

APPENDIX F

Updated Water Technical Report



Updated Water Technical
Report for Amendments
to the
City of Chula Vista
General Plan (GPA-09-01)
and Otay Ranch General
Development Plan
(PCM-09-11)

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1.0 Introduction

The purpose of this report is to update the Water Technical Report prepared by the City of Chula Vista (City) in 2005 describing the components of the existing water supply and distribution system serving the City. The Water Technical Report was prepared as part of the General Plan Update (GPU) process and was an appendix to the General Plan Update/General Development Plan (GPU/GDP) EIR certified in December 2005.

This update was completed as part of a proposed General Plan (GP) and General Development Plan (GDP) amendments considered for the Project Area described as follows:

- Portions of Villages 4 and 7;
- Village 8;
- Village 9;
- Planning Area 10 (which includes the University Site and a proposed 85-acre Regional Technology Park (RTP)); and
- A portion of the southern edge of the Eastern Urban Center.

The proposed village sites are separated by Village 8 East (not a part of this project) and State Route 125 (SR-125).

The Otay Ranch General Plan Amendment (GPA) and General Development Plan Amendment (GDPA) are composed of two parcels of land owned by the Otay Land Company (OLC) located within the Otay Ranch Planned Community.

2.0 Background

Water consumers within the City of Chula Vista are served by three water districts: the Otay Water District (OWD), the Sweetwater Authority, and the Cal-American Water District. Water for the proposed Project Area is provided by OWD. Each of the suppliers has reported that they are be able to meet the current demands and will continue to do so in the future.

2.1 Metropolitan Water District (MWD)

Water imported to the San Diego region comes from two primary sources, the Colorado River through the 240-mile Colorado River Aqueduct, and the State Water Project (SWP) from Northern California through the Sacramento-San Joaquin River Delta and the 444-mile-long California Aqueduct. These sources deliver water to the Metropolitan Water District of Southern California (MWD), which distributes water supplies to water agencies throughout the Southern California region including the San Diego County Water Authority (SDCWA).

2.2 San Diego County Water Authority (SDCWA)

The SDCWA is composed of 23 member agencies and receives purchased water by gravity through two aqueducts containing five large-diameter pipelines. These pipelines then supply the member water agencies, including OWD which serves portions of the City.

On June 23, 2011, the SDCWA Board of Directors adopted its final 2010 Urban Water Management Plan (UWMP). The 2010 UWMP identifies a diverse mix of water resources projected to be developed over the next 25 years to ensure long-term water supply reliability for the region. The 2010 UWMP includes projected water use based on SANDAG's 2050 Regional Growth forecasts, which include the City's 2005 GPA.

The plan quantifies the regional mix of existing and projected local and imported supplies necessary to meet future retail demands within the SDCWA service area in normal, single dry, and multiple dry years. The plans submitted by the member agencies and MWD provide details on their supplies that contribute to the diversification and reliability of supplies for the San Diego region. It is noted that through aggressive conservation programs, the region has conserved an average of 53,605 acre-feet per year (af/yr) of water over the last five years.

Table 1 shows projected normal water demands for the SDCWA service area through 2035. The table also shows the regional water demand forecast taking into account member agency water conservation targets as required by Senate Bill 7 of the Seventh Extraordinary Session of 2009. On November 10, 2009, SBX7-7 was passed seeking to achieve a 20 percent statewide reduction in urban per capita water use by December 2015. In order to meet this goal, urban retail water suppliers are required to develop water use targets to help meet the goal. As shown in Table 1, normal year water demand within the SDCWA's service area is expected to grow from about 654,022 af in 2015 to 903,213 af by 2035. The application of conservation measures derived by SBX7-7 would result in the incremental increase in water conservation over the next 35 to 40 years. Tables 2 and 3 show the forecasted single dry year water demand and

multiple dry year total water demand, respectively. Both tables apply conservation savings derived from SBX7-7.

