, assuming no demand reductions. In 2015, the City actually entered into Stage 3 demand reductions and reduced its total water use by 33 percent compared to 2013 water use. Total actual water use for 2015 was 22,991 af/yr.

Table 7-2. Potential Water Conservation, af/yr (up to 20 percent of Normal Year Demand)					
Hydrologic Condition	2020	2025	2030	2035	Buildout
Normal	-	-	-	-	-
Single Dry	900	3,265	4,307	7,227	11,930
Multi-Dry (Year 1)	-	-	-	-	6,757
Multi-Dry (Year 2)	-	-	-	-	4,151
Multi-Dry (Year 3)	-	-	-	-	11,930

Table 7-3. Potential Groundwater Use to Relieve Remaining Deficit, af/yr					
Hydrologic Condition	2020	2025	2030	2035	Buildout
Normal	-	-	-	-	-
Single Dry	-	-	-	-	8,221
Multi-Dry (Year 1)	-	-	-	-	-
Multi-Dry (Year 2)	-	-	-	-	-
Multi-Dry (Year 3)	-	-	-	-	795

Pursuant to Water Code section 10910(c)(4), and based on the technical analyses described in this Water Supply Assessment, the City finds that the total projected water supplies determined to be available for the Proposed Project during Normal, Single Dry, and Multiple Dry water years during a 20-year projection will meet the projected water demand associated with the Proposed Project, in addition to existing and planned future uses, including agricultural and manufacturing uses.

The City is intending to receive up to 1,500 af/yr of additional PCWA MFP treated water supply to serve the Proposed Project. As documented in PCWA’s 2010 UWMP, this water supply source is expected to have full (100 percent) reliability in all hydrologic conditions.

7.2 Recycled Water Supply and Demand

As described in this WSA and in the Proposed Project’s Recycled Water Master Plan, approximately 224 af/yr of recycled water supplies will be used to meet the landscape irrigation demands at buildout of the Proposed Project (see Net Recycled Water Demand column in Table 2-4). Although the Proposed Project was not included in the City’s 2010 UWMP, the projected average dry weather wastewater flow for the Proposed Project of 51.8 af/month is greater than the Proposed Project’s projected maximum month irrigation demand of 47.7 af/month for July at buildout. Therefore, there is sufficient recycled water supply to serve the projected recycled water demand of the Proposed Project, assuming the irrigation water conservation practices described in the Proposed Project’s Recycled Water Master Plan and Water Conservation Plan are implemented.

8.0 WATER SUPPLY ASSESSMENT APPROVAL PROCESS

Water Code sections 10910 and 10911 state:

10910 (g)(1) Subject to paragraph (2), the governing body of each public water system shall submit the assessment to the city or county not later than 90 days from the date on which the request was received. The governing body of each public water system, or the city or county if either is required to comply with this act pursuant to subdivision (b), shall approve the assessment prepared pursuant to this section at a regular or special meeting.

10911 (b) The city or county shall include the water supply assessment provided pursuant to Section 10910, and any information provided pursuant to subdivision (a), in any environmental document prepared for the project pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.

The Roseville City Council must approve this WSA at a regular or special meeting. Furthermore, the City must include this WSA in the Draft EIR being prepared for the Project.

The purpose of SB 610 is to document the plan to provide potable water to proposed developments. As described above, the Project Proponents have developed a plan to acquire additional water supply from PCWA to serve the Proposed Project.

SB 221 applies to residential subdivisions of over 500 dwelling units and requires that the water supplier (the City) provide a written verification that the water supply for the project is sufficient, prior to issuance of the final permits. Because the Project includes 2,827 residential dwelling units, it is subject to the requirements of SB 221 (Government Code section 66473.7).

9.0 ADDITIONAL MATERIAL TO SUPPORT CEQA ANALYSES

SB 610 requires an analysis of water supply impacts of the proposed Amoruso Ranch development for a range of hydrologic conditions. The City, in preparing EIRs for proposed projects, expands the range of hydrologic conditions to include “what if” scenarios to determine water conservation requirements and potential groundwater use during severe dry periods. In addition, the City has conducted analyses of the potential for USBR supply reductions under the USBR CVP Operations Criteria and Plan (OCAP).

