OVERVIEW OF WATER SERVICE
FOR THE
OTAY RANCH RESORT VILLAGE

September 2014

Prepared by:
Dexter Wilson Engineering, Inc.
2234 Faraday Avenue
Carlsbad, CA 92008

Job No. 605-808

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

TABLE OF CONTENTS

LIST OF FIGURES

ABBREVIATIONS

ac -	acre
AF -	acre-foot
AMSL -	above mean sea level
cfd -	community facilities district
cfs -	cubic feet per second
CRA -	Colorado River Aqueduct
GDP/SRP -	General Development Plan/Subregional Plan
gpd -	gallons per day
gpf -	gallons per flush
gpm -	gallons per minute
HOA -	homeowners association
IID -	Imperial Irrigation District
LAFCO -	Local Agency Formation Commission
mgd -	million gallons per day
MAF -	million acre-feet
MF -	multi-family land use designation
MWD -	Metropolitan Water District of Southern California
psi -	pounds per square inch
SAMP -	subarea master plan
SF -	single family land use designation
SDCWA -	San Diego County Water Authority
SWP -	State Water Project
UWMP -	Urban Water Management Plan

USEFUL CONVERSIONS

1 acre-foot	=	325,829 gallons
1 mgd	=	1,000,000 gallons/day
1 cfs	=	448.8 gpm
1 cubic foot	=	7.48 gallons
1 mgd	=	694.4 gpm

CHAPTER 1

INTRODUCTION

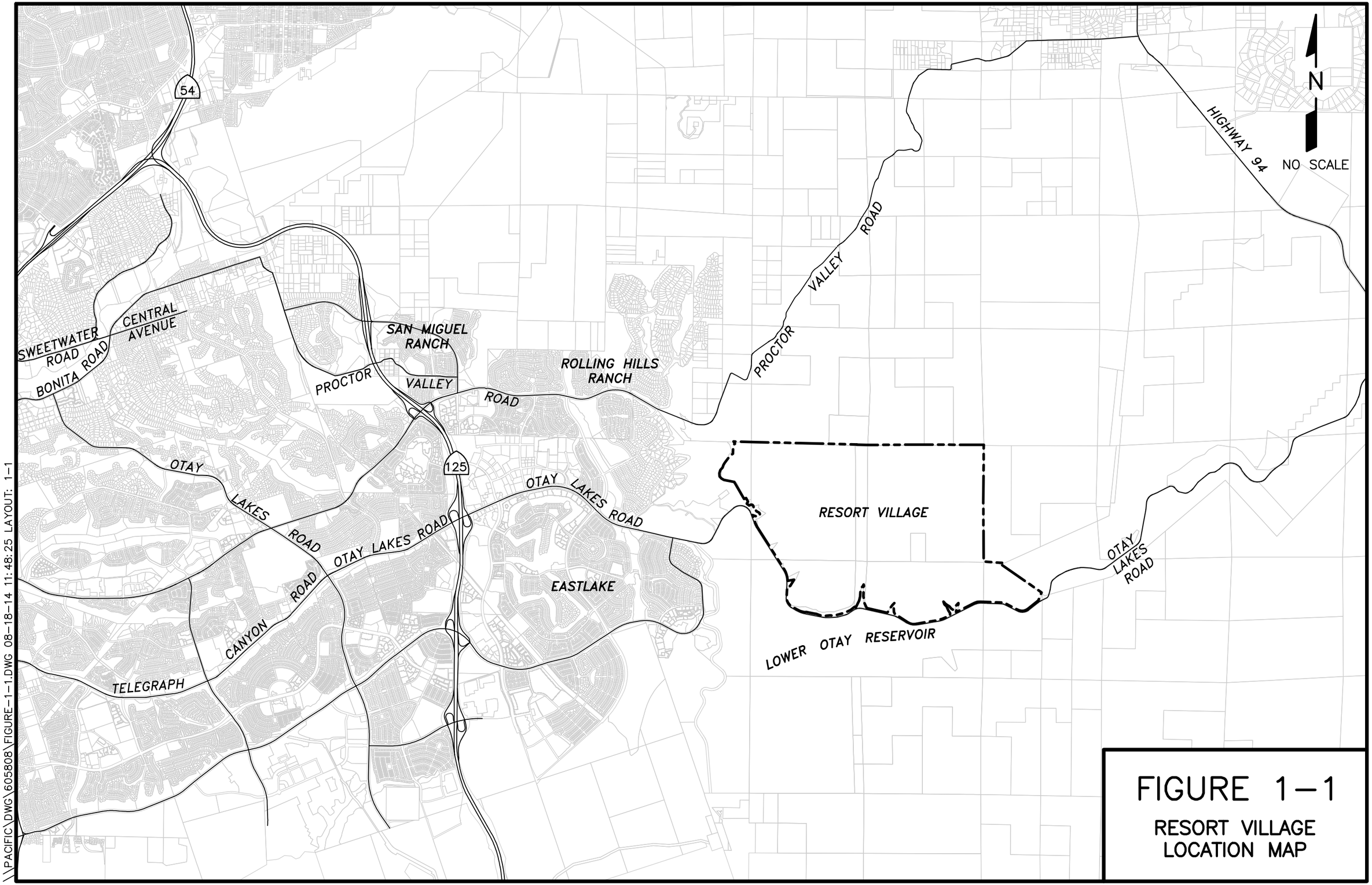
This report provides an overview of water service for the Otay Ranch Resort Village (project). This report will estimate water demands for the project, outline regional water facilities to be constructed, and recommend onsite facilities to accommodate project demands. The report includes an overview of water supplies in the region and recommends water facilities specific to the needs of the Otay Ranch Resort Village project.

PROJECT OVERVIEW

JPB Development and Baldwin & Sons (the Applicants) have applied for approval of the Otay Ranch Resort Village Specific Plan (Otay Ranch Resort Village) located northeast of Lower Otay Lake in south San Diego County. The proposed Specific Plan application includes amendments to the Otay Subregional Plan, Volume 2 ("Otay SRP"). The Otay SRP governs land uses and intensities of development permitted under the County General Plan for this Specific Plan Area (identified as Village 13 in the SRP). An amendment to the Otay SRP is a County General Plan Amendment (GPA).

PHYSICAL SETTING

The Otay Ranch Resort Village is located in the County of San Diego, in the Proctor Valley Parcel of the Otay SRP approximately one-quarter mile east of the City of Chula Vista. Access is provided via Telegraph Canyon Road which transitions into Otay Lakes Road and forms the southern boundary of the project site. Figure 1-1 presents a location map showing the Resort Village property.



\\PACIFIC\DWG\605808\FIGURE-1-1.DWG 08-18-14 11:48:25 LAYOUT: 1-1

FIGURE 1-1

RESORT VILLAGE LOCATION MAP

The Otay Ranch Resort Village's approximate 1,869-acre planning area consists of a broad mesa sloping to the south, broken by several steep canyons draining from north to south. Portions of the relatively flat mesa extend north into the Jamul Mountains, becoming part of steeper slopes. Site elevations range from approximately 500 feet above mean sea level (AMSL) at the southern end of the property to approximately 1,500 feet AMSL in the northeastern portions.

The project area lies within the watershed of the Otay River, a westerly flowing stream that drains an area of approximately 145 square miles. The site is upstream of Savage Dam, which creates Lower Otay Lake. The Otay Ranch Resort Village site vegetation consists of native coastal sage scrub and grassland habitats disturbed by grazing. Some riparian vegetation occurs in drainage areas of the site.

