DSRSD:
AT Dublin Project
Water Supply Assessment

Prepared for

Dublin San Ramon Services District

February 2018

WEST YOST ASSOCIATES
Consulting Engineers

406-12-17-60

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Project No. 406-12-17-60

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EXECUTIVE SUMMARY

Overview

This Water Supply Assessment (WSA) has been prepared for the Dublin San Ramon Services District (DSRSD) by West Yost Associates (West Yost) in accordance with Water Code sections 10910 through 10915 in connection with the proposed AT Dublin Project (Proposed Project). The Proposed Project is located in the City of Dublin, California, and consists of approximately 77 acres of new development. The Proposed Project is bounded by Tassajara Road to the west, Brannigan Street to the east, Interstate 580 (I-580) to the south, and a sliver to the north of Gleason Drive. The Proposed Project area currently consists entirely of vacant, developable parcels. In July 2017, the property changed ownership to the SCS Development Company (SCS).

The Proposed Project is a new, mixed-use residential community in the center of Dublin that will provide retail and entertainment options in a pedestrian-oriented setting. The Proposed Project consists of up to 290 apartments with ground-floor retail, 200 townhomes, and 180 single family homes located along developed paths to provide easy access to the retail, entertainment, and hospitality options available in the development. The Proposed Project also consists of up to 415,000 square feet of commercial development, including up to 240 hotel rooms.

Potable and Recycled Water Demands

The projected potable and recycled water demands for buildout of the Proposed Project have been calculated for the Proposed Project's land uses. The calculated demands for buildout of the Proposed Project are summarized as follows:

- Potable Water Demand = 229 acre-feet per year (AFA)
- Recycled Water Demand = 28 AFA

The potable water demand calculated for the Proposed Project, based on the current proposed land uses, is higher than the potable water demand included in the DSRSD 2015 UWMP for the Proposed Project site (which was 185 AFA). However, projected reductions in the potable water demands from four other planned developments located in the DSRSD water service area offset the increase in potable water demand calculated for the Proposed Project.

The recycled water demand calculated for the Proposed Project based on the current proposed land uses is higher than the recycled water demand included in the DSRSD 2015 UWMP for the Proposed Project (which was 7 AFA). As described in this WSA, recycled water supplies are proposed for use at the Proposed Project; however, if insufficient recycled water supplies are available, there are adequate potable water supplies available to meet the Proposed Project's irrigation demands.

Summaries of the availability and reliability of potable and recycled water supplies to serve the projected water demands for the Proposed Project are discussed below.

Potable Water Supply Availability and Reliability

As discussed in this WSA, the Zone 7 Water Agency (Zone 7) is DSRSD's sole potable water supplier and Zone 7 is aggressively planning for water supply programs and projects to meet the water demands of its customers through buildout of their adopted General Plans. According to Zone 7's 2015 UWMP, Zone 7 does not anticipate any water supply shortage during Normal, Single Dry, and Multiple Dry water years through 2035.

DSRSD plans to continue to manage potable water demands within its water service area through conservation efforts and its recycled water program. However, if supply shortages should occur, DSRSD may have to invoke its *Water Shortage Contingency and Drought Plan*, described in its 2015 UWMP.

Therefore, pursuant to Water Code section 10910(c)(4), and based on the technical analyses described in this WSA and the DSRSD 2015 UWMP, DSRSD finds that the projected potable water demands for the Proposed Project can be met by DSRSD during Normal, Single Dry, and Multiple Dry water years for a 20-year projection with no water supply shortage.

Recycled Water Supply Availability and Reliability

As described in this WSA, the projected recycled water demands for the Proposed Project are more than those included for the Proposed Project site in the DSRSD 2015 UWMP. Since 1999, DSRSD has operated an extensive recycled water system to produce and deliver recycled water for irrigation purposes throughout its service area. Recycled water is proposed for use at the Proposed Project, and will be used if available. However, the availability of source water supply currently limits the production of recycled water, particularly during peak demand periods. DSRSD anticipates resolving its current recycled water production limitations, but if the production limitations are not resolved, and if available recycled water supplies are insufficient to meet the irrigation demands for the Proposed Project, the irrigation demands for the Proposed Project can also be met with potable water through the potable water offset described in this WSA during Normal, Single Dry, and Multiple Dry water years for a 20-year projection with no water supply shortage.

Verification of Sufficient Water Supply

In accordance with the requirements of SB 221, Section 8.0 of this WSA provides a verification of sufficient water supply to meet the projected demands associated with the Proposed Project, in addition to DSRSD's existing and planned future uses, including, but not limited to, industrial uses. There are no existing nor planned agricultural uses in the DSRSD service area.

1.0 INTRODUCTION

1.1 Legal Requirement for 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 which sought to promote more collaborative planning between local water suppliers and cities and counties. Both statutes require detailed information regarding water availability to be provided to the city and county decision-makers prior to approval of specified large development projects. The purpose of this coordination is to ensure that prudent water supply planning has been conducted, and that planned water supplies are adequate to meet existing demands, anticipated demands from approved projects and tentative maps, and the demands of proposed projects.

SB 610 amended California Water Code sections 10910 through 10915 (inclusive) to require land use lead agencies to:

- Identify any public water purveyor that may supply water for a proposed development project; and
- Request a Water Supply Assessment (WSA) from the identified water purveyor.

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 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 subdivisions[1] 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.

1.2 Need for and Purpose of Water Supply Assessment

The City of Dublin has requested that the Dublin San Ramon Services District (DSRSD) prepare a WSA as required by Water Code sections 10910 through 10915 in connection with the proposed AT Dublin Project (Proposed Project). It is not 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 policies and procedures, consistent with existing law.

This WSA for the Proposed Project has been prepared by West Yost Associates (West Yost), as requested by DSRSD, the responsible water purveyor for the Proposed Project.

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

1.3 Water Supply Assessment Preparation, Format and Organization

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

- Section 1: Introduction
- Section 2: Description of Proposed Project
- Section 3: Required SB 610 Determinations
- Section 4: DSRSD Water Demands
- Section 5: DSRSD Water Supplies
- Section 6: Water Supply Reliability
- Section 7: Determination of Water Supply Sufficiency Based on the Requirements of SB 610
- Section 8: Verification of Sufficient Water Supply Based on the Requirements of SB 221
- Section 9: Water Supply Assessment and Verification Approval Process
- Section 10: References

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

1.4 Acronyms and Abbreviations

The following acronyms and abbreviations have been used throughout this WSA.

AF	Acre-feet
AFA	Acre-feet per year
BBID	Byron Bethany Irrigation District
CEQA	California Environmental Quality Act
DERWA	DSRSD-EBMUD Recycled Water Authority
DSRSD	Dublin San Ramon Services District
du	Dwelling unit
DWR	California Department of Water Resources
EBMUD	East Bay Municipal Utility District
EIR	Environmental Impact Report
FAR	Floor Area Ratio
GMP	Groundwater Management Plan
gpd	Gallons per day
GPQ	Groundwater Pumping Quota
M&I	Municipal and industrial
MFUV	Microfiltration Ultraviolet treatment facilities
mgd	Million gallons per day
MOU	Memorandum of Understanding
RFTA	Reserve Forces Training Area
RWQCB	Regional Water Quality Control Board
RWTF	Recycled Water Treatment Facilities
SB 610	California State Senate Bill 610 of 2001
SBA	South Bay Aqueduct
sf	Square feet
SFUV	Sand Filtration Ultraviolet Treatment Facilities
SWP	State Water Project
TDS	Total Dissolved Solids
UWMP	Urban Water Management Plan
West Yost	West Yost Associates
WSA	Water Supply Assessment
Zone 7	Zone 7 of the Alameda County Flood Control and Water Conservation District (also referred to as the Zone 7 Water Agency)

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2.0 DESCRIPTION OF PROPOSED PROJECT

2.1 Proposed Project Location

The Proposed Project is located in the City of Dublin in Alameda County, California, and consists of approximately 77 acres of new development located within the DSRSD water service area. As shown on Figure 2-1, the Proposed Project is bounded by Tassajara Road to the west, Brannigan Street to the east, I-580 to the south, and a sliver to the north of Gleason Drive.[2] The Proposed Project area currently consists entirely of vacant, developable parcels. In July 2017, the property changed ownership to the SCS Development Company (SCS).

2.2 Proposed Project Land Uses

The Proposed Project is envisioned as a mixed-use destination in the center of Dublin with commercial, retail, and residential land uses. The Proposed Project consists of up to 670 residential units and up to 415,000 square feet of commercial, including up to 240 hotel rooms. Residential units will include up to 290 apartments with ground-floor retail, 200 townhomes, and 180 single family homes located along developed paths to provide easy access to the retail, entertainment, and hospitality options available in the development.

Key features of the Proposed Project include:

- An amenity-rich, mixed-use destination with upscale retail, entertainment, and dining to encourage the use of the site as a local gathering place;
- A "town square" style retail area with a theatre, dining amenities, and open space;
- An apartment community integrated with ground-floor retail to serve as a mixed-use village in the core of the development, between Dublin Boulevard and Central Parkway;
- Single-family townhomes centered around a village green to provide open air concerts, community fairs, and other outdoor entertainment;
- Single-family detached homes connected to amenities by a network of pathways, gardens, and courtyards, and approximately 3 acres of connecting open space; and
- Right-of-way improvements of 6 to 7 acres.

The Proposed Project will provide residential, entertainment, dining, and retail diversity to the center of Dublin, securing a sense of community in this currently vacant land. Table 2-1 presents a summary of the land uses for the Proposed Project.

[2] AT Dublin Fact Sheet, provided by Shea Properties on November 6, 2017.

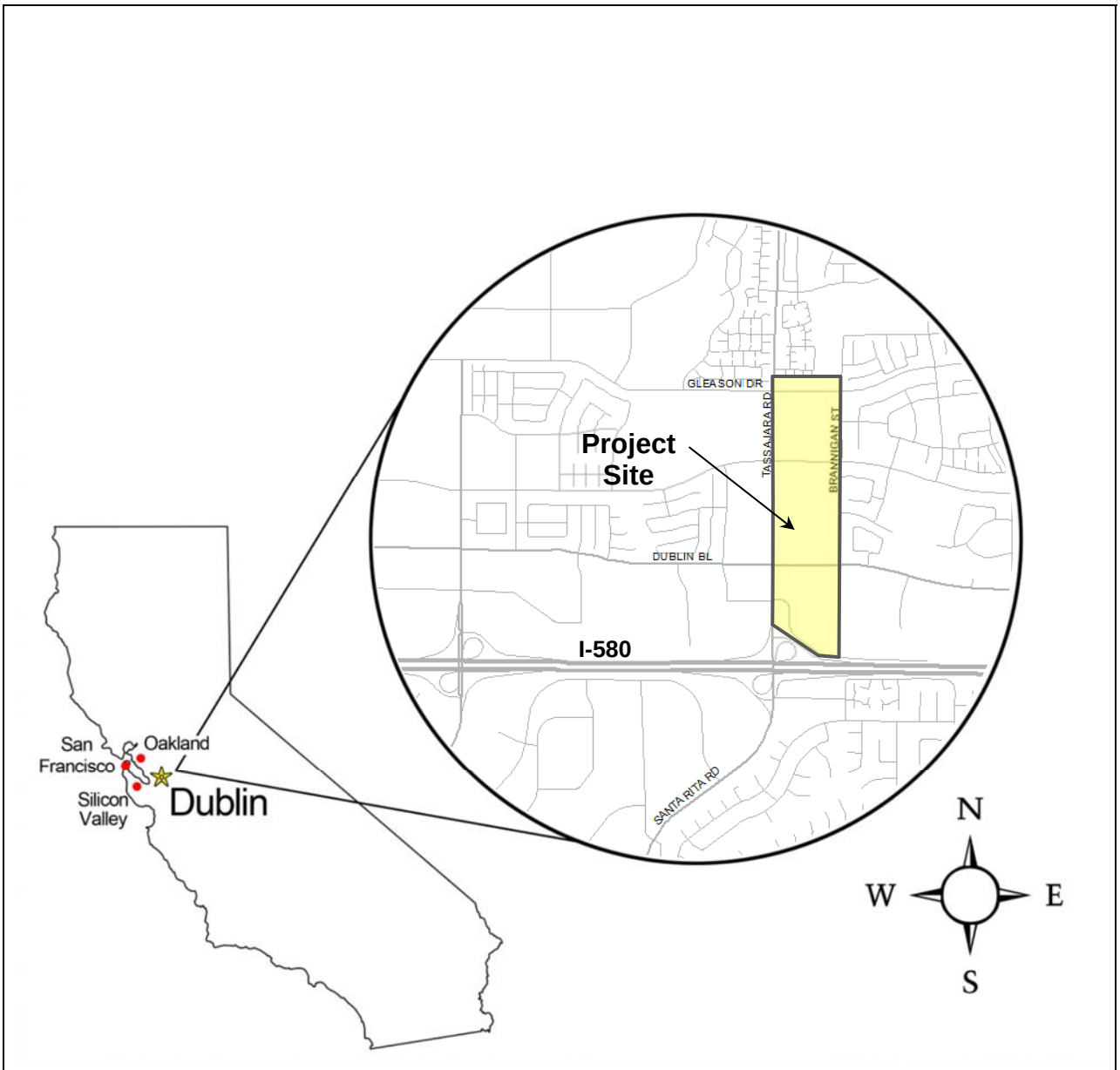

Figure 2-1. Proposed Project Location

Table 2-1. Land Use Summary for Proposed Project[a]