The following topics are addressed in this section:

- Surface Water Delivery Scenarios
- Demand Reduction Scenarios
- Balancing Water Supplies and Demands
- Potential Delivery under USBR CVP OCAP

9.1 Surface Water Delivery Scenarios

As discussed in section 6.1.1 above, under the WFA, the availability of untreated surface water to the City equals 58,900 af/yr in normal years, and ranges from 39,800 to 54,900 af/yr in drier and driest years. In addition, the proposed project would bring up to 1,500 af/yr of additional treated PCWA water, in all hydrologic year types, that is not currently available to the City.

In addition to WFA limitations, the City’s CVP supplies with USBR are subject to shortage provisions. In severe droughts the shortage provisions could result in City supplies falling below the lowest WFA limitations. If USBR calls for shortages in excess of 73 percent of the contracted USBR total of 32,000 af/yr, then available untreated surface water availability would fall below the WFA threshold of 38,900 af/yr. In 2015, USBR CVP allocation to the City was 25 percent of historical use, or nearly 25% of the City’s full contracted amount. For this analysis, five different delivery scenarios from USBR CVP supplies are considered: 100 percent, 75 percent, 50 percent, 25 percent, and zero percent. The total amount of surface water available under each of these scenarios for both existing and buildout conditions is summarized in Table 9-1.

Source	Time Frame	Percent Availability of USBR CVP Supply				
		100%	75%	50%	25%	0%
USBR Raw Water	Existing and Buildout	32,000	24,000	16,000	8,000	0
PCWA Raw Water	Existing and Buildout	30,000	30,000	30,000	30,000	30,000
PCWA Treated Water	Buildout Only	1,500	1,500	1,500	1,500	1,500
Total, Existing	Existing	62,000	54,000	46,000	38,000	30,000
Total, Buildout	Buildout	63,500	55,500	47,500	39,500	31,500

9.2 Demand Reduction Scenarios

As discussed in section 5.3 above, demand reduction scenarios from 10 to 50 percent (Stage 1 through Stage 5) are allowed by the City’s Municipal Code, depending on the severity of drought conditions. The relationship between water demands and available surface water supplies is summarized in Table 9-2 for existing conditions and in Table 9-3 for buildout conditions. It should be noted that the indicated combinations of demand reductions and supply availability become increasingly improbable toward the lower left and upper right corners of the tables. For example, it is highly unlikely that a 50 percent demand reduction would ever be imposed in a normal water year, or that no demand reduction would be imposed in a year when USBR CVP deliveries were reduced to zero.

Demand Condition	Potable Water Demand, af/yr	Supply Surplus, af/yr				
		100% of CVP	75% of CVP	50% of CVP	25% of CVP	0% of CVP
Normal	40,129 ^(a)	21,871	13,871	5,871	-2,129	-10,129
Stage 1: 10% Reduction	36,116	25,884	17,884	9,884	1,884	-6,116
Stage 2: 20% Reduction	32,103	29,897	21,897	13,897	5,897	-2,103
Stage 3: 30% Reduction	28,090	33,910	25,910	17,910	9,910	1,910
Stage 4: 40% Reduction	24,077	37,923	29,923	21,923	13,923	5,923
Stage 5: 50% Reduction	20,065	41,936	33,936	25,936	17,936	9,936
Total Available Supply	--	62,000	54,000	46,000	38,000	30,000

^(a) Note that the demand value for Existing Conditions is based on a projected value, assuming no demand reductions. In 2015, the City actually entered into Stage 3 demand reductions and reduced its total water use by 33 percent compared to 2013 water use. Total actual water use for 2015 was 22,991 af/yr.

Demand Condition	Potable Water Demand, af/yr	Supply Surplus, af/yr				
		100% of CVP	75% of CVP	50% of CVP	25% of CVP	0% of CVP
Normal	59,651	2,349	-4,151	-12,151	-20,151	-28,151
Stage 1: 10% Reduction	53,686	8,314	1,814	-6,186	-14,186	-22,186
Stage 2: 20% Reduction	47,721	14,279	7,779	-221	-8,221	-16,221
Stage 3: 30% Reduction	41,756	20,244	13,744	5,744	-2,256	-10,256
Stage 4: 40% Reduction	35,791	26,209	19,709	11,709	3,709	-4,291
Stage 5: 50% Reduction	29,826	32,174	25,674	17,674	9,674	1,674
Total Available Supply	--	63,500	55,500	47,500	39,500	31,500