TABLE 1
SDCWA NORMAL YEAR WATER DEMAND
(acre-feet)

Type	2015	2020	2025	2030	2035
M&I Demand ^{1,2,3}	590,731	661,415	728,574	788,174	839,417
Agricultural Demand ⁴	55,358	49,534	48,380	47,279	46,178
Near-Term Annexations ⁵	5,709	6,670	6,670	6,670	6,670
Accelerated Forecasted Growth ⁶	2,224	4,421	6,605	8,776	10,948
Total Demand Forecast	654,022	722,040	790,229	850,899	903,213
SBX7-7 Conservation	-6,737	-46,951	-72,234	-97,280	-117,528
Total Demand With Sbx7-7 Conservation	647,285	675,089	717,995	753,619	785,685

SOURCE: Table 2-2 and 2-5 of 2010 UWMP

¹M&I: Municipal and Industrial demands includes 12,000 af demand for Camp Pendleton

²Reflects passive historic conservation savings

³Includes increment of demand associated with the decay of historic active conservation program savings as follows: 2015=7,111 acre-feet (af); 2020=14,221 af; post 2020=21,332 af.

⁴Includes forecasts from two different categories: (1) projected demands in the SDCWA's Special Agricultural Water rate program and (2) demands under SDCWA M&I rate

⁵Known near-term annexation demands include: Escondido (314 af), Otay Ranch Village 13 and parcels east of Village 13 (2,361 af), Peaceful Valley Ranch (70 af), Sycuan reservation (392 af), Stoddard Parcel (2 af), San Ysidro Mt. Parcel Village 17 (148 AF), Viejas (2,000AF), Rincon (417AF), Meadowood Development (460 AF), Pauma Ranch (76 af), and Warner Ranch/Sycamore Ranch (430 af).

⁶Accounts for projected growth as identified by SANDAG which are not yet included in local jurisdictions' plans.

TABLE 2
SDCWA SINGLE DRY YEAR WATER DEMAND

	2015	2020	2025	2030	2035
Single Dry-Year Demand	694,257	765,409	836,967	901,210	956,544
SBX7-7 Conservation	-6,737	46,951	72,234	97,280	117,528
TOTAL DEMANDS	687,520	718,458	764,733	803,930	839,016

SOURCE: Table 2-7 of the 2010 UWMP.

TABLE 3
SDCWA MULTIPLE DRY YEAR WATER DEMAND

Year	Total Estimated Demands (af/yr)
2012	658,381
2013	679,509
2014	711,241
2016	682,338
2017	705,461
2018	740,326
2021	724,294
2022	751,800
2023	790,177
2126	772,892
2027	801,649
2028	844,137
2031	811,421
2032	842,947
2033	882,795

SOURCE: San Diego County Water Authority 2005.

The SDCWA 2010 UWMP identifies a diverse mix of resources available to the SDCWA to meet future water demands including both local and imported sources. Section 4.0 of the SDCWA 2010 UWMP provides specific documentation on the existing and projected supply sources being implemented by the SDCWA including the following:

- Long-term transfers of Colorado River water from the Imperial Irrigation District (IID)
- Conserved water transfers from the All-American Canal and Coachella Canal Lining projects
- Imported supplies from Metropolitan Water District (MET)
- Carlsbad Seawater Desalination project is a reliable water source commencing in 2020

In addition, local resources developed and managed by the SDCWA's member agencies are included in the assessment of available water supplies. These local supplies include surface water, groundwater, recycled water, and local desalinated seawater. The overall diversity of supplies provides for flexibility and adaptability in the resource mix to handle potential risks associated with managing and developing supplies. These risks could include environmental constraints, lack of political will, water supply contamination, and/or lack of funding.

Implementation of water conservation measures within the SDCWA’s service area is one of the most cost-effective means of reducing demands. The SDCWA plan for achieving conservation savings and the estimated amount of future savings is discussed in detail in the SDCWA’s 2010 Update.

2.3 Otay Water District (OWD)

The OWD service area is generally located within the south-central portion of San Diego County and includes approximately 137 square miles, providing water to a population of approximately 206,000. The OWD currently obtains all of its potable water supply from the SDCWA as imported water and receives the majority of its treated supply from SDCWA’s Pipeline Number 4 of the Second San Diego Aqueduct

OWD uses and maintains 722 miles of potable water mains and 93 miles of recycled water mains. In 2010, they had 29,866 af of potable water and 4,298 af of recycled water sales. The water system includes 40 potable reservoirs, 4 recycled water reservoirs, and 28 pump stations. They have a potable storage capacity of 226.3 million gallons and a recycled storage capacity of 43.7million gallons. OWD also operates the Ralph W. Chapman Water Recycling Facility that can produce 1,300,000 gallons of water per day.