The Otay Ranch Resort Village site is located at the interface of urban development and scenic open space. The Otay Valley Parcel of Otay Ranch, the Eastlake Vistas residential community, the Eastlake Woods residential community, and the U.S. Olympic Training Center compose the edge of urban development to the west. Lower Otay Lake, a recreational reservoir and water supply owned by the City of San Diego, is located to the south. Upper Otay Lake and the Birch Family Estate are located to the northwest. A temporary ultra-light gliding and parachuting airport is located at the eastern end of the Lower Otay Lake on City of San Diego property. An inactive quarry operation is located further to the east.

PROJECT DESCRIPTION

The land uses proposed by the Otay Ranch Resort Village are shown on Figure 1-2 and consist of a combination of single-family neighborhoods, a mixed use residential and commercial use neighborhood, a resort hotel with associated ancillary facilities, an elementary school site, a site for public safety facilities, open space, Preserve land, and park and recreational uses.

The proposed Otay Ranch Resort Village includes development of 1,881 single-family detached homes on approximately 525 acres. Five single family neighborhoods are planned with average densities ranging from 3.2 and 4.4 du/ac.

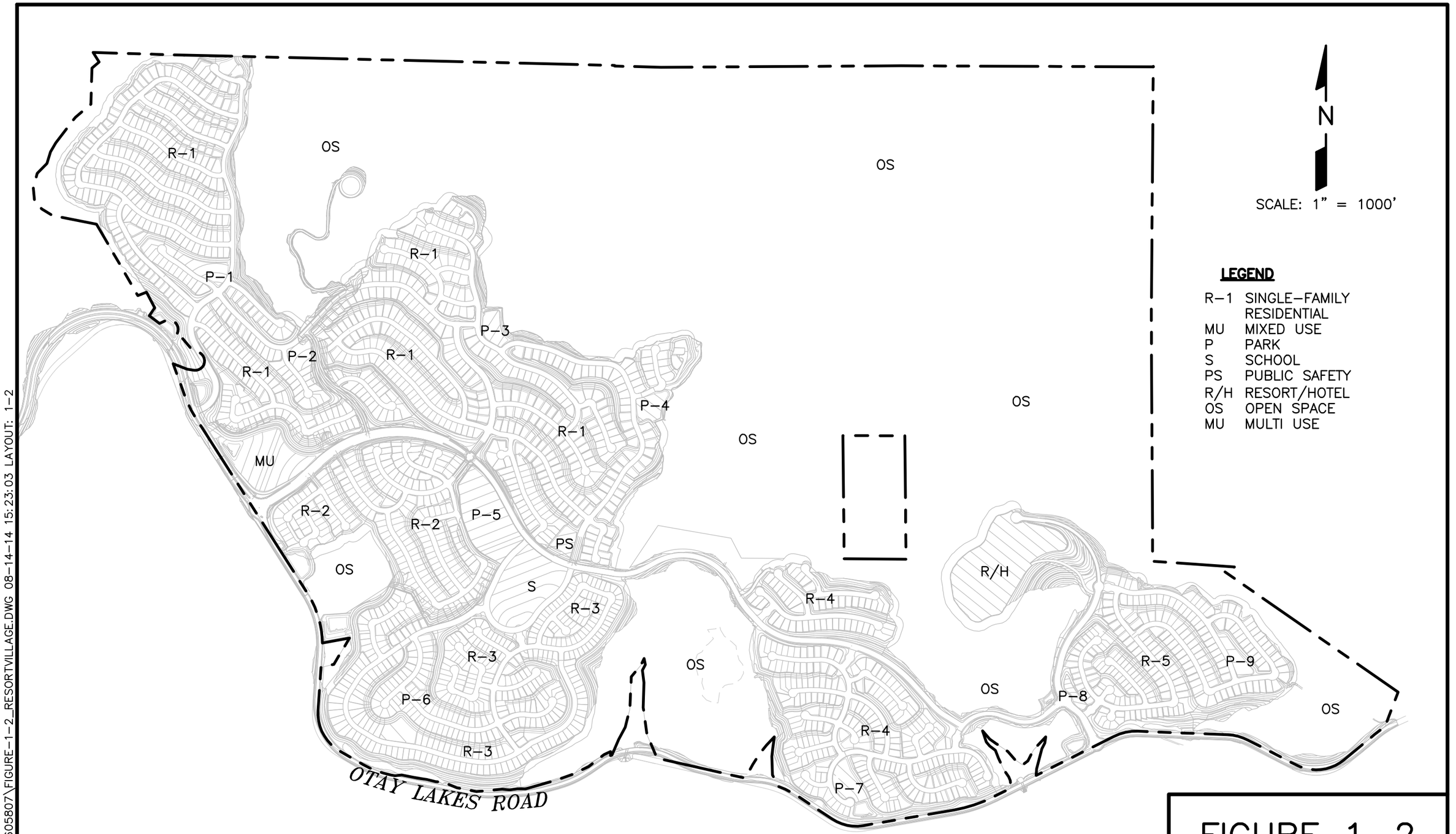


FIGURE 1–2

OTAY RANCH RESORT VILLAGE
PROPOSED DEVELOPMENT PLAN

A 14.1-acre mixed-use neighborhood is proposed to contain 57 multi-family residential units in either an attached or detached configuration with up to 20,000 square feet of commercial uses. Approximately 17.4 acres are identified for a resort hotel complex with a maximum of 200 guest rooms and up to 20,000 square feet of ancillary uses including meeting rooms, a conference center, offices, shops, and restaurants.

The proposed Otay Ranch Resort Village includes nine parks on 28.6 acres. The largest park is a 10.3 acre public neighborhood park, and the remaining parks range from 1.3 to 3.6 acres. The project also proposes a 2.1 acre public safety site, a 10.0 acre elementary school site, about 144 acres of open space, and approximately 1,089 acres of Preserve land.
Open space generally consists of large manufactured slopes outside of neighborhoods and brush management areas. Preserve land is usually undisturbed lands and/or restored habitats set aside for dedication to the Otay Ranch Preserve Owner Manager in satisfaction of Otay Ranch Resource Management Plan (Otay Ranch RMP) conveyance requirements. Internal circulation comprises about 39.0 acres of the project site.

WATER SERVICE

The Resort Village is not currently within the boundaries of the Otay Water District (OWD), San Diego County Water Authority (SDCWA), or Metropolitan Water District of Southern California (MWD) for water service. Ultimately retail water service for the Resort Village is proposed to be provided by the OWD. For its potable water, the OWD relies solely on the SDCWA, a member of the MWD. The majority of the water used in the SDCWA area is imported from MWD, which transports its water supply through the State Water Project (SWP) and the Colorado River Aqueduct (CRA). The SDCWA transports filtered water to near the Lower Otay Reservoir, just south of the Otay Ranch Resort Village.

The Otay Ranch Resort Village project site will require annexation to SDCWA, MWD, and OWD in order to obtain water service. Following approval of the environmental impact report (EIR) for the proposed project, the project applicants will apply to the Local Agency Formation Commission (LAFCO) for annexation. As a responsible agency, LAFCO will rely on the Otay Ranch Resort Village Project EIR to make annexation decisions.

