

Annual Water Resources Report 2017

Antelope Valley - East Kern Water Agency

Phone: 661-943-3201
6450 West Avenue N
Palmdale, Ca 93551

Email: info@avek.org
Website: www.avek.org

April 2018



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Introduction

1.1 Purpose of the AWRR

The Antelope Valley-East Kern Water Agency (AVEK, Agency) has prepared an Annual Water Resources Report (AWRR) for calendar year 2017 in fulfilling its Goals and Objectives outlined in the Agency's 2015 five-year Strategic Plan (see **Appendix A**). This AWRR document is part of a blueprint for how AVEK will respond to current challenges and make the best of future opportunities for the benefit of our customers. It is intended to report and confirm our commitment to leadership that provides a level of regional water reliability that supports our customers' water needs. Proper local water resource management will also help in the protection and sustainability of the region's groundwater basins. Better groundwater basin stewardship is also among the Agency's strategic goals found in their five-year Strategic Plan.

Alongside of the Agency's commitment to lead in a regional effort toward improved water reliability for its customers, AVEK will support the regional goal to better manage the groundwater basin of the greater Antelope Valley. In December of 2015, the 16-year-old Antelope Valley Groundwater Adjudication case was finalized with an approved Stipulated Judgment. The groundwork for implementation of the approved Judgment is being laid through the leadership of the seated Watermaster Board. In assisting with the cooperative efforts of the region in achieving groundwater sustainability in an equitable manner, AVEK will provide this Annual Strategic Water Resources Report as a tool for the Antelope Valley Watermaster and its seated Engineer. More information about the Antelope Valley Groundwater Adjudication case and the Watermaster can be found at: www.avwatermaster.net.

1.2 Using & Updating the AWRR

AVEK's Annual Water Resources Report will be used as a water resource document that summarizes the Agency's previous year's supply and demand picture for Board of Directors, staff, customers, Watermaster, and the public. This report is intended to be used alongside of a variety of other AVEK planning documents including their Strategic Plan, their Urban Water Management Plan, Water System Master Plan, water rate studies, and financial plans. This report will be revisited regularly and formally updated during the first quarter of every year.

Water Resources

2.1 Background

The Agency has two water resource options available to it in meeting its customers' water needs: imported surface water and local groundwater. AVEK currently has a maximum SWP Table A allocation of 144,844 AF/Year from the State Water Project (SWP) California Aqueduct. However, historically the Agency has been limited in this imported supply as this source is highly variable and unpredictable. The limited reliability of the SWP supply and its delivery systems is shown in the below **Figure 2-1** of historical SWP allocations in years 2000 through 2018 (initial) and indicated in **Table 2-1**. Any annual surplus in the SWP supplies have proven to be occasional and temporary. Taking advantage of these limited times of available surplus waters led to the Agency's need to pursue other water resource strategies for the future.

In the years leading up to 2010, AVEK began shifting their water resource emphasis to include other long-term strategies for water reliability within the greater Antelope Valley region. Groundwater recharge (storage) and recovery facilities that would benefit the customers of AVEK began to develop.

Water Banking had already been proven to be a support regional water reliability, improved water quality, and groundwater basin stewardship. Soon after these beginnings in 2010, the state of California experienced one of the worst droughts to occur in the region on record. The period between late 2011 and 2014 was the driest in California’s recorded history. The dry hydrologic conditions of 2014 led to the lowest SWP Table A water supply allocation in recorded history: 5%. This Drought continued into 2015 with an allocation of only 20% from the Aqueduct.

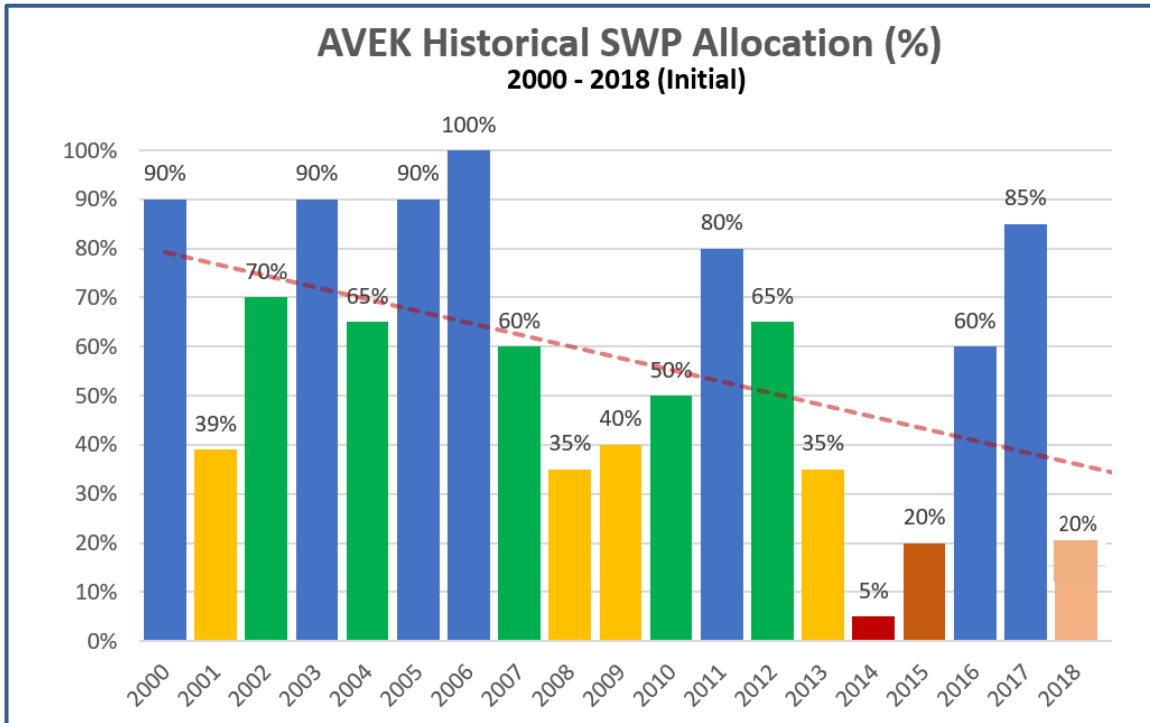


Figure 2-1 Historical SWP Allocations - Years 2000 - 2018 (Initial) with trend line

Year	% Allocation	Avail. Amt (AF)	Running Avg. Avail.
2000	90%	124,560	--
2001	39%	53,976	89,268
2002	70%	98,980	92,505
2003	90%	127,260	101,194
2004	65%	91,910	99,337
2005	90%	127,260	103,991
2006	100%	141,400	109,335
2007	60%	84,840	106,273
2008	35%	49,490	99,964
2009	40%	56,560	56,560
2010	50%	70,700	63,630
2011	80%	113,120	80,127
2012	65%	91,910	83,073
2013	35%	49,490	76,356
2014	5%	7,242	64,837
2015	20%	28,969	59,713
2016	60%	86,906	63,112
2017	85%	123,117	69,779
2018	20%	21,727	64,974