Land Use Designation	Total Net Acreage[b]	Permitted Density	Proposed Density	Total Development Potential[c]
General Commercial	23.2	0.2 to 0.6 FAR	0.33 FAR	336,500 square feet, including up to 240 hotel rooms
Mixed Use	16.0	0.3 to 1.0 FAR	0.6 FAR	78,500 commercial square feet plus 290 dwelling units
Medium High Density Residential	14.0	14.1 to 25.0 du/acre	14.3 du/ac	200 dwelling units
Medium Density Residential	23.5	6.1 to 14.0 du/acre	7.7 du/ac	180 dwelling units
Total	76.7			

[a] Based on the AT Dublin Land Use Plan - Proposed (sheet A0.3) dated January 17, 2018.

[b] Net acreage is equal to the gross area less street dedications.

[c] Unit counts and commercial square footage are preliminary. Stage 2 Development Plan and Site Development Review will establish the specific maximum number of units and commercial square footage.

2.3 Comparison with Previous Land Use Descriptions in Other Planning Documents

The land use designations for the Proposed Project area in the current City of Dublin General Plan are primarily General Commercial, with some areas of Neighborhood Commercial, High Density Residential, Medium High Density Residential, Medium Density Residential, and a small area of Public/Semi-Public land use along Brannigan Street and Gleason Drive. As such, the development of the Proposed Project will require text and map amendments to the City of Dublin General Plan, text and map amendments to the Eastern Dublin Specific Plan, text and map amendments to the City of Dublin Zoning Ordinance, approval of a Large Lot Tentative Map, and adoption of a Development Agreement.

DSRSD's 2015 Urban Water Management Plan (UWMP) accounted for future commercial and residential development within the Proposed Project area. Land use assumptions for the Proposed Project area in DSRSD 2015 UWMP were based on the City of Dublin's General Plan; however, these assumptions are different than those currently proposed in the current AT Dublin development plan. Table 2-2 provides a comparison of current versus previously assumed land uses for the Proposed Project area.

2.4 Projected Water Demand

2.4.1 Overall Water Use Assumptions

Projected water demands for the Proposed Project have been calculated based on the following overall water use assumptions:

- All interior water demands and some exterior water demands (*e.g.*, exterior hose bibs and homeowner-maintained landscaping for AT Dublin Medium Density Residential and Medium High Density Residential) will be met using potable water supplies from DSRSD; and
- Exterior landscape irrigation water demands for Mixed Use and non-residential land uses with City-maintained or Homeowner Association (HOA)-maintained landscaping will be met using recycled water supplies from DSRSD, if available.

2.4.2 Water Use Factors

The projected potable and recycled water demands for the Proposed Project have been calculated based on the currently proposed land uses for the Proposed Project. DSRSD has adopted standard unit water use factors for use in projecting potable and recycled water demands based on the proposed land use, the number of dwelling units or square footage, and whether recycled water is proposed for exterior water uses.

Table 2-2. Comparison of Current and Previous Land Use Assumptions for Proposed Project Area

Land Use Category	Currently Proposed Land Use[a] (based on the AT Dublin Land Use Plan dated January 17, 2018)	Previously Assumed Land Use (based on 2016 DSRSD Water System Master Plan)
Residential	Residential (up to 670 Dwelling Units)	Residential (up to 375 Dwelling Units)
	• Medium Density Residential: 180 dus	• Medium Density Residential: 16 dus
	• Medium High Density Residential: 200 dus	• Medium High Density Residential: 170 dus
	• High Density Residential: 290 dus	• High Density Residential: 189 dus
Commercial	Commercial & Mixed Use (39.2 acres)	Commercial (54.2 acres)
	• General Commercial: 336,500 sf	• Retail: 590,000 sf
	• Mixed Use - Commercial: 78,500 sf	
	• Hotel Rooms: 240[b]	
Public/Semi-Public		Public/Semi-Public (0.9 acres)
		• Public: 9,800 sf

[a] Based on the AT Dublin Land Use Plan - Proposed (sheet A0.3) dated January 17, 2018.

[b] Hotel square footage (150,000 sf) is included in the General Commercial square footage.

2.4.2.1 Potable Water Use Factors

The unit potable water demand factors currently used by DSRSD are shown in Table 2-3. These standard water use factors were developed for use in the DSRSD 2016 Water System Master Plan and have been refined based on actual water use trends observed in DSRSD's water service area, and were used for water supply planning purposes in the DSRSD 2015 UWMP to project future potable water demands within DSRSD's water service area.

A recent evaluation of the actual potable water use for hotels within the DSRSD service area from 2013 to 2017 indicates that the average potable water demand per hotel room is approximately 115 gpd. Based on these findings, the Commercial – Retail potable water use factor for the Proposed Project was increased from 0.14 gpd/ft^2 to 0.156 gpd/ft^2 to account for the additional potable water use for up to 240 hotel rooms.

2.4.2.2 Recycled Water Use Factors

It is assumed that recycled water will be used for exterior landscape irrigation for all residential and non-residential land uses with City-maintained or HOA-maintained landscaping within the Proposed Project. DSRSD's 2016 Water System Master Plan established a methodology for calculating the recycled water demand for various land use types based on several factors, including: percentage of total area irrigable; percentage of irrigable area to use recycled water; an irrigation factor based on plant type; and a unit water demand of 48 inches per year was assumed for calculating future recycled water demands. A summary of DSRSD's other recycled water planning assumptions for each land use category is provided in Table 2-4.

2.4.3 Calculation of Potable and Recycled Water Demands

The projected buildout potable and recycled water demands for the Proposed Project have been calculated using the unit water demand factors discussed above. As shown in Table 2-5, the calculated buildout demands for the Proposed Project are 229 AFA for potable water and 28 AFA for recycled water.

2.4.4 Comparison with Water Demand Calculations in Other Planning Documents

The potable and recycled water demands for the Proposed Project site incorporated in the 2016 Water System Master Plan and subsequent DSRSD 2015 UWMP are based on different land use assumptions for the Proposed Project site (refer to Table 2-2). Therefore, it is expected that the current projected water demands would be different from the 2016 Water System Master Plan and DSRSD 2015 UWMP. The 2016 Water System Master Plan and DSRSD 2015 UWMP projected the potable water demand to be 185 AFA and the recycled water demand to be 7 AFA for the Proposed Project.

The potable water demand currently calculated for the Proposed Project (229 AFA) is higher than the potable water demand included in the DSRSD 2015 UWMP (185 AFA), and the recycled water demand currently calculated for the Proposed Project (28 AFA) is higher than the recycled water demand included in the DSRSD 2015 UWMP (7 AFA).

Table 2-3. Potable Water Demand Factors by Land Use Type

Land Use Designation	Unit for Interior Use	Unit Water Use Factor[a]	
		Interior Use	Exterior Use, gpd/acre[b]
Residential			
Rural	gpd/du	730	--
Low Density	gpd/du	350	--
Low-Medium Density	gpd/du	300	--
Medium Density	gpd/du	255	--
Medium-High Density	gpd/du	160	--
High Density	gpd/du	135	--
Commercial			
Commercial Retail	gpd/ft^2	0.14	267.8
Commercial Office	gpd/ft^2	0.10	267.8
Industrial			
Business Park	gpd/ft^2	0.06	267.8
Mixed Use			
Mixed Use	gpd/ft^2	0.27	267.8
Public			
Public/Semi-Public	gpd/ft^2	0.05	267.8
Elementary School	gpd/student	10	267.8
Middle School	gpd/student	15	267.8
High School	gpd/student	20	267.8
Open Space			
Neighborhood Park	gpd/acre	125	--
Community Center	gpd/visitor	8	--
Golf Course	gpd/golfer	12	--

[a] Source: Table 3-16, DSRSD Water System Master Plan, March 2016.

[b] Assumes extensive use of recycled water for exterior landscaping and minimal potable water use on non-residential land uses equal to 10 percent of the exterior landscaping water demand of 3.0 af/acre/yr (0.3 af/acre/yr = 267.8 gpd/acre).

Table 2-4. Recycled Water Demand Factors by Land Use Type[a]

Land Use Designation	Percent of Area Irrigable, %	Percent of Irrigation Demand Met with Recycled Water, %	Plant Type Irrigation Factor[b]
Administration & Classrooms	25	95	0.9
Aquatic Park - visitors at specific features	15	30	0.9
Barracks	0	0	0.9
Child Care Facility	25	95	0.9
Commercial - Neighborhood Commercial	15	100	0.8
Commercial - Office	15	100	0.8
Commercial - Office/Hotel	15	100	0.8
Commercial - Retail	15	100	0.8
Community Center	25	100	0.8
Community Support Facilities (Dining, laundry, etc)	0	0	0.8
Corridor	50	100	0.8
Hospital (equiv to med-high Residential)	10	80	0.9
Industrial - Business Park	20	100	0.9
Inmates in Jail (Santa Rita County Jail)	15	50	0.9
Mixed Use	15	100	0.9
Neighborhood Square	25	100	0.9
Open Space - City Park/Community Center (SP)	80	75	1.0
Open Space - City Park/Community Park	80	100	1.0
Open Space - Golf Course	80	95	1.0
Open Space - Neighborhood Park	80	75	1.0
Open Space - Open Space	0	0	1.0
Open Storage	30	30	0.9
Other	25	95	0.9
Parking	0	0	0.0
Public - Community College	25	95	0.9
Public - Elementary School	25	95	0.9
Public - Elementary School - No Recycled Water Use	25	95	0.9
Public - High School	25	95	0.9
Public - Middle School	25	95	0.9
Public - Public/Semi-Public	25	95	0.9
Recreation	0	0	0.0
Residential - High	8	80	0.9
Residential - High (Hotel Expansion)	8	30	0.9
Residential - Low	30	0	0.9
Residential - Low Medium	15	40	0.9
Residential - Medium	15	30	0.9
Residential - Medium High	10	80	0.9
Retail	0	0	0.8
Roads	0	0	0.0
Rural	95	0	1.0
School	80	100	0.9
Warehouses and Closed Storage	15	100	0.9

[a] Recycled water demands spreadsheet, "RW Demand Tool_Revisedv2.xlsx", provided by Carollo. Used to calculate recycled water demand in the 2016 DSRSD Water System Master Plan.

[b] Plant Type Irrigation Factor indicates the type of plant assumed to be irrigated. A factor of 1.0 represents higher water use plants such as turf grass.