At this time, OWD has included the proposed project's water demands in its 2010 Urban Water Management Plan (UWMP), and its current jurisdictional boundaries abut the project site. The OWD has existing and planned facilities in the vicinity of the project and water service can be provided by expanding the existing system. In particular, water service will be provided by

the 980 Pressure Zone (980 Zone) within the Central Area System of the OWD. The 980 Zone currently includes two pump stations which pump water into two existing 980 Zone reservoirs. This report will provide recommendations for improving and expanding the 980 Zone as needed to provide water service to the Otay Ranch Resort Village project.

PURPOSE OF STUDY

This report provides an overview of water service for the proposed Otay Ranch Resort Village project. This document is prepared as a supporting document for the project's Specific Plan and EIR. The developers of the project will be required to prepare, for review and approval by the OWD, Subarea Master Plan(s) (SAMP) concurrent with the processing of preliminary final engineering plans. The SAMP will provide more detailed information on project phasing, pump station and reservoir capacity requirements, recycled water system improvements and processing requirements, and computer modeling to justify recommended pipe sizes.

Because the project is located adjacent to a raw water storage reservoir used as a potable water source (Lower Otay Reservoir), a brief discussion will be provided of how urban water runoff management facilities will be implemented into the project to meet the requirements of the City of San Diego and other regulatory agencies.

PROCESSING SUMMARY

A summary of the major permits and process approvals that must be completed prior to the Otay Ranch Resort Village project being eligible for water service from OWD include:

- Project EIR, Specific Plan and Tentative Map(s) approvals through County of San Diego
- LAFCO application approval
- MWD, SDCWA, and OWD annexation approval
- OWD Improvement Districts 22 and 27 annexation approval
- Approval of SAMP(s) by OWD
- Final Engineering Improvement Plan approvals

CHAPTER 2

DESIGN CRITERIA AND PROJECTED WATER DEMANDS

This chapter presents the design criteria used to evaluate the water system for the Otay Ranch Resort Village project. The design criteria are utilized for analysis of the existing water system as well as for design and sizing of proposed improvements and expansions to the existing system to accommodate demands in the study area. Unless otherwise noted, this criteria is taken from the OWD Water Resources Master Plan, last amended April 2013.

Duty Factors and Peaking Factors

Table 2-1 presents the duty factors used in projecting the total average demand for the Otay Ranch Resort Village project. The required fire flows and durations are also listed. Actual fire flow requirement will be determined as site specific details such as building footprints and construction materials become available. The fire flow requirements listed in Table 2-1 are used by the OWD in master planning their overall water system. A residential fire flow of 2,500 gpm was assumed due to the location of the project relative to large areas of native vegetation.

To convert average day potable water demands to maximum day demands, Figure 4-2 from the OWD Water Resources Master Plan was utilized. To convert average day potable water demands to peak hour demands, Figure 4-3 from the Water Resources Master Plan was used.

System Pressures

Generally, the potable water distribution system is designed to maintain static pressures between 65 psi and 200 psi. This criteria is used to initially divide a project between water service zones. The potable water distribution system has been designed to yield a minimum of 40 psi residual pressure at any location under peak hour demand flows, and a minimum residual pressure of 20 psi during maximum day demand plus fire flow conditions. Potable water mains are sized to maintain a maximum velocity of 10 feet per second under a maximum day plus fire flow scenario and a maximum velocity of 6 feet per second under peak hour flow conditions.

TABLE 2-1 WATER DUTY FACTORS			
Land Use Designation	**Unit Domestic Demand**	**Required Fire Flow (gpm)**	**Required Fire Flow Duration (hours)**
Single Family - Medium (1-3 DU/AC)	850 gpd/unit	2,500	2
Single Family - High (3-8 DU/AC)	500 gpd/unit	2,500	2
Multi-Family (>8 DU/AC)	300 gpd/unit	2,500	2
Resort/Hotel Units	300 gpd/unit	5,000	4
Commercial	1,785gpd/ac	3,500	3
Public Safety	1,785gpd/ac	3,500	4
School	1,785gpd/ac	5,000	4
Park	2,155 gpd/ac	------	-------

Projected Water Demands

Due to the proximity of the project to Lower Otay Lake, the project will not utilize recycled water on the project for irrigation. Table 2-2 provides the projected potable water demand for the Otay Ranch Resort Village project. The total estimated average potable water use is 1.42 mgd (1,590 AFY). All of this demand will be supplied from OWD's 980 Zone System, as discussed in Chapter 4.

TABLE 2-2
OTAY RANCH RESORT VILLAGE
PROJECTED POTABLE WATER DEMANDS

Neighborhood	Land Use Designation	Gross Acres	Quantity, Units	Water Duty Factor	Total Average Water Demand, GPD
R-1	SF Residential	248.7	796	500 gpd/unit	398,000
R-2	SF Residential	55.9	211	500 gpd/unit	105,500
R-3	SF Residential	90.2	401	500 gpd/unit	200,500
R-4	SF Residential	74.4	263	500 gpd/unit	131,500
R-5	SF Residential	55.8	210	500 gpd/unit	105,000
Mixed Use	 MU - Residential MU-Commercial	17.4	 57 2.0 ac/20,000SF	 500 gpd/unit 1,785 gpd/ac	 28,500 3,570
P-1	Park	2.9	---	2,155 gpd/ac	6,250
P-2	Park	1.7	---	2,155 gpd/ac	3,663
P-3	Park	2.3	---	2,155 gpd/ac	4,957
P-4	Park	2.2	---	2,155 gpd/ac	4,741
P-5	Park	10.3	---	2,155 gpd/ac	22,197
P-6	Park	2.4	---	2,155 gpd/ac	5,172
P-7	Park	2.9	---	2,155 gpd/ac	6,249
P-8	Park	1.3	---	2,155 gpd/ac	2,801
P-9	Park	2.6	---	2,155 gpd/ac	5,603
S-1	School	10.0	---	1,785 gpd/ac	17,850
---	Public Safety	2.1	---	1,785 gpd/ac	3,750
Resort	 Resort Units Commercial	17.4	--- 200 units 2.0 ac/20,000 SF	 300 gpd/unit 1,785 gpd/ac	 60,000 3,570
Irrigated OS	Open Space	131.4[1]	---	2,155 gpd/ac	283,167
Irrigated Common Areas		7.6[1]		2,155	16,378
Preserve	Open Space	1,089.0	---	0	0
Circulation	Open Space	39.0	---	0	0
Total		**1,869.0**	**1,938[2]**		**1,418,918 (1,590 AFY)**

[1] Estimated for permanently irrigated areas.
[2] Total residential units.

CHAPTER 3

WATER SUPPLY

Urban Water Management Planning Act

In 1983, the Legislature enacted the Urban Water Management Planning Act (California Water Code sections 10610 through 10656), which requires every urban water supplier that provides water to 3,000 or more customers, or over 3,000 acre feet (af) of water annually, to make every effort to ensure the appropriate level of reliability in its water service to meet the needs of its customers during normal, dry, and multiple-dry years. The UWMP is required in order for a water supplier to be eligible for the Department of Water Resources (DWR) administered state grants, loans, and drought assistance. The UWMP provides information on water use, water resources, recycled water, water quality, reliability planning, demand management measures, best management practices, and water shortage contingency planning for a specified service area or territory.