Table 4 provides the projected normal year supply and demand comparison as presented in the OWD 2010 UWMP. Table 5 presents the same information for the single dry year.

**TABLE 4
 OWD PROJECTED NORMAL YEAR SUPPLY AND DEMAND**

	FY 2015	FY 2020	FY 2025	FY 2030	FY 2035
SDCWA (af/yr) ¹	40,483	41,321	44,015	45,974	48,614
Recycled (af/yr)	4,400	5,000	5,800	6,800	8,000
Total Supply (af/yr)	44,883	46,321	49,815	52,774	56,614
District Demands ²	44,883	53,768	63,811	70,669	77,171
SBX7-7 Conservation Target	0	-7,447	-13,996	-17,895	-20,557
Demand Totals with Conservation	44,883	46,321	49,815	52,774	56,614
Difference as a % of Supply	0%	0%	0%	0%	0%
Difference as a % of Demand	0%	0%	0%	0%	0%

SOURCE: Table 31 OWD UWMP 2010.

¹SDCWA supplies assume that the OWD demands meet its SBX7-7 water use targets.

²OWD demand projections based on SANDAG2050 population forecasts and near-term annexations

TABLE 5
OWD PROJECTED SINGLE DRY YEAR SUPPLY AND DEMAND

	FY 2015	FY 2020	FY 2025	FY 2030	FY 2035
SDCWA (af/yr) ¹	40,483	41,321	44,015	45,974	48,614
Recycled (af/yr)	4,400	5,000	5,800	6,800	8,000
Total Supply (af/yr)	44,883	46,321	49,815	52,774	56,614
District Demands ²	44,883	53,768	63,811	70,669	77,171
Demand Totals with Conservation	44,883	46,321	49,815	52,774	56,614
Difference as a % of Supply	0%	0%	0%	0%	0%
Difference as a % of Demand	0%	0%	0%	0%	0%

SOURCE: Table 32 OWD UWMP 2010.

¹SDCWA supplies assume that the OWD demands meets its SBX7-7 water use targets.

²OWD demand projections based on SANDAG2050 population forecasts and near-term annexations.

The 2008 OWD Water Resources Master Plan (WRMP) was approved on February 3, 2010. The WRMP identified the capital facilities needed to provide an adequate, reliable, flexible, and cost-effective potable and recycled water system for the delivery of OWD, City of San Diego, SDCWA, and/or MWD water supply to meet approved land use development plans and growth projections. The WRMP was consistent with SANDAG forecasts through 2030; however, the originally approved WRMP was revised in November 2010 (WRMP Revised) to include the projected land uses within Otay Ranch Villages 8, 9, 10, and the RTP, as identified in Land Offer Agreements dated April 15, 2008 (between the City and OLC) and May 20, 2008 and August 17, 2010 (between the City of Chula Vista and OV Three Two, LLC, and JJJ&K Investments Two, LLC), in its list of major planned developments within the OWD (See OWD 2009:Figure 2-3 and Table 2-3).

The OWD, in concert with the City of Chula Vista, also continues to expand the use of recycled water. The OWD continues to actively require the development of recycled water facilities and related demand generation within new development projects within the City of Chula Vista. The City of Chula Vista and OWD plan to jointly develop a feasibility study to provide the City with projected needed sewer disposal capacity and production of recycled water. To address the uncertainties surrounding imported water supplies as a result of potential drought shortages or emergency seismic conditions, in addition to the rising costs of imported water, OWD has prepared an Integrated Resources Plan (IRP) to develop a flexible, long-term strategy for its future supply portfolio. The 2007 IRP identifies new supply options beyond the planned facility expansions and upgrades through 2010.

As presented in the WRMP Revised, the IRP identified supply options, including water conservation, groundwater development, desalination, recycled water, additional imported water alternatives, and regional water banking and transfers. These options

were integrated into a set of eight alternative water supply strategies. The IRP recommended the following projects for implementation.