Table 2-5. Potable and Recycled Water Demands for the Proposed Project

Development	Land Use Data				Potable Water Demand					Recycled Water Demand								
	Land Use Designation	Area, acres	Quantity	Units	Interior Water Use Factor	Units	Exterior Water Use Factor, gpd/acre	Potable Water Demand, mgd	Potable Water Demand, AFA	Residential Density, DU/acre	Area, acres	Percent of Area Irrigable, %	Percent of Irrigation with Recycled Water, %	Unit Demand, inches/yr	Normal Irrigation Demand, AFA	Plant Type Factor	Recycled Water Demand, mgd	Recycled Water Demand, AFA
AT Dublin Project	Residential - Medium Density	24	180	du	255	gpd/du		0.049	54.7	6.1-14.0	24	15%	30%	48	4.2	0.9	0.003	3.8
	Residential - Medium High Density	14	200	du	160	gpd/du		0.034	38.1	14.1-25.0	14	10%	80%	48	4.5	0.9	0.004	4.0
	Residential - High Density (part of Mixed Use)	16	290	du	135	gpd/du		0.042	46.7		16	15%	100%	48	9.6	0.9	0.008	8.6
	Commercial - Retail (part of Mixed Use)		78,500	ft^2	0.156	gpd/ft^2	267.8	0.018	19.7									
	Commercial - Retail	23	336,500	ft^2	0.156	gpd/ft^2	267.8	0.062	70.0		23	15%	100%	48	13.9	0.8	0.010	11.1
TOTAL		**77**	**670**	**DU**				**0.20**	**229**		**77**						**0.02**	**28**

Notes:

Land uses, areas and quantities per AT Dublin Land Use Plan - Proposed (sheet A0.3) dated January 17, 2018.

The Commercial - Retail land use includes 150,000 square feet of hotel (240 rooms).

Potable water use based on DSRSD unit water demand factors (2016 DSRSD Water System Master Plan).

The Commercial - Retail interior water use factor is higher than the 0.14 gpd/ft^2 provided for in the 2016 DSRSD Water System Master Plan, as it accounts for a hotel water use factor of 115 gpd/room (based on historical hotel water use data within the DSRSD water service area).

Potable water demand includes unaccounted-for water, assuming 6% potable water loss (per the 2016 DSRSD Water System Master Plan).

Recycled water use assumed for irrigation for all proposed land uses.

Recycled water factors (% irrigable and % irrigated with recycled water) based on 2016 Water System Master Plan. Unit irrigation demand assumed to be 48 inches per year.

Recycled water factor for Residential - High Density / Commercial - Retail corresponds to Mixed Use land use (2016 Water System Master Plan).

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3.0 REQUIRED SB 610 DETERMINATIONS

3.1 Does SB 610 Apply to the Proposed Project?

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.

As shown in Table 3-1, the Proposed Project does meet the definition of a "Project" as specified in Water Code section 10912(a)(7). 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.

The City of Dublin has also determined that the Proposed Project is subject to the California Environmental Quality Act (CEQA) and that an Environmental Impact Report (EIR) is required.

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 up to 670 new residential dwelling units in DSRSD's water service area, is therefore subject to the requirements of SB 221. Section 8.0 of this WSA provides the required written verification of sufficient water supply.

Table 3-1. Does the Proposed Project Meet the SB 610 Definition of a "Project"?		
SB 610 Project Definition Components	Proposed Project Quantity	Meets the SB 610 Definition of a "Project"?
Residential > 500 dus	Up to 670 dus	YES
Retail > 1,000 employees or > 500,000 sf	Up to 415,000 sf	NO
Commercial Office Building > 1,000 employees or > 250,000 sf	N/A	NO
Hotel/Motel > 500 rooms	Up to 240 rooms	NO
Industrial Plant/Park > 1,000 employees or > 40 acres or > 650,000 sf	N/A	NO
Mixed Use Project that includes one or more of the above	--	YES
A Project that would demand the amount of water required by a 500-dwelling unit project	--	YES
SB 610 Required?	--	YES

3.3 Who is the Identified Public Water System?

> *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…*

The Proposed Project is located within DSRSD's water service area. DSRSD provides water service to all areas within the City of Dublin (including Central Dublin, Eastern Dublin, and Western Dublin), Camp Parks, and the Dougherty Valley area in Contra Costa County (see Figure 3-1), and maintains the potable water facilities in the streets adjacent to the Proposed Project site, including Tassajara Road, Dublin Boulevard, Central Parkway, Gleason Drive, and Brannigan Street. Additionally, DSRSD also currently treats and distributes recycled water to water customers in its service area. Therefore, DSRSD is the identified public water system for the Proposed Project.

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

> *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).*

DSRSD's 2015 UWMP was adopted by the DSRSD Board of Directors in June 2016. The DSRSD 2015 UWMP includes existing and projected water demands for existing and projected future land uses within DSRSD's service area. Table 3-2 provides a summary of the currently projected potable and recycled water demands for the Proposed Project, as compared to those included in the DSRSD 2015 UWMP.

As shown in Table 3-2, the potable water demand calculated for the Proposed Project based on the current proposed land uses is higher than the potable water demand included in the DSRSD 2015 UWMP for the Proposed Project site. However, projected reductions in the potable water demands from four other planned developments located in the DSRSD water service area offset the increase in potable water demand calculated for the Proposed Project. Therefore, the net resulting potable water demand is lower than the potable water demand documented in the DSRSD 2015 UWMP due to the reduced potable water demands from the following planned developments: The Green; Grafton Plaza; Lennar Homes (Sub Area 3); and Gale Ranch (Amarante).3

[3] Updated land use data provided by DSRSD staff on January 10, 2018.

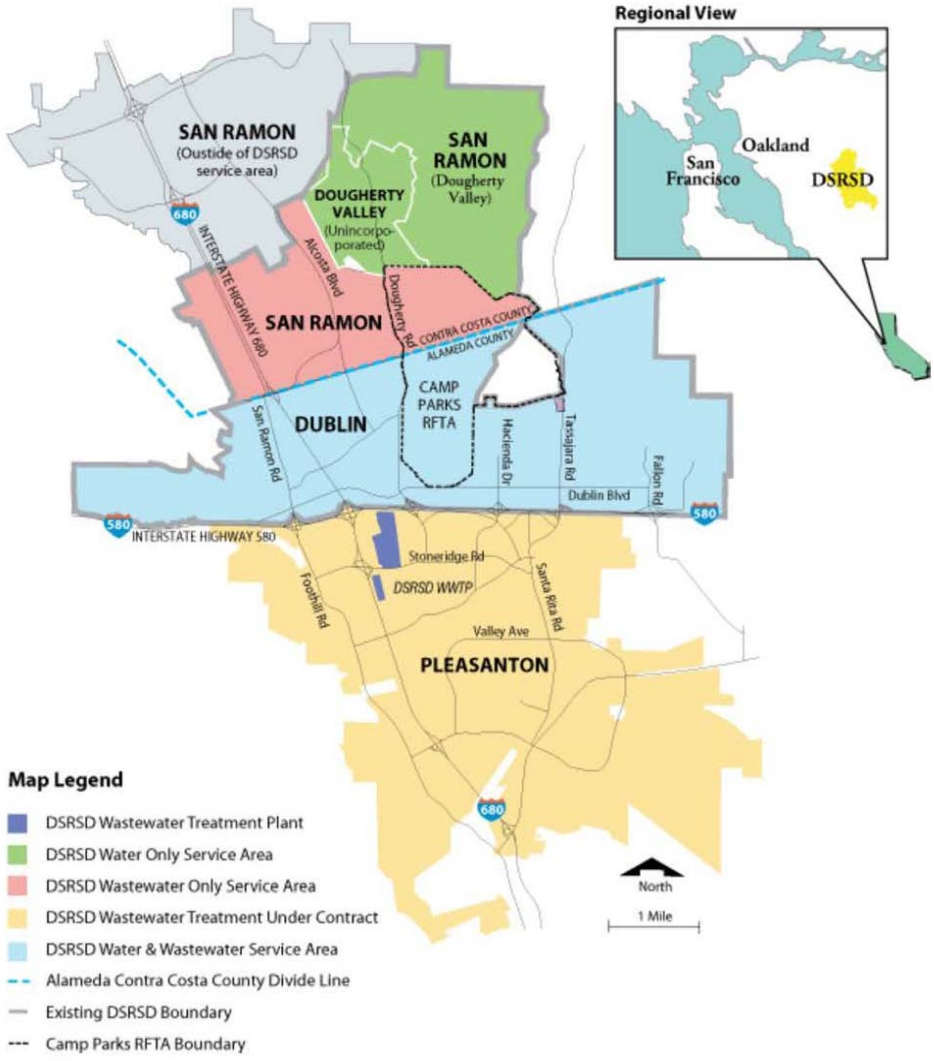

Figure 3-1. DSRSD Water and Wastewater Service Area

Table 3-2. Summary of Projected Potable and Recycled Water Demands for the Proposed Project

Source Document	Land Use Assumptions	Potable Water Demand (Difference from 2015 UWMP)	Recycled Water Demand (Difference from 2015 UWMP)
DSRSD 2015 UWMP[(a)]	Based on the City of Dublin General Plan Land Use Map (updated August 26, 2014)	185 AFA	7 AFA
AT Dublin Stage 1 Development Plan	Proposed Land Use Plan (dated January 17, 2018) (see Table 2-1)	229 AFA (+ 44 AFA)	28 AFA (+ 21 AFA)

[(a)] The projected demands in DSRSD's 2015 UWMP are based on land use projections as documented in DSRSD's 2016 Water System Master Plan.

The recycled water demand calculated for the Proposed Project based on the current proposed land uses is also higher than the recycled water demand included in the DSRSD 2015 UWMP for the Proposed Project site. DSRSD has operated an extensive recycled water system to produce and deliver recycled water for irrigation purposes throughout its service area. Recycled water is proposed for use for the Proposed Project, and will be used if available. However, the availability of source water supply currently limits the production of recycled water, particularly during peak demand periods (see further discussion in Section 5.4). DSRSD anticipates resolving its current recycled water production limitations, but if the production limitations are not resolved, and if available recycled water supplies are insufficient to meet the irrigation demands for the Proposed Project, the irrigation demands for the Proposed Project can also be met with potable water through the potable water offset described above.

4.0 DSRSD WATER DEMANDS

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 DSRSD water demands have been taken, for the most part, from DSRSD's 2016 Water System Master Plan (dated March 2016) and DSRSD's 2015 UWMP (adopted in June 2016).

As described in Section 3.4, although the projected potable water demands for the Proposed Project are higher than the potable water demands included in the DSRSD 2015 UWMP, the increased potable water demands for the Proposed Project are offset by a reduction in potable water demands associated with updated development plans for other development projects.

The projected recycled water demands for the Proposed Project are also higher than the recycled water demands included in the DSRSD 2015 UWMP. Recycled water is proposed to be used for the Proposed Project, and will be used if available. However, if available recycled water supplies are insufficient to meet the irrigation demands for the Proposed Project, the irrigation demands for the Proposed Project can also be met with potable water through the potable water offset (see further discussion in Section 5.4).

4.1 Historical and Existing Water Demands

According to DSRSD's 2016 Water System Master Plan, the DSRSD water service area has experienced significant population growth. From 2010 through 2015, DSRSD's water service area population had grown by 20.2 percent; however, the total volume of potable water sold decreased by 19.4 percent. This decrease in total potable water consumption, despite growth in population served, was due to water use limitations imposed under DSRSD's 2014 Community Drought Declaration during the recent statewide drought. Table 4-1 summarizes DSRSD's historical potable water demand (based on water production) and recycled water demand for 2010 through 2015.

Table 4-1. Historical Potable and Recycled Water Demands

	2010	2011	2012	2013	2014	2015
Total Potable Water Demand[a,c], AFA	9,262	9,565	10,264	11,244	8,549	7,466
Total Recycled Water Demand[b,d], AFA	1,695	1,916	2,080	2,362	2,528	2,579

(a) Source: DSRSD 2016 Water System Master Plan (dated March 2016), Table 3-1.
(b) Source: DSRSD 2016 Water System Master Plan (dated March 2016), Table 3-22.
(c) Includes the historical annual water purchased from Zone 7.
(d) Includes only recycled water deliveries within DSRSD's service area. Does not include recycled water use in City of Pleasanton or in EBMUD's service area. DSRSD data only includes demand in the recycled water distribution system and does not include water from recycled water fill stations at the treatment plant.