Senate Bills 610 and 221

On January 1, 2002, SB 610 took effect. SB 610, which was codified in the Water Code beginning with section 10910, requires the preparation of a water supply assessment (WSA) for projects within cities and counties that propose to construct 500 or more residential units or the equivalent. SB 610 stipulates that when environmental review of certain large development projects is required, the water agency that is to serve the development must complete a WSA to evaluate water supplies that are or will be available during normal, single-dry, and multiple-dry years during a 20-year projection to meet existing and planned future demands, including the demand associated with a proposed project.

Enacted in 2001, SB 221, which was codified in the Water Code beginning with section 10910, requires that the legislative body of a city or county, which is empowered to approve, disapprove or conditionally approve a subdivision map, must condition such approval upon proof of sufficient water supply. The term "sufficient water supply" is defined in SB 221 as the total water supplies available during normal, single-dry, and multiple-dry years within a 20-year projection that would meet the projected demand associated with the proposed subdivision. The definition of sufficient water supply also includes the requirement that sufficient water encompass not only the proposed subdivision, but also existing and planned future uses, including agricultural and industrial uses.

Urban Water Management Plans

The California Urban Water Management Planning Act requires that each urban water supplier providing water for municipal purposes, either to more than 3,000 customers, or more than 3,000 acre-feet of water annually, must prepare, adopt, and update a UWMP at least once every five years on or before December 31, in years ending in five and zero. This applies to MWD, SDCWA, and its member agencies, including OWD, that serve unincorporated San Diego County. The intent of an UWMP is to present information on water supply, water usage/demand, recycled water, and water use efficiency programs in a respective water district's service area. An UWMP also serves as a valuable resource for planners and policy makers over a 25 year time frame.

The UWMP process ensures that water supplies are being planned to meet future growth. UWMPs are developed to manage the uncertainties and variability of multiple supply sources and demands over the long term. Water agencies and districts update their demand and supply estimates based on the most recent San Diego Association of Governments (SANDAG) forecast approximately every five years to coincide with preparation of their UWMPs. The most current supply and demand projections are contained in the 2010 UWMPs of MWD, SDCWA, and OWD. SDCWA member districts rely on the UWMPs and Integrated Resources Plans (IRPs) of MWD and the Regional Water Facilities Master Plan of SDCWA for documentation of supplies available to meet projected demands.

Normal year, single-dry year, and multiple-dry year 2010 UWMP supply and demand assessments for MWD, SDCWA, and OWD are intended to describe the water supply reliability and vulnerability to seasonal or climatic conditions, to the extent practical. Normal water years are considered to be years that experience average rainfall for the respective district. Single-dry water years are considered one year drought events. Multiple-dry water years refer to a series of below average rainfall for particular areas (i.e., multiple drought year conditions). Projections for multiple-dry years are made in five year increments. In the 2010 UWMPs, MWD, SDCWA and all SDCWA member agencies, including OWD, that serve unincorporated San Diego County determined that adequate water supplies would be available to serve existing service areas under normal year, single-dry year, and multiple-dry year conditions through the year 2035.

Metropolitan Water District

MWD supplies water to approximately 18.7 million people in a 5,200-square mile service area that includes portions of Ventura, Los Angeles, Orange, San Bernardino, Riverside, and San Diego counties. SDCWA is one of MWD's 26 member agencies. Supply and demand projection information for MWD is included in its 2010 Regional UWMP, adopted in November 2010. MWD's long-term strategy for a sustainable water supply is outlined in its Integrated Resources Plan (IRP) (2004), which is currently being updated. The MWD IRP, to be updated approximately every five years, was first adopted in 1996 and last updated in October 2010. MWD's IRP identifies a mix of resources (imported and local) that will provide 100 percent reliability for full-service demands through the attainment of regional targets set for conservation, local supplies, SWP supplies, Colorado River supplies, groundwater banking, and water transfers through the year 2035. SDCWA, one of 26 member agencies of MWD, is the largest agency in terms of delivery, purchasing approximately 25 percent of MWD's water. MWD gets its water from two sources. The first source is the Colorado River, which is connected to MWD's six-county service area through a 242-mile aqueduct. The aqueduct system is known as the Central Valley Project (CVP). The CVP is operated by U.S. Bureau of Reclamation. The second source is water from northern California, which supplies water through a series of dams, aqueducts, pipelines, and other facilities known as the State Water Project (SWP). The SWP is operated by the California Department of Water Resources (DWR). From the Colorado River Agreement (CRA), MWD is apportioned 550,000 acre-feet of water per year (AFY). Despite this low apportionment, MWD was able to transport up to 1.2 million acre-feet (MAF) through the CRA in past years by relying on unused apportionments from Arizona, Nevada, and California agricultural agencies. However, because MWD's firm water supply from the CRA is only 550,000 AF, which is the number planning agencies must rely on for development. To supplement this supply, MWD also has several existing programs and programs being developed in cooperation with other agencies.

From the SWP, MWD is contractually entitled to receive 1,911,000 AF of water; however, the level of SWP supply development, state and federal environmental regulations, and other factors have restricted and, in some cases, reduced actual amount of available SWP water. As a result of these and other limitations, MWD estimates that actual SWP supplies will be 0.6 MAF in a dry year and 411,000 AF during critically dry years.

In November 2010, the MWD adopted its 2010 Regional UWMP, which is an update to its prior 2005 Regional UWMP. In its 2010 UWMP, MWD evaluated water supply reliability, over a 20-year period, for average, single-dry, and multiple-dry years. To complete its most recent water supply reliability assessment, MWD developed estimates of total retail demands for the region, factoring in the impacts of conservation. After estimating demands, the water reliability analysis identified current supplies and supplies under development to meet projected demands. MWD's reliability assessment showed that MWD can maintain reliable water supplies to meet projected demands through the year 2035. MWD also identified buffer supplies, including other SWP groundwater storage and transfers, which could serve to supply additional water needs. Appendix A-3 to the MWD 2010 Regional UWMP contains detailed justifications for the sources of supply projected to meet water demands in the region, including Colorado River Aqueduct deliveries (Colorado River supplies) and California Aqueduct deliveries (SWP supplies).

San Diego County Water Authority (SDCWA)

The SDCWA service area covers approximately 951,000 acres and encompasses the western third of San Diego County. SDCWA has 24 member agencies, 15 of which provide water to unincorporated areas of San Diego County. The SDCWA is responsible for ensuring a safe and reliable water supply to support the region's economy and the quality of life for three million residents. Because of the County's semi-arid climate and limited local water supplies, SDCWA imports between 70 and 95 percent of the water used in the San Diego region from MWD. In 2008, MWD provided 71 percent of the San Diego region's water supply. Most of this water is obtained from the Colorado River and the SWP through a system of pipes, aqueducts, and associated facilities. Historically, SDCWA has relied on imported water supplies purchased from the MWD to meet the needs of its member agencies. SDCWA is the largest MWD member agency in terms of deliveries.

Both MWD and SDCWA provide water supplies to their member agencies in order to meet projected water demand based upon regional population forecasts. The San Diego Association of Governments (SANDAG) is responsible for providing and updating land use planning and demographic forecasts for San Diego County. MWD and SDCWA update their water demand and supply estimates based on the most recent SANDAG forecasts approximately every five years to coincide with preparation of the their respective UWMPs.