9.3 Balancing Water Supplies and Demands

The balancing of water supplies and demands in any given year can be achieved through some combination of surface water usage, recycled water usage, groundwater usage, and demand reduction. The specific untreated surface water supply delivery scenarios under consideration in this analysis include the following:

- Normal: Conditions in a normal water year
- WFA-Max: Dry year conditions with maximum WFA deliveries (54,900 af/yr)
- WFA-Mid: Dry year conditions with midpoint WFA deliveries (46,900 af/yr)
- WFA-Min: Dry year conditions with minimum WFA deliveries (38,900 af/yr)
- 2015 Delivery: Dry year conditions with 2015 25% CVP allocation (38,000 af/yr)
- Zero USBR: Dry year conditions with zero CVP allocation (30,000 af/yr)

The buildout potable water demands shown in Table 9-3 are depicted graphically in Figure 9-1, along with the maximum anticipated recycled water usage, with the remainder being met through demand reduction. The results in Figure 9-1 are based on the assumption of zero groundwater usage.

With the addition of the proposed project up to 1,500 af/yr of treated surface water would become available to the City, and an estimated recycled water volume 4,768 af/yr would also be available to meet city-wide water demands. Assuming both of these sources are put to full use, the demand reductions needed (in the absence of groundwater usage) are depicted in Figure 9-2. As indicated in the figure, Stage 1 demand reductions would be adequate for the WFA-Max scenario, and Stage 2 reductions would be adequate for the WFA-Mid scenario. For the more severe delivery curtailment scenarios (WFA-Min, 2015 Delivery, and Zero USBR), demand reductions of Stage 4 or 5 would be needed in the absence of groundwater supplies.

It should be noted, however, that the implementation of demand reductions is a highly imprecise proposition. Stage 2 reductions should be readily achievable in severe drought conditions, but beyond that, it is difficult to predict the effectiveness of demand reduction measures. If it is assumed that demand reduction measures beyond Stage 2 could not be guaranteed, then it would be necessary to use groundwater to make up any demand deficits. Accordingly, Figure 9-3 shows the amount of groundwater that would be needed if demand reductions were implemented preferentially to groundwater usage, but were limited to Stage 2 demand reductions. As indicated in the figure, groundwater volumes in excess of 16,000 af/yr would be needed to meet demands in a zero USBR delivery year with Stage 2 demand reductions in force.

