

**WATER SUPPLY ASSESSMENT AND  
VERIFICATION REPORT  
FOR THE  
LILAC HILLS RANCH PROJECT**

October 9, 2012



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## CITATIONS

- American Water Works Association (AWWA). *Water Use Statistics*. Accessed at <http://www.drinktap.org/consumerdnn/Home/WaterInformation/Conservation/WaterUseStatistics/tabid/85/Default.aspx> on September 26, 2012.
- United States Environmental Protection Agency (EPA). *Water-Efficient Landscaping: Preventing Pollution & Using Resources Wisely*. Accessed at [http://www.epa.gov/WaterSense/docs/water-efficient\\_landscaping\\_508.pdf](http://www.epa.gov/WaterSense/docs/water-efficient_landscaping_508.pdf) on September 26, 2012.

## CHAPTER 1

### PURPOSE

On January 1, 2002, Senate Bill 610 (SB 610) and Senate Bill 221 (SB 221) took effect. The intent of SB 610 and SB 221 was to improve the link between information on water supply availability and certain land-use decisions made by cities and counties. SB 610, which has been codified in the Water Code beginning at Section 10910, requires the preparation of water supply assessments for projects within cities and counties that propose to construct 500 or more residential units. In addition, under SB 610, the assessment must be furnished to cities and counties for inclusion in any environmental documentation for projects subject to the California Environmental Quality Act (CEQA). Under SB 221, approval by a city or county of certain residential subdivisions requires an affirmative written verification of sufficient water supply or water supply verification. SB 221 is intended as a mechanism to ensure that collaboration occurs between land use agencies, water purveyors, and land development so that it can be demonstrated that adequate water supplies will be available to serve new large subdivisions before construction begins.

A foundational document for compliance for both SB 610 and SB 221 is the Urban Water Management Plan (UWMP) of the relevant water agency. Both of these statutes repeatedly identify the UWMP as a planning document that can be used by a water supplier to meet the standards set forth in both statutes. The Urban Water Management Plan for the Valley Center Municipal Water District (District) is titled, "Urban Water Management Plan 2010 Update." It was prepared by Brown and Caldwell, is dated July 2011, and is referred to throughout this report as the District 2010 UWMP. This document was presented to the District Board of Directors at their June 20, 2011 meeting for a Public Hearing. At the completion of the Public Hearing, the Board of Directors approved a resolution adopting the document.

The purpose of this document is to provide the water supply assessment and verification (WSAV) required by SB 610 and SB 221 for the Lilac Hills Ranch project. The Lilac Hills Ranch Project is proposing to build 1,746 dwelling units as well as commercial/retail uses. A more detailed description of the Lilac Hills Ranch Project is provided in Chapter 3 of this report. This WSAV evaluates water supplies that are or will be available during normal, single-dry year, and multiple dry water years during a 20-year projection to meet existing demands, existing plus projected demands of the proposed Project, and future water demands served by the District.

## CHAPTER 2

### FINDINGS

This WSAV Report finds that the historic use of parcels which are part of the Lilac Hills Ranch has primarily been for agricultural purposes with some residential and commercial use. The transition of parcels from agricultural use to single-family homes and mixed agricultural/residential use, as proposed with the Lilac Hills Ranch project, is expected within the District and is evident in SANDAG projections and in the District's water planning efforts, most notably in the District 2010 UWMP.

This WSAV Report finds that the estimated annual water demand by the proposed Lilac Hills Ranch project is 1,290 acre-feet per year. The projected per capita water demand by the project is 258 gallons per person per day. In comparison, the District's projected per capita water demand is 850 gallons per person per day. The per capita water demand for the Lilac Hills Ranch project is therefore expected to be less than one-third of the District's.

This WSAV Report finds that the estimated annual water demand of 1,290 afy by the Lilac Hills Ranch project does not represent 1,290 afy of new demand to the District (i.e. new water which must be supplied), rather the net new demand on the District will effectively be zero when considering the historic imported potable water use in the project area, the project's water conservation approach, development and use of recycled water, and continued use of onsite groundwater.

Specifically, this WSAV Report finds that the project will offset a portion of its water demand through the development of 289 afy of recycled water, 191 afy of groundwater (which has been historically utilized onsite), and 323 afy in water savings via water conservation efforts. The remaining water demand of 487 afy is less than the project parcels' existing imported water demand of 513 afy. Therefore, the project imparts no net increase in water demands to the District.

Because the District's population and water demand projections are anticipating the land use transition from agriculture to single-family homes and mixed agricultural/residential use, and the Lilac Hills Ranch project's water demand (when considering offsets) is less than existing imported water use, the project is therefore included in the District's most recent long term water demand forecasts (i.e. District 2010 UWMP dated July 2011).

Water supplies necessary to serve the demands of the proposed project, along with existing and other projected future users, as well as the actions necessary to develop these supplies, have been identified in the District 2010 UWMP. This WSAV Report demonstrates and verifies that with development of the resources identified, there will be sufficient water supplies over a 20-year planning horizon to meet the projected demand of the proposed project and the existing and other planned development projects within the District's service area during normal, single-dry, and multiple-dry water years.

## CHAPTER 3

### PROJECT DESCRIPTION

The Lilac Hills Ranch project is located in the northern portion of the County of San Diego. This development project is situated in an unincorporated area east of the Interstate 15 Freeway and south of West Lilac Road.