Table 2-1 Historical SWP Allocation & AVEK Available Amount - Years 2000 – 2018 (Initial)

2.2 Imported Water

AVEK provides a supplemental imported water supply from the State Water Project (SWP) to retail water suppliers in the Antelope Valley region. This is a secondary water source for Municipal and Industrial (M&I) suppliers, used in-lieu of or in addition to pumped groundwater. Water providers in the greater Antelope Valley using AVEK water include Los Angeles County Waterworks, District #40 (LACWWD40), Quartz Hill Water District, California City, and Edwards Air Force Base. Treatment of imported water by AVEK for M&I use has traditionally been achieved at one of their four (4) treatment plants: Quartz Hill Water Treatment Plant (located near Palmdale, CA), Rosamond Water Treatment Plant (Rosamond, CA), Eastside Water Treatment Plant (located near Pearblossom, CA), and Acton Water Treatment Plant (Acton, CA). **Figure 2-2** shows the Agency’s service area, water facilities, and treatment plants with further details given in **Table 2-2** and **Appendix B**.

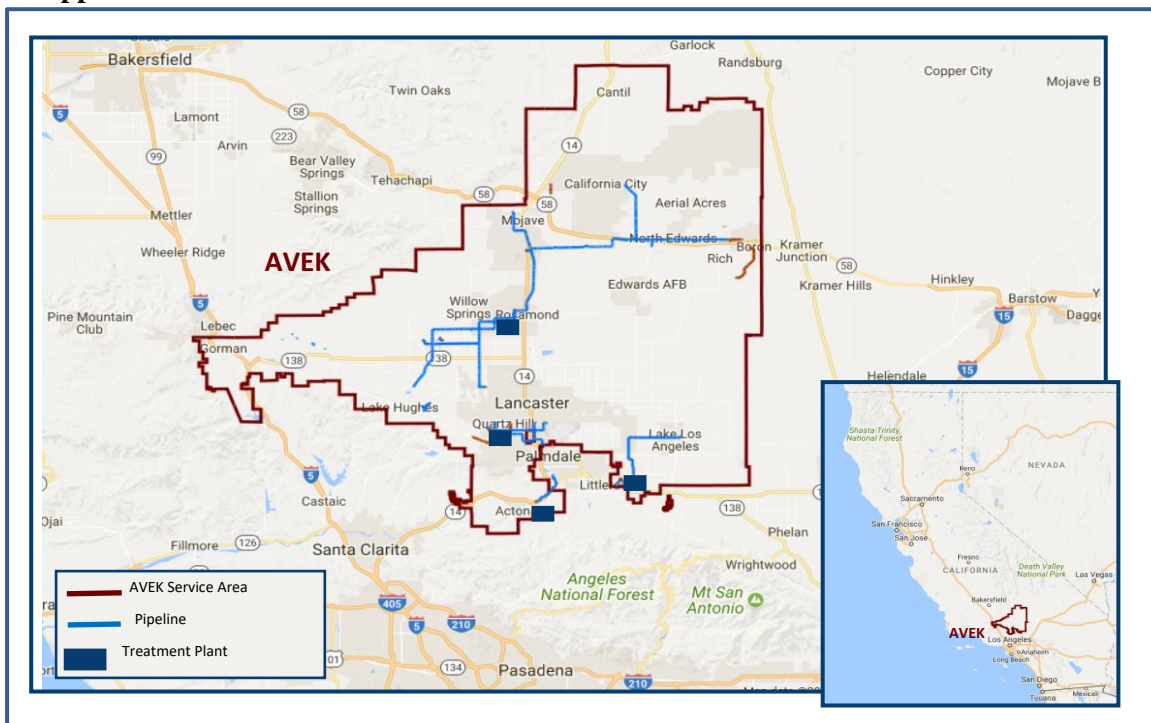


Figure 2-2 AVEK Service Area, Water Facilities, & Treatment Plants

Treatment Plant Facility	Location	Year Constructed	Current Total Capacity
Quartz Hill Water Treatment Plant	Palmdale	1977	90 MGD
Rosamond Water Treatment Plant	Rosamond	1978	14 MGD
Eastside Water Treatment Plant	Pearblossom	1981	10 MGD
Acton Water Treatment Plant	Acton	1991	4 MGD
AVEK/PWD Intertie	Acton	2012	---
Delivery Facilities	Location	Qty /Miles	Size
Pump Stations	System-Wide	10	0.7
Pressure Reducing Stations	Fairmont/Rosamond	2	60"/30"
Distribution Pipelines	System-Wide	145 m	12" - 60"
Chlorination Stations	System-Wide	3	Various
Treated Water Reservoirs	Treatment Plants/WWB	12	65 MG
Customer Turnouts	System-Wide	100	3" - 54"
Potable Groundwater Wells	WWB(WSSP-2)/EWB	17	Various
Agricultural Wells	WWB(WSSP-2)/WSSP-1	17	Various

Table 2-2 AVEK Water Facilities & Treatment Plants

2.2.1 Agency Deliveries

AVEK delivered an annual average of 49,685 Acre-Feet (AF) of Imported SWP water into its service area in the 7-Year period prior to 2017. See Figure 2-3 and Table 2-3 for AVEK SWP deliveries between years 2010 and 2016, with comparison made to 2017 (102,418 AF delivered). Following the Drought years through 2015, California’s State Water Project annual Table A allocation saw an increase in 2016 to 60%, or an available 86,906 AF for AVEK. This was followed by a record Wet Year in 2017 with an 85% Table A allocation, or an available amount of 123,117 AF. Over these two years alone, AVEK had over 124,000 AF of additional SWP supply above their most recent average annual customer deliveries.

A limited amount of treated imported SWP water is delivered to AVEK customers for agricultural use. Historically, untreated imported SWP water has been used for agriculture, however due to residential and business growth in the region, the trend toward providing more treated M&I water is to continue.