4.2 Future Water Demands

Table 4-2 presents DSRSD's projected normal year potable and recycled water demands through 2040. These projections are based on projected land uses within DSRSD's potable and recycled water service areas. As presented in the table below, the projected potable water demand includes an estimate for unaccounted-for water of 6 percent of the total deliveries from Zone 7 to DSRSD. It should be noted that the updated demands from the Proposed Project are not included in the demands shown in Table 4-2 (demands are as included in DSRSD's 2015 UWMP).

Table 4-2. Projected Potable and Recycled Water Demands -- Normal Years

	2020	2025	2030	2035	2040
Potable Water Demand[(a)], AFA	13,678	14,554	15,223	15,840	15,840
Recycled Water Demand[(a)], AFA	3,905	4,117	4,203	4,203	4,203

[(a)] Source: DSRSD 2015 UWMP (June 2016), Table 4-4.

As described in the DSRSD 2015 UWMP, the potable water and recycled water demand projections have been established based on DSRSD's continued strong commitment to the implementation of water conservation measures and use of recycled water to offset potable water demands. DSRSD plans to maintain the current level of conservation as the foundation of a comprehensive water conservation program and investigate and implement, as appropriate, permanent demand reduction programs that are shown to be effective and affordable. DSRSD also plans to continue to connect future, planned development projects to recycled water to serve non-potable demands.

4.3 Dry Year Water Demands

Under dry water year conditions, DSRSD anticipates implementing demand reduction measures as appropriate to reduce potable water demands to match the reduction in the supply provided by Zone 7. The demand reduction assumptions as included in DSRSD's 2015 UWMP are listed below.

- During Single Dry Years, the potable water demands are assumed to be 75 percent of Normal Year demands (25 percent reduction in water use). Recycled water demands are assumed to be the same as Normal Year demands.
- During Multiple Dry Years, the potable water demands are assumed to be 85 percent of Normal Year demands (15 percent reduction in water use). Recycled water demands are assumed to be the same as Normal Year demands.

Tables 4-3 and 4-4 present the projected dry year potable water demand and recycled water demand through 2040 as presented in the DSRSD 2015 UWMP.

Table 4-3. Projected Potable and Recycled Water Demands -- Single Dry Year

	2020	2025	2030	2035	2040
Potable Water Demand[(a)], AFA	10,258	10,915	11,417	11,880	11,880
Recycled Water Demand[(a)], AFA	3,904	4,117	4,203	4,203	4,203

(a) Source: DSRSD 2015 UWMP (June 2016), Table 7-6.

Table 4-4. Projected Potable and Recycled Water Demands -- Multiple Dry Years

	2020	2025	2030	2035	2040
Potable Water Demand[(a)], AFA	11,626	12,371	12,939	13,464	13,464
Recycled Water Demand[(a)], AFA	3,904	4,117	4,203	4,203	4,203

(a) Source: DSRSD 2015 UWMP (June 2016), Table 7-9.

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5.0 DSRSD WATER SUPPLIES

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…under the existing water supply entitlements, water rights, or water service contracts.

10910(e) If no water has been received in prior years by the public water system…under the existing water supply entitlements, water rights, or water service contracts, the public water system…shall also include in its water supply assessment…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.

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

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

(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 recent 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.

(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.

(4) 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.

(5) 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.

The descriptions provided below for DSRSD's water supplies have been taken, for the most part, from DSRSD's 2015 UWMP (adopted in June 2016) and Zone 7's 2015 UWMP (adopted in March 2016).

5.1 Water Supply Overview

DSRSD currently receives its potable water supply from Zone 7 Water Agency. Zone 7 is a multi-purpose agency that oversees water-related issues in the Livermore-Amador Valley. Zone 7 is a State Water Project contractor that wholesales treated water to four retail water agencies including DSRSD, City of Pleasanton, City of Livermore, and Cal Water Livermore District. In addition, Zone 7 retails non-potable water supplies for irrigated agricultural use, retails treated water to several direct customers, provides and maintains flood control facilities, and manages groundwater and surface water supplies in its service area. Zone 7's water supplies are discussed in detail in Section 5.2 (DSRSD Potable Water Supplies from Zone 7). DSRSD also has a groundwater pumping quota (GPQ) of 645 AFA in the Livermore Valley Main Groundwater Basin (Main Basin), which Zone 7 pumps on DSRSD's behalf as part of its water contract. This groundwater supply is discussed briefly in Section 5.2.4.2 and in detail in Section 5.3.

DSRSD's water supply is augmented with recycled water from its Recycled Water Treatment Facilities (RWTF). DSRSD owns and operates a wastewater treatment plant that treats wastewater from Dublin, South San Ramon, and Pleasanton. The wastewater treatment plant includes conventional secondary treatment facilities, as well as tertiary and advanced recycled water treatment facilities. The DSRSD-EBMUD Recycled Water Authority (DERWA) operates the San Ramon Valley Recycled Water Program (SRVRWP), a multi-phased project which distributes recycled water from the RWTF to portions of DSRSD's and EBMUD's service areas. DSRSD's recycled water production and distribution is discussed in Section 5.4.

5.2 DSRSD Potable Water Supplies from Zone 7

Zone 7 uses a combination of water supplies and water storage facilities to meet the municipal and industrial (M&I) demands of its four retailers (DSRSD, City of Pleasanton, City of Livermore, and Cal Water Livermore District). These include the following:

- Imported surface water from the State Water Project (SWP);
- Imported surface water transferred from the Byron Bethany Irrigation District (BBID);
- Local surface water runoff captured in Del Valle Reservoir;
- Local groundwater extracted from the Livermore Valley Main Groundwater Basin;
- Non-local groundwater storage in the Semitropic Water Storage District and Cawelo Water District; and
- Future local storage in the Chain-of-Lakes.

Each of these supplies is described further below.

5.2.1 State Water Project (SWP)

In November 1961, Zone 7 entered into a 75-year agreement with the Department of Water Resources (DWR) to receive water from the State Water Project (SWP). The SWP is the nation's largest publicly-built water storage and conveyance system and currently serves over 25 million people throughout California. SWP water originates within the Feather River watershed, is captured in and released from Lake Oroville, and flows through the Sacramento-San Joaquin Delta before it is conveyed by the South Bay Aqueduct (SBA) to Zone 7 or by the California Aqueduct to other south-of-Delta SWP contractors.

The SBA also delivers water to other water suppliers, namely Santa Clara Valley Water District and Alameda County Water District. Lake Del Valle is part of the SBA system and is used for storage of SWP water, as well as local runoff. At Zone 7, SWP water is used to meet treated water demands from municipal and industrial customers (both wholesale and retail) and untreated water demands from agricultural customers. It is also used to artificially recharge the local groundwater basin or to fill non-local storage.

Negotiations on extending the SWP contracts took place between DWR and the contractors during 2013 and 2014. The following terms were agreed to and are currently the subject of analysis under the requirements of the California Environmental Quality Act (CEQA) (Notice of Preparation dated September 12, 2014) (Draft EIR released on August 17, 2016):

- Extend the term of the 29 Water Supply Contracts to December 31, 2085,
- Provide for increased SWP financial operating reserves during the extended term of the SWP contracts,
- Provide additional funding mechanisms and accounts to address SWP needs, and
- Develop a revised payment methodology with a corresponding billing system that better matches the timing of future SWP revenues to future expenditures.

It is anticipated that the term of the SWP contracts will be extended to December 31, 2085 and the data and information contained in Zone 7's 2015 UWMP reflect that assumption.

5.2.1.1 Table A Allocation

Each SWP contractor is limited to a maximum annual contract amount as specified in Article 6(c) and Table A of the SWP Contract; this amount is therefore commonly referred to as "Table A." As noted above, Zone 7 first entered into the SWP Contract in November 1961; as the SWP was expanded and as Zone 7 demands increased over the years, Zone 7's Table A amount was increased, reaching the amount of 46,000 acre-feet annually (AFA) in 1997. Since then, Zone 7 has increased its supply from the SWP through a series of five permanent transfers. In December 1999, Zone 7 secured Table A SWP allocations from Lost Hills Water District of 15,000 AFA and Berrenda Mesa Water District of 7,000 AFA. In December 2000, 10,000 AFA of SWP allocation from Belridge Water Storage District was acquired. An additional 2,219 AFA was obtained from the same source in October 2003. Finally, 400 AFA of water was acquired from the Tulare Lake Basin Water Storage District in 2003. Together, these transfers have raised Zone 7's current Table A allocation to 80,619 AFA.

In practice, the actual amount of SWP water available to Zone 7 under the Table A allocation process varies from year to year due to hydrologic conditions, water demands of other contractors, existing SWP stored water, SWP facility capacity, and environmental/regulatory requirements.

In July 2015, DWR issued the "State Water Project Final Delivery Capability Report 2015" (2015 Delivery Capability Report). Since 2002, DWR has been publishing 'Delivery Reliability Reports' to provide contractors and other local agencies a single source of the most current data available on SWP delivery reliability that can be used for the development of local plans such as UWMPs. There were notable changes in 2015. First, DWR renamed the report 'Delivery Capability Report'. Second, and more importantly, DWR provided multiple alternatives for the reliability of the SWP under future conditions. Under the 'Early Long-Term' alternative in the 2015 Delivery Capability Report, the SWP's projected long-term average yield is 62 percent of Table A, equivalent to approximately 50,000 AFA for Zone 7.

As a SWP contractor, Zone 7 has the option to store unused Table A water from one year to the next in SWP surface storage facilities (specifically San Luis Reservoir in the case of Zone 7) when there is storage capacity available. This "carryover" water is also called Article 12e or 56c water, in reference to the relevant contract terms. Article 12e water must be taken by March 31 of the following year, but Article 56c water may remain as carryover as long as San Luis Reservoir storage is available. Zone 7 typically maintains between 10,000 to 15,000 acre-feet (AF) of carryover water. The analysis provided in Zone 7's 2015 UWMP assumes Zone 7 carries over 10,000 AF of water each year.

5.2.1.2 Article 21 Water (Interruptible or Surplus Water)

Under Article 21 of Zone 7's contract with DWR, Zone 7 also has access to excess water supply from the SWP that is available only if: (1) it does not interfere with SWP operations or Table A allocations; (2) excess water is available in the Delta; and (3) it will not be stored in the SWP system. Per the 2015 Delivery Capability Report, the projected yield from Article 21 is very low and does not represent a significant water supply for Zone 7.

5.2.1.3 Article 56d Water (Turnback Pool Water)

Article 56d is a contract provision that allows SWP contractors with unused Table A water to sell that water to other SWP contractors via a "turnback pool" administered by DWR on an annual basis. Historically, only a few SWP contractors have been in a position to make turnback pool water available for purchase, particularly in normal or dry years. Over 2013 and 2014, DWR began pilot-testing a Multi-Year Pool Demonstration Program ("Water Pool Program") to evaluate the feasibility of a multi-year water purchase program. The Water Pool Program could conceivably provide an alternative to the turnback pool, providing more incentive to prospective sellers and therefore increasing the amount of water available. In 2015, the Water Pool Program was re-introduced through the end of 2016 at a price more in line with the current market. The program remains on pilot status.

While Zone 7 received 2,500 AF of water from the Water Pool Program in 2013, Zone 7 currently does not anticipate a significant amount of water supply to be reliably available under Article 56d (or its alternative) until there is a resolution to the current Delta crisis.

5.2.1.4 Yuba Accord

In 2007, Zone 7 entered into a contract with DWR to purchase additional water under the Lower Yuba River Accord (Yuba Accord). The original contract expires in 2025, and a number of amendments have been made to the original agreement over the years, including a new pricing agreement executed in 2014.

There are four different types ("Components") of Yuba water available. Zone 7 has the option to purchase Components 2 and 3 water during drought conditions, and Component 4 water when the Yuba County Water Agency has determined that it has water supply available to sell.

Under the Yuba Accord, water is primarily available during dry years, and the amount is relatively small: 400 AF in 2014 and approximately 300 AF in 2015. For planning purposes, Zone 7 currently assumes a long-term average yield under the Yuba Accord of 145 AF annually; in the future, this amount may increase given the new terms as renegotiated in 2014. Any such increase will be reflected in future planning efforts.