The proposed project land use will consist of a total of 1,746 residential dwelling units, community commercial space, a school, parks, and other public services such as a Senior Center and a YMCA. A summary of the proposed land uses is listed in Tables 3-1 and 3-2 below.

<b>TABLE 3-1 LILAC HILLS RANCH LAND USE SUMMARY</b>				
<b>Land Use</b>	<b>Planning Areas</b>	<b>Gross Acreage</b>	<b>Dwelling Units (Square Feet)</b>	<b>Zoning</b>
Single-Family	SF1-8	138.9	932	RU
Senior Community (Age-Restricted Units)	SF 9-14	76	468	RU
Multi-Family	MF	15	241	C34
Assisted Living Facility (200 beds)	AL	5.3	N/A	RU
Commercial and Mixed-Use <sup>2</sup>	C	16.9	105 (75,000 sf)	C34
Senior Center	SC	3.3	N/A	RU
K-8 School Site	S	11.2	N/A	RU
Institutional Use	I	7.5	N/A	RU
Parks	P	21	N/A	RU/C34
Private Recreation	PR	1.8	N/A	C34
Private Park/Village Green,	P-6 or P-7	1.9	N/A	C34
Biological Open Space	OS	105	N/A	RU
Common Areas and Agricultural Open Space	--	37.8	N/A	--
Manufactured Slopes	--	79.3	N/A	--
Roads	--	81.15	N/A	--
Water Reclamation Facility	--	2.4	N/A	RU
Recycling Facility/Trail Head/Staging Area	RF	0.6	N/A	C34
Detention Basins	DB	5.5	N/A	--
<b>TOTALS</b>		<b>608</b>	<b>1,746</b>	<b>—</b>

Last updated August 26, 2012

## PROJECT WATER DEMANDS

Water demands for the Lilac Hills Ranch project are summarized in Table 3-2. This table represents the maximum projected water demands for the Lilac Hills Ranch project based on typical demand factors (water use rates) for the proposed land use type. Detailed water demand information for the project is provided in Appendix A.

<b>TABLE 3-2 LILAC HILLS RANCH PROJECTED WATER DEMANDS</b>					
<b>Land Use</b>	<b>Acres</b>	<b>Units</b>	<b>Water Use</b>		
			<b>Demand Factor</b>	<b>Use gpm</b>	<b>Use gpd</b>
Single Family	138.90	932	500 gpd/DU	323.61	466,000
Senior Community	76.00	468	300 gpd/DU	97.50	140,400
Multi-Family	15.00	241	433 gpd/DU	72.47	104,353
Commercial/Mixed Use	16.90	105	2,333 gpd/ac	27.38	39,428
Water Reclamation	2.40	-	2,333 gpd/ac	3.89	5,599
Detention Basin	5.50	-	- -	-	-
School	11.20	-	2,333 gpd/ac	18.15	26,130
Private Recreation	1.80	-	2,333 gpd/ac	2.92	4,199
Community Purpose	3.30	-	2,333 gpd/ac	5.35	7,699
Assisted Living	5.30	-	2,333 gpd/ac	8.59	12,365
Institutional	7.50	-	2,333 gpd/ac	12.15	17,498
Park	21.00	-	1,667 gpd/ac	24.31	35,007
Biological OS	105.00	-	- -	-	-
Non-Circulating Road	40.35	-	-	-	-
Circulating Road	40.80	-	-	-	-
Common Areas/Ag	37.80	-	2,500	65.63	94,500
Manufactured Slopes	79.30	-	2,500	137.67	198,250
<b>Total, gpd</b>	<b>608.05</b>	<b>1,746</b>		<b>799.60</b>	<b>1,151,427</b>
<b>Total, afy</b>					<b>1,290</b>

The demands in Table 3-2 do not account for water conservation measures the project is planning to implement or the use of non-potable water sources such as groundwater and recycled water for the irrigation of the HOA landscaped areas. Examples of water conservation features the project may utilize are provided below. Ultimately, the specific water conservation features incorporated into the project will be based on the most effective measures available and those recommended by the District.

Interior water conservation features:

- High efficiency clothes washers
- High efficiency dishwashers
- Low flush toilets
- Low flow water faucets and showerheads
- Tankless water heaters

Exterior water conservation features:

- Weather-based irrigation controllers
- Low water use landscaping (xeriscape)
- Restrictions limiting turf use and encouraging artificial turf

Additional conservation features:

- Installation of “smart” meters with leak detection capability
- Individually metered multi-family units

Research by the American Water Works Association has demonstrated that the installation of water-efficient interior water fixtures can result in a water use reduction of 30 to 35 percent with the greatest reductions seen with clothes washers and toilets (AWWA). Similarly, the conversion to water-efficient exterior landscaping has demonstrated a reduction in water use of greater than 30 percent (EPA).

To account for conservation measures the Lilac Hills Ranch project is planning to implement, an overall reduction in interior and exterior water use of 25 percent is assumed. Table 3-3 provides the project’s proposed water demands with the implementation of conservation measures as well as the utilization of non-potable water (Appendix A provides a comparison of interior and exterior use with and without conservation).