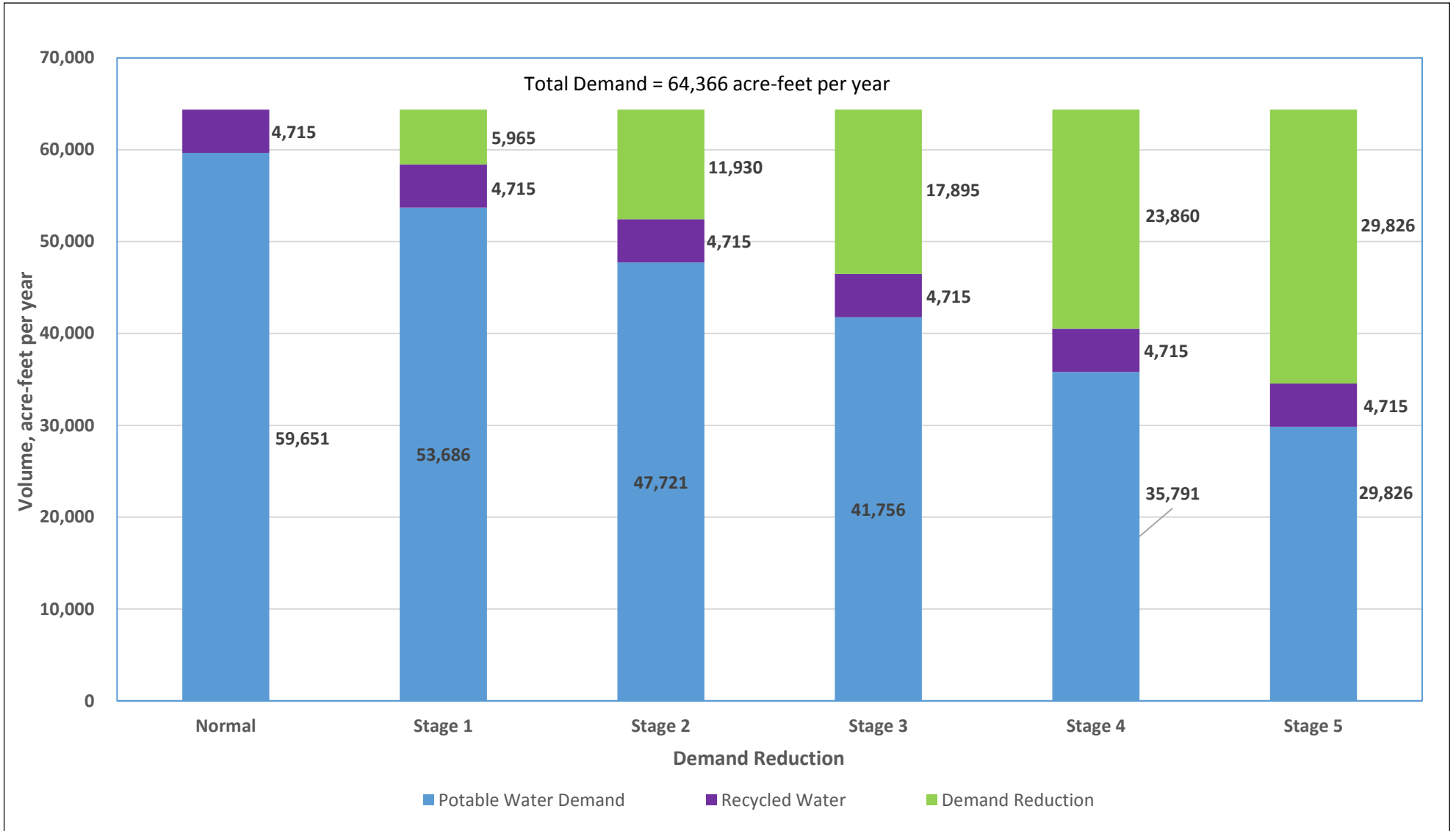


Figure 9-1

Potable Water Demands for Varying Demand Reduction Stages, Buildout Demand Conditions

City of Roseville
 Water Supply Assessment
 for Amoruso Ranch Specific Plan





Figure 9-2

Demand Reductions Needed for Varying Water Supply Scenarios, Buildout Demand Conditions, No Groundwater



