



**El Dorado Irrigation District**

**2013 WATER RESOURCES  
AND  
SERVICE RELIABILITY REPORT**

El Dorado Irrigation District  
2890 Mosquito Road  
Placerville, California 95667

Presented to the EID Board of Directors  
August 12, 2013

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

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**TABLE OF CONTENTS**

1	EXECUTIVE SUMMARY .....	1
2	SUMMARY OF WATER METER AVAILABILITY .....	1
	2.1 El Dorado Hills Supply Area.....	1
	2.2 Western / Eastern Supply Area.....	3
	2.3 Calculation of Water Meter Availability .....	3
3	METHODOLOGY .....	15
	3.1 EID Policies and Regulations Pertaining to EDU Allocations.....	16
4	SYSTEM FIRM YIELD ANALYSIS .....	17
	4.1 Water Rights Permit 21112.....	17
	4.2 Rediversion of Existing Water Rights to Folsom Reservoir.....	17
	4.3 Fazio Water Supply (Public Law 101-514).....	19
	4.4 Infrastructure Based Yield.....	19
5	TOTAL POTENTIAL DEMAND .....	20
	5.1 Average Demand by User Category .....	20
	5.2 Active Demand .....	20
	5.2.1 Active Accounts .....	20
	5.2.2 Active Meters.....	20
	5.3 Latent Demand .....	21
	5.3.1 Inactive Accounts .....	21
	5.3.2 Uninstalled Meters.....	21
	5.4 Other System Demand .....	21
	5.4.1 Authorized Uses .....	22
	5.4.2 Potable Water Supplement to Recycled System .....	22
6	COMMITMENTS .....	22
	6.1 El Dorado Hills Supply Area.....	23
	6.1.1 Assessment District No. 3.....	23
	6.1.2 Buy-ins to AD3.....	23
	6.1.3 Monte Vista Parcels.....	23
	6.1.4 Weber Dam Advanced Funding Agreement .....	23
	6.1.5 Wetsel-Oviatt Agreement and Subsequent Amendment .....	24
	6.1.6 Carson Creek Agreement.....	25
	6.2 Western / Eastern Supply Area.....	27
	6.2.1 Apple Mountain.....	27
	6.2.2 Bell Ranch .....	27

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

---

7	RECYCLED WATER SYSTEM .....	30
7.1	Supply and Demand Summary .....	30
7.1.1	Supply.....	30
7.1.2	Demand.....	30
7.2	Projected Recycled Water Supply and Demand.....	30
8	GLOSSARY – Terms and Definitions.....	36

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

---

**LIST OF TABLES**

TABLE 1	Water Meter Availability.....	4
TABLE 2	System Firm Yield .....	5
TABLE 3	Infrastructure Based Yield .....	6
TABLE 4A	Projected Demand, El Dorado Hills Supply Area.....	7
TABLE 4B	Projected Demand, Western/Eastern Supply Area.....	8
TABLE 5	Active Demand, El Dorado Hills Supply Area.....	9
TABLE 6	Latent Demand, El Dorado Hills Supply Area.....	10
TABLE 7	Active Demand, Western/Eastern Supply Area .....	11
TABLE 8A	Western Latent Demand.....	12
TABLE 8B	Eastern Latent Demand .....	13
TABLE 9	Other System Demand.....	14
TABLE 10	Status of Commitments, El Dorado Hills Supply Area .....	26
TABLE 11	Status of Commitments, Western/Eastern Supply Area .....	28
TABLE 12	Active Demand, Recycled Water System.....	31
TABLE 13	Latent Demand, Recycled Water System.....	32
TABLE 14	Recycled Water Supply and Demand Summary .....	33
TABLE 15	Projected Recycled Water Supply / Demand.....	34

**LIST OF FIGURES**

FIGURE A	Water Supply and Infrastructure Boundaries.....	2
FIGURE B	Service Zones .....	29
FIGURE C	Recycled Water System .....	35

**APPENDICES**

APPENDIX A	El Dorado Hills Historical Trends.....	42
APPENDIX B	Western Region Historical Trends.....	43
APPENDIX C	Eastern Region Historical Trends.....	44

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

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## **1 EXECUTIVE SUMMARY**

The *Water Resources and Service Reliability Report* is updated annually to determine current water supply and water meter availability within the El Dorado Irrigation District (EID or District). Board Policy 5010, Water Supply Management, states that the District will not issue any new water meters if there is insufficient water supply. Administrative Regulation 5010, Water Availability and Commitments, outlines the responsibilities for annual reporting, shortages, and new meter restrictions. This policy and regulation provide the means to ensure that meter sales do not exceed water supply and infrastructure capacity. To determine the amount of water that will be available in the coming year for new meter sales, the District uses the firm yield of the water supply sources minus the total potential demand for all uses of this water.

The District's overall system firm yield is approximately 63,500 acre-feet. For purposes of calculating meter availability for the District, two water supply areas have been identified, one that primarily receives water pumped from Folsom Reservoir, and one that receives water by gravity flow from the eastern supply sources – Project 184 and Jenkinson Lake.

The supply areas are divided into the El Dorado Hills supply area and the Western/Eastern supply area. The available supply in El Dorado Hills is currently restricted by infrastructure, which includes the capacity of the El Dorado Hills Water Treatment Plant and other conveyance facilities; whereas the supply in the Western/Eastern area is not restricted by infrastructure.

The demands of the District have been divided into three regions: 1) El Dorado Hills; 2) Western Region, which includes the communities of Bass Lake, Cameron Park, Shingle Springs, Logtown, El Dorado and Diamond Springs; and 3) Eastern Region, which includes Pleasant Valley, Sly Park, Pollock Pines, Camino, Placerville, and Lotus/Coloma. Water customers in each region are then further sub-divided into user categories depending upon the type of use for the water, such as residential or commercial, turf or agricultural irrigation, or municipal delivery to the City of Placerville. A projected unit demand methodology was developed for the *2011 Report* for all user categories in each demand region, and has been held constant through the *2013 Report*. A new unit demand calculation will be included in next year's *2014 Report*.

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

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The following table reflects the current water meter availability for the District.

<b>2013 WATER METER AVAILABILITY</b>	
EL DORADO HILLS SUPPLY AREA	WESTERN/EASTERN SUPPLY AREA
Water supply = 15,163 AF	Water Supply = 36,000 AF
Total Potential Demand = 11,554 AF	Total Potential Demand = 34,955 AF
Unallocated Water Supply = 3,609 AF	Unallocated Water Supply = 1,045 AF
<b>Water Meter Availability = 4,687 EDUs</b>	<b>Water Meter Availability = 1,935 EDUs</b>

This report also includes recycled water data, which is a valuable water resource for the District. The 2012 recycled water supply and demand data are presented, along with a projection of the 2013 recycled water supply and anticipated demands for either dry year or normal/wet year conditions.

## 2 SUMMARY OF WATER METER AVAILABILITY

The water meter availability for EID is tracked within two distinct water supply areas; the El Dorado Hills supply area and the Western/Eastern supply area, which are illustrated in Figure A. The unallocated water supply is calculated as annual acre-feet (AF), and then converted to equivalent dwelling units (EDUs).<sup>1</sup>

Table 1 summarizes the respective water meter availability for these two water supply areas. The subsequent Tables 2 through 9 are used to calculate the system firm yield and potential demand for both areas in order to determine the water meter availability.

### ***2.1 El Dorado Hills Supply Area***

The available supply in the El Dorado Hills supply area is currently restricted by infrastructure, which includes the capacity of the El Dorado Hills Water Treatment Plant and other conveyance facilities.

The water supply for the El Dorado Hills supply area is provided in Table 2. The active demand is provided in Table 5. Latent demand is shown in Tables 6, while other system demand is shown in Table 9. The resulting unallocated water supply for the year is provided in Table 1.

To convert the available water supply to meter availability, an average unit demand was calculated based on actual historical demands. This per EDU demand was based on the average demands of single-family residential dwellings over a 10 year period between 2001-2010, with the high and low values removed to account for annual demand fluctuations. A new unit demand will be calculated for the *2014 Report*.

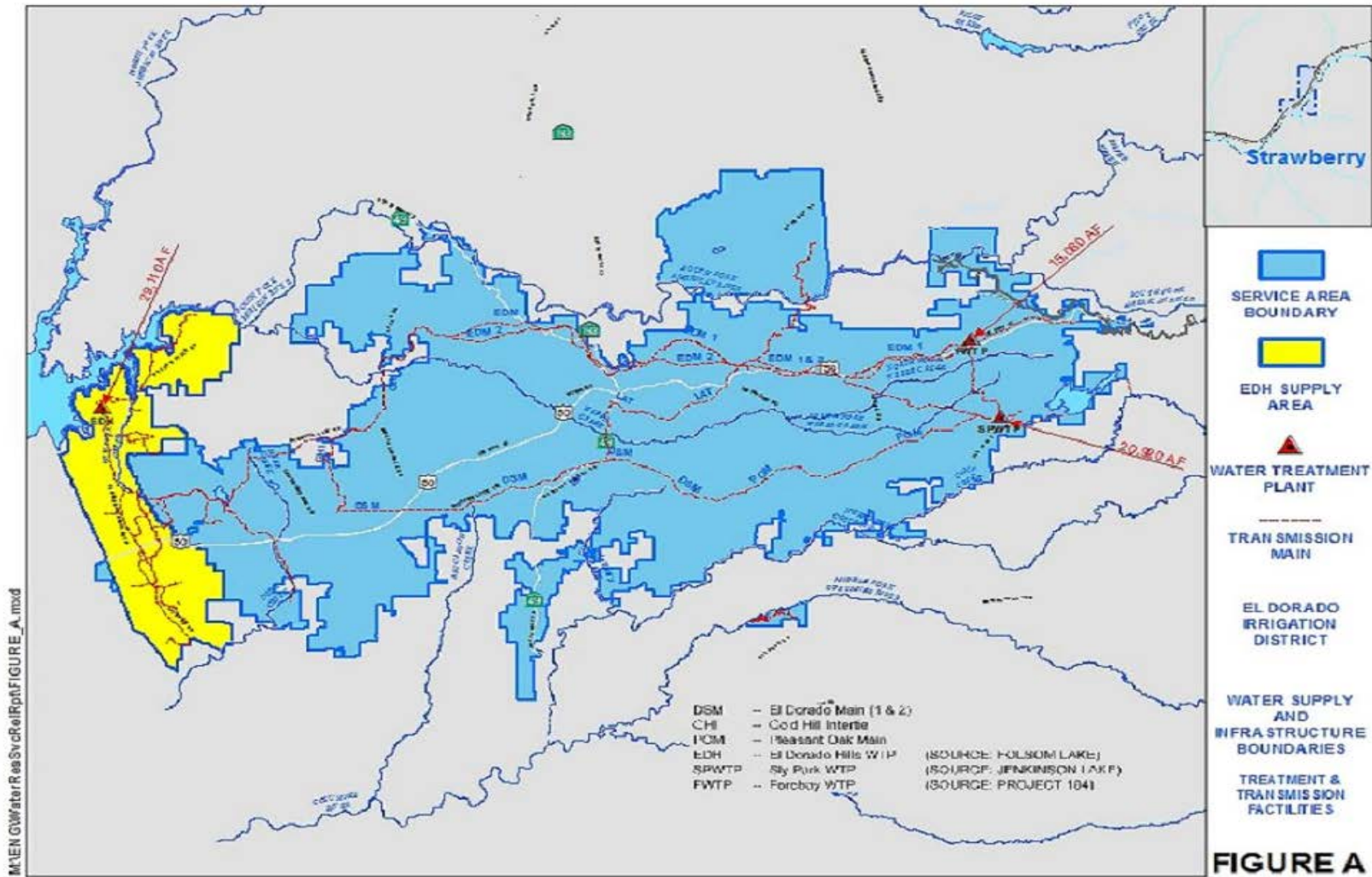
In each supply area, there are several contractual commitments that have been established. These commitments are further described in Section 6, Commitments. The District's system of water supply and infrastructure is adequate to serve these commitments in addition to a general pool of meter availability.