5.2.2 Byron Bethany Irrigation District

The Byron Bethany Irrigation District (BBID) diverts water from the Sacramento San Joaquin Delta (Delta) pursuant to a "Notice of Appropriation of Water" dated May 18, 1914. Zone 7 entered into a short-term water transfer demonstration project in 1994 with BBID, which provided a minimum supplemental water supply of 2,000 AFA. This was a five-year agreement with a potential to purchase up to 5,000 AFA. In 1998, Zone 7 and BBID agreed to convert the agreement into a long-term 15-year contract, renewable every five years up to a total of 30 years. The current contract was recently extended through 2030 with an option to extend through 2039. However, in the last few years, BBID, Zone 7, and DWR have been reviewing the potential yield available for Zone 7, and discussing the long-term future of the contract. Furthermore, Zone 7 now expects the available supply under this contract to diminish as BBID's own water demands increase. Until discussions among BBID, DWR, and Zone 7 reach a conclusion, 2,000 AFA of water is assumed to be available under this contract at this time; this amount is similar to the latest BBID transfer approved in 2013 of 2,200 AF.

5.2.3 Local Surface Water Runoff

Zone 7, along with Alameda County Water District (ACWD), has water right permits to divert flows from Arroyo del Valle. Runoff from the Arroyo del Valle watershed above Lake Del Valle is stored in the lake, which is managed by DWR. As noted above, Lake Del Valle is also used to store imported surface water deliveries from the SWP. In late summer/early fall, DWR typically lowers lake levels in anticipation of runoff from winter storm events, and to provide flood control capacity. Water supply in Lake Del Valle is made available to Zone 7 via the SBA through operating agreements with DWR. Inflows to Lake Del Valle, after accounting for permit conditions, are equally divided between ACWD and Zone 7. Zone 7 can store up to about 7,500 AF of its share of Arroyo Valle runoff in the lake; runoff collected in any given year is required to be delivered to Zone 7 by the end of the following year.

5.2.4 Local Storage

Zone 7 has three options for local storage: storage in Lake Del Valle, storage in the local groundwater basin and, in the future, surface storage in the Chain of Lakes. Each of these is described below.

5.2.4.1 Lake Del Valle

As described above, Lake Del Valle is used to store runoff from the Arroyo del Valle watershed above the lake, and also to store imported surface water deliveries from the SWP.

5.2.4.2 Livermore Valley Groundwater Basin

Zone 7 overlies the Livermore Valley Groundwater Basin (Main Basin). The Main Basin is the portion of the Livermore Valley Groundwater Basin that contains high-yielding aquifers and good quality groundwater. It has an estimated storage capacity of about 254,000 AF. DWR has not identified the Main Basin (DWR Basin No. 2-10) as either a basin in overdraft or a basin expected to be in overdraft. Detailed descriptions of the Main Basin are available in Zone 7's Groundwater Management Plan (GMP) and the Zone 7 2015 UWMP.

It should be noted that, for Zone 7, the Basin is considered a storage facility and not a long-term water supply because Zone 7 does not have a groundwater-pumping quota, and only pumps groundwater it has previously artificially recharged using its surface water supplies.

Zone 7 administers oversight of the Main Basin as part of its Groundwater Management Program. As part of its conjunctive use program, Zone 7's policy is to maintain groundwater levels above historic lows in the Main Basin through artificial recharge of SWP water or locally-stored runoff from Arroyo del Valle. Currently, this is accomplished by releasing water to the arroyos for subsequent percolation and replenishment of the aquifers. Zone 7 established historic lows based on the lowest measured groundwater elevations in various wells in the Main Basin; historic lows correspond to a groundwater storage volume of about 128,000 AF. In general, the difference between water surface elevations when the Main Basin is full and water surface elevations when the Main Basin is at historic lows defines Zone 7's operational storage. Operational storage is about 126,000 AF based on Zone 7's experience operating the Main Basin.

Section 5.3 (DSRSD Groundwater Supply) further describes the Livermore Valley Groundwater Basin and Zone 7's Groundwater Management Plan[4] that is used to manage the basin.

5.2.4.3 Chain of Lakes – Lake I and Cope Lake

The Chain of Lakes (COLs) refers to a series of former or active gravel quarry pits that have been or will be transferred to Zone 7 for water resources applications. These might include surface storage of stormwater or other local runoff, surface storage of water from the SWP, and/or use as groundwater recharge basins once mining has lakes are named Cope Lake and Lakes A through I.

[4] Groundwater Management Plan for Livermore-Amador Valley Groundwater Basin, prepared for Zone 7 Water Agency, prepared by Jones & Stokes, September 2005.

The COLs will ultimately cover approximately 1,500 acres and have 150,000 AF of total storage volume; 31,000 AF is estimated to be available for operational storage. Zone 7 currently only owns Cope Lake and Lake I. Zone 7 expects to take ownership of Lakes A and H sometime within the next five years; however, the availability of Lakes B through G may extend well beyond 2030, and may be as late as 2060.

5.2.5 Non-Local Storage

In addition to local storage, Zone 7 also participates in the two non-local (also called "out of basin") groundwater banking programs described below; both banks are located in Kern County. Note that while these banking programs provide a water source during drought years, they represent water previously stored from Zone 7's surface water supplies during wet years. Therefore, they do not have a net contribution to Zone 7's water supply over the long term and in fact result in some operational losses as described below. Furthermore, this banked water supply is only available when the SBA is operational.

5.2.5.1 Semitropic Water Storage District

Zone 7 originally acquired a storage capacity of 65,000 AF in the Semitropic Water Storage District (Semitropic) groundwater banking program in 1998. Subsequently, Zone 7 agreed to participate in Semitropic's Stored Water Recovery Unit, which increased pumpback capacity and allowed Zone 7 to contractually store an additional 13,000 AF. Zone 7 currently has a total of 78,000 AF of groundwater banking storage available to augment water supplies during drought conditions. During non-drought periods, Zone 7 can store up to 5,883 AFA into the Semitropic groundwater bank. Note that a 10 percent loss is associated with water put into Semitropic. During a drought year, Zone 7 has the ability to request up to 9,100 AF of pumpback and any amount between 0 to 8,645 AF of exchange water; the availability of exchange water depends on projected SWP allocation. Pumpback is water that is pumped out of the Semitropic aquifer and into the SWP system. Exchange water is water that is transferred between Zone 7 and Semitropic by adjusting the amounts of Table A water allocated between Zone 7 and Semitropic. During the recent drought, Zone 7 was able to recover 9,900 AF in 2014 and about 12,500 AF in 2015. The agreement is in effect through December 31, 2035.

5.2.5.2 Cawelo Water District

Similar to the arrangements with Semitropic, Zone 7 has 120,000 AF of groundwater banking storage available with the Cawelo Water District, as executed in an agreement in 2006. During non-drought periods, Zone 7 can store up to 5,000 AFA in the bank. During droughts, Zone 7 has the ability to request up to 10,000 AFA of pumpback (or exchange water) from Cawelo. During the recent drought, Zone 7 was able to recover 9,700 AF, delivered evenly over 2014 and 2015; most of this water was used directly, while the rest was stored in San Luis Reservoir for future use. The agreement is in effect through December 31, 2035.

5.3 DSRSD Groundwater Supply

This section describes the Livermore Valley Groundwater Basin and Zone 7's Groundwater Management Plan[5] that is used to manage the basin. Each year, Zone 7 prepares an Annual Report for the Groundwater Management Program.

DSRSD does not itself extract groundwater as a water supply. By contract, Zone 7 conducts this groundwater pumping operation as part of providing water supply services to DSRSD. This groundwater supply is then blended with water from Zone 7's other water supply sources and delivered to DSRSD. In accordance with their water supply agreement, Zone 7 pumps DSRSD's groundwater supply from the Livermore Valley Main Groundwater Basin, as described in Section 5.2.4.2.

DSRSD's groundwater resource is described below.

5.3.1 DSRSD Groundwater Pumping Quota

DSRSD, the City of Pleasanton, the City of Livermore, and Cal Water Livermore District, through agreements with Zone 7, have mutually agreed to limit their extraction from the Main Basin to a combined quantity of approximately 7,200 AFA, about 54 percent of the long-term sustainable yield of the Main Basin. This agreement, along with Zone 7's other groundwater management activities, keeps the groundwater budget essentially in balance under average hydrologic conditions. Each of these retailers has a groundwater pumping quota (known as their GPQ). DSRSD's GPQ is 645 AFA. In accordance with its agreement with Zone 7, DSRSD may obtain groundwater in excess of its GPQ if it pays a recharge fee to Zone 7.

Currently, the DSRSD groundwater supply (GPQ) is pumped by Zone 7 for DSRSD from a Zone 7 installed well in the Mocho well field, Mocho No. 4. This well was constructed on DSRSD property (previously Parks RFTA property) under a 2002 agreement between DSRSD and Zone 7 whereby DSRSD provided Zone 7 with access, Zone 7 paid all of the costs for the well, pump and building, and DSRSD has the annual option of requesting that Zone 7 pump and provide DSRSD's GPQ at a cost of only power, chemical and some other incidental charges. Groundwater from Mocho No. 4 is blended with water from other Zone 7 water supplies and is delivered to DSRSD to meet its total water demand.

In addition to groundwater from the Main Basin, DSRSD may extract water in addition to the 645 AFA Main Basin groundwater pumping quota (GPQ) from areas outside the Main Basin (the fringe subbasin). Water can be pumped from the Fringe Basin as long as this groundwater extraction does not have adverse effects on the Main Basin. In the past, DSRSD pumped water from the fringe subbasin when it owned wells along Dublin Boulevard. However, pumping from the fringe subbasin was abandoned in 1980 due to water quality issues and pumping costs.

[5] Groundwater Management Plan for Livermore-Amador Valley Groundwater Basin, prepared for Zone 7 Water Agency, prepared by Jones & Stokes, September 2005. (http://www.water.ca.gov/urbanwatermanagement/2005uwmps/AlamedaZone7/GMP%202005%20Submittal%20-%20Complete.pdf)

5.3.2 Historical and Projected Future Pumpage

As described above, DSRSD has a GPQ of 645 AFA in the Livermore Valley Main Groundwater Basin (Main Basin), which Zone 7 pumps on DSRSD's behalf as part of its water contract. Therefore, DSRSD itself does not pump any groundwater. DSRSD's GPQ is included in the purchased Zone 7 supply.

5.3.3 Groundwater Basin Description

As defined in DWR Bulletin 118 Update 2003 (California's Groundwater), the Livermore Valley Groundwater Basin (DWR Basin 2-10) extends from the Pleasanton Ridge east to the Altamont Hills and from the Livermore Uplands north to the Tassajara Uplands. Surface drainage features include Arroyo del Valle, Arroyo Mocho, and Arroyo Las Positas as principal streams, with Alamo Creek, South San Ramon Creek, and Tassajara Creek as minor streams. All streams converge on the west side of the basin to form Arroyo de la Laguna, flowing south and joining Alameda Creek in Sunol Valley, and ultimately draining to the San Francisco Bay. Some geologic structures restrict the lateral movement of groundwater, but the general groundwater gradient is from east to west, towards Arroyo de la Laguna, and from north to south along South San Ramon Creek and Arroyo de la Laguna.

The entire floor of the Livermore Valley and portions of the upland areas on all sides of the valley overlie groundwater-bearing materials. The materials are mostly continental deposits from alluvial fans, outwash plains, and lakes. They include valley-fill materials, the Livermore Formation, and the Tassajara Formation. Under most conditions, the valley-fill and Livermore Formation yield adequate to large quantities of groundwater to all types of wells, with the larger supply wells being located in the Main Basin. The Main Basin is composed of the Castle, Bernal, Amador, and Mocho 2 sub-basins.

5.3.4 Groundwater Quantity

Zone 7 routinely monitors groundwater levels within the Main Basin. Two independent methods are used to estimate groundwater storage: (1) Hydrologic Inventory; and (2) Nodal Groundwater Elevation. The Main Basin is estimated to have a total storage capacity of 254,000 AF, of which approximately 126,000 AF are available for Zone 7 operational storage. Zone 7's goal is to maintain 128,000 AF of groundwater in storage at all times, as discussed below.