Since adopting the 2010 UWMP, SDCWA and its member agencies have made considerable progress in conserving and diversifying its supplies. The SDCWA 2010 UWMP reports that the San Diego region has reduced water usage over 50,000 AFY over the last three years. In addition, conserved agricultural transfer water from the Imperial Valley began flowing to the San Diego region. This source provided 70,000 AF in 2010 and will provide 200,000 AFY by 2021. This additional water supply is the result of SDCWA entering into the Quantification Settlement Agreement (QSA) with other water agencies in October 2003. The QSA resolved long-standing disputes regarding Colorado River water use among agencies, and established a water budget for the agricultural agencies. This permitted implementation of several water conservation and transfer agreements, including the SDCWA/IID transfer agreement. Transfers from IID began in late 2003 with the signing of the QSA.

In June 2011, the SDCWA adopted its 2010 UWMP, updating the previously adopted 2005 UWMP. Sections 4, 5, and 6 of SDCWA's 2010 UWMP contain documentation of SDCWA's existing and planned water supplies, including MWD supplies (imported Colorado River water and SWP water), SDCWA supplies, and local member agency supplies (surface water reservoirs, water recycling, groundwater, and groundwater recovery). SDCWA supplies include (1) IID water transfer supplies, (2) Supplies from conservation projects to line the All-American Canal and the Coachella Canal, located in Imperial and Coachella Valleys, and (3) development of a seawater desalination facility at the Encina Power Plant in Carlsbad, which is anticipated to produce 56,000 AFY of additional water supplies. (See Tables 3-1 and 3-2, below.)

Additionally, since 1980, approximately 5 percent to 30 percent of the member agencies water has come from local sources, primarily from surface water reservoirs as indicated in Table 3-2. Recycled water and groundwater recovery projects are growing in importance in the region, and water conservation efforts have also made SDCWA member agencies less dependent on imported water.

TABLE 3-1
PROJECTED IMPORTED WATER SUPPLIES (AFY)

WATER SOURCE	2015	2020	2025	2030	2035
IID Water Transfer	100,000	190,000	200,000	200,000	200,000
Supply from MWD	358,189	230,601	259,694	293,239	323,838
Coachella Canal and All American Canal Lining Projects	80,200	80,200	80,200	80,200	80,200
TOTAL IMPORTED SUPPLIES	**538,389**	**500,801**	**539,894**	**537,439**	**604,038**

Source: San Diego County Water Authority 2010 Urban Water Management Plan.

TABLE 3-2 PROJECTED LOCAL WATER SUPPLIES (AFY)					
WATER SOURCE	**2015**	**2020**	**2025**	**2030**	**2035**
Surface Water	48,206	47,940	47,878	47,542	47,289
Water Recycling	38,660	43,728	46,603	48,278	49,998
Groundwater	11,710	11,100	12,100	12,840	12,840
Seawater Desalination	0	56,000	56,000	56,000	56,000
Groundwater Recovery	10,320	15,520	15,520	15,520	15,520
TOTAL LOCAL SUPPLIES	**108,396**	**174,288**	**178,101**	**180,180**	**181,647**

Source: San Diego County Water Authority 2010 Urban Water Management Plan.

Section 9 of SDCWA's 2010 UWMP evaluates water supply reliability in average, single-dry, and multiple-dry years. Based on SDCWA's water supply reliability assessment, SDCWA concluded that water supplies would be sufficient through 2035. (See section below regarding Summary of Water Supplies and Demand, and Tables 3-3 through 3-5.)

To address the risk identified by the SDCWA 2005 UWMP, in the 2008 Strategic Plan and the 2008 Business Plan, SDCWA's Board of Directors has provided clear direction to SDCWA to continue to increase the reliability of the water supply to meet the San Diego region's demands, and to ensure cost effective, environmentally sensitive, and safe delivery of those supplies. Since adoption of its 2005 UWMP, SDCWA has adopted policies and programs in the areas of supply reliability, system infrastructure, finance, and outreach to help accomplish its mission to provide a safe and reliable water supply to its member agencies serving the San Diego region. SDCWA's long-term commitment also involves diversifying the region's water supplies portfolio, reducing the region's reliance on imported water, and optimizing facilities to provide the flexibility needed to respond to the region's ever-changing water needs. To prepare the San Diego region for potential water shortages, in March 2008 the SDCWA released a Model Drought Response Ordinance to its member agencies. The Model Drought Response Ordinance has identified four drought response levels that contain water-use restrictions to help achieve demand reduction during water shortages. Member agencies used the SDCWA's model to update their own ordinances to help provide consistency throughout the region on response levels and water use restrictions that may be taken to reduce water demand.

SUMMARY OF WATER SUPPLIES AND DEMAND

Based on the imported and member agency local water sources discussed above, SDCWA estimates that it, along with member agency local sources will be able to supply 647,285 AF of water in 2015, as demonstrated in Table 3-1 and Table 3-2, above. Therefore, according to the MWD and SDCWA 2010 UWMPs, there is available water to meet all of the region's anticipated demand, including development of the Otay Ranch Resort Village, in average/normal and dry water years, as demonstrated in Table 3-3, Table 3-4 and Table 3-5, below. The Water Supply Assessment and Verification Report prepared for the Otay Ranch Resort Village by OWD further details the water supply assumptions and findings of OWD, SDCWA, and MWD.

TABLE 3-3
AVERAGE/NORMAL WATER YEAR SUPPLY AND DEMAND ASSESSMENT (AFY)

LOCAL SUPPLIES	**2015**	**2020**	**2025**	**2030**	**2035**
Surface Water	48,206	47,940	47,878	47,542	47,289
Water Recycling	38,660	43,728	46,603	48,278	49,998
Groundwater	11,710	11,100	12,100	12,840	12,840
Groundwater Recovery	10,320	15,520	15,520	15,520	15,520
Seawater Desalination	0	56,000	56,000	56,000	56,000
IMPORTED SUPPLIES					
IID Water Transfer	100,000	190,000	200,000	200,000	200,000
Supply from MWD	358,189	230,601	259,694	293,239	323,838
Coachella Canal and All American Canal Lining Projects	80,200	80,200	80,200	80,200	80,200
TOTAL PROJECTED SUPPLIES	**647,285**	**675,089**	**717,995**	**753,619**	**785,685**
TOTAL ESTIMATED DEMANDS[1]	**647,285**	**675,089**	**717,995**	**753,619**	**785,685**
DIFFERENCE	**0**	**0**	**0**	**0**	**0**

[1] With Conservation.
Source: San Diego County Water Authority 2010 Urban Water Management Plan.

TABLE 3-4
SINGLE DRY WATER YEAR SUPPLY AND DEMAND ASSESSMENT (AFY)

LOCAL SUPPLIES	2015	2020	2025	2030	2035
Surface Water	17,932	17,932	17,932	17,932	17,932
Water Recycling	38,660	43,728	46,603	48,278	49,998
Groundwater	9,977	9,977	9,977	9,977	9,977
Groundwater Recovery	10,320	15,520	15,520	15,520	15,520
Seawater Desalination	0	56,000	56,000	56,000	56,000
IMPORTED SUPPLIES					
IID Water Transfer	100,000	190,000	200,000	200,000	200,000
Supply from MWD	430,431	305,101	338,501	376,023	409,389
Coachella Canal and All American Canal Lining Projects	80,200	80,200	80,200	80,200	80,200
TOTAL PROJECTED SUPPLIES	**687,520**	**718,458**	**764,733**	**803,930**	**839,016**
TOTAL ESTIMATED DEMANDS[1]	**687,520**	**718,458**	**764,733**	**803,930**	**839,016**
DIFFERENCE	**0**	**0**	**0**	**0**	**0**

[1] With Conservation.
Source: San Diego County Water Authority 2010 Urban Water Management Plan.