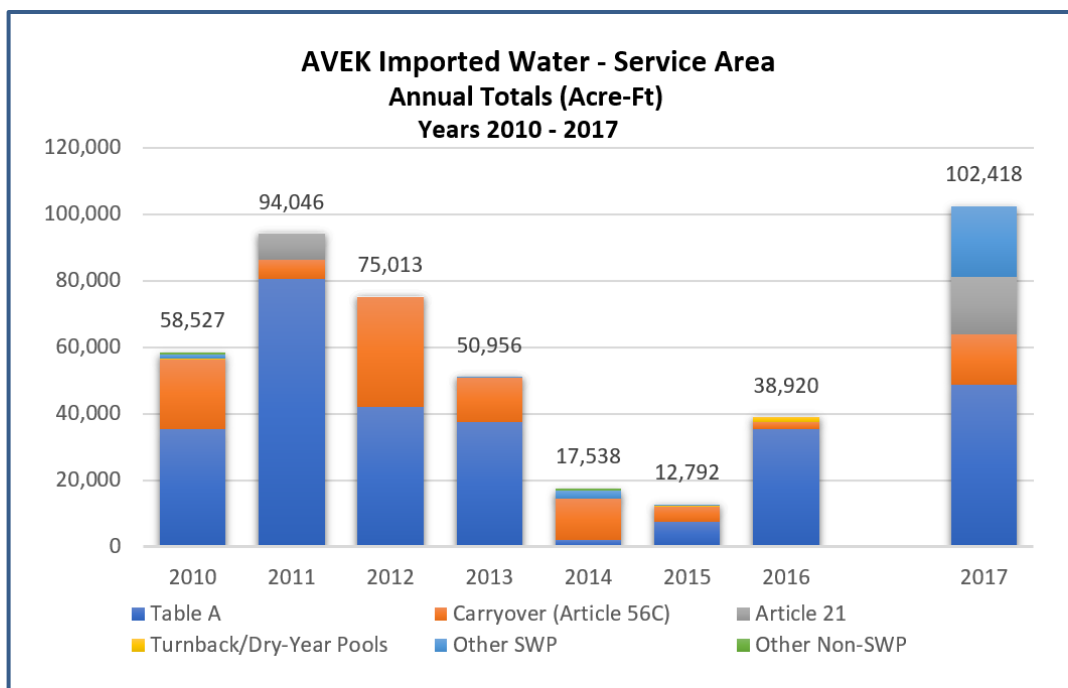


Figure 2-3 AVEK SWP Deliveries by Water Type – 2010 through 2017

Year	Table A	Carryover (Article 56C)	Article 21	Turnback & Dry-Year Pools	Other SWP	Other Non-SWP	TOTAL
2010	35,350	20,813	0	438	1,150	776	58,527
2011	80,529	5,888	7,629	0	0	0	94,046
2012	42,159	32,854	0	0	0	0	75,013
2013	37,562	13,386	0	0	8	0	50,956
2014	2,186	12,213	0	111	2,320	708	17,538
2015	7,583	4,575	0	174	460	0	12,792
2016	35,392	2,057	0	1,471	0	0	38,920
2017	48,706	15,153	17,278	0	21,281	0	102,418

Table 2-3 AVEK SWP Deliveries by Water Type – 2010 through 2017

2.2.2 Water Banking

Additional SWP water supplies made available to AVEK (beyond that amount required in fulfilling customers annual need) have proven to be occasional and temporary. Since 2010, the Agency has taken advantage of these limited times of available surplus waters from the California Aqueduct by storing (Banking) SWP supplies in the region through groundwater recharge. The Agency has invested in three local Water Banking sites: Westside Water Bank (Westside, WWB), Eastside Water Bank (Eastside, EWB), and under preliminary design, the High Desert Water Bank (HDWB). The **Figure 2-4** map below also shows the Agency’s Water Banking sites with recharge and recovery facilities developed since 2010. A summary of AVEK’s water banking sites, their status in 2017, and respective capacities is also shown in **Table 2-4** below. More detail of AVEK’s water banking sites can be found in **Appendix C**.

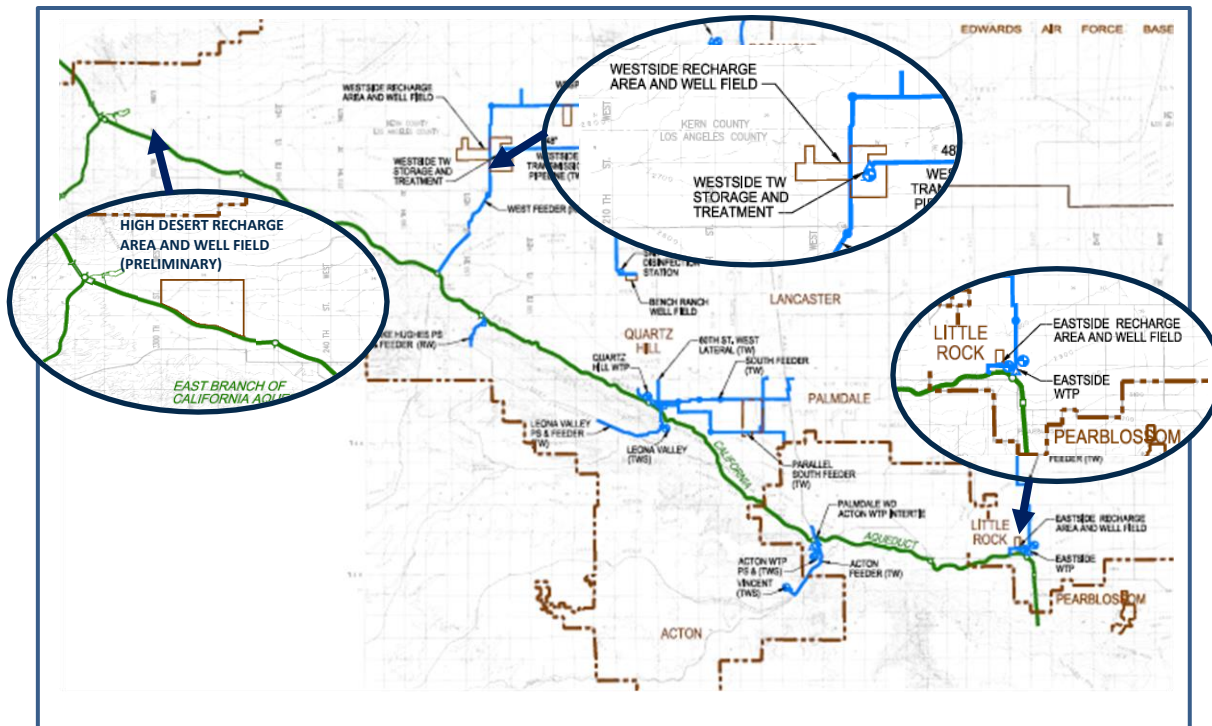


Figure 2-4 AVEK Water Banking Project Sites, Recharge and Recovery Facilities

Banking Project Site	Status in 2017	Est. Annual Recharge Amt (AFY)	Est. Annual Recovery Amt (AFY)	Est. Total Storage Capacity (AF)
Eastside Water Bank	Operational	2,000	1,800	6,700
High Desert Water Bank	Preliminary Design	70,000	70,000	280,000
Westside Water Bank	Operational	50,000	36,000	150,000

Table 2-4 AVEK’s Water Banking Projects, Status, and Capacities

Prior to the Wet Year 2017, recharge of SWP water at AVEK’s water banking facilities was limited to an annual average of 7,426 AF with no substantial deliveries made in Drought years 2013 thru 2015. The Agency’s groundwater storage efforts by the end of 2016 totaled 46,786 AF in recoverable water (51,984 AF gross recharge less 10% leave-behind amount). Recovery of this previously stored water in future Dry or Drought Years will for the benefit of AVEK’s existing customers. In 2017, the Agency was able to recharge 71,163 AF of SWP water at their three banking locations, leading to a

total recharge amount by the end of calendar year 2017 of 123,147 AF (or 110,833 AF recoverable). See **Figure 2-5** for AVEK’s total banking effort since 2010 and the amounts available for recovery for Agency customers/partners. A tabulated version of these amounts is shown as **Table 2-5** below.