**TABLE 3-3  
LILAC HILLS RANCH POTABLE AND NON-POTABLE DEMANDS  
WITH CONSERVATION**

Project Information		Potable Water Demand, gpm		Non-Potable Water Demand, Exterior	Total Potable Demand	Total Non-Potable Demand
Land Use	Project Water Demands	Interior Demand	Exterior Demand			
Single Family	349,500	139,800	104,850	104,850 *	244,650	104,850
Senior Community	105,300	42,120	31,590	31,590 *	73,710	31,590
Multi-Family	78,265	31,306	14,088	32,871 *	45,394	32,871
Commercial/Mixed Use	29,571	11,828	-	17,742	11,828	17,742
Water Reclamation	4,199	1,680	-	2,520	1,680	2,520
Detention Basin	-	-	-	-	-	-
School	19,597	7,839	-	11,758	7,839	11,758
Private Recreation	3,150	1,260	-	1,890	1,260	1,890
Community Purpose	5,774	2,310	-	3,465	2,310	3,465
Assisted Living	9,274	3,709	-	5,564	3,709	5,564
Institutional	13,123	5,249	-	7,874	5,249	7,874
Park	26,255	10,502	-	15,753	10,502	15,753
Biological Open Space	-	-	-	-	-	-
Non-Circulating Road	-	-	-	-	-	-
Circulating Road	-	-	-	-	-	-
Common Areas/Ag	70,875	-	-	70,875	-	70,875
Manufactured Slopes	148,688	-	-	148,688	-	148,688
<b>Total, gpd</b>	<b>863,570</b>	<b>257,603</b>	<b>150,528</b>	<b>455,440</b>	<b>408,131</b>	<b>455,440</b>
<b>Total, afy</b>	<b>967</b>	<b>289</b>	<b>169</b>	<b>510</b>	<b>457</b>	<b>510</b>

\* Non-potable water demand will be part of Common Area Irrigation

## RECYCLED WATER DEVELOPMENT AND USE

The Lilac Hills Ranch project plans to either (1) construct a new wastewater reclamation facility (i.e. wastewater treatment plant) onsite, (2) expand the existing Lower Moosa Canyon Water Reclamation Plant, or (3) develop a combination of the two, to convert wastewater generated by the project into recycled water for landscape irrigation. The recycled water will be produced in accordance with Title 22 standards for unrestricted use. Additional information with respect to these facilities can be found in the project's *Wastewater Management Alternatives for the Lilac Hills Ranch Community* (dated September 14, 2012 and included in the project's EIR). Table 3-4 summarizes the projected recycled water generation which shall be used to supply a portion of the project's 510 afy non-potable water demand.

<b>TABLE 3-4</b>					
<b>LILAC HILLS RANCH ESTIMATED RECYCLED WATER GENERATION</b>					
<b>Land Use</b>	<b>Acres</b>	<b>Units</b>	<b>Avg 24 hr Sewage/Recycled Generation</b>		
			<b>Factor</b>	<b>gpd</b>	
Single Family	138.90	932	150	gpd/unit	139,800
Senior Community	76.00	468	90	gpd/unit	42,120
Multi-Family	15.00	241	130	gpd/unit	31,330
Commercial/Mixed Use	16.90	105	700	gpd/ac	11,830
Water Reclamation	2.40	-	700	gpd/ac	1,680
Detention Basin	5.50	-	700	gpd/ac	3,850
School	11.20	-	700	gpd/ac	7,840
Private Recreation	1.80	-	700	gpd/ac	1,260
Community Purpose	3.30	-	700	gpd/ac	2,310
Assisted Living	5.30	-	700	gpd/ac	3,710
Institutional	7.50	-	700	gpd/ac	5,250
Park	21.00	-	500	gpd/ac	10,500
Biological Open Space	105.00	-	0	gpd/ac	-
Non-Circulating Road	40.35	-	0	gpd/ac	-
Circulating Road	40.80	-	0	gpd/ac	-
Common Areas/Ag	37.80	-	0	gpd/ac	-
Manufactured Slopes	79.30	-	0	gpd/ac	-
<b>Total</b>	<b>608.05</b>	<b>1,746</b>			<b>257,630</b>
<b>Total, afy</b>					<b>289</b>

## EXISTING AND HISTORICAL WATER USE

The Lilac Hills Ranch project acreage has been historically utilized primarily for agricultural purposes and has some existing development as well. This section will discuss historical District water use as well as historical private groundwater use by the Lilac Hills Ranch parcels.

### Historical District Water Demand and Use

The District provided historical billing data for those parcels which are part of the proposed Lilac Hills Ranch project to calculate an estimate of historical water use for the property. This report follows the District 2010 UWMP methodology which utilizes a ten year historical window to establish the baseline for a 20% reduction by 2020 (2008 to 1999) and a five year historical window to establish a 10% reduction by 2015 (2008 to 2004). To maintain consistency with this baseline calculation, the ten year window from 2008 to 1999 was used to establish the historical average water use from the Lilac Hills Ranch parcels. The average water use on the parcels over the base period was determined to be 513 AF. Details relative to this calculation are provided in Appendix B.

As the project parcels have had this historical demand upon the District, the majority of facility improvements to provide water to the project will occur within the project itself and shall be constructed as the project develops. Offsite improvements shall generally be limited to the improvement of the Country Club and/or Old Country Club Reservoirs to provided added redundancy and reliability. The required water facilities are further described in the report *Water Service for the Lilac Hills Ranch Community in the Valley Center Municipal Water District* (dated September 14, 2012 and included in the project's EIR).