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<sup>1</sup> An EDU corresponds to a single-family residential dwelling served by a 3/4-inch water meter. Larger water meters, such as those for commercial applications, require additional EDUs.



**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**



## ***2.2 Western / Eastern Supply Area***

The available supply in the Western / Eastern supply area is not restricted by infrastructure. The water supply for the Western / Eastern supply area is provided in Table 2. The active demand is provided in Table 7. Latent demand is shown in Tables 8A and 8B, while other system demand is shown in Table 9. The resulting unallocated water supply for the year is provided in Table 1.

To convert the available water supply to meter availability, an average unit demand was calculated based on actual historical demands. This per EDU demand was based on the average demands of single-family residential dwellings over a 10 year period between 2001-2010, with the high and low values removed to account for annual demand fluctuations. A new unit demand will be calculated for the *2014 Report*.

The District also has contractual commitments within the Western/Eastern supply area from existing water supplies; these commitments are provided in Section 6, Commitments. The District's system of water supply and infrastructure is adequate to serve these commitments in addition to a general pool of meter availability.

## ***2.3 Calculation of Water Meter Availability***

The following Tables 1 through 9 describe the system firm yield and calculate the potential demands of the two supply areas. Water meter availability is the difference between the available water supply and the total potential demand for each respective area. Total potential demand is the sum of active demand, latent demand, and other system demand. The active and latent demands have been determined using the average unit demands for each user category, multiplied by the number of active and latent accounts as of December 31<sup>st</sup> of the previous year. The other system demand uses a fixed 13% loss rate applied to the infrastructure and supply yields, along with a 5-year historical average of recycled supplementation and other authorized uses.

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

**TABLE 1  
WATER METER AVAILABILITY**

EL DORADO HILLS SUPPLY AREA		
Infrastructure Based Yield from Folsom Reservoir (Table 3) ...	15,163	Acre-Feet
Calculated Potential Demand		
Active Demand (Table 5) .....	8,602	
Latent Demand (Table 6) .....	430	
Other System Demand (Table 9) .....	<u>2,522</u>	
Total Potential Demand	11,554	Acre-Feet
2013 Unallocated Water Supply .....	3,609	Acre-Feet
Supply minus Total Potential Demand		
Conversion to Equivalent Dwelling Units (EDUs) .....	0.77	Acre-Feet per EDU
<p><b>Average</b> EDU demand from 10-year historical data for single-family residential dwellings in the El Dorado Hills Supply Area. (Table 4A and Appendix Table A)</p>		
<b>2013 Water Meter Availability</b> .....	<b>4,687</b>	<b>EDUs <sup>[1]</sup></b>
<p>[1] These EDUs are subject to the El Dorado Hills Contractual Commitments described in Section 6 and summarized in Table 10.</p>		

WESTERN / EASTERN SUPPLY AREA		
Supply Based Yield of Eastern Sources (Table 2) .....	36,000	Acre-Feet
Calculated Potential Demand		
Active Demand (Table 7) .....	28,090	
Latent Demand (Tables 8A and 8B) .....	140	
Other System Demand (Table 9) .....	<u>6,725</u>	
Total Potential Demand	34,955	Acre-Feet
2013 Unallocated Water Supply .....	1,045	Acre-Feet
Supply minus Total Potential Demand		
Conversion to Equivalent Dwelling Units (EDUs) .....	0.54	Acre-Feet per EDU
<p><b>Average</b> EDU demand from 10-year historical data for single-family residential dwellings in the Western / Eastern Supply Area. (Table 4B, and Appendix Tables B and C)</p>		
<b>2013 Water Meter Availability</b> .....	<b>1,935</b>	<b>EDUs <sup>[1]</sup></b>
<p>[1] These EDUs are subject to the Western / Eastern Contractual Commitments described in Section 6 and summarized in Table 11.</p>		

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

**TABLE 2  
SYSTEM FIRM YIELD  
El Dorado Hills and Western / Eastern Supply Areas**

OVERALL SYSTEM FIRM YIELD	
EID's System Firm Yield -No Infrastructure Restrictions- Determined using the OASIS Model <sup>[1]</sup>	63,500 Acre-Feet
EL DORADO HILLS SUPPLY AREA	
Supply from Folsom Reservoir -No Infrastructure Restrictions-	29,110 Acre-Feet <sup>[2]</sup>
El Dorado Hills Infrastructure Capacity and the Gold Hill Intertie <b>-Infrastructure Based Yield-</b>	<b>15,163 Acre-Feet <sup>[3]</sup></b>
WESTERN / EASTERN SUPPLY AREA	
Supply from Eastern Sources -No Infrastructure Restrictions- Commercial	36,000 Acre-Feet <sup>[4]</sup>

[1] The OASIS Model is a computer software package developed by HydroLogics, Inc. to model hydrologic conditions in conjunction with certain input parameters. The OASIS Model determines the firm yield of the integrated system, which includes Project 184, Jenkinson Lake, Folsom USBR contracts, Permit 21112 and ditch/Weber Reservoir water rights. The overall system firm yield determined by the OASIS Model is for planning level purposes.

[2] The supply for the El Dorado Hills Area consists of 7,550 AF from the USBR Folsom Contract, 17,000 AF from Permit 21112, and 4,560 AF from ditch/Weber water rights. The supply would be reduced in dry-years to approximately 25,660 AF to account for USBR cutbacks and reduced supply from the ditch/Weber water rights.

[3] The El Dorado Hills infrastructure capacity considers the capacity of the EDHWTP, the eastern transmission system, and the Gold Hill Intertie as determined in Table 3.

[4] The supply for the Western / Eastern Supply Area consists of 15,080 AF from Project 184; and 20,920 AF from Jenkinson Lake. During a critical dry year, the annual supply from Jenkinson Lake would be reduced pursuant to Board Policy 5010.

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

**TABLE 3  
INFRASTRUCTURE BASED YIELD  
El Dorado Hills Supply Area**

EL DORADO HILLS WATER TREATMENT PLANT (EDHWTP) CAPACITY Calculation of Annual Acre-Feet				
Year	Maximum Day WTP Capacity in MGD <sup>[1]</sup>	Maximum Day Peaking Factor	Calculated Average Day WTP Capacity in MGD	Calculated Annual Acre-Feet
2013	26	2.0	13.00	<b>14,563</b>

GOLD HILL INTERTIE (GHI) CAPACITY Calculation of Annual Acre-Feet				
Year	Available Maximum Day Capacity in GPM	Maximum Day Peaking Factor	Calculated Average Day Capacity in GPM	Calculated Annual Acre-Feet
2013	750	2.0	375	<b>600</b>

<b>TOTAL INFRASTRUCTURE BASED YIELD in Acre-Feet</b>	<b>15,163</b>
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**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

**TABLE 4A  
PROJECTED 2013 DEMAND PER SERVICE  
El Dorado Hills Supply Area  
In Acre-Feet**

User Categories	Demand per Service or Unit for the Previous 3-Years			Average Unit Demand from 10-Year <sup>[1]</sup> Historical Trend
	2010	2011	2012	
<b>EL DORADO HILLS SUPPLY AREA</b>				
Commercial	2.69	2.42	2.64	3.39
Domestic Irrigation	1.80	1.69	1.74	1.92
Multi-Family Residential (Units)	0.18	0.17	0.18	0.24
Recreational Turf Services	8.45	8.31	9.66	10.67
Single-Family Dual Potable	0.15	0.16	0.15	0.18
Single-Family Residential	0.61	0.59	0.67	0.77
Small Farm Irrigation	3.93	3.25	3.71	3.40

**SERVICE ZONES WITHIN SUPPLY AREA (Zone #):**

El Dorado Hills (02)

[1] Refer to Appendix Table A for the historical data used to calculate the Average Unit Demands.

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

**TABLE 4B  
PROJECTED 2013 DEMAND PER SERVICE  
Western / Eastern Supply Area  
In Acre-Feet**

User Categories	Demand per Service or Unit for the Previous 3-Years			Average Unit Demand from 10-Year <sup>[1]</sup> Historical Trend
	2010	2011	2012	
<b>WESTERN REGION</b>				
Agricultural Metered Irrigation	10.75	7.42	7.00	15.65
Commercial	1.38	1.32	1.39	1.57
Ditches	13.36	17.00	14.50	13.31
Domestic Irrigation	1.38	1.26	1.42	1.66
Multi-Family Residential (Units)	0.20	0.20	0.22	0.26
Recreational Turf Services	11.84	11.47	12.74	15.42
Single-Family Dual Potable	0.18	0.18	0.18	0.17
Single-Family Residential	0.47	0.43	0.49	0.61
Small Farm Irrigation	3.05	3.18	2.94	3.54
<b>EASTERN REGION</b>				
Agricultural Metered Irrigation	15.13	12.68	16.01	21.46
Commercial	1.44	1.26	1.34	2.47
Ditches	17.24	21.81	53.27	23.61
Domestic Irrigation	1.33	1.24	1.33	1.78
Multi-Family Residential (Units)	0.20	0.20	0.20	0.23
Municipal (City of Placerville)	72.87	64.53	84.60	142.65
Recreational Turf Services	7.24	7.28	8.28	11.09
Single-Family Residential	0.32	0.29	0.33	0.43
Small Farm Irrigation	2.44	2.12	2.85	3.41
<b>SERVICE ZONES WITHIN SUPPLY AREA (Zone #):</b>				
<u>Western Region</u>				
Bass Lake (01), Cameron Park (04), Shingle Springs (05), Logtown (06), Diamond Springs/EI Dorado (07)				
<u>Eastern Region</u>				
Lotus/Coloma (03), Swansboro (09), Camino (10), Pleasant Valley (11), Sly Park (12), Pollock Pines (13), North Placerville (18), South Placerville (28)				

[1] Refer to Appendix Tables B and C for the historical data used to calculate the Average Unit Demands.