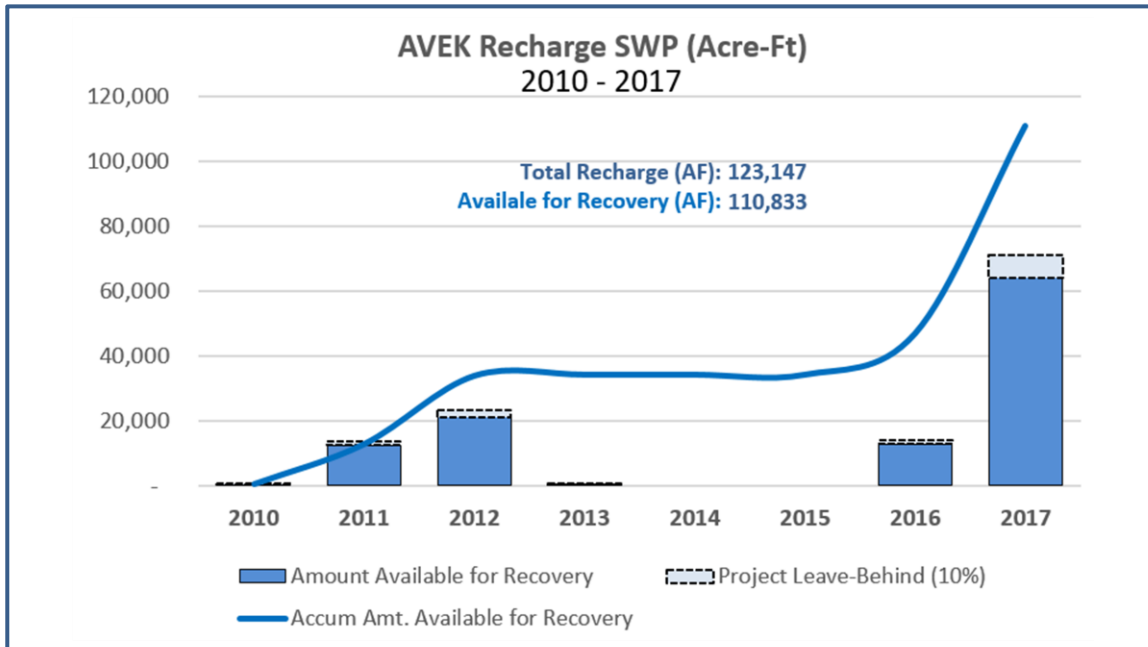


Figure 2-5 AVEK Water Banking Projects, Total Recharge and Recoverable Amounts (2010 – 2017)

Year	2010	2011	2012	2013	2014	2015	2016	2017
Amount of Recharge	413	13,731	23,384	371	-	-	14,086	71,163
Accum. Recharge	413	14,144	37,528	37,898	37,898	37,898	51,984	123,147
Leave-Behind (10%)	41	1,373	2,338	37	-	-	1,409	7,116
Accum. Leave-Behind (10%)	41	1,414	3,753	3,790	3,790	3,790	5,198	12,315
Available for Recovery	371	12,358	21,046	333	-	-	12,677	64,047
Accum. Available for Recovery	371	12,729	33,775	34,109	34,109	34,109	46,786	110,833

Table 2-5 AVEK Water Banking Projects, Total Recharge and Recoverable Amounts (2010 – 2017)

2.2.3 Transfers & Exchanges

Transfers and exchanges of Imported Water between State Water Project Contractors (SWC’s) have allowed AVEK to further improve water supply reliability, increase the region’s groundwater storage, and make the most of their available SWP allocation. By developing transfer and exchange partnerships, AVEK customers and tax-payers also see a financial benefit. As an example, AVEK’s partnership with its neighboring SWC, Littlerock Creek Irrigation District has brought an additional 6,210 AF of water (that would have otherwise been lost) into the region since 2007. Water exchanges with fellow SWC’s, Santa Clara Water District and Central Coast Water Agency (Santa Barbara) again increased AVEK’s water supply in 2017 by 21,281 AF. Continuing partnerships developed with the Agency’s own customers for the conveyance of available surplus waters to (and from) AVEK have shown mutual benefit as well. **Figure 2-6** graphically represents the values of **Table 2-6** indicating the most-recent AVEK Imported Water transfers and exchanges of SWP (and Non-SWP) supplies through 2017.