### Historical Groundwater Demand and Use

Nine, private, groundwater production wells are currently operating within the Lilac Hills Ranch project. Six of these wells have been in production for more than five years. Analysis by the project's hydrogeologist estimates that the water wells with at least a five year history of activity may have produced, on average, approximately 191 acre-feet per year. The hydrogeologic assessment is provided in Appendix C. Future use of this water would be to supply a portion of the project's non-potable demands and could be reduced or

terminated if the source is found to be unreliable. Because of the historical use and interruptible nature of its future use, the utilization of this water is considered reliable and does not warrant detailed groundwater basin analyses for the purposes of this report.

**PER CAPITA WATER DEMAND**

This section estimates the per capita water demand of the Lilac Hills Ranch project for comparison to the District's per capita water demand. This basis of this comparison includes all demand types (e.g. domestic, agricultural, commercial, etc). From the District 2010 UWMP, the District population in 2035 is estimated to be 40,486 (District 2010 UWMP, Page 3-7). Further, it is estimated that the water demand from this population in the same year will be 38,537 af (District 2010 UWMP, Page 3-2). District-wide this equates to a per capita water use of 850 gallons per person per day.

The Lilac Hills Ranch project's population is estimated to be 4,470, assuming an average population per dwelling unit of 2.56 people (1,746 dwelling units \* 2.56 people per dwelling unit = 4,470 people). The population density of 2.56 was calculated based on the District's 2035 population of 40,486 divided by the estimated number of single-family and multi-family accounts in year 2035, which is 15,805 (40,486 people/15,805 dwelling units = 2.56 people per dwelling unit). The resulting per capita water use at Lilac Hills Ranch is expected to be 258 gallons per person per day (1,151,427 gpd/4,470 people = 257.6 gallons per person per day). This demand rate does not consider conservation or the use of recycled water or groundwater which would reduce the per capita water demand. In comparison to the District, the Lilac Hills Ranch project's overall projected per capita water usage is estimated to be less than one-third of the District's overall per capita water usage.

**DETERMINATION OF NET DEMAND**

Table 3-5 demonstrates that the net new demand to the District by the Lilac Hills Ranch project shall be less than zero. Specifically, the project will offset a portion of its water demand through the development of 289 afy of recycled water, 191 afy of groundwater (which has been historically utilized onsite), and 323 afy in water savings via water conservation efforts. The remaining water demand of 487 afy is less than the project parcels' existing imported water demand of 513 afy. Therefore, the project imparts no net increase in water demands to the District.

**TABLE 3-5  
LILAC HILLS RANCH  
DETERMINATION OF NET NEW DEMAND TO  
THE DISTRICT**

<b>Demand Type</b>	<b>Quantity, afy</b>
<b>Total Projected Demand <sup>1</sup></b>	<b>1,290</b>
Demand Savings Due to Conservation <sup>2</sup>	- 323
Demand Savings Due to Recycled Water	- 289
Historic Groundwater Demand <sup>3</sup>	- 191
<b>Net Projected Demand</b>	<b>487</b>
<b>Historic Demand <sup>4</sup></b>	<b>- 513</b>
<b>Net New Demand</b>	<b>-26</b>

<sup>1</sup> per Table 3-2

<sup>2</sup> per Table 3-3 (1,290 afy – 967 afy = 323 afy)

<sup>3</sup> per page 9

<sup>4</sup> per page 9

## CHAPTER 4

### HISTORICAL AND PROJECTED DISTRICT WATER DEMANDS

Upon its formation in 1954, the District joined the San Diego County Water Authority (SDCWA) and Metropolitan Water District of Southern California (MWD) to acquire the right to purchase and distribute imported water throughout its service area. The SDCWA has 23 member agencies, and is the regional wholesaler of imported waters. Member agency status entitles the District to directly purchase water from SDCWA on a wholesale basis. The District also looks to the SDCWA to insure, to the best of its ability, that adequate amounts of water will be available to satisfy future water requirements.

The Water Authority and the District work closely with SANDAG's existing estimates and forecasts of population, housing, and employment to calculate future demands within their respective service areas. This provides for comprehensive, integrated planning to ensure that the wholesale and retail supplies match the existing and future water users projected demands.

From the District's 2010 UWMP, "...SANDAG predicts an increase in land utilized for single family housing. In addition there were 21,255 acres of vacant developable land available in 2008. There will only be 1,437 acres in 2020...confirm[ing] the expected transition from a predominantly agricultural area to that of large single-family homes and mixed agricultural/residential usage." The District's projected population is provided in Table 4-1.

<b>Year</b>	<b>2005</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
<b>Population</b>	23,797	25,378	25,785	29,041	32,564	36,400	40,486

Source: VCMWD 2010 UWMP Table 3-1, SANDAG

From the District's 2010 UWMP, "The District has identified that the community is in transition from a predominantly agricultural region to a combined agricultural and residential community, with the potential for greater residential water needs in the future. With the ongoing re-evaluation of existing land use designations for the community, it is anticipated that zoning changes will impact the areas' water supply master planning efforts."