TABLE 3-5
MULTIPLE DRY WATER YEAR SUPPLY AND DEMAND ASSESSMENT (AFY)

	Near Term			Long Term		
Scenario	**2012**	**2013**	**2014**	**2031**	**2032**	**2033**
Multiple Dry Years						
Demands	658,381	679,509	711,241	811,421	842,947	882,795
Supply	597,557	623,817	634,563	811,421	821,016	829,874
Potential Surplus or (Shortage)[1]	(60,824)	(55,692)	(76,678)	0	(21,931)	(52,921)

[1] Potential shortages would be offset through management actions.
Source: San Diego County Water Authority 2010 Urban Water Management Plan.

Otay Water District

Once water is made available by SDCWA, it is transferred across San Diego County in two aqueducts containing five large-diameter pipelines. The First Aqueduct includes Pipelines 1 and 2, and the Second Aqueduct includes Pipelines 3, 4 and 5. The OWD maintains several connections to Pipeline 4, which delivers filtered water from the MWD filtration plant at Lake Skinner in Riverside County.

In San Diego County, OWD provides water services to southern El Cajon, La Mesa, Rancho San Diego, Jamul, Spring Valley, Bonita, eastern Chula Vista, and Otay Mesa along the international border with Mexico. OWD covers approximately 80,000 acres, and has approximately 47,000 connections. OWD has approximately 709 miles of pipelines, 24 pump stations, and 40 reservoirs with a total storage capacity of 226 million gallons (mg). OWD provides 90 percent of its water service to residential land uses, and 10 percent to commercial and industrial land uses. Average annual consumption for OWD is approximately 30,000 af. OWD maintains five major systems to supply and deliver water, which include Hillsdale, Regulatory, La Presa, Central, and Otay Mesa.

In addition, OWD has a connection to the La Mesa - Sweetwater Extension Pipeline, which delivers filtered water from the R.M. Levy Water Treatment Plant which is owned and operated by the Helix Water District. However, this connection currently supplies water to the north portion of OWD only. Furthermore, OWD maintains a connection to the City of San Diego's water system in Telegraph Canyon Road and has an agreement which allows the District to receive water from the Lower Otay Filtration Plant.

The OWD 2005 UWMP assessed OWD's water supply sources, water demands, water supply reliability, supply and demand comparison provisions, demand management, water shortage contingency plan, and water recycling through 2030. OWD's 2005 UWMP stated that because OWD is dependent on imported water provided by the SDCWA, water supply depends on the reliability of water supplied by MWD and SDCWA. The 2005 UWMP described measures to ensure a reliable water supply including water conservation measures, emergency and operational storage, and interagency agreements with neighboring water agencies. On June 1, 2011, OWD's Board of Directors adopted the updated OWD 2010 UWMP. Sections 2, 3, and 4 of the 2010 UWMP provides an overview of OWD's service area, its current water supply sources, supply reliability, water demands, measures to reduce water demand, and planned water supply projects and programs. Section 5 of the 2010 UWMP contains OWD's water service reliability assessment. This section states that the level of reliability is based on the documentation in the UWMP's prepared by MWD and SDCWA and that these agencies have

determined they will be able to meet potable water demands through 2035, during normal and dry year conditions. According to the 2010 UWMP, OWD currently relies on MWD and SDCWA for its potable supply, and OWD has worked with these agencies to prepare consistent demand projections for OWD's service area.

In accordance with Senate Bills 610 and 221, the OWD prepared a Water Supply Assessment and Verification Report for the Otay Ranch Resort Village project. This report verified that there is sufficient water supply being planned to meet the needs of the Otay Ranch Resort Village project and other reasonably foreseeable planned development projects in the District. This report was approved by the OWD in May 2014.

Based on the above information, the proposed project is not anticipated to contribute to a cumulatively considerable impact on water supplies. Therefore, cumulative impacts related to water supply are considered less than significant.

POTABLE WATER

The OWD will supply water to the Otay Ranch Resort Village project from the 980 Zone of the District's Central Area System. The 980 Zone accesses water from the SDCWA aqueduct by Otay Flow Control Facilities Number 10 and 12, which fill 624 Pressure Zone reservoirs. Water is then distributed within the 624 Zone and pumped to the 711 and 980 Zone storage and distribution systems. The 980-2 pump station construction has been recently completed and placed into operation. The 980-2 Pump Station will pump water directly from the 624 Zone to the 980 Zone system. The 980-1 Pump Station will remain as part of the Central Area System to serve as a backup resource to the 980-2 Pump Station in the event it is needed.

To receive potable water service, the Otay Ranch Resort Village project will need to expand the existing 980 Zone system. The following paragraphs detail the existing potable water facilities located in the vicinity of the project.

980 Zone

There are two existing pump stations in the 980 Zone, the 980-1 Pump Station referred to as the Eastlake Pump Station, located on the south side of Otay Lakes Road at Lane Avenue and the new 980-2 Pump Station. The 980-1 Zone Pump Station, which currently has two active and one standby pumps that are all rated for 4,000 gpm and maintain a firm station capacity of

8,000 gpm, pumps water from the 711 Zone system into the 980 Zone distribution system, and into two existing 980 Zone reservoirs located in the OWD Use Area. The 980-2 Pump Station pumps water from the 624 Zone to the 980 Zone and currently has three duty pumps, one standby pump, and two empty pump cans for future expansion. All pumps are rated for 5,000 gpm which results in a firm pumping capacity of 15,000 gpm.

Both existing reservoirs in the 980 Zone are located at the same site within the OWD Use Area, north of Rolling Hills Ranch. These reservoirs each have a capacity of 5.0 million gallons, for a total of 10.0 million gallons. The location of these reservoirs is provided on Figure 3-1.

The major 980 Zone pipelines in the vicinity of the project are all located west of the project and include transmission lines in Hunte Parkway and Otay Lakes Road. The 24-inch transmission line in Otay Lakes Road has been extended to just east of Hunte Parkway, as shown on Figure 3-1.

In accordance with Senate Bills 610 and 221, the OWD prepared the January 2014 Water Supply Assessment and Verification Report for the Otay Ranch Resort Village property. This report was approved by the District at their May 7, 2014 Board meeting and concluded that there is sufficient water supply being planned to meet the needs of the Otay Ranch Resort Village project and other reasonably foreseeable planned development projects in the District.