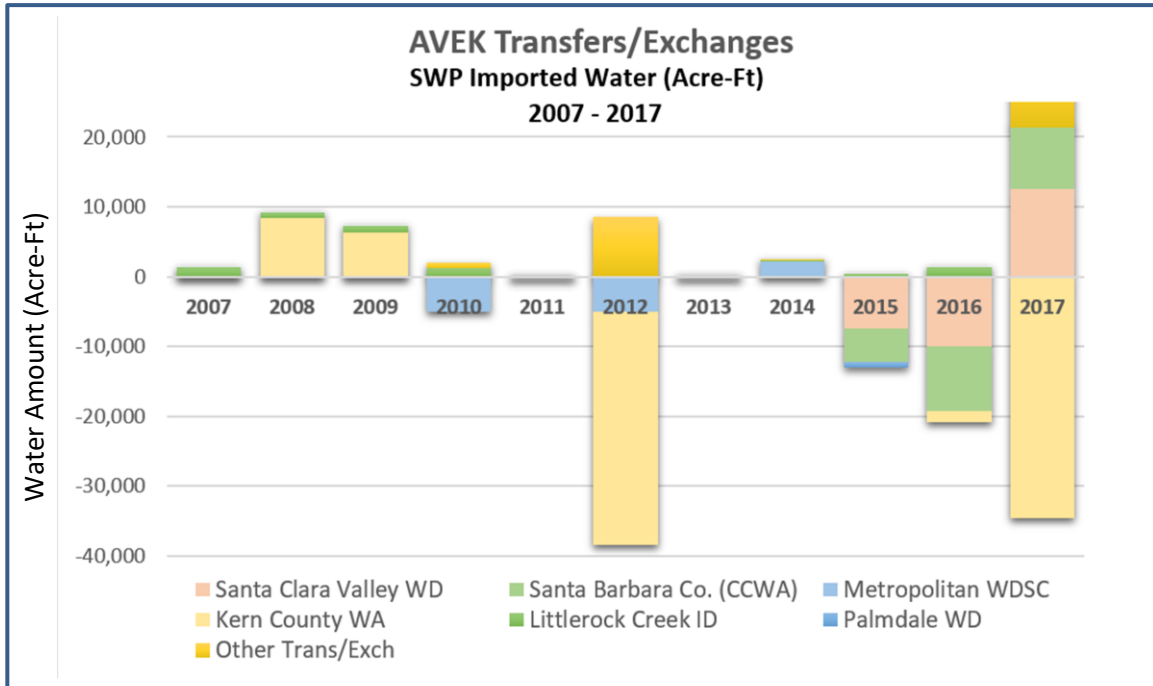


Figure 2-6 AVEK Transfers and Exchanges of Imported Water supplies through 2017

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
SWP Contractor											
Santa Clara Valley WD	-	-	-	-	-	-	-	-	(7,500)	(10,000)	12,500
Santa Barbara Co. (CCWA)	-	-	-	-	-	-	-	-	(4,789)	(9,323)	8,781
Metropolitan WDSC	-	-	-	(5,000)	-	(5,000)	-	2,205	-	-	-
Kern County WA	-	8,393	6,393	-	-	(33,511)	-	-	-	(1,489)	(34,643)
Littlerock Creek ID	1,380	805	920	1,150	-	-	-	115	460	1,380	-
Palmdale WD	-	-	-	-	-	-	8	-	(727)	-	-
Other Trans/Exch	-	-	-	776	-	8,585	-	32	-	-	11,456
TOTAL	1,380	9,198	7,313	(3,074)	-	(29,926)	8	2,352	(12,556)	(19,432)	(1,906)

Table 2-6 AVEK Transfers and Exchanges of Imported Water supplies through 2017

2.3 Groundwater

Beyond the Agency’s traditional treatment and delivery of Imported Water from the SWP California Aqueduct, local groundwater has become an important source of water for AVEK’s customers. With the multi-year drought conditions found between 2011 and 2015, SWP Water supplies were limited and local groundwater production increased to meet demands. With an increasing need for local groundwater resources, the Agency began to develop the 80th & Avenue H Well Field site (Bench Ranch) in 2014. Additional supply of groundwater from Bench Ranch is to meet water demands during periods of below average SWP allocation or during emergency supply needs. Along with diversification of their water resources, the Agency continued to prepare for future years of surplus waters from the California Aqueduct, and for their subsequent recovery (less 10% basin leave-behind). Further development of Water Banking sites continued at Agency properties located in the western Antelope Valley (WWB), in the east near Pearblossom (EWB), and in preliminary pursuits in the far western area of the Valley near Neenach (HDWB).

2.3.1 Demand Production

A summary of AVEK’s 2017 well production at their Water Banking properties is shown in **Figure 2-7** below and in **Table 2-7**. More detail of AVEK’s activities at these sites (including well production) can be found in **Appendix C**.

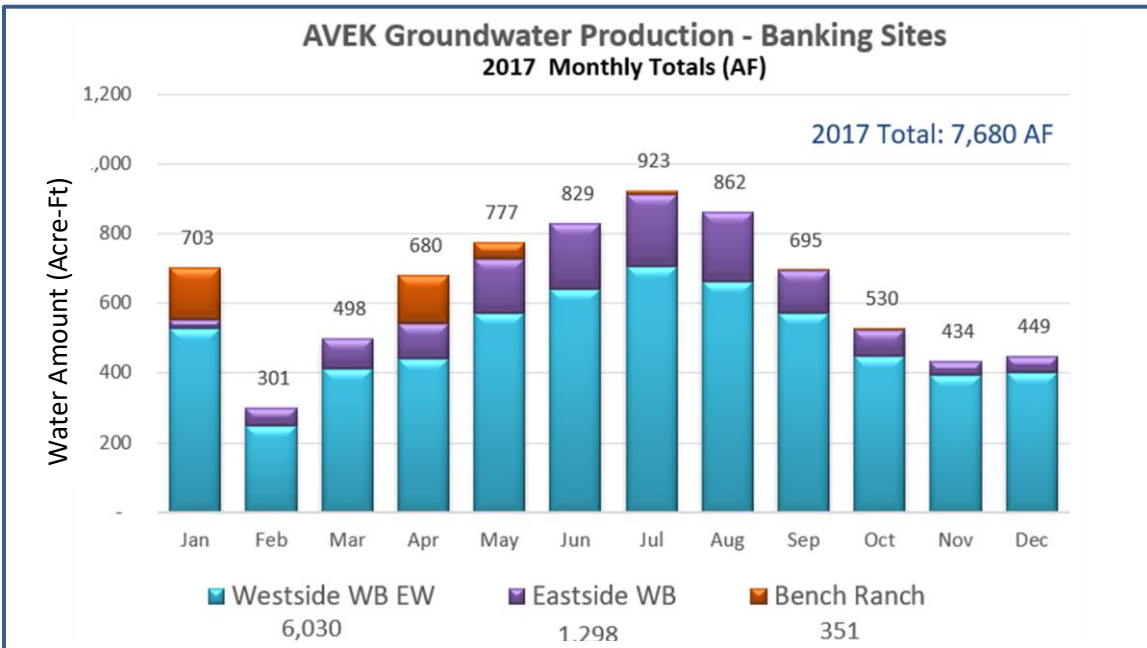


Figure 2-7 Summary of 2017 Groundwater Production at AVEK Water Banking Properties

Month	Westside WB EW	Eastside Water Bank	Bench Ranch Wells	Groundwater Totals (AF)
Jan	528	26	149	703
Feb	249	53	-	301
Mar	412	87	-	498
Apr	443	99	138	680
May	572	157	48	777
Jun	640	189	-	829
Jul	706	207	10	923
Aug	663	199	-	862
Sep	572	122	-	695
Oct	448	76	6	530
Nov	395	39	-	434
Dec	403	46	-	449
Totals	6,030	1,298	351	7,680

Figure 2-6 Summary of 2017 Groundwater Production at AVEK Water Banking Projects

2.3.2 Groundwater Monitoring

Representing the overall effect on the groundwater aquifer levels due to well production at AVEK's Water Banking property sites, see the Westside Water Bank (WWB) measurements found in **Figure 2-8**. Levels are shown for four of AVEK's recovery wells (EW) with water levels since 2014, taken during monthly monitoring at the site. A complete list of groundwater level measurements (2014-2017) for the WWB site can be found in **Table 2-8** of **Appendix D**. With multi-year drought conditions increasing overall groundwater production, well water levels (measured Below Ground Surface, BGS) were noted to have decreased an average of approximately 28 feet, or 10%. With the re-establishing of recharge in 2016 followed by 67,600 AF of recharge at WWB in 2017, groundwater levels quickly rebound by almost 120 feet (over 30% higher than 2014's original levels.) As a note, AVEK is required to discontinue recharge if groundwater aquifer levels approach 75 feet below ground surface.