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

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**TABLE 5  
ACTIVE DEMAND  
El Dorado Hills Supply Area**

ACTIVE DEMAND			
Active Account Categories	Average Demand from Historical Data AF per Service or Unit <sup>[1]</sup>	2012 Services or Units	Calculated Active Demand in AF
Commercial	3.39	421	1,427
Domestic Irrigation	1.92	27	52
Mult-Family Residential (Units)	0.24	1,430	343
Recreational Turf Services	10.67	35	373
Single-Family Dual Potable	0.18	1,640	295
Single-Family Residential	0.77	7,907	6,088
Small Farm Irrigation	3.40	7	24
Calculated Active Acre-Feet			8,602
<b>EL DORADO HILLS - ACTIVE DEMAND in Acre-Feet</b>			<b>8,602</b>

[1] Refer to Appendix Table A for the historical data used to calculate the Average Unit Demands.



**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

**TABLE 6  
LATENT DEMAND  
El Dorado Hills Supply Area**

INACTIVE ACCOUNTS			
<i>Inactive</i> Account Categories	Average Demand from Historical Data AF per Service or Unit <sup>[1]</sup>	2012 <i>Inactive</i> Services or Units	Calculated <i>Inactive</i> Demand in AF
Single-Family Residential	0.77	5	4
Single-Family Dual Potable	0.18	0	0
Subtotal <i>Inactive</i> Acre-Feet			4

UNINSTALLED ACCOUNTS			
<i>Uninstalled</i> Meter Categories	Average Demand from Historical Data AF per Service or Unit <sup>[1]</sup>	2012 <i>Uninstalled</i> Services or Units	Calculated <i>Uninstalled</i> Demand in AF
Commercial	3.39	0	0
Single-Family Dual Potable	0.18	0	0
Multi-Family Residential	0.24	0	0
Single-Family Residential	0.77	553	426
Subtotal <i>Uninstalled</i> Acre-Feet			426

Calculated Inactive and Uninstalled Acre-Feet	430
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<b>EL DORADO HILLS - LATENT DEMAND in Acre-Feet</b>	<b>430</b>
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[1] Refer to Appendix Table A for the historical data used to calculate the Average Unit Demands.

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

**TABLE 7  
ACTIVE DEMAND  
Western / Eastern Supply Area**

WESTERN ACTIVE DEMAND			
User Categories for Active Accounts	Average Demand from Historical Data AF per Service or Unit <sup>[1]</sup>	2012 Services or Units	Calculated Active Demand in AF
Agricultural Metered Irrigation	15.65	26	407
Commercial	1.57	757	1,188
Ditches	13.31	2	27
Domestic Irrigation	1.66	676	1,122
Mult-Family Residential (Units)	0.26	3,825	995
Recreational Turf Services	15.42	47	725
Single-Family Dual Potable	0.17	2,230	379
Single-Family Residential	0.61	13,589	8,289
Small Farm Irrigation	3.54	188	666
Calculated WESTERN Active Acre-Feet			13,798

EASTERN ACTIVE DEMAND			
User Categories for Active Accounts	Average Demand from Historical Data AF per Service or Unit <sup>[1]</sup>	2012 Services or Units	Calculated Active Demand in AF
Agricultural Metered Irrigation	21.46	210	4,507
Commercial	2.47	325	803
Ditches	23.61	25	590
Domestic Irrigation	1.78	457	813
Mult-Family Residential (Units)	0.23	1,928	443
Municipal (City of Placerville)	142.65	15	2,140
Recreational Turf Services	11.09	25	277
Single-Family Residential	0.43	9,451	4,064
Small Farm Irrigation	3.41	192	655
Calculated EASTERN Active Acre-Feet			14,292

<b>WESTERN / EASTERN - ACTIVE DEMAND in Acre-Feet</b>	<b>28,090</b>
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[1] Refer to Appendix Tables B and C for the historical data used to calculate the Average Unit Demands.

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

**TABLE 8A  
WESTERN LATENT DEMAND  
Western / Eastern Supply Area**

WESTERN INACTIVE ACCOUNTS			
<i>Inactive</i> Account Categories	Average Demand from Historical Data AF per Service or Unit <sup>[1]</sup>	2012 Services or Units	Calculated <i>Inactive</i> Demand in AF
Commercial	1.57	6	9
Ditches	13.31	0	0
Single-Family Dual Potable	0.17	0	0
Single-Family Residential	0.61	41	25
Subtotal WESTERN <i>Inactive</i> Acre-Feet			34

WESTERN UNINSTALLED ACCOUNTS			
<i>Uninstalled</i> Meter Categories	Average Demand from Historical Data AF per Service or Unit <sup>[1]</sup>	2012 <i>Uninstalled</i> Services or Units	Calculated <i>Uninstalled</i> Demand in AF
Commercial	1.57	0	0
Multifamily Residential (Units)	0.26	0	0
Single-Family Dual Potable	0.17	0	0
Single-Family Residential	0.61	0	0
Subtotal WESTERN <i>Uninstalled</i> Acre-Feet			0

Calculated Inactive and Uninstalled Acre-Feet	34
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<b>WESTERN / EASTERN - LATENT DEMAND in Acre-Feet</b>	<b>34</b>
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[1] Refer to Appendix Tables B and C for the historical data used to calculate the Average Unit Demands.

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

**TABLE 8B  
EASTERN LATENT DEMAND  
Western / Eastern Supply Area**

EASTERN INACTIVE ACCOUNTS			
<i>Inactive</i> Account Categories	Average Demand from Historical Data AF per Service or Unit <sup>[1]</sup>	2012 <i>Inactive</i> Services or Units	Calculated <i>Inactive</i> Demand in AF
Agricultural Metered Irrigation	21.46	3	64
Commercial	2.47	3	7
Ditches	23.61	0	0
Mult-Family Residential (Units)	0.23	1	0
Recreational Turf Services	11.09	0	0
Single-Family Residential	0.43	81	35
Subtotal EASTERN <i>Inactive</i> Acre-Feet			106

EASTERN UNINSTALLED ACCOUNTS			
<i>Uninstalled</i> Meter Categories	Average Demand from Historical Data AF per Service or Unit <sup>[1]</sup>	2012 <i>Uninstalled</i> Services or Units	Calculated <i>Uninstalled</i> Demand in AF
Agricultural Metered Irrigation	21.46	0	0
Commercial	2.47	0	0
Single-Family Residential	0.43	0	0
Subtotal EASTERN <i>Uninstalled</i> Acre-Feet			0

Calculated Inactive and Uninstalled Acre-Feet	106
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<b>EASTERN - LATENT DEMAND in Acre-Feet</b>	<b>106</b>
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[1] Refer to Appendix Tables B and C for the historical data used to calculate the Average Unit Demands.

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

**TABLE 9  
OTHER SYSTEM DEMAND  
El Dorado Hills and Western / Eastern Supply Areas  
In Acre-Feet**

OVERALL DISTRICT				
Overall System Firm Yield	Historical Real and Apparent Losses (13%) [1]	5-Year Average Other Authorized Uses [2]	5-Year Average Recycled System Supplement	Estimated Other System Demands
63,500	8,300	2,073	522	10,895
<b>OVERALL - OTHER SYSTEM DEMAND in Acre-Feet</b>				<b>10,895</b>

EL DORADO HILLS SUPPLY AREA				
El Dorado Hills Infrastructure Restricted Yield	Historical Real and Apparent Losses (13%) [1]	5-Year Average Other Authorized Uses [2]	5-Year Average Recycled System Supplement	Calculated Other System Demands
15,163	1,971	415	136	2,522
<b>EL DORADO HILLS - OTHER SYSTEM DEMAND in Acre-Feet</b>				<b>2,522</b>

WESTERN / EASTERN SUPPLY AREA				
Western / Eastern Supply Based Yield	Historical Real and Apparent Losses (13%) [1]	5-Year Average Other Authorized Uses [2]	5-Year Average Recycled System Supplement	Calculated Other System Demands
36,000	4,680	1,659	386	6,725
<b>WESTERN / EASTERN - OTHER SYSTEM DEMAND in Acre-Feet</b>				<b>6,725</b>

[1] The estimated real and apparent losses of 13% have been applied to the infrastructure and supply based yields for each supply area.

[2] The other authorized uses have been distributed between the Western/Eastern and El Dorado Hills supply areas.

### **3 METHODOLOGY**

The District has developed a method of reporting two numbers that are relevant to the availability of water supply: 1) a supply based yield; and 2) an infrastructure based yield. The supply based yield establishes water availability based on the hydrology of water rights, permits, and contracts that include Jenkinson Lake, Project 184, Permit 21112, and USBR Folsom contracts; while the infrastructure based yield establishes water availability based on the maximum day constraints of infrastructure. In a supply area such as El Dorado Hills, in which infrastructure like the water treatment plant capacity rather than water supply is the limiting factor in delivering water, the infrastructure based yield will be used to determine EDU availability. The meter sales in that supply area are limited to that which the infrastructure is currently capable of delivering on the maximum demand day of the year.

The method used in this report distinguishes the EDU availability for El Dorado Hills versus the remainder of the District, while at the same time ensuring that EDU allocations overall do not outpace either infrastructure capacity or available water supplies.

The OASIS modeling software was used to perform the firm yield modeling, based on historic hydrology. The model determines a “supply based” firm yield, which assumes that no infrastructure restrictions exist. This assumption provides the benefit of reporting a consistent firm yield number year after year, which only changes when additional supplies are added to the system. This number also gives the Board and the public a sense of the District’s potential to deliver additional water as needed infrastructure projects are completed. It is also used to calculate meter availability in areas where water supply, rather than infrastructure, is the limiting factor.

A separate calculation of infrastructure capacity was used to determine an “infrastructure-based” yield for the El Dorado Hills supply area. This calculation is accomplished by using the capacity of the El Dorado Hills Water Treatment Plant, plus a calculated capacity of the Gold Hill Intertie. This method compares maximum day demands against treatment and transmission capacities to determine meter availability for infrastructure-restricted areas such as El Dorado Hills.

With the addition of 17,000 AF of Permit 21112 water and 4,560 AF from the Ditch/Weber water rights to the District’s supplies, water availability from Folsom Reservoir is restricted by the El Dorado Hills water treatment plant capacity. In other words, there is more water supply available from Folsom Reservoir than this infrastructure can treat on a maximum day basis. By contrast, the District’s Western/Eastern supply area is restricted by available supplies, not infrastructure. Infrastructure capacity exists to treat and deliver the annual allotment of Project 184 of 15,080 AF, and the approximate annual yield of Jenkinson Lake of 21,000 AF. Therefore, to fully account for these differing conditions within the District, the water supply yield has been divided into the following two supply areas:

**EL DORADO IRRIGATION DISTRICT**  
**2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

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- 1) El Dorado Hills supply area – This area receives both water pumped from Folsom Lake combined with water provided by gravity flow from the Gold Hill Intertie (GHI).
- 2) Western/Eastern supply area – This area includes the remaining higher elevation areas of the District that currently receive gravity water supply from the District's eastern sources - Project 184 and Jenkinson Lake.