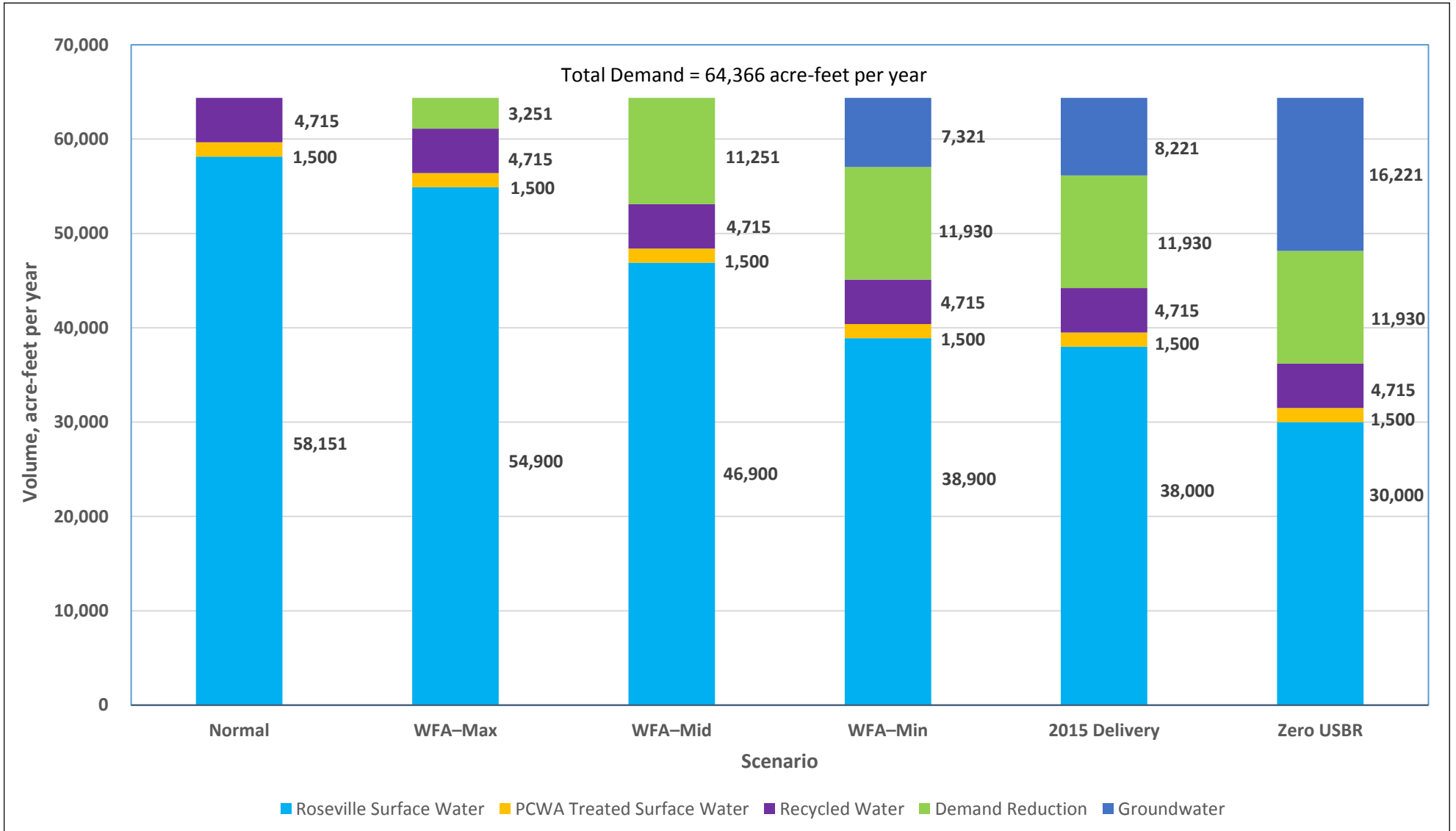


Figure 9-3

Groundwater Required for Varying Water Supply Scenarios, Buildout Demand Conditions, Maximum Reductions: Stage 2



9.4 Groundwater Supplies

As show on Figure 9-3, groundwater required to meet build out water demands range from 0 af/yr to as much as 16,221 af/yr if USBR were to issue a complete shortage of the City's CVP supplies. It is important to note that Figure 9-3 represents single-event scenarios. In support of the CEQA analysis this section further evaluates the number of years in which groundwater could be needed based upon historic regional hydrologic records.

9.4.1 Groundwater Needs under USBR CVP OCAP and life of the Proposed Project

In its 2015 Hewlett Packard/Campus Oaks Rezone & Master Plan Project Water Supply Assessment (HPCO WSA) (see Appendix F), the City analyzed USBR supply reliability under the USBR CVP OCAP. The analyses indicate that the USBR water supply would be less reliable than provided for in the WFA (expanding the numbers of years when some cut-back in water supply from USBR would occur), although minimum delivery under OCAP is expected to be the same as the minimum WFA supply of 38,900 af/yr.

The HPCO WSA also provides a detailed analysis of the number of years in which groundwater could be needed based upon historic hydrologic records for the American River. The analysis indicates that at buildout of the City groundwater would be required under the CVP OCAP scenario in 10 out of 100 years in volumes ranging from 0 af/yr in a single year to as much as 16,805 af/yr in a single year. The analysis also shows that over a 100 year period, the life of the project, a total of 51,227 af of groundwater would be needed. Because a new water supply, available in all hydrologic year types, is being added to the city's water supply portfolio with this project (1,500 af/yr of PCWA treated water supply), the volume of groundwater needed over the life of the Proposed Project is expected to be nearly the same or slightly less than documented within the HPCO WSA.

10.0 REFERENCES

City of Roseville 2010 UWMP, August 2011.

Placer County Water Agency 2010 UWMP, June 2011.

Amoruso Ranch Specific Plan Area - Water Master Plan, Kimley Horn, February 2015.

Amoruso Ranch Specific Plan Area - Recycled Water Master Plan, Kimley Horn, September 2015.

Amoruso Ranch Specific Plan Area - Water Conservation Master Plan, Kimley Horn, September 2015.

Memorandum from Brian Rickards and Tony Firenzi (PCWA) to Michele Kingsbury (Placer County) and Kelye McKinney (City of Roseville), Subject: Sunset Industrial Area Water Allocation, November 25, 2015.

Memorandum from Greg Young (Tully & Young) to Placer County Water Agency, Subject: PCWA demand development information, May 11, 2012.

Hewlett-Packard/Campus Oaks Rezone & Master Plan Project Water Supply Assessment, Municipal Consulting Group, June 2015.