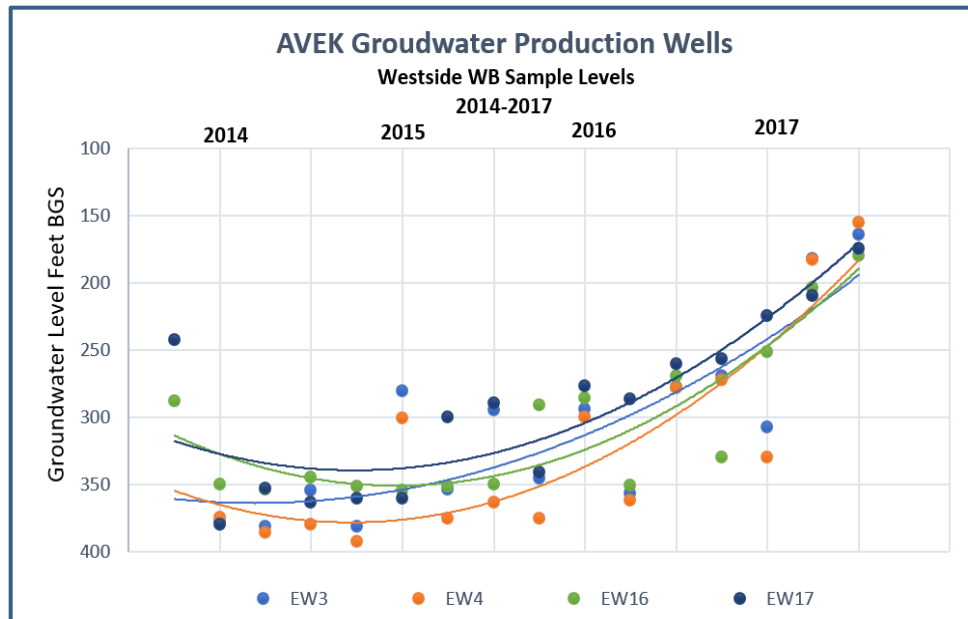


Figure 2-8 Representative Groundwater Levels – Westside WB (EW) Wells 2014 - 2017

Water Supply vs. Demand

3.1 Supply Summary

Figure 3-1 summarizes the SWP Water supply resources delivered into AVEK's service area during 2017, as also tabulated in **Table 3-1**. These include Table A allocation, Carryover (Article 56C), and Article 21. Transfers and exchanges of AVEK's SWP Table A Amounts are also included, having started in June of 2017. SWP Imported Water supplies into AVEK's service area totaled 102,418 AF, of which 21,281 AF were through exchange return deliveries from other SWC allocations (Santa Clara WD, Central Coast WA). Actual 2017 SWP Table A deliveries of 83,349 AF included a transfer to Kern Co WA of 34,643 AF, leaving 48,706 AF of Table A deliveries to AVEK and their customers. Almost 40,000 AF of water may become available to the Agency for carry-over into 2018 (dependent on State's 2018 realized hydrology, SWP operations, and AVEK transfers/exchanges).

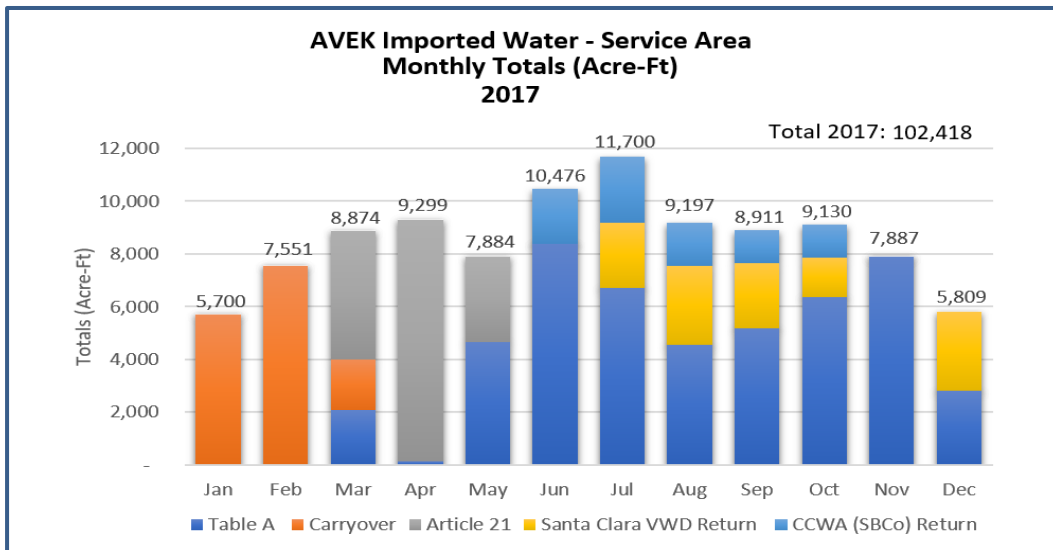


Figure 3-1 AVEK Water Agency 2017 Imported Water - Service Area

Water Supply Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
Table A	-	-	2,072	135	4,670	8,376	6,699	4,548	5,161	6,349	7,887	2,809	48,706
Carryover	5,700	7,551	1,902	-	-	-	-	-	-	-	-	-	15,153
Article 21	-	-	4,900	9,164	3,214	-	-	-	-	-	-	-	17,278
Turnback/Dry-Year Pools	-	-	-	-	-	-	-	-	-	-	-	-	-
Littlerock Creek ID	-	-	-	-	-	-	-	-	-	-	-	-	-
Santa Clara VWD Return	-	-	-	-	-	-	2,500	3,000	2,500	1,500	-	3,000	12,500
CCWA (SBCo) Return	-	-	-	-	-	2,100	2,501	1,649	1,250	1,281	-	-	8,781
Other SWP	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Supply - Service Area	5,700	7,551	8,874	9,299	7,884	10,476	11,700	9,197	8,911	9,130	7,887	5,809	102,418

Table 3-1 AVEK Water Agency 2017 Imported Water - Service Area

AVEK Groundwater production amounts are added to Imported Supply deliveries for 2017 as shown in **Figure 3-2** and in **Table 3-2**. These are demand-driven customer needs equal to actual monthly deliveries that occurred. AVEK’s delivered groundwater supplies totaled 7,680 AF for the 2017. The Agency’s long-term water supply storage account is made up of the Recoverable Water stored at its banking sites since 2010. By the end of 2017, this supply totaled 110,833 AF (123,147 AF gross recharge less the 10% leave behind amount), available for recovery starting in 2018. Also, reference Figure 2-5 above.