These two supply areas are shown in Figure A. This method provides an accurate way to analyze water availability that matches the capability and configuration of the District's water system.

### ***3.1 EID Policies and Regulations Pertaining to EDU Allocations***

The District is governed by both Board Policies and Administrative Regulations that were developed in 2006. Board Policy 5010 – Water Supply Management states that the District will not issue any new water meters if there is insufficient water supply. Administrative Regulation 5010 – Water Availability and Commitments outlines the responsibilities for annual reporting, shortages, and new meter restrictions. This policy and regulation provide a means to ensure that meter sales do not exceed supply or infrastructure capacity.

Board Policy 9020 – Establishing New Service and Administrative Regulation 9021 – Eligibility for New Service outline the process an applicant must comply with in order to purchase a water meter. As part of the application process for a project, an applicant must request a Facility Improvement Letter (FIL) from the District, which describes the existing system and any improvements that will be needed in order to receive service. For more complicated projects, the applicant must have a licensed engineer prepare a Facility Plan Report (FPR) for District review and approval. The FIL and FPR both assess the adequacy of the water system to provide service to the applicant and thereby identify the necessary improvements that must be constructed prior to the issuance of water meters. These facility improvements range from distribution facilities that must be funded and constructed by the developer, to District financed capital improvement projects such as transmission mains and storage tanks.

The applicant can receive service only when the required facilities are completed and accepted by the District. These regulations and service procurement procedures, coupled with the guidelines in this report of meter availability, provide a solid basis to ensure that both adequate supply and infrastructure are in place to serve existing and new connections throughout the District.

## 4 SYSTEM FIRM YIELD ANALYSIS

Table 2 summarizes the overall system firm yield of 63,500 AF as calculated by the OASIS computer model. This number represents an overall water demand that cannot be exceeded until new supplies are added. The overall system firm yield is then broken down into the two supply areas to calculate meter availability. The Folsom Reservoir supply is 29,110 AF, which includes the water service contract with the United States Bureau of Reclamation (USBR) for 7,550 AF, 17,000 AF Permit 21112 water rights, and a 4,560 AF Warren Act contract for the Ditch/Weber Reservoir water rights. The Western/Eastern supply is 36,000 AF, consisting of 15,080 AF from Project 184 and approximately 20,920 AF from Sly Park's Jenkinson Lake.

### ***4.1 Water Rights Permit 21112***

The State Water Resources Control Board (SWRCB) issued Water Right Permit 21112 to the District<sup>1</sup> on October 16, 2001.

The District originally submitted an application for a multiple-year Warren Act Contract<sup>2</sup> (WAC) with the USBR for 11,000 AF of the 17,000 AF water right. The contract was then amended to 17,000 AF after the County General Plan was adopted. Prior to signing the previously negotiated 40-year Warren Act contract, the USBR must prepare an Environmental Assessment (EA) and make a Finding of No Significant Impact (FONSI) under the provisions of the National Environmental Policy Act (NEPA). The District is currently working with USBR to initiate formal consultation with National Oceanic and Atmospheric Administration (NOAA) fisheries under the Endangered Species Act.

Over the last year staff has continued to coordinate with USBR staff to finalize the Permit 21112 Long-Term Warren Act Contract. The District's goal is to execute a contract in 2014.

### ***4.2 Rediversion of Existing Water Rights to Folsom Reservoir***

In the 1990s, the District began an initiative to convert ditch customers to the treated, piped system whenever feasible. The goal was to minimize the use of ditches in favor of the more efficient, less costly piped system. Over time, the District succeeded in removing all customers from the Summerfield Ditch, Gold Hill Ditch, and Farmers Free Ditch. Under California's water rights system, however, the District could maintain the water rights associated with these ditches only if it made a new beneficial use of the water supplies within five years of ceasing ditch operations. The District met this requirement by executing a series of one-year Warren Act Contracts with USBR. (The

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<sup>1</sup> The El Dorado Irrigation District and the El Dorado County Water Agency jointly submitted the application for diversion and consumptive use of the 17,000 acre-feet of water from FERC Project 184.

<sup>2</sup> The execution of a Warren Act Contract, either single or multiple year, is required before a federal facility such as Folsom Reservoir can be used to store non-federal water.



**EL DORADO IRRIGATION DISTRICT**  
**2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

---

Warren Act is a federal law that authorizes USBR to contract with others to use excess capacity in federal facilities to store or convey water belonging to others.) Under those one-year contracts, the District allowed the water formerly turned into these ditches to pass downstream to Folsom Reservoir, where the District withdrew it to supply service zones in the El Dorado Hills area.

In May 2004, the District moved to make this arrangement permanent by submitting an application for a long-term Warren Act Contract. Specifically, the District sought to introduce into Folsom Reservoir the waters of Slab Creek that were previously diverted into the Summerfield Ditch, the waters of Hangtown Creek that were previously diverted into the Gold Hill Ditch, and the waters of Weber Creek - both natural flows and stored releases from Weber Reservoir - that were previously diverted or re-diverted into the Farmers Free Ditch. The creek diversions are under rights that pre-date the Water Commission Act of 1914 and as such, are not under the jurisdiction of the State Water Resources Control Board (SWRCB). In contrast, the right to store water in Weber Reservoir is under license issued by the SWRCB, and therefore SWRCB approval was required to change the point of rediversion, place of use, and purposes of use to match the new operations. The District applied for this SWRCB approval in November 2004, and the SWRCB issued a revised water rights license to accommodate the new operations in October 2007. Meanwhile, the District and USBR negotiated language for the long-term contract and continued to execute successive one-year contracts. The District also completed the project's environmental review under California Environmental Quality Act (CEQA) in June 2005.

USBR obtained federal Endangered Species Act clearances from the United States Fish and Wildlife Service in late 2009, and from the National Marine Fisheries Service in 2010. USBR also completed its environmental assessment under the National Environmental Policy Act (NEPA) in late 2009, and issued a NEPA Finding of No Significant Impact concurrent with approval of the contract. During much of this time, USBR's progress was slowed or halted by its involvement in numerous still-pending Endangered Species Act and NEPA lawsuits challenging USBR's operation of the Central Valley Project (of which Folsom Reservoir is a part).

The long-term Warren Act Contract has a term of 40 years. The maximum contract amount is 4,560 acre-feet per year. This total reflects the best estimate of the yields of these various water rights in a normal water year, based upon limited actual data and computer modeling. The contract total also assumes a 15% conveyance loss between the former points of diversion and Folsom Reservoir. The actual total yield will vary from year to year, based on hydrologic conditions, but the amount taken in any year will be determined by the amount of water the District introduces into the reservoir. Unlike CVP contracts, this contract has no USBR-controlled shortage provisions. The assumed 15% conveyance loss can later be adjusted by mutual agreement, based on operational data, without amending the contract. The water is to be used for municipal and industrial (M&I) purposes in the El Dorado Hills area.

### ***4.3 Fazio Water Supply (Public Law 101-514)***

On behalf of EID and Georgetown Divide Public Utility District (GDPUD), the El Dorado County Water Agency (EDCWA) is pursuing a water supply service contract with USBR. Public Law 101-514 transferred unallocated Central Valley Project (CVP) supply to local water purveyors, allocating 15,000 acre-feet to El Dorado County. Under this new contract, up to 15,000 acre-feet of CVP M&I water would be made available for diversion from Folsom Reservoir, or from an exchange on the American River upstream from Folsom Reservoir between GDPUD and Placer County Water Agency. EDCWA would make this new CVP water available to EID and GDPUD for use within their respective service areas. P.L. 101-514 does not specify how much of the 15,000 acre-feet would be allocated to each district, however it has been tentatively assumed that the new CVP allocation would be split equally between EID and GDPUD. For EID, water would be diverted from the Folsom Lake intake and delivered to the El Dorado Hills and Cameron Park service areas.

A Draft EIS/EIR was prepared by USBR and the EDCWA, and went out for public review and comment in 2009. EDCWA approved the Final EIR in January 2011. This final document is a CEQA-only Final EIR (but not a Final EIS). Because EDCWA was in a position to finalize the EIR portion of the draft joint document before USBR was in a position to finalize the EIS portion, EDCWA chose to prepare a CEQA only Final EIR in support of its decision to enter into a water supply contract with USBR, recognizing that USBR must prepare its own NEPA-only Final EIS before USBR can take action entering into such a contract with EDCWA. USBR has not yet completed its NEPA and Endangered Species Act (ESA) obligations due to ongoing Delta endangered species litigation related to its operation of the Central Valley Project. EDCWA continues explore with USBR alternatives to completing NEPA and ESA requirements so that a Record of Decision can be issued and a contract executed.

When EDCWA and USBR ultimately execute a contract, the EDCWA would then execute subcontracts with EID and GDPUD.

### ***4.4 Infrastructure Based Yield***

As previously noted, the El Dorado Hills supply area based yield is restricted by infrastructure. Significant improvements have been made to the El Dorado Hills water system infrastructure to support a capacity of 26 mgd.

Based on this infrastructure capacity in combination with the capacity of the GHI, the total water supply for El Dorado Hills supply area has been calculated in the amount of 15,163 AF. This calculation is shown in Table 3, which uses the maximum day peaking factor of 2.0 from the District's design standards, along with the infrastructure capacity of the EDHWTP and GHI.

## 5 TOTAL POTENTIAL DEMAND

The total potential demand has been calculated for each class of service using historical 2001-2010 demands to determine an average unit demand. The highest and lowest annual demands from a 10 year period were excluded from the average. These values are held constant for a three-year period, including the *2013 Report*, to avoid large EDU changes caused by annual demand fluctuations. A new unit demand calculation will be completed for next year's *2014 Report* to account for more recent demand data.

### 5.1 Average Demand by User Category

Tables 4A and 4B summarize the average demand per active meter for each user category over the last three years for the two designated supply areas of El Dorado Hills and Western/Eastern. The tables also show the average unit demand for each category. The user categories include: single-family and multi-family residential, single-family dual plumbed dwellings (potable), small farm irrigation, agricultural metered irrigation, ditches, recreational turf services, domestic irrigation, commercial/industrial, and municipal water sales to the City of Placerville.

### 5.2 Active Demand

Table 5 summarizes the active demand for the El Dorado Hills supply area, and Table 7 the active demand for the Western/Eastern supply area. The active accounts, or dwelling units for multi-family, have been multiplied by the average unit demand for each user category from Tables 4A and 4B, respectively.