5.3.4.1 Artificial Recharge

Before the construction of the SWP in the early 1960s, groundwater was the sole water source for the Livermore-Amador Valley. This resource has gone through several periods of extended withdrawal and subsequent recovery. In the 1960s, when approximately 110,000 AF of groundwater was extracted, the Main Basin reached its historic low of 128,000 AF. The Main Basin was allowed to recover from 1962 to 1983. It was during this era that Zone 7 first conducted a program of groundwater replenishment by recharging imported surface water via its streams ("in-stream recharge") for storage in the Main Basin, began supplying treated surface water to customers to augment groundwater supplies, and began regulating municipal pumping by contractually establishing GPQ as discussed further below.

Zone 7's operational policy is to maintain the balance between the combination of natural and artificial recharge and withdrawal. This ensures that groundwater levels do not drop below the historic level of 128,000 AF.

5.3.4.2 Current Sustainable Yield and Groundwater Pumping Quotas

Long-term natural sustainable yield is contractually defined as the average amount of groundwater annually replenished by natural recharge in the Main Basin (through percolation of rainfall, natural stream flow, and irrigation waters, and inflow of subsurface waters) and which can therefore be pumped without lowering the long-term average groundwater volume in storage. In contrast, "artificial recharge" is the aquifer replenishment that occurs from artificially induced or enhanced stream flow, as described in the previous section. With artificial recharge, more groundwater can be sustainably extracted from the Main Basin each year.

The natural sustainable yield of the Main Basin has been determined to be about 13,400 AFA, which is about 11 percent of the operational storage. This long-term natural sustainable yield is based on over a century of hydrologic records and projections of future recharge conditions. Based on this sustainable yield value, DSRSD, the City of Pleasanton, the City of Livermore, and Cal Water Livermore District (collectively referred to as the Retailers) are permitted to pump 7,245 AFA. Each retailer has an established "Groundwater Pumping Quota" (GPQ), formerly referred to as the "Independent Quota" in the original Municipal and Industrial water supply contract between Zone 7 and each retailer. The City of Pleasanton and Cal Water Livermore District pump their own GPQ; they are also permitted to pump groundwater in excess of their GPQ under a recharge fee paid to Zone 7. This fee covers the cost of importing and recharging additional water into the Main Basin. Zone 7 pumps DSRSD's GPQ. The City of Livermore has not had any groundwater pumping capability for the last five to six years, and has therefore not pumped their GPQ over this time period.

Zone 7's groundwater extraction for its treated water system does not use the natural sustainable yield from the Main Basin; instead, Zone 7 pumps only water that has been previously recharged as part of its artificial recharge program using its surface water supplies. During high demands, groundwater is used to supplement surface water supply delivered via the SBA and treated at one of the Zone 7's two surface water treatment facilities. Groundwater is also used when the SBA is out of service due to maintenance and improvements or when Zone 7's surface water treatment plants are operating under reduced capacity due to construction, repairs, *etc*. Finally, Zone 7 uses its stored groundwater (both local and non-local) under emergency or drought conditions, when there may be insufficient surface water supply available. Zone 7 also pumps groundwater out of the Main Basin during normal water years to help reduce the salt loading in the Main Basin. To achieve additional salt removal, a demineralization facility has been in operation since 2009. Zone 7 plans to recharge 9,200 AFA on average, which means that Zone 7 can pump an equivalent 9,200 AFA on average from the Main Basin.

5.3.5 Groundwater Quality

In general, the Main Basin is characterized by relatively good quality groundwater that meets all state and federal drinking water standards. The pumped groundwater is chloraminated simply to match the disinfectant residual in the distribution system. However, there has been a slow degradation of groundwater quality as evidenced by rising Total Dissolved Solids (TDS) and

hardness levels over the last few decades. To address this problem, Zone 7 developed a Salt Management Plan (SMP), which was approved by the Regional Water Quality Control Board in 2004 as a condition of the Master Waste Reuse Permit and incorporated into Zone 7's GMP in 2005.

Zone 7 implements a wastewater and recycled water monitoring program as part of the GMP. In 2014, about 27 percent of the recycled water produced in the service area was applied to landscapes over the Main Basin. Nitrates and salinity have historically been the primary water quality parameters of concern in recycled water, but nitrates have become less of a concern since 1995 when the City of Livermore Water Reclamation Plant (which, along with DSRSD, is one of the two largest wastewater agencies in the area) stopped nitrifying its effluent. In 2015, Zone 7 completed a Nutrient Management Plan which provides an assessment of the existing and future groundwater nutrient concentrations relative to the current and planned expansion of recycled water projects and future developments in the Livermore Valley. The Nutrient Management Plan also presents planned actions for addressing positive nutrient loads and high groundwater nitrate concentrations in localized Areas of Concern where the use of onsite wastewater treatment systems (i.e., septic tank systems) is the predominant method for sewage disposal. The Nutrient Management Plan was prepared as a supplement to the SMP; together, they are a Salt and Nutrient Management Plan and have been incorporated into the GMP.

To further manage the water quality in the Main Basin, Zone 7 also runs a Toxic Site Surveillance Program, documenting and tracking sites across the groundwater basin that pose a potential threat to drinking water supplies. Zone 7 works closely with the Regional Water Quality Control Board and Alameda County Environmental Health in these efforts. In general, there are two types of contamination threatening the Livermore Valley Groundwater Basin: petroleum-based fuel products and industrial chemical contaminants. In 2014, Zone 7 tracked the progress of 53 sites where groundwater contamination has been detected or contamination is threatening groundwater. More details on the affected sites and their remediation can be found in the Zone 7's *Annual Report for the Groundwater Management Program*.

5.4 Recycled Water

DSRSD currently treats and distributes recycled water to water customers in its service area. Recycled water is produced from DSRSD's regional wastewater treatment facilities.

DSRSD began its recycled water program in the early 1990's by adopting Resolution No. 42-92 in August 1992. The resolution set priorities and policies for the use and promotion of recycled water service within and outside DSRSD's water service area. The policies were intended to assist DSRSD achieve the following objectives:

- Promote, produce, sell and deliver recycled water to retail and wholesale customers;
- Manage the San Ramon Valley Recycled Water Program on an equitable and self-supporting basis;
- Work with others to develop ordinances and guidelines to encourage the use of recycled water;

- Develop local regulations and standards to ensure the safe and beneficial use of recycled water; and
- Conduct public information and customer service programs to ensure that the public has an appropriate understanding of recycled water, including the benefits of using recycled water.

DSRSD then adopted the "Water Recycling Business Plan Framework" in 1993, to establish the DSRSD Recycled Water Enterprise. Since that time, recycled water has been an important part of water planning at DSRSD. In that same year, the City of Dublin certified an EIR for the *Eastern Dublin General Plan Amendment and Specific Plan*. The DSRSD service plan for eastern Dublin is predicated upon the use of recycled water for landscape irrigation as summarized in the EIR and subsequent annexation documentation. Potable water supply requests to Zone 7 by DSRSD for Eastern Dublin under the "Contract between Zone 7 and DSRSD for a Municipal & Industrial Water Supply," are the net of the eastern Dublin total water demands less the recycled water to be provided by DSRSD.

DSRSD and EBMUD formed a joint powers authority, the DERWA, in 1995. DERWA's mission is to provide a safe, reliable, and consistent supply of recycled water, and to maximize the amount of recycled water delivered for non-potable use. DERWA operates the SRVRWP, a multi-phased project to supply recycled water from DSRSD's RWTF to portions of DSRSD's and EBMUD's service areas.

In 1995, DSRSD became committed to also providing recycled water to Dougherty Valley. The DSRSD service plan for Dougherty Valley is also predicated upon the use of recycled water for landscape irrigation. The amount of potable water purchased for Dougherty Valley is the net of the Dougherty Valley total water demands less the recycled water to be provided by DSRSD.

In April 1998, DSRSD adopted Ordinance No. 280 which established a Recycled Water Use Zone within DSRSD's service area, consisting of all areas then receiving potable water services and those additional areas designated for such service. In April 2004, this ordinance was repealed and replaced by Ordinance No. 301 which formally established the rules and regulations governing the use of recycled water within DSRSD's service area. In November 2010, when DSRSD recodified its code, DSRSD incorporated Ordinance No. 301 into the DSRSD Code and added DSRSD Code Section 3.20.110, Duty to connect—Recycled water, which requires that new development in DSRSD's water service area connect to recycled water for appropriate irrigation uses. DSRSD also adopted a policy (Policy P300-10-3) regarding the provision of recycled water service both within and outside the District (included in Appendix H).

As shown in Table 4-2, the projected recycled water demand within DSRSD's service area is estimated to be about 4,200 AFA by 2030.

The current capacity of DSRSD treatment facilities for recycled water production and delivery to both DSRSD and EBMUD is 12.7 mgd, the combined capacity of the RWTF's SFUV (9.7 mgd) and MFUV (3.0 mgd) facilities. Currently, the recycled water treatment facilities are undergoing a Phase 2 expansion to increase the SFUV capacity to 16.2 mgd. The Phase 2 expansion of the recycled water facilities is anticipated to be completed in Fall 2018.

The availability of source water supply currently limits production of recycled water. In 2008, the SRVRWP's peak day demand for recycled water exceeded the amount of secondary effluent collected from the DSRSD wastewater collection system. DSRSD entered into an agreement with the City of Pleasanton in 2002, which was most recently amended in January 2014, allowing utilization of secondary effluent collected from the Pleasanton wastewater collection system. With the most recent amendment, DSRSD shall have the right to utilize any secondary effluent from the City not being used or needed for the production of recycled water for use or delivery by the City's Recycled Water Program. The District is working on alternatives and seeking partnerships with adjacent agencies to increase its source water supply.

5.5 Summary of Current and Projected Future Water Supplies

Table 5-1 provides a summary of DSRSD's current and projected future water supplies.

Table 5-1. DSRSD Current and Projected Future Water Supplies

Water Source	2015, Actual[a]	2020[b]	2025[b]	2030[b]	2035[b]	2040[b]
Water Purchased from Zone 7, AFA	7,445	13,678	14,554	15,223	15,840	15,840
Recycled Water, AFA	2,579	3,905	4,117	4,203	4,203	4,203
Total, AFA	10,024	17,583	18,671	19,426	20,043	20,043

[a] Actual 2015 supplies are from Table 6-11 of the DSRSD 2015 UWMP (June 2016). Includes the DSRSD GPQ of 645 AFA.
[b] Projected supplies are from Table 6-9 of the DSRSD 2015 UWMP (June 2016). Includes the DSRSD GPQ of 645 AFA.

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6.0 WATER SUPPLY RELIABILITY

10910 (c)(4) address "total projected water supplies available…during normal, single dry, and multiple dry water years during a 20-year projection…"

6.1 Potable Water Supply Reliability

6.1.1 Zone 7 Reliability Policy for Municipal & Industrial Water Supplies

The current reliability of DSRSD's potable water supply is largely dependent upon its water supply contract with Zone 7 and Zone 7's water supply reliability policy. On October 17, 2012, the Zone 7 Board of Directors approved a revised Water Supply Reliability Policy, which adopts the following level of service goals to guide the management of Zone 7's treated water supplies as well as its Capital Improvement Program (CIP):

- **Goal 1:** Zone 7 will meet its treated water customers' water supply needs, in accordance with Zone 7's most current Contracts for M&I Water Supply, including existing and projected demands as specified in Zone 7's most recent UWMP, during normal, average, and drought conditions, as follows:
  - At least 85 percent of M&I water demands 99 percent of the time
  - 100 percent of M&I water demands 90 percent of the time
- **Goal 2**: Provide sufficient treated water production capacity and infrastructure to meet at least 80 percent of the maximum month M&I contractual demands should any one of Zone 7's major supply, production, or transmission facilities experience an extended unplanned outage of at least one week.

This revised reliability policy provides Zone 7 with the additional flexibility and time necessary to evaluate, develop and implement cost-effective solutions necessary to allow Zone 7 to continue to provide a reliable, high-quality water supply to its customers in the face of an uncertain water supply future. Changing the second goal to reflect a prolonged outage based on the maximum month instead of the maximum day should allow Zone 7 to develop more cost-effective solutions to major, prolonged outages, while also providing the time necessary to communicate with and obtain a response from its customers.

6.1.2 Zone 7 Water Supply Reliability

The treated potable water that DSRSD receives from Zone 7 is blended from various sources. It meets all Federal and State drinking water requirements. The quality of water delivered to DSRSD depends on the blend of supplies available to Zone 7.