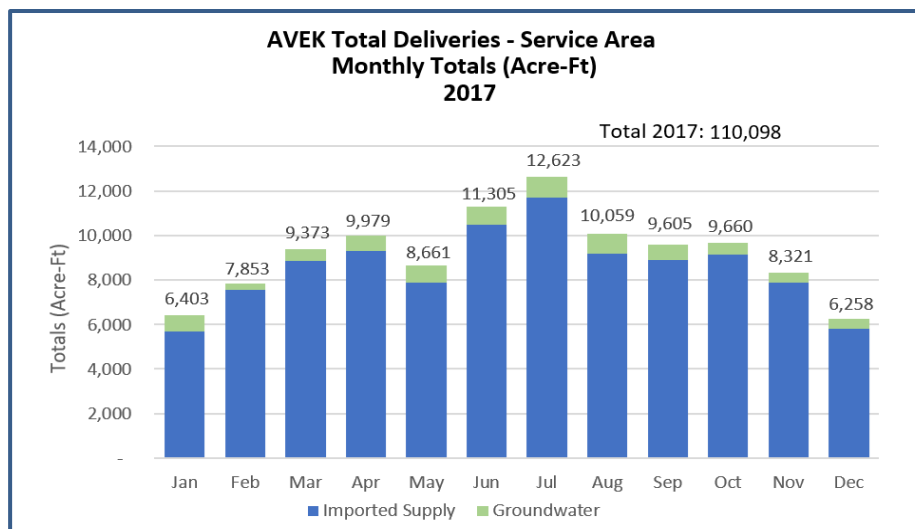


Figure 3-2 AVEK Water Agency 2017 Deliveries - Service Area

AVEK Deliveries	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
Imported Supply	5,700	7,551	8,874	9,299	7,884	10,476	11,700	9,197	8,911	9,130	7,887	5,809	102,418
Groundwater	703	302	499	680	777	829	923	862	694	530	434	449	7,680
Total	6,403	7,853	9,373	9,979	8,661	11,305	12,623	10,059	9,605	9,660	8,321	6,258	110,098

Table 3-2 AVEK Water Agency 2017 Deliveries - Service Area

3.2 Demand Summary

AVEK customers submit annual estimated demands for M&I and agricultural use as required per Agency Rules and Regulations for Distribution of Water. Requested deliveries for 2017 are compared to actual customer deliveries in **Figure 3-3** and **Table 3-3** below. Monthly requests were consistently above actual usage with deliveries approximately 24% below customer requested amounts for the year. Starting in 2018, AVEK customers will submit five-year request forms given the Agency a more accurate forecasting ability through the year 2022.

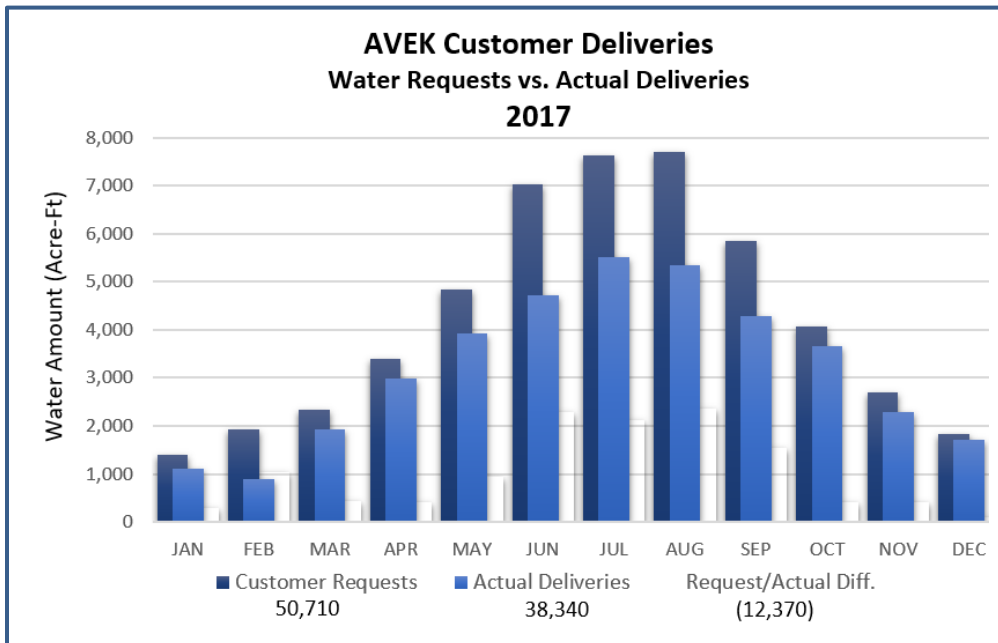


Figure 3-3 AVEK 2017 Customer Water Requests Compared to Actual Deliveries

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Customer Requests	1,406	1,929	2,347	3,396	4,850	7,017	7,621	7,708	5,840	4,075	2,700	1,822	50,710
Actual Deliveries	1,112	889	1,922	2,977	3,915	4,726	5,508	5,355	4,286	3,655	2,278	1,716	38,340
Request/Actual Diff.	(294)	(1,040)	(425)	(418)	(934)	(2,290)	(2,114)	(2,353)	(1,554)	(420)	(422)	(106)	(12,370)

Table 3-3 AVEK 2017 Customer Water Requests Compared to Actual Deliveries

The addition of 2017 Water Banking demand deliveries by AVEK are represented in **Figure 3-4** below for three banking locations: Westside Water Bank, Eastside Water Bank, and High Desert Water Bank. Total recharge demand was 71,163 AF. **Table 3-4** also summarizes these banking demands of AVEK for 2017. Another 12,028 AF of SWP supply (not shown) was delivered into the Agency’s service area in 2017 for Tejon Ranch Company to be recharged in their local banking facility. No AVEK water was delivered in 2017 to the Willow Springs Water Bank, which is also located in the region.