#### 5.2.1 Active Accounts

This category includes water meters that are installed in the ground, have an active billing status, and are charged a minimum bi-monthly billing regardless of recorded water use during the prior year. Pursuant to Article 3, Section 22280 of the California State Water Code, the Board of Directors adopted a policy on September 23, 1987 that requires all metered accounts to be billed from the date the water meter is installed. Therefore, any meters installed after 1987, or any meters that have changed ownership since 1987, are considered to be active accounts and are included in this category.

#### 5.2.2 Active Meters

Tables 4A and 4B summarize the average demand per service for the previous 3 years. Table 4A reports the average demand per service for the El Dorado Hills supply area; and Table 4B reports the average demand per service for the Western/Eastern supply area. In the case of multi-family residential, the projected unit demand is calculated per dwelling unit rather than per service to better represent the unit demands.

### **5.3 Latent Demand**

Table 6 summarizes the latent demand for the El Dorado Hills supply area, and Tables 8A and 8B summarize the latent demand for the Western/Eastern supply area. The latter area has been further separated into the Western and Eastern demand regions in order to more accurately calculate unit demands. Table 4B lists the individual service zones for these demand regions, and Figure B illustrates the service zones. The inactive accounts and uninstalled meters have been multiplied by the projected unit demand from the historical data for each user category from Tables 4A and 4B.

#### **5.3.1 Inactive Accounts**

This category includes water meters that are installed in the ground but idle as of December 31<sup>st</sup> of the previous year. This category also includes water meters purchased prior to 1987 that were then allowed to remain idle, and have had no changes in ownership or recorded water use since 1987.

#### **5.3.2 Uninstalled Meters**

This category includes water meters that have been purchased to serve a parcel of land, but have not yet been installed nor has an account been set up for minimum billing purposes. This category also includes those meters purchased under the “Crawford Allocation” during the declared Water Emergency in 1990, which are not required to be installed until needed.

### **5.4 Other System Demand**

Table 9 summarizes the other system demand for the El Dorado Hills supply area and the Western/Eastern supply area. The other system demand includes real losses of water into the ground due to leaks and breaks, apparent or paper losses such as meter inaccuracies, supplementation of potable water to the recycled system, and other authorized uses of water such as operational flushing or environmental flows. A fixed 13% rate for real and apparent losses has been applied to the available water supply, both infrastructure and supply based yields. This percentage of loss has been fairly consistent over the past 10 years, independent of annual diversions.

Real and apparent losses are a major component of the calculation to determine the District’s “Other System Demand.” Minor components include supplementation to the recycled system and other authorized uses. Five years of historical data are now available for these demands which allows for a 5-year average to be calculated in order to minimize yearly variations.

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

---

### **5.4.1 Authorized Uses**

The majority of authorized uses include potable water that is metered and billed to EID customers, and raw water that is both metered and unmetered, but billed to EID customers. Both of these categories are classified as revenue water and include not only the metered residential, commercial, and irrigation customers, but also private fire service connections and construction meters. In addition, EID receives assessments from Improvement District No. 97 – metered raw water releases to Clear Creek for aesthetics flow maintenance; and the Knolls Reservoir Assessment District – metered potable water releases for reservoir level maintenance.

Authorized use of water also includes EID operational uses that are classified as non-revenue water because they are unbilled, but include both metered and unmetered uses. Examples of non-revenue water would include water quality and operational flushing, reservoir operational overflows, water meter testing, and the flushing and cleaning of sewage lift stations and the sewage collection system.

### **5.4.2 Potable Water Supplement to Recycled System**

Potable water has been used to supplement the recycled water system since 2002 and is also included to calculate the District’s “Other System Demand” in Table 9. Recycled water is used for residential and commercial landscape and turf irrigation. Several recycled water storage tanks and the Bass Lake pump station are the primary receiving points for supplemental potable water. With the closing of the Executive Golf Course, recycled water supplementation at the Highway 50 vault has been eliminated.

It is usually necessary to make releases to these receiving points during the summertime but during peak demand periods. The potable water system will continue to supplement the recycled system unless and until additional recycled supply is available to meet recycled water demand. Refer to Section 7, Recycled Water System, for information regarding the recycled water supply and demand, plus projections of available supply and demand.

## **6 COMMITMENTS**

The District has several contractual commitments for water supply in both the El Dorado Hills and Western/Eastern supply areas. Below is a description of each of these commitments, along with their impact upon the District’s existing and future water supplies. The methodology used in allocating EDUs under the board policies and administrative regulations ensures that the required infrastructure is built prior to the purchase of meters for the remaining commitments. Refer to Section 3.1, “EID Policies and Regulations Pertaining to EDU Allocations,” for a description of this governance.

## **6.1 El Dorado Hills Supply Area**

The contractual commitments for the El Dorado Hills supply area is provided in Table 10.

### **6.1.1 Assessment District No. 3**

In May of 1985, Assessment District No. 3 (AD3) was formed as a means to finance expansions and improvements to the El Dorado Hills water and sewer systems and related facilities.<sup>1</sup> The ultimate capacity of AD3 was based on 9,074 annual AF of water supply because of the likelihood that EID would be able to contract for additional water supplies beyond the current (1985) contracted amount of 7,550 AF. Using 600 gallons per dwelling unit per day or 0.67 AF/year,<sup>2</sup> the 9,074 AF was estimated to support 13,543 dwelling units or the equivalent.<sup>3</sup> At the time AD3 was formed, EID was estimated to be serving or committed to serve 2,563 EDUs. Consequently, there was additional water capacity for approximately 10,980 EDUs.

### **6.1.2 Buy-ins to AD3**

Subsequent “buy-ins” to AD3 were then allowed for both water and sewer service for parcels that were not participants in the original formation. In October of 1989, however, the District Board of Directors adopted Resolution No. 89-167 that revoked the ability of parcels to buy into AD3 for water service, until such time as the District determined that additional water supply was available to land already within the current boundaries of AD3.

### **6.1.3 Monte Vista Parcels**

In April of 1994, the District Board of Directors took action to “grandfather” the existing parcels within the Monte Vista area into AD3 when this area was connected to the El Dorado Hills water system by a pipeline extension. This area had previously been served directly from Folsom Reservoir through a small water treatment plant. Water quality issues required EID to either upgrade the treatment plant or connect the Monte Vista water system to the El Dorado Hills system. The pipeline extension was the preferred solution and the connection was made.

### **6.1.4 Weber Dam Advanced Funding Agreement**

In December of 2000, the District entered into an “Advanced Funding Agreement” (AFA)

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<sup>1</sup> Tax Free Municipal Bonds, El Dorado Irrigation District, El Dorado County, California, Assessment District No. 3, Phase Two, Final Offering Statement dated May 30, 1985.

<sup>2</sup> From a 1981 EID water system analysis of El Dorado Hills.

<sup>3</sup> The formation of AD3 was based on dwelling units, also known as equivalent dwelling units (EDUs). An EDU corresponds to a single-family residential dwelling served by a 3/4-inch water meter. Larger water meters, such as those for commercial applications, required additional EDUs.

**EL DORADO IRRIGATION DISTRICT**  
**2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

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with Serrano Associates LLC, Russell-Promontory LLC (AKT Development), El Dorado Hills Investors LTD, and Lennar Renaissance Inc., known in the agreement as the “Interested Parties.” These investors were willing to provide advanced funding of \$4,000,000 to the District to reconstruct Weber Dam in exchange for the guarantee of 540 AF of water supply from existing District supplies. The water supply was to be used solely for and upon those properties owned by the Interested Parties, located within AD3, and that were annexed to EID on or before the effective date of the AFA. The District also made available under this agreement an additional 140 AF of existing water supply for individual parcels known as the “Benefited Parties.” These specific parcels were entitled to purchase water connections for their properties on a “first-come, first-served” basis, consistent with District policies, procedures, and regulations.

The Board approved a new agreement in February 2011 that provides a 10-year extension of the Interested Parties commitments.

### **6.1.5 Wetsel-Oviatt Agreement and Subsequent Amendment**

In September of 2003, the District entered into a “Settlement Agreement” with Wetsel-Oviatt, Inc., (Wetsel) which established a pool of 1,900 AF/yr of water supply available solely to Wetsel from new water sources, of which not less than 1,600 AF/yr would be potable water and the remainder would be recycled water.

The new water supplies were defined as any water supply that increased the system-wide firm yield above 43,280 AF/yr; and the available water supplies to the El Dorado Hills region above 10,976 AF/yr. The new water supplies included Water Rights Permit 21112 for 17,000 AF/yr; the District’s share of the prospective water service contract for 15,000 AF/yr contemplated by Public Law 101-514 (Fazio Water); and the permanent transfer in point of diversion to Folsom Reservoir of the water rights associated with the District’s Farmer’s Free Ditch, Gold Hill Ditch, Summerfield Ditch, and Weber Reservoir.

The new water supply that has been added to the system-wide firm yield found in Table 2 includes the 17,000 AF/yr from Permit 21112 and the Ditch/Weber water rights. With the expansion of the EDHWTP to 26 mgd, the new supplies made available from Folsom, taking into account infrastructure restrictions total 14,563 AF/yr. The incremental new water supply made available above 10,976 AF/yr is therefore 3,587 AF/yr.

The agreement also states that for so long as the cumulative total of new water supplies is less than 3,800 AF/yr, then 50% shall be dedicated to the Wetsel pool and 50% shall become part of EID’s generally available supplies. Accordingly, 1,794 AF/yr has been established for the “Wetsel” pool, consisting of 1,494 AF/yr of potable water and 300 AF/yr of recycled water. Therefore, the cumulative total potable water dedicated to the “Wetsel” pool is 1,494 AF.

**EL DORADO IRRIGATION DISTRICT**  
**2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

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2010 Amendment

In 2010, The District and Sierra Pacific Industries (successor in interest to Wetsel-Oviatt) executed an amendment to the Wetsel-Oviatt Settlement Agreement. The amendment releases three-fourths of this contractual commitment, or 1,120 AF, through December 31, 2014. EID has established a pool of 1,494 acre-feet of potable water pursuant to the original Wetsel-Oviatt agreement. During the term of the amendment, SPI shall be eligible to purchase service connections for only 25% of the amount of potable water supplies in the pool established by EID, or 374 acre-feet.

**6.1.6 Carson Creek Agreement**

In December of 2007, the District entered into an agreement with AKT Carson Creek Investors, LLC for provision of services and advance partial purchase of Facility Capacity Charges (FCCs). Under the agreement, AKT Carson Creek Investors, LLC made an advance deposit of \$4,337,500 against future FCC liability. In exchange, the District provided assurance of future water, recycled water, and wastewater service for up to 1,250 dual-plumbed residential units. The agreement benefited the District financially by “smoothing” the dramatic fluctuation in FCC revenues the District would otherwise experience. The agreement benefited the developer of the property by making the property eligible to purchase service, as available, on a par with the beneficiaries of other contractual commitments.