EXISTING
980 ZONE
RESERVOIRS

20"

20"

24"

30"

36"

20"

16"

EXISTING
980 ZONE
PUMP STATION

VALLEY

PROCTOR

16"

ROAD

24"

30"

16"

20" W135

20" W135

36"

30"

16"

EASTLAKE

980-4 RESERVOIR
5 MG, W431

20"

W138

20"

W137

20"

W139

20"

W146

RESORT VILLAGE

OTAY LAKES ROAD

LOWER OTAY RESERVOIR

LEGEND

EXISTING 980 ZONE FACILITIES

PROPOSED 980 ZONE FACILITIES

W195 OWD CIP NUMBER

N

SCALE: 1"=2000'

FIGURE 3-1
MAJOR 980 ZONE WATER FACILITIES

\\PACIFIC\DWG\605808\FIGURE-3-1.DWG 08-18-14 13:16:13 LAYOUT: 4-1

CHAPTER 4

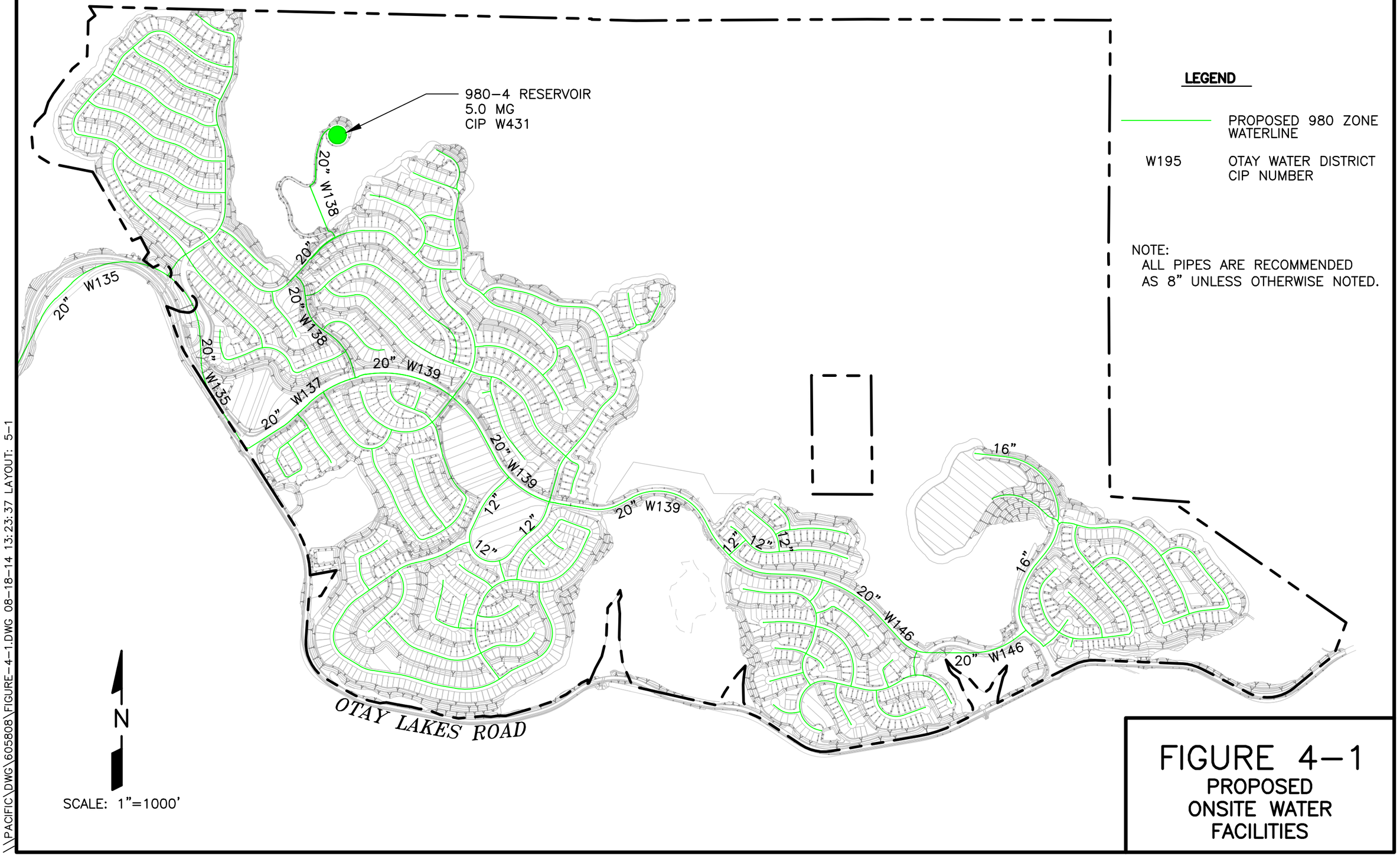
RECOMMENDED WATER FACILITIES

The Otay Ranch Resort Village project can receive water service by expanding the existing 980 Zone water system. Figure 3-1 provided the existing and proposed major water facilities in the vicinity of the project and Figure 4-1 provides the recommended onsite water facilities for the project. As discussed previously, a Subarea Master Plan(s) will be prepared prior to approval of final engineering improvement plans for the project to identify the sizing and timing of all onsite and offsite water facilities for the project. A brief description is provided below.

980 Pressure Zone

The proposed project would receive water service by expanding OWD's existing 980 Zone water system. The sizing and timing of all on-site and off-site water facilities for the Project site would be identified in a Subarea Master Plan to be reviewed and approved by OWD. The Subarea Master Plan would be prepared for the proposed project and submitted to OWD for approval prior to approval of final engineering plans.

Pursuant to OWD's Capital Improvement Program, improvements to the existing 980 Zone water system are necessary prior to or concurrent with development of the project. Such improvements would include construction of a new reservoir and extension of transmission lines. The 980-4 Reservoir, would be constructed within the project site and have a maximum capacity of five million gallons. The existing 24-inch transmission line in Otay Lakes Road is proposed to be extended as a 20 inch transmission line from just east of Hunte Parkway to the projects main entry, ultimately connecting to the 980-4 Reservoir. Additional improvements associated with the proposed project would include construction of pipelines for homes and other structures to connect to 980 Zone facilities. All other facilities would be sized for the proposed project to meet OWD looping criteria and pressure requirements.



LEGEND

———	PROPOSED 980 ZONE WATERLINE
W195	OTAY WATER DISTRICT CIP NUMBER

NOTE:
ALL PIPES ARE RECOMMENDED AS 8" UNLESS OTHERWISE NOTED.

FIGURE 4–1
PROPOSED ONSITE WATER FACILITIES

As noted above, construction of these water facilities is planned pursuant to the OWD Capital Improvement Program and the potential environmental impacts of the construction and operation of such facilities have been analyzed in the Final Program EIR for OWD's Water Resources Master Plan. The proposed on-site water reservoir and water lines would be constructed within areas proposed for grading as part of the tentative map, or in existing or proposed road rights-of-way. Therefore, construction of such facilities would not have any additional impacts beyond those identified throughout this EIR. Based on the above, impacts related to the construction of the water supply lines and storage facilities are considered less than significant.

The development pads on the project will range in elevation from approximately 527 feet to 849 feet. With service provided from the 980 Zone, this will result in maximum static pressures ranging from 57 to 196 psi. Where pipeline pressures exceed the OWD's standards for the use of PVC piping, steel pipe will be required and used.

URBAN RUNOFF

The applicants of the Otay Ranch Resort Village project have met with the City of San Diego on multiple occasions to discuss the potential impact of the project on Lower Otay Reservoir. A water quality technical report has been prepared by Hunsaker and Associates per the requirements of the County of San Diego Standard Urban Stormwater Management Plan (SUSMP) and the City of San Diego Source Water Protection Guidelines.

CHAPTER 5

WATER CONSERVATION AND LOCAL WATER SUPPLY

A residential water conservation plan was prepared for the Otay Ranch Resort Village project and is dated January 17, 2011. This chapter summarizes the findings of that study. As part of the MWD annexation application, the developer will be required to prepare a detailed plan for project specific water conservation measures to be implemented.