Table 4-2 presents the District's historical water demand on an annual-total and average-daily basis. Table 4-3 then presents the District' projected water demands through 2035.

<b>Fiscal Year Ending</b>	<b>acre-feet</b>	<b>mgd</b>
1990	52,535	46.9
1991	50,354	45
1992	38,282	34.2
1993	39,324	35.1
1994	33,799	30.2
1995	30,724	27.4
1996	38,822	34.7
1997	38,744	34.6
1998	29,301	26.2
1999	39,195	35
2000	48,550	43.3
2001	44,598	39.8
2002	49,524	44.2
2003	43,675	39
2004	52,182	46.6
2005	38,105	34
2006	44,767	40
2007	50,511	45.1
2008	39,500	35.3
2009	34,781	31
2010	29,522	26.4

Source: VCMWD Comprehensive Annual Financial Report 2010 and 2001

<b>Year</b>	<b>ac-ft/yr</b>
2010	29,522
2015	32,544
2020	32,573
2025	34,506
2030	36,448
2035	38,584

Note: Includes conservation required by SBx7-7.  
Source: VCMWD 2010 UWMP Table 3-14

## CHAPTER 5

### EXISTING AND PROJECTED SUPPLIES

Water supply for the Lilac Hills Ranch project will originate from the District, who in turn presently meets water demands primarily from water imported from the SDCWA, with minimal recycled water use.

<b>TABLE 5-1</b>						
<b>HISTORIC AND PROJECTED WATER SUPPLIES TO THE DISTRICT (in afy)</b>						
<b>WATER SOURCE</b>	<b>2010</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035 Optional</b>
SDCWA	29,478	32,497	32,526	34,459	36,401	38,537
District groundwater	0	0	0	0	0	0
District surface diversions	0	0	0	0	0	0
Transfers In	0	0	0	0	0	0
Exchanges In	0	0	0	0	0	0
Recycled Water (Existing)	44	47	47	47	47	47
Other	0	0	0	0	0	0
<b>Total</b>	<b>29,522</b>	<b>32,544</b>	<b>32,573</b>	<b>34,506</b>	<b>36,448</b>	<b>38,584</b>

Source: VCMWD 2010 UWMP Table 4-1

Table 5-2 shows the upper limit of the District's projected future imported water supplies (based on the District's' 20 x 2020 demand limits).

<b>TABLE 5-2</b>					
<b>WHOLESALE SUPPLIES - EXISTING AND PLANNED SOURCES OF WATER (in afy)</b>					
<b>WATER SOURCE</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035 Optional</b>
SDCWA	45,968	46,020	51,603	57,682	64,157
Recycled Water (Existing)	47	47	47	47	47

Source: VCMWD 2010 UWMP Table 4-7

## CHAPTER 6

### AVAILABILITY OF SUFFICIENT SUPPLIES

Chapters 4 and 5 summarized the District's projected demands and supplies, respectively, through 2035 as reported in the District's 2010 UWMP.

#### Recycled Water

Recycled water represents 0.12% of the District's long-term water supply sources while imported water from the SDCWA represents 99.88%. As the generation of wastewater is not expected to decrease over time (and is in fact projected to increase in time as the District transitions to more of a residential community), the recycled water supply as currently projected is considered a reliable supply in normal, single-dry, and multiple-dry years. Moreover, the District 2010 UWMP identified eight future recycled water projects which could produce an upward of approximately 1,300 afy.

#### Groundwater

While the District does not identify groundwater projects as a source of water in their 2010 UWMP projections, they do identify projects which could generate an upwards of 560 afy of groundwater.

#### Imported Water

Table 5-1 provided the water supplies expected to be provided by the Water Authority. These specific values can be found for the District in the Water Authority's 2010 UWMP. Table 5-2 provided the upper limit of the District's imported water supplies based on the District's 20 x 2020 demand limits. Per the District 2010 UWMP, "Because no shortages are anticipated within the SDCWA's service area in the dry-year scenarios analyzed, the District would not anticipate any shortages in single or multiple dry years through 2030."

## DEMONSTRATION OF SUFFICIENT SUPPLIES

Tables 6-1 through 6-3 are the results of the District's water supply reliability analysis in the District 2010 UWMP, illustrating that in normal, single-dry, and multiple-dry water years, the District expects for supply to meet and exceed demand. Moreover, water demands for the project during interim single-dry year and multiple-dry year events shall be managed through implementation of the District's Water Supply Shortage Response Program to balance demands with the Water Authority's available supply allocations.

<b>TABLE 6-1 NORMAL WATER YEAR SUPPLY AND DEMAND COMPARISON (in afy)</b>					
	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035 Optional</b>
Supply totals	45,968	46,020	51,603	57,682	64,157
Demand totals	31,536	31,486	33,424	35,383	37,508

Source: VCMWD 2010 UWMP Table 7-1

<b>TABLE 6-2 SINGLE-DRY WATER YEAR SUPPLY AND DEMAND COMPARISON (in afy)</b>					
	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035 Optional</b>
Supply totals	42,291	42,338	47,475	53,067	59,024
Demand totals	33,522	33,533	35,617	37,759	40,063