**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

**TABLE 10  
STATUS OF COMMITMENTS  
El Dorado Hills Supply Area**

EQUIVALENT DWELLING UNITS (EDUs)					
Type of Commitment	Zone	Original Commitments	EDUs Sold or Expired		Remainder of Commitments Zone 1 and/or 2 <sup>[1]</sup>
Considered in the Formation of AD3 Existing Dwelling Units - 2,563 New Dwelling Units - 10,980	1, 2	13,543	12,177		1,366
Buy-ins Allowed to AD3	2	568	568		0
Monte Vista Parcels	2	112	63		49
Advanced Funding Agreement	1, 2	1,000	710		290
	Zone	Total Potable Commitment	Current Potable commitment (AF)	Reduced per amendment (AF)	EDU commitment
Wetsel-Oviatt Agreement <sup>[2] [3]</sup>	2	1,737	1,494	373.5	485
	Zone	Dual-plumbed homes	Dual Plumbed Unit Demand Ratio	EDU commitment	
Carson Creek Agreement <sup>[4]</sup>	2	1,250	1 EDU = 2.5 homes	500	
<b>TOTAL EDU COMMITMENTS</b>					<b>2,690</b>
<b>EL DORADO HILLS COMMITMENTS in EDUs</b>					<b>2,690</b>

[1] Zone 2 is the El Dorado Hills Service Zone. Zone 1 is the Bass Lake Service Zone.

[2] This commitment is conditional upon certain augmentations to the District's water supply. With increases in supply to EDH, 1,494 AF of potable water has been assigned to this pool.

[3] Per Amendment 1 to the Wetsel-Oviatt Settlement Agreement, dated March 12, 2010, 75% of the water supply has been released through December 31, 2014.

[4] This agreement secured 1,250 dual-plumbed residential units for the Carson Creek property.

## **6.2 Western / Eastern Supply Area**

The total contractual commitments for the Western/Eastern supply area is provided in Table 11.

### **6.2.1 Apple Mountain**

In April of 2001, the District entered into a "Water Service Agreement" with Apple Mountain, LP for property known as the Apple Mountain Golf Course. The District committed to provide up to 270 AF/yr of water for golf course irrigation and non-potable uses. The annual amount is further restricted with no more than 240 AF between May 15 and October 15; and no more than 60 AF in each of the months of July and August.

The golf course's highest annual use was 197 Acre-Feet and is included as an Agricultural Metered Irrigation account, therefore approximately 73 Acre-Feet remain to be committed. The Average Unit Demand projection of 0.42 AF/YR for the Eastern Region (Table 4B) has been used to make the conversion. ( $73/0.42 = 174$  EDUs)

### **6.2.2 Bell Ranch**

In June of 2002, the District entered into a "Settlement Agreement" with Bell Ranch Properties, LTD in order to acquire approximately 4.83 acres of Bell Ranch Property for the purpose of constructing the Bass Lake water storage tanks. The Bass Lake Tanks project is part of the District's distribution system for potable water that serves portions of the Cameron Park and Bass Lake areas. In exchange for the 4.83 acres of land, the District guaranteed, from existing supplies, 113 water and sewer connections, subject to terms and conditions, annexation of Bell Ranch property, and payment of all Facility Connection Charges (FCCs) and fees in effect at the time application for service is made.

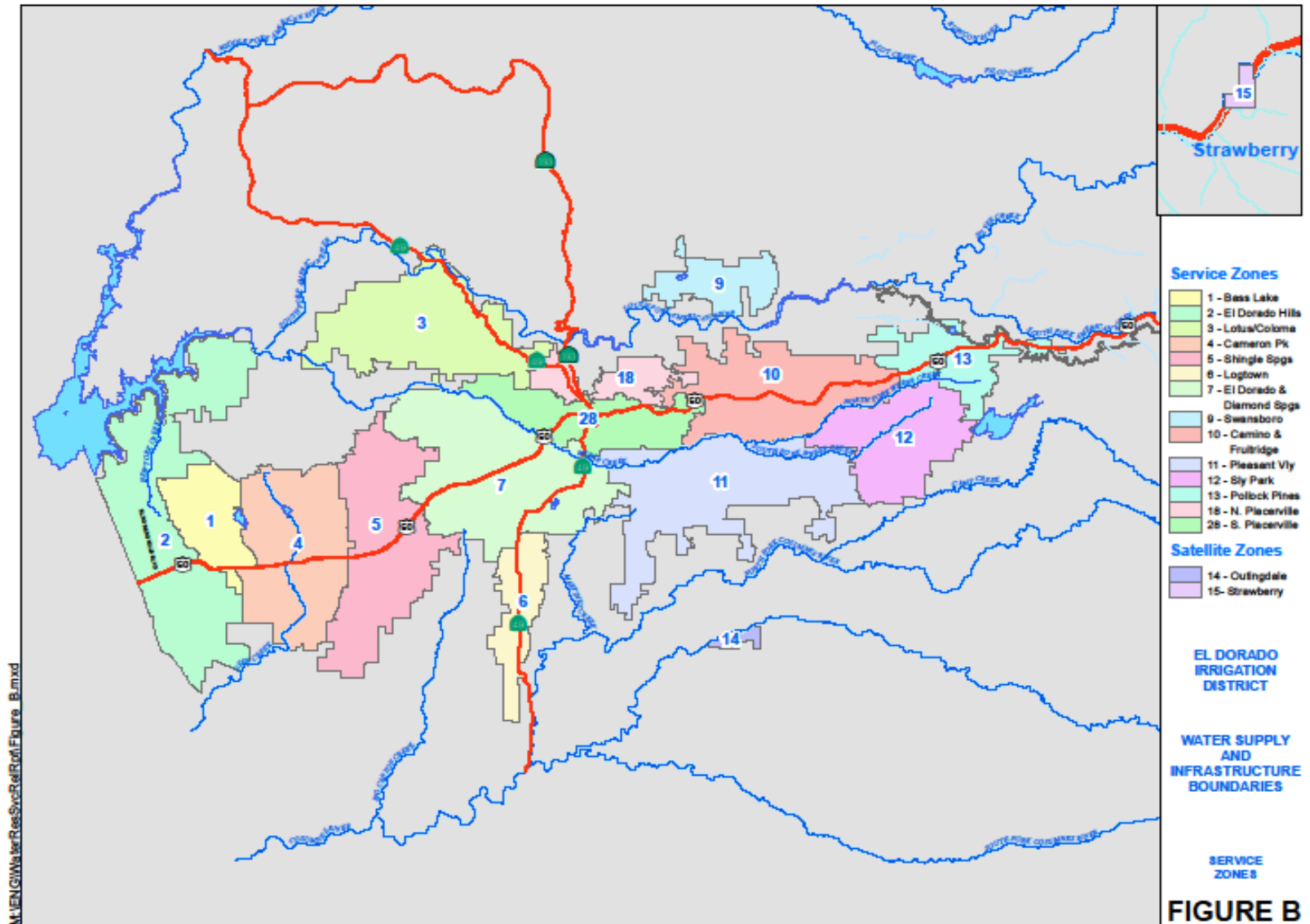
**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

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**TABLE 11  
STATUS OF COMMITMENTS  
Western / Eastern Supply Area**

COMMITMENTS - EQUIVALENT DWELLING UNITS (EDUs)					
Type of Commitment	Zone	Original Commitments		EDUs Sold	Remainder of Commitments
Bell Ranch Settlement Agreement	1	113		0	113
Sub-Total					113
	Zone	Original Commitment (AF)	Highest Amount Used (AF)	Remaining Commitment (AF)	Converted to EDUs
Apple Mountain Water Service Agreement	10	270	197	73	170
TOTAL COMMITMENTS in EDUs					283
<b>WESTERN / EASTERN COMMITMENTS in EDUs</b>					<b>283</b>

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**



## 7 RECYCLED WATER SYSTEM

A summary of the recycled water supply for the District has been included in the water supply and demand reporting since 2000. The following sections document the current and projected recycled water supply and demand data for the District.

### ***7.1 Supply and Demand Summary***

The total recycled water supply includes supply from the El Dorado Hills Wastewater Treatment Plant (EDHWWTP), the Deer Creek Wastewater Treatment Plant (DCWWTP), and direct potable supplementation to the recycled system. Refer to Table 14.

#### **7.1.1 Supply**

The supply to the recycled water system is dependent upon wastewater treatment plant influent flow and storage. The sources of recycled supply include: 1) the EDHWWTP influent and storage; 2) the DCWWTP influent; and 3) points of direct potable water supplementation, including Bass Lake. The WWTP sources provide supply through facilities that were built in accordance with the *Water Reclamation Master Plan*. The location of these facilities is illustrated in Figure C.

#### **7.1.2 Demand**

The demand for recycled water is based upon the actual usage of active meters as of December 31<sup>st</sup> of the previous year. The total potential demand includes the active demand (Table 12), plus a calculated demand for inactive accounts and uninstalled recycled water meters (Table 13).

### ***7.2 Projected Recycled Water Supply and Demand***

The deficit of recycled water demand will be met by potable water supplementation until additional recycled water supply is available. Table 15 contains a summary of the projected supply and demand.

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

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**TABLE 12  
2012 ACTIVE DEMAND  
Recycled Water System**

ACTIVE DEMANDS			
Active Account Categories	2012 Active Services	2012 Demand in Acre-Feet	Acre-Feet per service
Commercial / Industrial Recycled <sup>[1]</sup>	147	624	4.24
Recreational Turf Recycled <sup>[2]</sup>	12	544	45.33
Single-Family Dual Recycled	3,918	1,685	0.43
TOTALS	4,077	2,853	--

[1] The Commercial / Industrial Recycled accounts include outside irrigation of commercial landscaping and street medians.

[2] The Recreational Turf Recycled accounts serve publicly or privately owned property that may accommodate organized recreational activities, and for which the primary use of the recycled water is for turf irrigation and associated landscaping (i.e. parks, ball fields, and school turf).

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

**TABLE 13  
2012 LATENT DEMAND  
Recycled Water System**

INACTIVE ACCOUNTS			
<i>Inactive</i> Account Categories	2012 Demand Acre-Feet per Account	2012 <i>Inactive</i> Accounts	Calculated <i>Inactive</i> Demand in Acre-Feet
Commercial / Industrial Recycled	4.24	0	0
Single-Family Dual Recycled	0.43	0	0
Subtotal <i>Inactive</i> Acre-Feet			0

UNINSTALLED METERS			
<i>Uninstalled</i> Meter Categories	2012 Demand Acre-Feet per Meter	2012 <i>Uninstalled</i> Meters	Calculated <i>Uninstalled</i> Demand in Acre-Feet
Commercial / Industrial Recycled	4.24	2	8
Single-Family Dual Recycled	0.43	474	204
Subtotal <i>Uninstalled</i> Acre-Feet			212

Calculated Inactive and Uninstalled Acre-Feet	212
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<b>RECYCLED WATER SYSTEM - LATENT DEMAND in Acre-Feet</b>	<b>212</b>
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**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

**TABLE 14  
2012 SUPPLY and DEMAND SUMMARY  
Recycled Water System  
In Acre-Feet**

2012 SUPPLY					
Wastewater Treatment Plant Supply <sup>[1]</sup>		Reservoir Storage Supply		Direct Potable Supplementation to Recycled System <sup>[4]</sup>	TOTAL SUPPLY
El Dorado Hills	Deer Creek	El Dorado Hills <sup>[2]</sup>	Bass Lake <sup>[3]</sup>		
1,521	882	224	0	596	3,000

2012 DEMAND					
ACTIVE DEMAND			LATENT DEMAND		
Authorized Metered and Billed	Authorized Unbilled Uses <sup>[5]</sup>	TOTAL	Inactive	Uninstalled	TOTAL
2,853	141	2,994	0	212	212

2012 REAL AND APPARENT LOSSES		
Total 2012 Supply	Total 2012 Active Demand	2012 Real and Apparent Losses
3,000	2,994	6

[1] Data from actual total 2012 readings from WWTP plants.