WATER CONSERVATION GOAL

The goal of residential water conservation on the Otay Ranch Resort Village project is to reduce outdoor water usage by 30 percent. Given a typical outdoor water use of 260 gallons per day per home, the goal is to reduce outdoor water use to 182 gallons per day per home.

METHODOLOGY

To achieve a 30 percent reduction in outdoor water use, the following guiding principles are proposed:

1. Minimize the use of vegetation with high water use requirements. High water use vegetation may be specified on a limited basis depending on its use and function.
2. Maximize the use of water-efficient and native vegetation.
3. Establish vegetation hydrozones, which are landscape areas composed of plant materials that have similar water needs.
4. Use permeable and non-permeable decorative paving strategically to reduce the total irrigated area and decrease the overall water demand.

WATER CONSERVATION ESTIMATED SAVINGS

To estimate outdoor water savings anticipated from applying the principles above, calculations were provided for three anticipated lot configurations within the project. The results of these calculations are summarized in Table 5-1 and indicate that outdoor water savings of 30 to 41 percent are anticipated.

TABLE 5-1
OTAY RANCH RESORT VILLAGE
OUTDOOR WATER CONSERVATION SAVINGS

Lot Type	Typical Outdoor Water Use, gpd	Calculated Water Use with Conservation, gpd	Reduction, %
50 x 100	260	155	41
55 x 100	260	170	35
60 x 105	260	181	30

In addition to the outdoor water conservation measures, a number of conservation measures aimed at reducing indoor water use will also be implemented in the Project. The 2010 California Green Building Standards Code require fixtures to comply with stringent flow limitations. In addition to the mandated water conservation measures, the applicants will consider non-mandated measures such as ultra-low flow appliances, dual flush toilets, and instant hot water heaters.

CHAPTER 6

PROJECT PHASING

The Otay Ranch Resort Village project will be developed in multiple phases. Figure 6-1 graphically shows the ten development phases that have been identified. The phasing plan is non-sequential in order to adjust to regulatory constraints or economic and market fluctuations. For this reason, the project specific plan identifies facility performance thresholds and infrastructure improvements for each phase as if it developed independently from the other phases.

In general, to supply water to development within any of the phases, the offsite water line in Otay Lakes Road must be constructed and extended onsite to the proposed development area. The onsite 980 Zone Reservoir will not need to be constructed prior to development of the first unit within the Otay Ranch Resort Village, but OWD has indicated that they plan to design and construct the reservoir concurrent with the first phase of development on the project. Once the reservoir is constructed, piping to connect the reservoir to the proposed development area will be required.

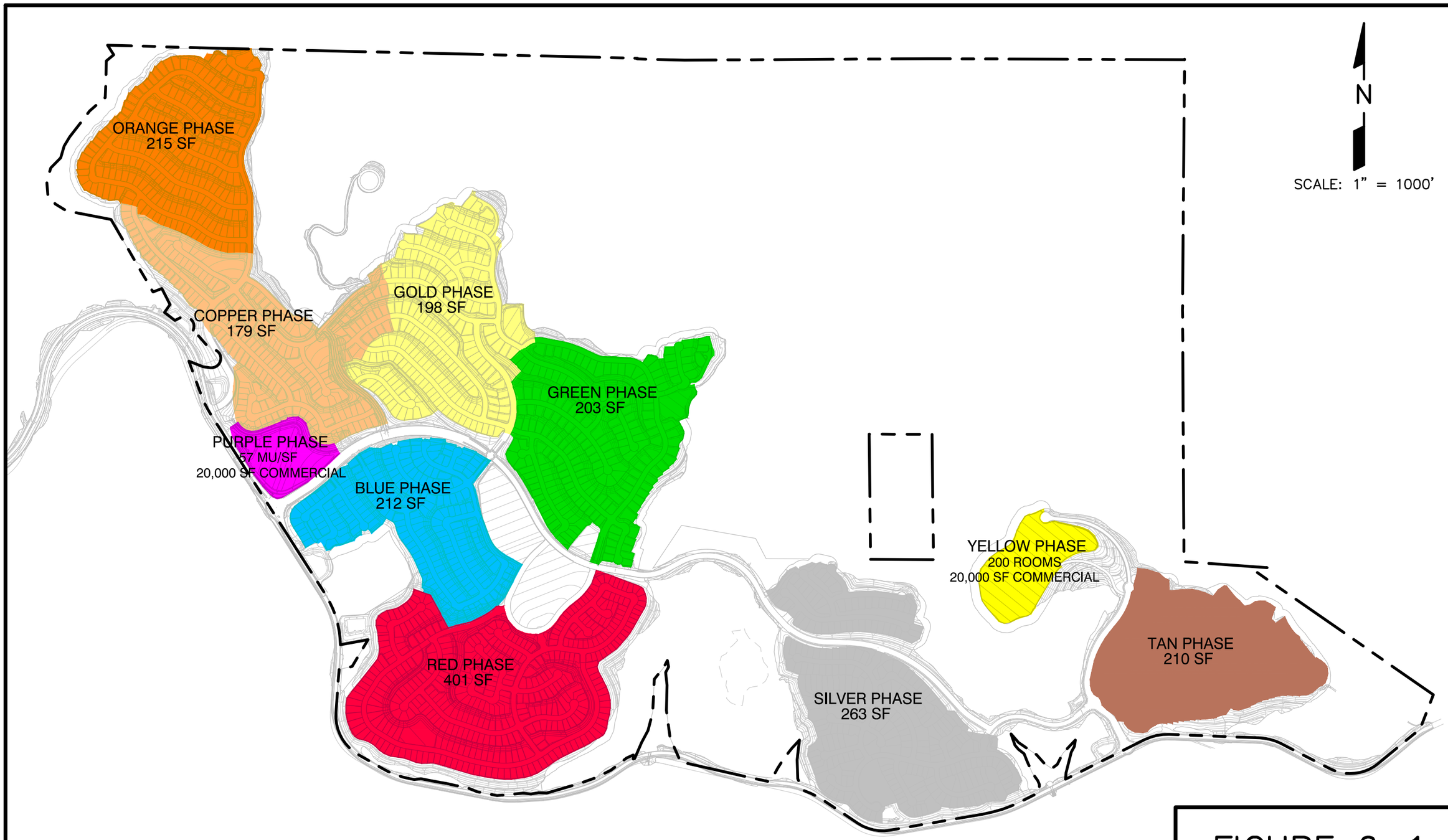


FIGURE 6–1

OTAY RANCH RESORT
PROJECT PHASING

REFERENCES

1. San Diego County Water Authority. *2010 Urban Water Management Plan*, adopted June 2011.

2. Metropolitan Water District of Southern California. *The Regional Urban Water Management Plan for the Metropolitan Water District of Southern California*, adopted November 2010.

3. Otay Water District Water Resources Master Plan, revised April 2013.

4. San Diego Association of Governments. *2030 Regional Growth Forecast*, adopted September 2006.

5. County of San Diego/City of Chula Vista. *Otay Ranch General Development Plan/Subregional Plan (GDP/SRP)*, adopted October 1993.

6. Otay Water District, 2010 Urban Water Management Plan.

7. Otay Ranch Resort Village Residential Water Conservation Plan, January 17, 2011.

8. Water Quality Technical Report for Otay Ranch Resort Village, November 2010.