Source: VCMWD 2010 UWMP Table 7-2

<b>TABLE 6-3 MULTIPLE-DRY WATER YEAR SUPPLY AND DEMAND COMPARISON (in afy)</b>					
	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035 Optional</b>
<b>Multiple-dry year first year supply</b>					
Supply totals	42,769	42,817	48,011	53,667	59,692
Demand totals	32,054	32,004	33,974	35,965	38,125
<b>Multiple-dry year second year supply</b>					
Supply totals	39,386	39,331	44,102	49,928	54,831
Demand totals	32,700	32,649	34,658	36,689	38,893
<b>Multiple-dry year third year supply</b>					
Supply totals	43,627	43,676	48,974	54,744	60,889
Demand totals	33,847	33,795	35,874	37,976	40,258

Source: VCMWD 2010 UWMP Table 7-3

**APPENDIX A**

**LILAC HILLS RANCH DEMAND PROJECTIONS**

Lilac Hills Ranch Water Demands						
Land Use	Acres	Units	Water Use Based on Alternate Demand Factors			
			Factor		Use	Use
					gpm	gpd
Single Family	138.90	932	500	gpd/DU	323.61	466,000
Senior Community	76.00	468	300	gpd/DU	97.50	140,400
Multi-Family	15.00	241	433	gpd/DU	72.47	104,353
Commercial/Mixed Use	16.90	105	2,333	gpd/ac	27.38	39,428
Water Reclamation	2.40	-	2,333	gpd/ac	3.89	5,599
Detention Basin	5.50	-	-	-	-	-
School	11.20	-	2,333	gpd/ac	18.15	26,130
Private Recreation	1.80	-	2,333	gpd/ac	2.92	4,199
Community Purpose	3.30	-	2,333	gpd/ac	5.35	7,699
Assisted Living	5.30	-	2,333	gpd/ac	8.59	12,365
Institutional	7.50	-	2,333	gpd/ac	12.15	17,498
Park	21.00	-	1,667	gpd/ac	24.31	35,007
Biological Open Space	105.00	-	-	-	-	-
Non-Circulating Road	40.35	-	-	-	-	-
Circulating Road	40.80	-	-	-	-	-
Common Areas/Ag	37.80	-	2,500		65.63	94,500
Manufactured Slopes	79.30	-	2,500		137.67	198,250
<b>Total, gpd</b>	<b>608.05</b>	<b>1,746</b>			<b>799.60</b>	<b>1,151,427</b>
<b>Total, afy</b>						<b>1,290</b>

Lilac Hills Ranch Potable and Non-Potable Water Use Without Conservation									
Land Use	Water Use	Interior Demand %	Potable Water Demand	Exterior Demand %	Potable Water Demand	Non-Potable Water	Total Potable Demand	Total Non-Potable	Project Total Demand
Single Family	466,000	40	186,400	60	139,800	139,800 *	326,200	139,800	466,000
Senior Community	140,400	40	56,160	60	42,120	42,120 *	98,280	42,120	140,400
Multi-Family	104,353	40	41,741	60	18,784	43,828 *	60,525	43,828	104,353
Commercial/Mixed Use	39,428	40	15,771	60	-	23,657	15,771	23,657	39,428
Water Reclamation	5,599	40	2,240	60	-	3,360	2,240	3,360	5,599
Detention Basin	-	0	-	100	-	-	-	-	-
School	26,130	40	10,452	60	-	15,678	10,452	15,678	26,130
Private Recreation	4,199	40	1,680	60	-	2,520	1,680	2,520	4,199
Community Purpose	7,699	40	3,080	60	-	4,619	3,080	4,619	7,699
Assisted Living	12,365	40	4,946	60	-	7,419	4,946	7,419	12,365
Institutional	17,498	40	6,999	60	-	10,499	6,999	10,499	17,498
Park	35,007	40	14,003	60	-	21,004	14,003	21,004	35,007
Biological Open Space	-	0	-	100	-	-	-	-	-
Non-Circulating Road	-	0.0	-	0.0	-	-	-	-	-
Circulating Road	-	0.0	-	0.0	-	-	-	-	-
Common Areas/Ag	94,500	0.0	-	100.0	-	94,500	-	94,500	94,500
Manufactured Slopes	198,250	0.0	-	100.0	-	198,250	-	198,250	198,250
<b>Total, gpd</b>	<b>1,151,427</b>	-	<b>343,471</b>	-	<b>200,704</b>	<b>607,253</b>	<b>544,174</b>	<b>607,253</b>	<b>1,151,427</b>
<b>Total, afy</b>	<b>1,290</b>	-	<b>385</b>	-	<b>225</b>	<b>680</b>	<b>610</b>	<b>680</b>	<b>1,290</b>

Last four categories interior vs exterior demand % are weighted averages of all other land use categories. Exterior potable demand is SF and MF % of total demand.