[2] The 224 acre-feet (73 MG) of storage is the revised reservoir capacity, with the actual supply used from storage being included in the El Dorado Hills Wastewater Treatment Plant supply of 1,521 acre-feet.

[3] Actual raw water supply that was pumped out of Bass Lake Reservoir into the recycled water system. 700 AF available.

[4] Direct supplementation includes potable water supplied in 2012 to the 940, Bridlewood, and Village C recycled water storage tanks, and to the Serrano Golf Course.

[5] Operational changes in late 2009 - plant water now is pumped internally prior to effluent flow meter. Not a recorded demand.



**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

**TABLE 15  
PROJECTED 2013 SUPPLY and DEMAND  
Recycled Water System  
In Acre-Feet**

SUPPLY PROJECTIONS FOR 2013					
SUPPLY YEAR	Treatment Plant Supply		Reservoir Storage Supply		TOTAL SUPPLY
	El Dorado Hills	Deer Creek	El Dorado Hills <sup>[3]</sup>	Bass Lake <sup>[4]</sup>	
2013 Projected Supply <sup>[1]</sup>	1,529	886	224	0	2,415

DEMAND PROJECTIONS FOR 2013				
TYPE OF DEMAND YEAR	Filter Backwash Water	WWTP Irrigation & Operational <sup>[6]</sup> Uses	Delivered to Distribution System	TOTAL DEMAND <sup>[5]</sup>
Projected 2013 Normal/Wet Year <sup>[2A]</sup>	141	0	2,899	3,040
Projected 2013 Dry Year <sup>[2B]</sup>	168	0	3,450	3,618

[1] Data from actual total 2012 readings from WWTP plants, plus 0.5% for growth in WWTP supply.

[2A] [2B] Source for the 2013 projected demands is the annual water balance prepared by District engineering staff.

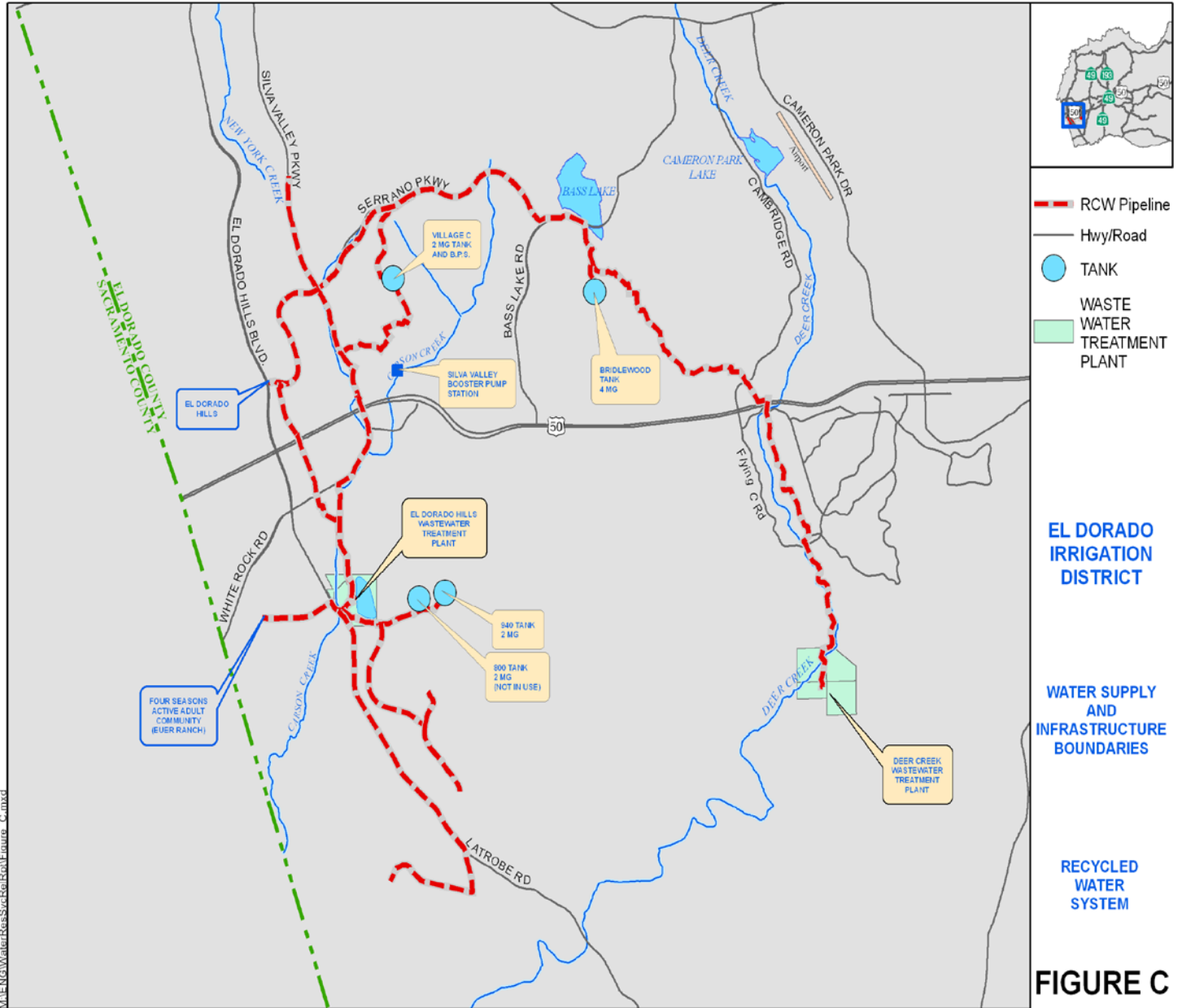
[3] The 224 acre-feet (73 mg) of storage is the revised capacity for the reservoir at the El Dorado Hills Wastewater Treatment Plant. It is an internal supply and included in the EDHWWTP Totals

[4] Bass Lake has 700 acre-feet of storage reserved for emergency use and therefore is not considered in total projected supply.

[5] The demand that cannot currently be met by recycled water will be met by supplementation from the potable water system.

[6] Operational Change in 2009. All Operational water taken off system prior to recycled water effluent meter.

# EL DORADO IRRIGATION DISTRICT 2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT



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## 8 GLOSSARY – Terms and Definitions

The following terms and definitions are tailored to reflect the terminology of the El Dorado Irrigation District (EID). In general terms, the normal water measurements used by EID are as follows: cubic feet (CF) for metered customer demands; acre-feet (AF) for water supplies; cubic feet per second (CFS) or million gallons per day (MGD) for flow rates and treatment plant capacities; and miners inches (MI) for some ditch deliveries.

### Active Water Accounts

Any account established after September 1987 where the meter has been installed and the account is charged a minimum bi-monthly billing, regardless of recorded water use; or any account established prior to September 1987 which has recorded water use or has changed ownership since 1987. Excludes those accounts temporarily disconnected for non-payment of a bill or seasonal accounts.

### Active Water Meters

Any water meter installed in the ground with recorded water use during the reporting year.

### Assessment District No. 3 (AD3)

An assessment district formed on May 30, 1985 that offered tax free municipal bonds to finance the expansion and improvement of the El Dorado Hills water and sewer systems and related facilities.

### Authorized Uses

The majority of authorized use generates revenue, and includes both potable water that is metered and billed to EID customers, and raw water that is both metered and unmetered but billed to EID customers. The other minor portion of authorized uses includes District operational uses of potable water that are considered non-revenue water because they are unbilled, and include both metered and unmetered uses.

### Contiguous Water System

The main, interconnected transmission and distribution system of the District, generally between the Sly Park and Forebay water treatment plants in the east, and the El Dorado Hills water treatment plant in the west, excluding the satellite water systems in the communities of Outingdale and Strawberry.

### Contractual Commitments

Legal obligations of the District to reserve water supply or provide water service to designated parties, entered into by the adoption of a Board resolution, the formation of an assessment district, or the signing of a contract. Refer to Tables 10 and 11.

**EL DORADO IRRIGATION DISTRICT**  
**2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

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Crawford Allocation

The EID Board of Directors considered the “Crawford Project Water Allocation Plan,” on April 23, 1990, in response to a water emergency declared on March 12, 1990. The Crawford Ditch Project was to net EID nearly 2,800 AF of new water, which equated approximately 3,500 EDUs. Resolution No. 90-87 was adopted on April 30, 1990, adding a surcharge of \$2,200 to the Facility Capacity Charge (FCC) for each new water meter sold under the allocation plan. These funds were then used to make improvements to the Crawford Ditch System as well as EID’s Reservoir 7 water treatment plant. Water meters purchased under the Crawford Allocation were not required to be installed at the time of purchase, but rather only as needed. These meters are in the latent demand as uninstalled meters. Over time, the number of Crawford Allocation uninstalled meters has steadily diminished as these projects are built and the meters are installed.

Dual Plumbed Dwellings

Single-family dwellings that receive recycled water for front and back yard landscape irrigation, and potable water for domestic household use.

Equivalent Dwelling Unit (EDU)

An EDU pertains to the average water demand for a detached, single-family dwelling unit served by a 3/4-inch water meter, and is referenced within this report as acre-feet per year (AF). This demand is measured at the customer’s water meter, and therefore does not include losses in the delivery system. Larger water meters, such as those for commercial applications, required additional EDUs. An EDU should further be defined as a dwelling unit in the El Dorado Hills or Western / Eastern Supply Areas.

Inactive Water Account

This category includes water meters purchased prior to 1987 that were then allowed to remain idle, and have had no changes in ownership or recorded water use since 1987.

Infrastructure Based Yield

A reduction in the supply based yield of a supply area, whereas an infrastructure constrained yield is determined by the maximum day capacity of existing facilities rather than hydrology. In El Dorado Hills, the infrastructure based yield is a combination of the water treatment plant capacity and the Gold Hill Intertie transmission main. Refer to Table 3.