Table 6-1 lists the years that Zone 7 identifies as their historical average, single driest year, and driest multi-year period, also known as the "Base Years." Table 6-2 summarizes the volume of water supply expected by source and the total percentage of water supply expected if there were to be a repeat of the hydrology of that type of year. The water year basis varies depending on the water source; explanatory details are included in Section 7.2 of Zone 7's 2015 UWMP, along with historical percentages of normal delivery.

Table 6-1. Basis of Water Year Data for Various Zone 7 Water Supplies[(a)]

Water Source	Average Year	Single Dry Year	Multiple-Dry Year		
			Year 1	Year 2	Year 3
Arroyo del Valle	1919	1977	1988	1989	1990
SWP - Table A	1964	2014	1990	1991	1992
SWP - Carryover	1964	2014	1990	1991	1992
SWP - Yuba Accord	1964	2014	1990	1991	1992
BBID	1964	2015	1990	1991	1992
From Storage					
Main Basin	1964	2014	1990	1991	1992
Semitropic	1964	2014	1990	1991	1992
Cawelo	1964	2014	1990	1991	1992

[(a)] Source: Zone 7 2015 UWMP, Tables 7-1 through 7-8.

In DSRSD's 2015 UWMP, projected Normal Year supplies are assumed to satisfy DSRSD's projected Normal Year demands. However, as shown in Table 6-2, purchased supplies from Zone 7 may be subject to reductions during dry years. In DSRSD's 2015 UWMP, and this WSA, DSRSD's purchased supplies from Zone 7 during dry years assume the following supply reductions:

- During Single Dry Years, purchased supplies from Zone 7 are assumed to be 75 percent of Normal Year supplies (25 percent reduction in supplies); and
- During Multiple Dry Years, purchased supplies from Zone 7 are assumed to be 85 percent of Normal Year supplies (15 percent reduction in supplies).

Table 6-3 shows DSRSD's projected supplies from Zone 7 during dry years based on the assumptions in DSRSD's 2015 UWMP.

Table 6-2. Zone 7's Potable Water Supply Reliability[a]

Water Source	Average Year	Single Dry Year	Multiple-Dry Year		
			Year 1	Year 2	Year 3
Arroyo del Valle, AFA	7,300-10,300	0	350	520	150
SWP - Table A, AFA	50,000	4,000	21,800	12,900	19,300
SWP – Carryover, AFA	10,000	10,000	10,000	10,000	10,000
SWP - Yuba Accord, AFA	145	676	676	676	676
BBID, AFA	2,000	0	2,000	2,000	2,000
From Storage					
Main Basin, AFA	9,200	28,000-34,400	12,400	16,100	13,500
Semitropic, AFA	0	7,200	10,400	9,100	9,100
Cawelo, AFA	0	7,800	10,000	10,000	10,000
Total	78,645	57,676	67,626	61,296	64,726
Percent of Average Supply		73.3%	86.0%	77.9%	82.3%

[a] Source: Zone 7 2015 UWMP, Table 7-11

Table 6-3. Projected DSRSD Supplies from Zone 7 During Dry Years

Hydrologic Condition	% of Normal Year	2020	2025	2030	2035	2040
Single Dry Year, AFA[a]	75	10,258	10,915	11,417	11,880	11,880
Multiple Dry Year, AFA[b]	85	11,626	12,371	12,939	13,464	13,464

[a] Based on DSRSD's 2015 UWMP (June 2016), Table 7-5.
[b] Based on DSRSD's 2015 UWMP (June 2016), Tables 7-8 and 7-10.

The following sections discuss the reliability of Zone 7's water supply sources and Zone 7's strategies for managing the risks associated with each supply. The descriptions provided below have been taken, for the most part, from Zone 7's 2015 UWMP, which was adopted in March 2016.

6.1.2.1 Imported Water: State Water Project

Imported surface water from the SWP is by far Zone 7's largest water source, providing over 80 percent of the treated water supplied to retail customers. Much of this imported surface water is derived from the Feather River watershed, in the northern part of California, and ultimately flows through the Delta before it is conveyed by the California Aqueduct and the SBA to Zone 7's water facilities. Zone 7's other imported surface water supply, BBID, is also diverted from the Delta and provides water to Zone 7 via the SBA.

The instability of the aging levees in the Delta (including their vulnerability to seismic events and climate change), regulatory uncertainty, water quality issues including saltwater intrusion, and the declining health of the Delta ecosystem all challenge the long-term reliability of the SWP and, more generally, the water conveyance capability of the Delta.

There are some important water quality considerations associated with the water that is conveyed through the Delta. In 1982, DWR formed the Interagency Delta Health Aspects Monitoring Program to monitor water quality in the Delta for human health protection. The program was renamed the Municipal Water Quality Investigations Program (MWQI Program) in 1990. From a municipal water supply perspective, water quality issues in the Delta are associated with salinity from seawater intrusion; wastewater effluent discharges; agricultural drainages from the islands; and recreational activities. Water quality issues of specific concern to Zone 7 include the following:

- Algal byproducts – Parameters of concern include components that cause taste and odor (T&O) and algal toxins. T&O is primarily a problem in the warmer months, when algal blooms may be present. It can affect supplies from the Delta and from Lake Del Valle. Algae produce geosmin and 2 methylisoborneol (MIB), which are key taste and odor causing compounds in surface water supply. Zone 7 currently treats T&O using powdered activated carbon (PAC), which is of limited effectiveness under high levels of algal byproducts. Adding ozonation, which is a more effective treatment process, is in Zone 7's CIP, see below. A switch to groundwater supplies may be necessary under high levels of algal byproducts in surface water.
- Total and Dissolved Organic Carbon (TOC/DOC) – Levels of organic carbon affect the amounts of coagulant and disinfectant chemicals used at Zone 7's water treatment plants (WTPs), and therefore result in higher costs. In addition, the formation of disinfectant byproducts (DBPS) is dependent upon the amount of TOC/DOC. Zone 7's WTPs have been able to manage high TOC/DOC by increasing coagulant dosages. However, this operational change results in greater sludge production and limits plant production. Ozone will reduce coagulant and chlorine demands, thus reducing typical chlorination DBPs, but will create other ozonation DBPs such as bromate.
- Turbidity – Like TOC/DOC, turbidity affects the amounts of chemicals used at the WTPs and Zone 7's ability to meet drinking water standards. It also can affect the production capacities of Zone 7's WTPs, requiring increased groundwater production under high demands. Planned ozonation facilities can help address settled water turbidity and reduce impacts on WTP production.
- Salinity or Total Dissolved Solids (TDS) – Salinity is a water quality parameter that has significant impacts on SWP operations and the availability of water. To meet the salinity objectives in the Delta, water exports from the Delta may be restricted, reducing the amount of water supply available during certain times of the year.
- Algal Blooms – In addition to T&O and the threat of algal toxins, algal blooms can significantly impact the performance of the filters through clogging, reducing plant production capacities, and requiring additional groundwater use.

Zone 7 plans to install ozonation facilities at DVWTP in 2019 and at PPWTP in 2020. These facilities will provide improved treatment of T&O, TOC/DOC, turbidity, and algal blooms. The facilities are expected to result in more reliable production capacities from the surface water treatment plants.

To protect water quality once the water from the Delta reaches the SBA, recipients of water from the SBA (ACWD, Santa Clara Valley Water District, and Zone 7, known collectively as the SBA Contractors) developed the SBA Watershed Protection Program Plan in 2008. The SBA Watershed Protection Program Plan is designed to protect the SBA system, including Lake Del Valle and Bethany Reservoir, from identified potential contaminant sources (e.g., septic tanks) for urban water supply purposes, as well as agricultural, recreational, and environmental uses.

6.1.2.2 Local Storage

Zone 7 has three options for local storage: storage in Lake Del Valle, storage in the Main Basin and, in the future, surface storage in the COL. The COL will also continue to be used for groundwater recharge.

The Main Basin is characterized by relatively good quality groundwater that meets all state and federal drinking water standards. Groundwater is chloraminated to maintain consistent disinfectant residual in the distribution system and to preserve delivered water quality. However, there has been a slow degradation of groundwater quality as evidenced by rising TDS and hardness levels over the last few decades. To address this problem, Zone 7 developed a SMP, which was approved by the RWQCB in 2004. As part of this SMP, Zone 7 completed construction of a wellhead demineralization facility in 2009.

The key constraint on the use of the COL for storage is the duration of the mining activities, which affects when the remainder of the COL will be transferred to Zone 7 ownership and how much storage is available over time. According to Zone 7's Water Supply Evaluation Update, Lake H is anticipated to be available in the next few years; however, the availability of Lakes A through G may extend well beyond 2030, and may be as late as 2060. Zone 7 continues to work closely with mining companies and quarry operators so planning efforts can be coordinated.

6.1.2.3 Non-Local Storage

In addition to local storage, Zone 7 also has storage contracts with two non-local groundwater banking districts in Kern County: Semitropic and Cawelo. There must be sufficient water flowing through the Delta to facilitate these exchanges, which could be a challenging condition to meet during a drought.

During the recent drought, access to banked water became uncertain because of the historically low Table A allocation, leading to minimal amounts of water moving through the SWP, and the potential cessation of pumping in the Delta to control salinity intrusion. Ultimately, DWR was able to manage salinity so that pumping in the Delta could continue, and with coordination among Zone 7, other SWP contractors, DWR, and banking partners, DWR prioritized the delivery of banked water to Zone 7 and other SBA contractors. Even during the serious drought conditions of 2014 and the minimal 5 percent SWP allocation, Zone 7 was able to successfully recover almost 15,000 AF, or approximately 78 percent of the maximum recovery requested by

Zone 7. In 2015, Zone 7 recovered 17,400 AF from storage. Zone 7 will continue to coordinate closely with DWR, other SWP contractors, Semitropic, and Cawelo to ensure the future reliability of the banked water supplies.

Some of Semitropic's wells are affected by arsenic. This is currently being managed through treatment before the affected groundwater water is pumped into the California Aqueduct. Arsenic criteria have been established for this "pump in" by the DWR Facilitation Group to mitigate any impacts to the downstream SWP contractors. Semitropic and the banking partners have developed a coordination process for discussing arsenic treatment. While the presence of arsenic in the Semitropic groundwater bank is likely to increase the cost of this water storage option, it is not likely to affect its overall reliability.

6.2 Recycled Water Supply Reliability

Reliability and vulnerability of DSRSD's recycled water supply are related to seasonal fluctuations in production of wastewater in DSRSD's service area, and are not generally subject to climatic fluctuations[6]. Wastewater collection volume is subject to seasonal variations; for example, during the dry season, wastewater discharge is low but recycled water demands are high. The availability of source water supply currently limits DSRSD's production of recycled water, but these challenges are not insurmountable. As discussed in Section 5.4 of this WSA, DSRSD is pursuing various alternatives to resolve these limitations.

Recycled water is proposed for use for the Proposed Project, and will be used if available. However, if available recycled water supplies are insufficient to meet the irrigation demands for the Proposed Project, the irrigation demands for the Proposed Project can also be met with potable water through the potable water offset.

[6] During a drought, wastewater flows may drop slightly due to reduced potable water use. DSRSD estimates that a 10 to 15 percent reduction in potable water use results in about a 1 to 1.5 percent reduction in wastewater flows. In the future, DSRSD may manage recycled water supplies by implementing recycled water demand management measures during single dry and multiple dry years.

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

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.

10911 (a) If, as a result of its assessment, the public water system concludes that its water supplies are, or will be, insufficient, the public water system shall provide to the city or county its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies.

7.1 Potable Water Supply Sufficiency

Pursuant to Water Code section 10910(c)(4), and based on the technical analyses described in this WSA, DSRSD 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. As described above, the projected potable water demands for the Proposed Project are accounted for in DSRSD's 2015 UWMP.

As discussed in this WSA, Zone 7 is DSRSD's sole potable water supplier and Zone 7 is aggressively planning for water supply programs and projects to meet the water demands of its customers through buildout of adopted general plans. According to Zone 7's 2015 UWMP, Zone 7 does not anticipate any water supply shortage during Normal, Single Dry, and Multiple Dry water years through 2035.