Short-Term (2008-2010)

- Additional conservation measures
- SD17 agreement with City of San Diego to treat raw water at Alvarado WTP
- Additional purchases from recycled water from the City of San Diego's South Bay
- Water Reclamation Plant (SBWRP)
- North District Recycled Water Concept
- Water banking agreements

Long-Range (2010-2030)

- Central Valley and Land Following Transfers
- Groundwater projects (Demineralization and Conjunctive Use)
- Ocean Desalination (Poseidon, Sweetwater/SD South Bay, Rosarito, Mexico, or other projects)
- Stripping (Scalping) Plant along the County of San Diego's Spring Valley Trunk Sewer
- North of Delta Transfers

3.0 Emergency Water Supply

Southern California faces water supply reliability issues due to the dependence on transporting imported water through the aqueduct system. The California Aqueduct and the Colorado River Aqueduct share the common vulnerability of crossing paths with several major fault lines. Therefore, the possibility of a major seismic event causing enough damage to stop water supply to the region is being addressed with the development of a regional emergency storage system. This system will be able to sustain demands for varying amounts of time.

The OWD Master Plan states that:

The SDCWA has long advocated and recommends that each of its member agencies provide systems and alternative supply to protect against CWA aqueduct facilities being out of service for up to ten continuous days any time of the year so an aqueduct outage can be

survived while service to the member agency customers can continue essentially uninterrupted.

OWD has addressed these concerns as part of their current CIP program seeking to provide storage of emergency water supply in the event their primary supply line, Pipeline Number 4 from the SDCWA, experiences failure. They have successfully completed an emergency supply plan to provide a maximum five annual average days of potable water emergency storage. OWD has also prepared a plan to develop sufficient local supplies such as through arrangements with neighboring agencies when operated in conjunction with storage that meets a supply outage of at least ten continuous days any time of the year.

4.0 2010 California Green Building Standards Code

The 2010 California Green Building Standards Code, referred to as CALGreen, took effect January 2011 instituting mandatory minimum environmental performance standards for all ground-up new construction of commercial and low-rise residential occupancies. It includes both mandatory requirements and additional voluntary environmental performance standards. Local jurisdictions must enforce the minimum mandatory requirements and may also adopt the Green Building Standards with amendments for stricter requirements.

The mandatory standards require 20 percent mandatory reduction in indoor water use relative to specified baseline levels. A water use compliance form must demonstrate the minimum 20 percent reduction in indoor water use by either showing a 20 percent reduction in the overall baseline water use as identified in CalGreen or a reduced per-plumbing-fixture water use rate.

5.0 Chula Vista Water Standards

5.1 Chula Vista Green Building Standards

The Green Building Standards ordinance (GBS ordinance) (Ordinance No. 3140) was adopted by the City Council on October 6, 2009, and became effective November 5, 2009. This represents early adoption of the then pending California Green Building Standards discussed above. Permit applications for all new/remodel residential and non-residential projects submitted on or after November 5, 2009 are required to comply with the GBS ordinance. Through adherence to the GBS ordinance, new residential and

non-residential construction, additions, remodels and improvements will benefit from enhanced energy efficiency, pollutant controls, interior moisture control, improved indoor air quality and exhaust, indoor water conservation, storm water management, and construction waste reduction and recycling.

5.2 Growth Management Program/Ordinance

The goal of the City of Chula Vista's Growth Management Program is to ensure that the supply of water required by existing and future residents is available from suppliers and is at a level of quality necessary for its intended use. The Growth Management Program has two objectives regarding water supply and distribution: (1) Ensure that adequate storage, treatment, and transmission facilities are constructed concurrently with planned growth; and (2) Ensure that water quality standards are not jeopardized during growth and construction.

The Growth Management Ordinance threshold for water supply and distribution states:

The City shall annually provide the San Diego County Water Authority, the Sweetwater Authority and the Otay Municipal Water District with a 12- to 18-month development forecast and request and evaluation of their ability to accommodate the forecast and continuing growth. Districts' replies should address the following:

- a. Water availability to the City and Planning Area, considering both short and long term perspectives;
- b. Amount of current capacity, including storage capacity, now used or committed;
- c. Ability of affected facilities to absorb forecast growth;
- d. Evaluation of funding and site availability for projected new facilities; and
- e. Other relevant information the District(s) desire(s) to communicate to the City and the Growth Management Oversight Commission.