\* Non-potable water demand will be part of Common Area Irrigation

Lilac Hills Ranch Potable and Non-Potable Water Use With Conservation										
Land Use	Pre-Conservation Water Use	Water Use With Conservation of 25%	Interior Demand %	Potable Water Demand	Exterior Demand %	Potable Water Demand	Non-Potable Water Demand	Total Potable Demand	Total Non-Potable Demand	Project Total Demand
Single Family	466,000	349,500	40	139,800	60	104,850	104,850 *	244,650	104,850	349,500
Senior Community	140,400	105,300	40	42,120	60	31,590	31,590 *	73,710	31,590	105,300
Multi-Family	104,353	78,265	40	31,306	60	14,088	32,871 *	45,394	32,871	78,265
Commercial/Mixed Use	39,428	29,571	40	11,828	60	-	17,742	11,828	17,742	29,571
Water Reclamation	5,599	4,199	40	1,680	60	-	2,520	1,680	2,520	4,199
Detention Basin	-	-	0	-	100	-	-	-	-	-
School	26,130	19,597	40	7,839	60	-	11,758	7,839	11,758	19,597
Private Recreation	4,199	3,150	40	1,260	60	-	1,890	1,260	1,890	3,150
Community Purpose	7,699	5,774	40	2,310	60	-	3,465	2,310	3,465	5,774
Assisted Living	12,365	9,274	40	3,709	60	-	5,564	3,709	5,564	9,274
Institutional	17,498	13,123	40	5,249	60	-	7,874	5,249	7,874	13,123
Park	35,007	26,255	40	10,502	60	-	15,753	10,502	15,753	26,255
Biological Open Space	-	-	0	-	100	-	-	-	-	-
Non-Circulating Road	-	-	0.0	-	0.0	-	-	-	-	-
Circulating Road	-	-	0.0	-	0.0	-	-	-	-	-
Common Areas/Ag	94,500	70,875	0.0	-	100.0	-	70,875	-	70,875	70,875
Manufactured Slopes	198,250	148,688	0.0	-	100.0	-	148,688	-	148,688	148,688
<b>Total, gpd</b>	<b>1,151,427</b>	<b>863,570</b>	<b>-</b>	<b>257,603</b>	<b>-</b>	<b>150,528</b>	<b>455,440</b>	<b>408,131</b>	<b>455,440</b>	<b>863,570</b>
<b>Total, afy</b>	<b>1,290</b>	<b>967</b>	<b>-</b>	<b>289</b>	<b>-</b>	<b>169</b>	<b>510</b>	<b>457</b>	<b>510</b>	<b>967</b>

Last four categories interior vs exterior demand % are weighted averages of all other land use categories. Exterior potable demand is SF and MF % of total demand.

\* Non-potable water demand will be part of Common Area Irrigation

Lilac Hills Ranch Wastewater Generation						
Land Use	Acres	Units	Peak 24 hr Sewage Generation		Avg 24 hr Sewage/Recycled	
			Factor	gpd	Factor	gpd
Single Family	138.90	932	200 gpd/unit	186,400	150 gpd/unit	139,800
Senior Community	76.00	468	125 gpd/unit	58,500	90 gpd/unit	42,120
Multi-Family	15.00	241	180 gpd/unit	43,380	130 gpd/unit	31,330
Commercial/Mixed Use	16.90	105	1000 gpd/ac	16,900	700 gpd/ac	11,830
Water Reclamation	2.40	-	1000 gpd/ac	2,400	700 gpd/ac	1,680
Detention Basin	5.50	-	0 gpd/ac	-	0 gpd/ac	-
School	11.20	-	1000 gpd/ac	11,200	700 gpd/ac	7,840
Private Recreation	1.80	-	1000 gpd/ac	1,800	700 gpd/ac	1,260
Community Purpose	3.30	-	1000 gpd/ac	3,300	700 gpd/ac	2,310
Assisted Living	5.30	-	1000 gpd/ac	5,300	700 gpd/ac	3,710
Institutional	7.50	-	1000 gpd/ac	7,500	700 gpd/ac	5,250
Park	21.00	-	700 gpd/ac	14,700	500 gpd/ac	10,500
Biological Open Space	105.00	-	0 gpd/ac	-	0 gpd/ac	-
Non-Circulating Road	40.35	-	0 gpd/ac	-	0 gpd/ac	-
Circulating Road	40.80	-	0 gpd/ac	-	0 gpd/ac	-
Common Areas/Ag	37.80	-	0 gpd/ac	-	0 gpd/ac	-
Manufactured Slopes	79.30	-	0 gpd/ac	-	0 gpd/ac	-
<b>Total</b>	<b>608.05</b>	<b>1,746</b>		<b>351,380</b>		<b>257,630</b>
<b>Total, afy</b>				<b>394</b>		<b>289</b>

**APPENDIX B**

**LILAC HILLS RANCH PARCELS HISTORICAL WATER USE**

<b>LILAC HILLS RANCH PARCELS HISTORICAL WATER USE SUMMARY</b>	
<b>Calendar Year</b>	<b>Use, af</b>
1999	635
2000	663
2001	511
2002	531
2003	462
2004	518
2005	466
2006	481
2007	527
2008	335
<b>Average</b>	<b>513</b>