Table 7-1 summarizes the projected availability of DSRSD's existing and planned future potable water supplies and DSRSD's projected water demands in Normal, Single Dry and Multiple Dry years through 2040. As shown in Table 7-1, water demand within DSRSD's water service area is not expected to exceed the DSRSD's water supplies during Normal, Single Dry, and Multiple Dry water years between 2020 and 2040.

DSRSD plans to continue to manage potable water demands within its water service area through conservation efforts and its recycled water program. If water shortages should occur, DSRSD may have to invoke its *Water Shortage Contingency and Drought Plan*, described in its 2015 UWMP.

Table 7-1. DSRSD Summary of Potable Water Demand Versus Supply During Hydrologic Normal, Single Dry, and Multiple Dry Years

Hydrologic Condition		Supply and Demand Comparison, AFA				
		2020	2025	2030	2035	2040
Normal Year						
Available Potable Water Supply[(a)]		13,678	14,554	15,223	15,840	15,840
Total Potable Water Demand[(b)]		13,678	14,554	15,223	15,840	15,840
Potential Surplus (Deficit)		0	0	0	0	0
Percent Shortfall of Demand		-	-	-	-	-
Single Dry Year						
Available Potable Water Supply[(c)]		10,258	10,915	11,417	11,880	11,880
Total Potable Water Demand[(d)]		10,258	10,915	11,417	11,880	11,880
Potential Surplus (Deficit)		0	0	0	0	0
Percent Shortfall of Demand		-	-	-	-	-
Multiple Dry Years						
Multiple-Dry Year 1	Available Potable Water Supply[(c)]	11,626	12,371	12,939	13,464	13,464
	Total Potable Water Demand[(e)]	11,626	12,371	12,939	13,464	13,464
	Potential Surplus (Deficit)	0	0	0	0	0
	Percent Shortfall of Demand	-	-	-	-	-
Multiple-Dry Year 2	Available Potable Water Supply[(c)]	11,626	12,371	12,939	13,464	13,464
	Total Potable Water Demand[(e)]	11,626	12,371	12,939	13,464	13,464
	Potential Surplus (Deficit)	0	0	0	0	0
	Percent Shortfall of Demand	-	-	-	-	-
Multiple-Dry Year 3	Available Potable Water Supply[(c)]	11,626	12,371	12,939	13,464	13,464
	Total Potable Water Demand[(e)]	11,626	12,371	12,939	13,464	13,464
	Potential Surplus (Deficit)	0	0	0	0	0
	Percent Shortfall of Demand	-	-	-	-	-

(a) From Table 5-1 of this WSA.
(b) From Table 4-2 of this WSA.
(c) From Table 6-3 of this WSA.
(d) From Table 4-3 of this WSA.
(e) From Table 4-4 of this WSA.

7.2 Recycled Water Supply Sufficiency

As described in this WSA, approximately 28 AFA (Normal Year demand) of recycled water is needed to meet the landscape irrigation demands at buildout of the Proposed Project. Recycled water is proposed to be used for the Proposed Project; however, if available recycled water supplies are insufficient to meet the irrigation demands for the Proposed Project due to current source water supply issues, the irrigation demands for the Proposed Project can also be met with potable water through the potable water offset described in this WSA during Normal, Single Dry, and Multiple Dry water years for a 20-year projection with no water supply shortage.

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8.0 VERIFICATION OF SUFFICIENT WATER SUPPLY BASED ON THE REQUIREMENTS OF SB 221

The Proposed Project, with up to 670 residential dwelling units, is also subject to the requirements of SB 221 (Government Code section 66473.7). SB 221 applies to residential development projects of more than 500 dwelling units (such as the Proposed Project) and requires that the water supplier (DSRSD) provide a written verification that the water supply for the Proposed Project is sufficient.

Verification must demonstrate supply sufficiency by showing that water supplies available during Normal, Single Dry and Multiple Dry years within a 20-year projection will meet the projected demand associated with the Proposed Project, in addition to existing and planned future uses, including, but not limited to, agriculture and industrial uses. Per the requirements of SB 221, the following must be considered:

- Historical water deliveries for the previous 20 years;
- Urban water shortage contingency analysis prepared for the UWMP;
- Supply reduction for specific water use sectors; and
- Amount of water expected from specified supply projects.

The DSRSD 2015 UWMP and this WSA for the Proposed Project provide the documentation required to comply with SB 221 and demonstrate that DSRSD's supplies are sufficient to meet the projected demand associated with the Proposed Project, in addition to existing and planned future uses, including, but not limited to, agriculture and industrial uses. The specific considerations to be evaluated for the SB 221 verification are described below and reference applicable sections of the DSRSD 2015 UWMP and this WSA.

8.1 Historical Water Deliveries

DSRSD's water supplies are described in Section 5.0 of this WSA and Chapter 6 of the DSRSD 2015 UWMP. Table 8-1 presents DSRSD's historical use of these supplies over the past 20 years. The use of these supplies will continue into the future, as described in Section 5.0 of this WSA, and as shown in Table 5-1 of this WSA.

Table 8-1. DSRSD Historical Water Supplies

Water Source	1995	2000	2005	2010	2015
Water Purchased from Zone 7 Water Agency, AFA[(a)]	3,409	6,724	9,489	8,619	6,800
Groundwater Pumped by Zone 7 on DSRSD's Behalf, AFA[(a)]	645	645	645	645	645
DSRSD Recycled Water, AFA[(a,b)]	0	34	888	1,729	2,579
Total, AFA	4,054	7,403	11,022	10,993	10,024

(a) Table 6-1, DSRSD 2005 UWMP and Table 4-1, Table 6-11, DSRSD 2015 UWMP.
(b) DSRSD recycled water does not include recycled water sales to other water agencies.

The availability and historical and projected use of groundwater supplies is described in Section 5.3 of this WSA. As described, DSRSD does not itself extract groundwater as a water supply. In accordance with the DSRSD water supply agreement with Zone 7, Zone 7 pumps DSRSD's groundwater supply (based on DSRSD's GPQ) from local storage, and this groundwater supply is then blended with water from Zone 7's other water supply sources and delivered to DSRSD.

Water supply availability and reliability during Normal, Single Dry and Multiple Dry years is described in Section 6.0 of this WSA.

8.2 Projected Water Demand by Customer Sector

Projected potable and recycled water demands in the DSRSD service area are described in Section 4.2 of this WSA based on information provided in Chapter 4 of DSRSD's 2015 UWMP. Projected water demand by customer sector within DSRSD's service area is documented in the DSRSD's 2015 UWMP (Chapter 4, Table 4-3) and is summarized in Table 8-2.

Table 8-2. Actual and Projected Water Demands

Water Source	2015[a] (Actual)	2020[b]	2025[b]	2030[b]	2035[b]	2040[b]
Potable Water, AFA						
Single Family	3,618	6,647	7,074	7,398	7,698	7,698
Multi-Family	1,418	2,605	2,772	2,900	3,017	3,017
Commercial	699	1,285	1,367	1,430	1,488	1,488
Institutional/Governmental	105	193	205	215	223	223
Landscape	488	897	954	998	1,038	1,038
Other – Group Quarters	464	853	908	950	988	988
Other – Construction	15	28	30	31	33	33
Other – Fireline Meters	1	1	1	1	1	1
Other – Ranch Owner	2	3	3	3	4	4
Other – Unmetered Sales	94	173	184	192	200	200
Other – Supplemental water for recycled water demand	9	16	17	18	19	19
Other	111	203	216	226	235	235
Losses	421	774	823	861	896	896
Potable Water Subtotal, AFA[b]	7,445	13,678	14,554	15,223	15,840	15,840
Recycled Water, AFA[c]	2,579	3,905	4,117	4,203	4,203	4,203
Total, AFA	10,024	17,583	18,671	19,426	20,043	20,043

[a] From Table 4-2, DSRSD 2015 UWMP, June 2016.
[b] From Table 4-3, DSRSD 2015 UWMP, June 2016.
[c] From Table 4-4, DSRSD 2015 UWMP, June 2016.

As described in Section 3.4, the potable water demands for the Proposed Project are included in DSRSD's 2015 UWMP. The recycled water demands for the Proposed Project are also included, although they are more than included in the 2015 UWMP. DSRSD anticipates resolving the current recycled water production limitations (see further discussion in Section 5.4), and any recycled water needs that cannot be met due to production limitations can be sufficiently supplied with potable water under DSRSD's 2015 UWMP projections (see Section 3.4).

8.3 Water Shortage Contingency Analysis

Chapter 8 of the DSRSD 2015 UWMP provides a *Water Shortage Contingency and Drought Plan* to address situations when catastrophic water supply interruptions occur due to regional power outage, earthquake, or other disasters; and when drought occurs. The plan is based on DSRSD Ordinance No. 323, DSRSD's Emergency Response Plan, and DSRSD Code Section 4.10.030(C).

The DSRSD Board of Directors adopted Ordinance No. 323 in June 2009 to establish an updated water conservation program and a program for management of the DSRSD water supplies during any water shortage condition declared by the DSRSD Board of Directors, and to establish regulations and restrictions on the delivery and consumption of water and penalties for ordinance violations during a declared water shortage condition. This ordinance addresses both water emergencies (catastrophic water interruptions) and drought conditions. During water emergencies, DSRSD Ordinance No. 323 authorizes the DSRSD General Manager to declare a water emergency and initiate implementation of the ERP. The ERP provides DSRSD with a standardized response and recovery protocol to prevent, minimize, and mitigate injury and damage resulting from emergencies or disaster of natural or man-made origins. DSRSD updates the ERP periodically to ensure that newly developed parts of its service area and the associated infrastructure are taken into account.

When DSRSD revised its code in November 2010, DSRSD Code Section 4.10.030(C) was added to regulate water use in the event of shortage for any reason. This provision authorizes the DSRSD General Manager to prescribe and enforce rules governing water allocation and use of water. It also provides the DSRSD General Manager with guidelines for allocating water supply during shortages.

The ERP and the Water Conservation Program adopted in DSRSD Ordinance 323 includes four stages of reductions depending on the severity on conditions. The ERP included numeric minimum targets as a guideline for quick decision-making during emergencies. The Water Conservation Program does not include any numeric targets that trigger each stage, nor any specific percentage reductions expected with each stage. Determination of compliance with specific criteria is very difficult due to the multitude of differing customer conditions. Rather, the intent of the program is to maintain some degree of flexibility for DSRSD to respond to water supply shortages.

If an emergency were to occur, or if drought conditions occurred, requiring DSRSD to implement its *Water Shortage Contingency and Drought Plan*, all of DSRSD customers, including those within the Proposed Project, would be subject to the same water conservation measures and water use restrictions as included in DSRSD's *Water Shortage Contingency and Drought Plan*.

8.4 Verification of Sufficient Water Supply

As described in Section 7.0 of this WSA, DSRSD's water supplies are sufficient to meet the projected demands associated with the Proposed Project, in addition to DSRSD's existing and planned future uses, including, but not limited to, industrial uses. There are no existing nor planned agricultural uses in the DSRSD service area.

9.0 WATER SUPPLY ASSESSMENT AND VERIFICATION APPROVAL PROCESS

> *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.*

The DSRSD Board of Directors must approve this WSA at a regular or special meeting and provide it to the City of Dublin. Furthermore, this WSA must be included in the Draft EIR being prepared for the Proposed Project.

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10.0 REFERENCES

AT Dublin Land Use Table, prepared by Shea Properties, January 16, 2018.

AT Dublin Proposed Land Use Plan, prepared by Shea Properties, January 17, 2018.

AT Dublin Fact Sheet, provided by Shea Properties, November 6, 2017.

City of Dublin General Plan, adopted February 11, 1985 and amended as of November 14, 2016.

City of Dublin AT Dublin General Plan Amendment Study Initiation Request, City Council Staff Report prepared by City of Dublin, dated October 3, 2017.

DSRSD Water System Master Plan, prepared by West Yost Associates, March 2016.

DSRSD 2015 Urban Water Management Plan, prepared by West Yost Associates, June 2016.

Zone 7 Water Agency 2015 Urban Water Management Plan, prepared by Zone 7 Water Agency, March 2016.

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