The Chula Vista Growth Management Ordinance, Municipal Code Section 19.09.050C, requires a Water Conservation Plan (WCP) to be submitted with all Sectional Planning Area (SPA) Plans. If a SPA Plan is not required, a WCP is required to be submitted with Tentative Subdivision Maps. The Growth Management Program further requires that a Water Conservation Plan be submitted for all major development projects, defined as

residential projects consisting of 50 dwelling units or greater, or commercial and industrial projects with 50 Equivalent Dwelling Units (EDUs) of water demand or greater.

In accordance with the Growth Management Program, WCPs must provide an analysis of water usage requirements of the Proposed Project. This includes a detailed plan of proposed measures for water conservation, use of reclaimed water, and other means of reducing per capita water consumption from the Proposed Project, as well as defining a program to monitor compliance.

The City of Chula Vista also ensures that an adequate supply and quality of water is provided to accommodate new master planned developments by implementing a set of project processing requirements for applicants to follow through each stage of development. Processing requirements for GDPs, SPAs/Public Facilities Finance Plans, and Tentative Maps are described below:

A General Development Plan for an area shall identify:

- Total water demands;
- Storage requirements, and
- Needed facilities to service all new projects.

A Sectional Planning Area Plan/Public Facilities Finance Plan shall identify:

- Demands for street and sewer improvements;
- Location of improvements in conformance with the concerned water districts master plan;
- Cost estimates and financing responsibilities;
- financing methods; and
- A WCP for all developments with 50 EDUs of water demand or greater.

At the Tentative Map stage, identification of the following improvements is required:

- Distribution and storage facilities by phase of development;
- Dedication of required easements;
- Identification of financing for each development,;
- Letter from the concerned water district verifying their ability to serve the phased development; and

- If needed, conditions to comply with Metro II Program concepts.

At the Final Map stage, conditions are implemented and there is a confirmation of the water district's ability to service project demands. Ultimately, with the issuance of Building Permits all water fees are to be paid.

5.2 Chula Vista Landscape Manual

The City of Chula Vista Landscape Manual includes requirements and standards for landscape areas throughout the City and identifies the need for water conservation practices to be implemented in the form of xeriscape landscaping and drought tolerant plant materials. The Landscape Manual states that water conserving methods of landscaping are a legal requirement of the State of California, as set forth in Government Code Section 65591 et. seq. (AB325 1990) and the State Department of Water Resources Water Efficient Landscape Ordinance.

6.0 Forecast Conditions

The technical analysis of water supply and distribution impacts associated with the Proposed Project is discussed below. Table 6 shows the water demand calculations for the Proposed Project using the water unit duty factors obtained from the WRMP Revised. As shown in Table 6, the general potable water demand associated with the increased land uses for Villages 8 West and 9, and the RTP, is calculated to total approximately 538,329 gallons per day (gpd).

**TABLE 6
 POTABLE WATER DEMAND SUMMARY
 FOR THE PROPOSED PROJECT LAND USES**

Land Use Type	Unit Demand	Quantity	Total Demand (gpd)
Single-family Residential	500 gpd/unit ¹	247 units	123,500 gpd
Multi-family Residential	255 gpd/unit ²	633 units	161,415 gpd
Commercial	0.14 gpd/sf ³	550,000 sf	77,000 gpd
Schools	1,785 gpd/ac	6.4 ac	11,424 gpd
Parks ⁴	2,155 gpd/ac	5.1 ac	10,990 gpd
Industrial (RTP)	0.07 gpd/sf ⁵	2.2 million sf	154,000 gpd
Community Purpose Facility	893 gpd/ac	-9.3 ac	-8,305 gpd
TOTAL			538,329 gpd

SOURCE: 2008 OWD WRMP (revised November 2010).

gpd= gallons per day; sf= square feet; ac= acre

¹Based on medium density (3-8 du/acre)

²Adjusted to assumed use of reclaimed water

³Recommended unit demand of 1,785 gpd/ac has been adjusted to reflect multi-story commercial buildings based on building square feet. To estimate water usage, the 1,785 gpd/ac factor from OWD and a factor of 0.3 from the Water Agency Standards was used to convert gross acres to net building area as follows: 1.0

gross acre is assumed to have 13,068 square feet of building (43,560 sf/ac x 0.3). From this, the demand factor of 0.14 gpd/sf (1,785/13,068) was calculated.