**EL DORADO IRRIGATION DISTRICT**  
**2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

---

Metered Water Demand (Consumption)

The total amount of measured and billed water that is delivered through the customer's meter. This demand is usually measured and billed once every two months, and reported statistically on an annual calendar basis.

Monte Vista

A community along Salmon Falls Road to the northeast of El Dorado Hills, possibly named after the old Monte Vista Campground, and at one time a separate District service zone called the Monte Vista / Salmon Falls (Zone 1) until it was connected and incorporated into the El Dorado Hills Service Zone 2.

OASIS Model

A computer software package developed by HydroLogics, Inc. to model the historic hydrologic conditions in conjunction with certain input parameters to optimize the firm yield of the integrated system, which includes Project 184, Jenkinson Lake, Folsom USBR contracts, and Permit 21112. The overall system firm yield is determined by the OASIS Model for planning level purposes.

Peaking Factor

The difference between an average day of demand, in million gallons per day or MGD, and a maximum day of demand, used in this report to determine the annual capacity of the El Dorado Hills Water Treatment Plant, Gold Hill Intertie and Diamond Springs Main in acre-feet. Refer to Table 3.

Potential Water Demand

A calculated annual amount of water demand based upon a historical 10-year average, excluding high and low, for each user category to determine the total potential demand, which includes active, latent, and other system demands.

Recycled Water

Tertiary treated and disinfected wastewater effluent meeting the water quality requirements of the Department of Health Services Title 22 regulations that is pure enough for human contact but not for human consumption. Within EID, recycled water is used solely for landscape and turf irrigation, including residential landscaping, golf courses, parks, and other uses where human body contact is a potential occurrence.

Supply Areas

The two areas are the El Dorado Hills supply area and the Western/Eastern supply area as illustrated in Figure A. El Dorado Hills receives water from Folsom Lake, with additional water provided by gravity flow from the Gold Hill Intertie (GHI) and Diamond Springs Main (DSM). The Western/Eastern includes all other service zones (Figure B) that currently receive gravity water supply from the District's eastern sources – Project 184 and Jenkinson Lake.

**EL DORADO IRRIGATION DISTRICT**  
**2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

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Service Zones

The individual service zones illustrated in Figure B, consisting of 14 contiguous service zones and 2 satellite water systems. The boundary between service zones is usually a storage tank or reservoir.

Single-Family Dual Potable

A single-family residential dwelling unit served with potable water for inside uses and recycled water for outside irrigation.

Supplement to the Recycled System

The quantity of potable water that is needed to make up the difference between what the recycled water system is able to produce and the demand for recycled water, due to a lack of seasonal recycled water storage.

Supply Based Firm Yield

The combined firm yield from Jenkinson Lake, FERC Project 184, USBR water service contracts from Folsom Reservoir, and Permit 21112, based on water year hydrology not restricted by infrastructure. Refer to Table 2.

System Firm Yield

According to District Administrative Regulation No. 5010, *Water Availability and Commitments*, the *Water Resources and Service Reliability Report* will use a system firm yield method to determine that sufficient water supply exists to meet potential demands. Under this methodology, approximately 95% of the time sufficient water supply is available to meet normal water demands, but during the remaining 5% of the time water shortages may occur. Such shortages may result in the implementation of voluntary or mandatory conservation measures.

Unallocated Water Supply

The quantity of water supply available for sale during the reporting year, which is the difference between the system firm yield, supply based or infrastructure based, and the total potential demand. Calculated as annual acre-feet and then converted to an equivalent dwelling unit.

Uninstalled Water Meters

A meter which has been purchased to serve a parcel of land, but has not been installed nor has an account been set up for billing purposes.

**EL DORADO IRRIGATION DISTRICT**  
**2013 WATER RESOURCES AND SERVICE RELIABILITY REPORT**

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User Categories

Designates different water rate structures used within the financial billing system, which are then used to separate classes of services for statistical reporting. The user categories include single-family and multi-family residential; single-family dual potable; commercial/industrial; small farm, agricultural, ditch, recreational turf and domestic irrigation; and municipal water sales to the City of Placerville.

Warren Act Contract

A one-year or multiple-year contract between the District and the United States Bureau of Reclamation (USBR), which authorizes and charges a fee for the use of a Federal facility, such as Folsom Reservoir, to store non-Federal water for District use.

Water Supply Management Conditions

According to District Administrative Regulation No. 5011, Water Supply Management Conditions, incremental steps would be needed to manage increasing levels of shortages due to either drought or water emergency. Specific procedures are outlined in the above referenced water supply matrix, although the District is in the process of completing a comprehensive drought plan that will eventually replace the water supply matrix.

Water Year

A continuous 12-month period during which a complete cycle occurs, arbitrarily selected from the presentation of data relative to hydrologic or meteorological phenomena. The U.S. Geological Survey uses the period October 1 to September 30 in the publication of its records of stream flow.

# APPENDICES



**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES & SERVICE RELIABILITY REPORT**

**APPENDIX TABLE A  
EL DORADO HILLS HISTORICAL TRENDS  
EL DORADO HILLS SERVICE AREA**

User Category	Historical Unit Demands in Acre-Feet										Average <sup>[1]</sup>
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Unit Demand
Commercial	3.64	3.86	3.48	3.45	3.81	2.92	1.90	2.69	2.42	2.64	3.39
Domestic Irrigation	1.98	2.07	1.84	2.00	2.05	2.19	1.89	1.80	1.69	1.74	1.92
Multi-Family Residential (Units)	0.28	0.21	0.20	0.22	0.22	0.21	0.24	0.18	0.17	0.18	0.24
Recreational Turf Services	9.01	14.76	11.18	11.75	10.90	11.16	10.43	8.45	8.31	9.66	10.67
Single-Family Dual Potable	0.20	0.22	0.18	0.17	0.17	0.17	0.20	0.15	0.16	0.15	0.18
Single-Family Residential	0.73	0.80	0.74	0.78	0.83	0.83	0.78	0.61	0.59	0.67	0.77
Small Farm	---	---	---	1.27	3.81	4.63	3.17	3.93	3.25	3.71	3.40

[1] The average unit demands were developed for the 2011 Water Resources Report using years 2001 through 2010. Unit demands were estimated by excluding the historical maximum and minimum values and averaging the remaining values. Except for the Domestic Irrigation and Small Farm categories, which have an updated average unit demand, the unit demand for the 2013 Report is held constant from the 2011 report and not recalculated each year in order to avoid large EDU changes caused by annual demand fluctuations. The unit demand will be recalculated for the 2014 report.

[2] A new Small Farm service was added to this area in 2006.

**SERVICE ZONES WITHIN SERVICE AREA (Zone #):**  
El Dorado Hills (02)

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES & SERVICE RELIABILITY REPORT**

**APPENDIX TABLE B  
WESTERN REGION HISTORICAL TRENDS  
Western / Eastern Service Area**

User Category	Historical Unit Demands in Acre-Feet										Average <sup>[1]</sup>
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Unit Demand
Agricultural Metered Irrigation	16.35	22.54	13.60	10.96	13.90	16.07	11.59	10.75	7.42	7.00	15.65
Commercial	1.57	1.70	1.60	1.70	1.64	1.42	1.46	1.38	1.32	1.39	1.57
Ditches	8.76	10.08	17.78	14.58	15.27	14.58	14.98	13.36	17.00	14.50	13.31
Domestic Irrigation	1.77	1.98	1.60	1.78	1.80	1.88	1.65	1.38	1.26	1.42	1.66
Multi-Family Residential Units	0.27	0.27	0.23	0.24	0.25	0.25	0.26	0.20	0.20	0.22	0.26
Recreational Turf Services	14.87	19.77	14.02	16.18	16.40	15.70	13.04	11.84	11.47	12.74	15.42
Single-Family Dual Potable	0.11	0.15	0.17	0.17	0.19	0.19	0.23	0.18	0.18	0.18	0.17
Single-Family Residential	0.60	0.66	0.58	0.63	0.65	0.66	0.60	0.47	0.43	0.49	0.61
Small Farm	4.07	4.64	3.38	4.12	3.55	3.85	3.11	3.05	3.18	2.94	3.54

[1] The average unit demands were developed for the 2011 Water Resources Report using years 2001 through 2010. Unit demands were estimated by excluding the historical maximum and minimum values and averaging the remaining values. Except for the Domestic Irrigation and Small Farm categories, which have an updated average unit demand, the unit demand for the 2013 Report is held constant from the 2011 report and not recalculated each year in order to avoid large EDU changes caused by annual demand fluctuations. The unit demand will be recalculated for the 2014 report.

**SERVICE ZONES WITHIN SERVICE AREA (Zone #):**

Western Region

Bass Lake (01), Cameron Park (04), Shingle Springs (05), Logtown (06), Diamond Springs/EI Dorado (07)

**EL DORADO IRRIGATION DISTRICT  
2013 WATER RESOURCES & SERVICE RELIABILITY REPORT**

**APPENDIX TABLE C  
EASTERN REGION HISTORICAL TRENDS  
Western / Eastern Service Area**

User Category	Historical Unit Demands in Acre-Feet										Average <sup>[1]</sup>
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Unit Demand
Agricultural Metered Irrigation	21.65	25.50	18.62	20.31	21.22	21.39	18.71	15.13	12.68	16.01	21.46
Commercial	2.98	2.40	2.45	2.27	2.46	2.38	2.00	1.44	1.26	1.34	2.47
Ditches	18.15	23.10	20.86	29.11	24.10	26.47	30.78	17.24	21.81	53.27	23.61
Domestic Irrigation	1.80	2.00	1.64	1.88	2.33	1.95	3.65	1.33	1.24	1.33	1.78
Multi-Family Residential Units	0.24	0.24	0.22	0.23	0.23	0.23	0.23	0.20	0.20	0.20	0.23
Municipal-City of Placerville	170.93	164.65	151.45	152.02	150.73	102.21	83.64	72.87	64.53	84.60	142.65
Recreational Turf Services	9.77	12.01	13.63	10.70	9.39	9.65	9.89	7.24	7.28	8.28	11.09
Single-Family Residential	0.43	0.47	0.41	0.44	0.45	0.45	0.41	0.32	0.29	0.33	0.43
Small Farm	3.56	4.54	3.49	4.02	4.71	3.77	2.63	2.44	2.12	2.85	3.41

[1] The average unit demands were developed for the 2011 Water Resources Report using years 2001 through 2010. Unit demands were estimated by excluding the historical maximum and minimum values and averaging the remaining values. Except for the Domestic Irrigation and Small Farm categories, which have an updated average unit demand, the unit demand for the 2013 Report is held constant from the 2011 report and not recalculated each year in order to avoid large EDU changes caused by annual demand fluctuations. The unit demand will be recalculated for the 2014 report.

**SERVICE ZONES WITHIN SERVICE AREA (Zone #):**

Eastern Region

Lotus/Coloma (03), Swansboro (09), Camino (10), Pleasant Valley (11), Sly Park (12), Pollock Pines (13), North Placerville (18), and South Placerville (28)