**LILAC HILLS RANCH PARCELS  
HISTORICAL WATER USE DETAIL**

AppNo	WSAID	STATUS	USER	MTR S	APN8	CY2011 TTL	CY2010 TTL	CY2009 TTL	CY2008 TTL	CY2007 TTL	CY2006 TTL	CY2005 TTL	CY2004 TTL	CY2003 TTL	CY2002 TTL	CY2001 TTL	CY2000 TTL	CY1999 TTL	
1643	1643	OP	SF	3	12707220	25,691	25,613	27,100	21,419	26,550	30,591	25,506	31,127	27,715	30,448	31,424	53,687	43,354	
1871	1871	OP	CC	3	12707238	26,848	21,865	28,089	22,396	30,707	33,913	32,298	36,430	39,446	46,327	42,164	48,003	39,903	
2686	2686	OP	CC	2	12707247	3,433	2,827	3,729	4,086	5,396	4,962	4,599	5,163	4,308	6,305	5,590	5,898	5,875	
353	353	OP	CC	3/4	12828010	361	389	483	780	2,083	1,449	1,464	2,431	2,447	3,105	1,711	2,937	2,138	
1628	1628	OP	CC	2	12828037	2,642	3,099	3,839	4,284	6,553	3,200	163	3,043	1,256	1,529	1,249	1,613	1,286	
891	891	OP	CC	1-1/2	12828042	499	542	504	441	885	1,040	893	976	884	1,153	877	889	853	
2330	2330	OP	SC	2	12829009	11,919	11,673	13,657	12,476	17,966	17,890	15,595	17,103	17,068	19,009	20,508	19,261	15,143	
563	563	IN	A	2	12829051	0	0	0	0	0	122	698	0	0	0	0	0	319	
2626	2626	OP	SF	3	12829057	7,078	8,606	21,415	8,151	10,472	18,979	20,960	22,558	19,353	21,686	16,368	18,493	17,198	
6807	6807	OP	F	1	12829058	775	1,025	1	0	0	1,224	1,408	1,752	1,694	1,954	1,694	1,889	1,680	
6808	6808	OP	F	1	12829059	646	1,560	242	0	1	0	0	0	0	0	0	0	0	
6809	6809	OP	F	1	12829060	1,311	1,512	260	0	0	0	0	0	0	0	0	0	0	
6810	6810	OP	F	1	12829061	1,123	1,577	296	0	0	0	0	0	0	0	0	0	0	
254	254	OP	SC	3	12829069	6,179	6,724	8,231	9,398	14,424	13,109	13,186	17,611	16,934	16,300	13,149	15,883	14,922	
8129	8129	OP	A	1	12829074	128	1,201	1,480	1,763	1,671	1,543	1,395	987	819	736	37	0	0	
6539	6539	OP	A	1	12844002	54	273	443	56	37	7	6	79	8	182	47	0	0	
800	800	OP	A	2	12844003	210	372	329	221	75	289	0	0	0	0	0	145	929	
164	164	OP	K	1-1/2	12844005	392	410	596	877	1,624	1,386	2,036	1,453	1,974	2,452	2,421	2,537	738	
6103	6103	OP	A	1	12844006	648	688	915	1,088	1,113	748	1,012	269	117	157	124	1	6	
5792	5792	OP	A	1	12844012	1,785	1,393	3,571	3,951	5,163	3,774	4,629	5,055	3,640	6,377	3,478	3,698	1,344	
927	927	OP	A	2	12844017	145	1,022	0	0	0	0	0	3,293	0	0	4,255	4,121	1,631	
1298	1298	IN	F	1-1/2	12844022	0	0	0	0	0	0	0	0	0	0	45	0	7	
366	366	OP	SC	2	12901068	1,003	1,945	2,649	3,728	7,272	6,699	3,452	4,765	4,424	4,252	3,062	2,756	2,622	
1498	1470	OP	SF	2	12901069	7,279	9,623	19,460	7,826	14,575	11,422	12,679	14,779	13,933	19,209	15,346	15,344	18,243	
1470	1470	OP	SF	2	12901072	119	334	5,608	12,095	21,656	16,194	17,687	22,166	19,917	27,192	20,841	23,295	26,519	
1167	1167	OP	CF	2	12901115	2,045	2,693	2,576	3,407	11,679	8,771	7,554	3,013	4,537	11,024	14,961	23,362	24,879	
385	385	IN	CF	1-1/2	12901116	0	0	0	141	2,613	1,691	6,864	0	620	0	0	0	0	
324	396	IN	A	2	12930009	0	0	0	0	0	0	0	0	0	-49	4,168	10,551	12,479	
396	396	OP	SC	2	12930009	3,110	2,413	3,613	7,393	13,526	10,378	8,977	11,701	8,635	7,614	9,200	15,016	13,768	
1193	396	OP	SF	2	12930009	3,003	1,663	1,565	2,052	3,869	3,194	3,017	3,297	5,735	2,596	2,594	3,651	3,739	
1400	396	OP	SF	2	12930009	6,236	5,850	5,955	9,096	13,487	7,080	6,953	11,274	5,831	1,810	2,685	4,464	8,238	
1329	1329	OP	SF	2	12930010	9,499	6,423	8,946	8,724	16,363	10,059	10,098	5,120	0	0	4,568	11,336	18,718	
<b>TOTAL, hcf</b>						<b>124,161</b>	<b>123,315</b>	<b>165,552</b>	<b>145,849</b>	<b>229,760</b>	<b>209,714</b>	<b>203,129</b>	<b>225,445</b>	<b>201,295</b>	<b>231,368</b>	<b>222,566</b>	<b>288,830</b>	<b>276,531</b>	
<b>TOTAL, af</b>						<b>285</b>	<b>283</b>	<b>380</b>	<b>335</b>	<b>527</b>	<b>481</b>	<b>466</b>	<b>518</b>	<b>462</b>	<b>531</b>	<b>511</b>	<b>663</b>	<b>635</b>	