⁴Potable water demand based on assumption that increased acreage will be irrigated by potable water.

⁵The recommended unit demand of 893 gpd/ac has been adjusted. Using the formula in 3, above, the demand factor of 0.07 (893/13,068) was calculated.

Applying conservation measures required in the CalGreen and the City's GBS Ordinance, the Proposed Project's water use would achieve a 20 percent reduction in water consumption compared to the general water use assumptions contained in the 2008 WRMP Update. Therefore, accounting for the mandatory conservation measures included in the Proposed Project, water consumption rates were adjusted by 20 percent as shown Table 7.

**TABLE 7
 POTABLE WATER DEMAND SUMMARY
 FOR THE PROPOSED PROJECT LAND USES
 ADJUSTED FOR 20% CONSERVATION MEASURES**

Land Use Type	Unit demand	Quantity	Total Demand above 2005 GPU Preferred Plan (gpd)
Single-family Residential	400 gpd/unit ¹	247 units	98,800 gpd
Multi-family Residential	205 gpd/unit ²	633 units	129,765 gpd
Commercial	0.11 gpd/sf ³	550,000 sf	60,500 gpd
Industrial (RTP)	0.06 gpd/sf ⁵	2.2 million sf	132,000 gpd
Schools	1,428 gpd/ac	6.4 ac	9,139 gpd
Parks ⁴	1,725 gpd/ac	5.1 ac	8,798 gpd
Community Purpose Facility	714.4 gpd/ac	-9.3 ac	-6,644 gpd
TOTAL			432,358 gpd

SOURCE: 2008 OWD WRMP (revised November 2010)

gpd= gallons per day

sf= square feet

ac= acre

¹Based on medium density (3-8 du/acre)

²Adjusted to assumed use of reclaimed water

³Recommended unit demand based on multi-story commercial buildings based on building square feet as described in Note 3, Table 5.8-7 adjusted by 20% to reflect mandatory project conservation measures

⁴Potable water demand based on assumption that increased acreage will be irrigated by potable water.

⁵Parks to be irrigated by recycled water. Potable water estimates per Table 5.8-6, above.

⁵The recommended unit demand of 893 gpd/acre has been adjusted. Using the formula described in Note 3, Table 5.8-7, adjusted by 20%.

Total Proposed Project water usage after applying a 20 percent reduction, would equate to 432,358 gpd. While future SPA plans could aim for greater percentage reductions, at this level of analysis the minimum required reductions are assumed. The GPU/GDP EIR estimated total water demands within the Land Use Change Area to be 930,494 gpd. Adding the Proposed Project's increased land use potential to this amount, results in total estimated water demands within the Land Use Change Area of approximately 1.4 million gpd.

OWD's Growth Management Oversight Commission (GMOC) 2005 Questionnaire (Questionnaire) states that the additional water supply demands resulting from the Proposed Project can be addressed through the typical processes of land use information provided to SANDAG by the City of Chula Vista and used by the SDCWA in their supply projection analysis methodology.

This forecasted increase in population associated with the Proposed Project is accounted for in the most recently updated regional planning and supply projection efforts undertaken by SDCWA, and OWD. These documents conclude that an adequate water supply is available to meet the needs of the Proposed Project. To assure such adequacy, OWD will be required to certify the sufficiency of a reliable water supply primarily through the water assessment and verification process (SB-610 certification process). Additionally, all future development within the Land Use Change Area would be required to comply with GP Objectives, prepare water conservation plans to document compliance with City ordinance specifically identifying water use reduction measures incorporated into the design and planning of the individual projects, and assure infrastructure is in place. Notwithstanding these requirements, long-term water supply is not assured and contracts do not currently exist to serve the City through buildout of the Proposed Project. Therefore, at this level of analysis, impacts associated with water supply would be significant.

7.0 References Cited

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