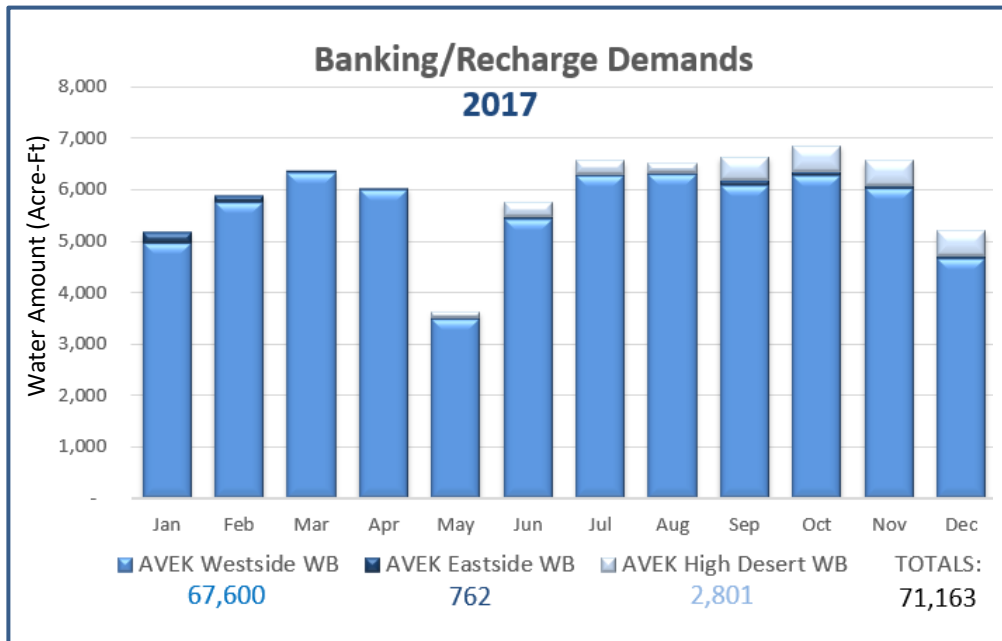


Figure 3-4 AVEK 2017 Water Banking Demands

AVEK Location	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Westside WB	4,967	5,764	6,338	5,994	3,487	5,432	6,270	6,294	6,092	6,286	6,017	4,664	67,600
Eastside WB	204	123	32	10	31	39	29	32	86	65	62	49	762
High Desert WB	-	-	-	-	115	285	270	189	459	503	494	486	2,801
Total:	5,171	5,887	6,370	6,004	3,632	5,755	6,569	6,514	6,636	6,854	6,573	5,199	71,163

Table 3-4 AVEK 2017 Water Banking Demands

3.3 Supply/Demand Comparison

In the Wet Year of 2017, the total SWP Imported Water supply available to AVEK reached over 193,000 AF, including the base Table A supplies, surplus SWP amounts (e.g. Article 56c Carryover, Article 21), and exchanged waters delivered to AVEK from other SWC's. However, with a total demand peaking at about 116,000 AF (for retail customers, banking recharge, and out-of-area transfers), only 60% of AVEK's water was delivered for the year. The Agency's Imported Supply vs. Actual Demands for the past year are shown in **Figure 3-5** and tabulated in **Table 3-5**. As noted, AVEK could see almost 39,800 AF in SWP Carryover Water available for delivery in the year 2018.

Local groundwater production supply from the Agency's wells added another 7,680 AF of supply for 2017. This represents demand-driven customer needs equal to actual monthly deliveries that occurred. For local groundwater available for production from the Agency beyond 2017, AVEK has established a storage account of Recoverable Water within their water banking sites. Since 2010, this account has reached a total recoverable amount of 110,833 AF (123,147 AF gross recharge less the 10% leave behind amount). This current stored supply amount represents 82% of the Agency's goal to store three years of customers' budgeted base demand (45,000 AF/Year) for Dry or Drought Year protection. Reference Figure/Table 2-5 and Figure/Table 3-2 above.

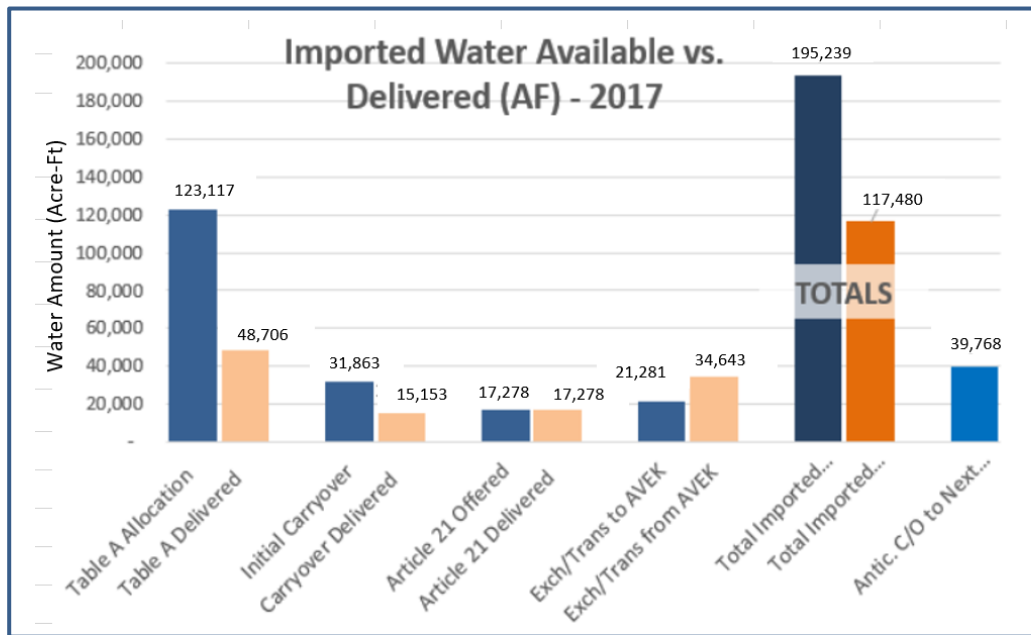


Figure 3-5 Imported Water Supply - Available vs. Deliveries for 2017

Imported Water Deliveries	Water Available	Water Delivered	Avail./Deliv. Diff.
Table A	123,117	48,706	74,411
Carryover	31,863	15,153	16,710
Article 21	17,278	17,278	0
Transfer/Exchange	21,281	34,643	(13,362)
Other Imported Water	1,700	1,700	0
Total	195,239	117,480	77,759

Table 3-5 Imported Water Supply - Available vs. Deliveries for 2017

Groundwater Adjudication Physical Solution

4.1 Background

The Judgment and Physical Solution process for the Antelope Valley Groundwater Adjudication reached a milestone in December of 2015 with a settlement between local groundwater producers including public water suppliers, landowners, small pumpers, and non-pumping parties. As the Judgment identified the region in a state of overdraft, the pumping rights among these producers is to be managed to reduce groundwater level declines and subsidence. The Watermaster Board, an Advisory Committee, the Watermaster Engineer, and an Attorney was established with the Judgment. The Physical Solution portion of the Judgment provides direction for this reduction of groundwater use within the adjudicated area.

The year 2017 was the second (of seven total) years that required a reduction of groundwater production. This is known as the Rampdown Period. The amount that each Party may produce from the Antelope Valley region's adjudicated basin Native Safe Yield will be reduced linearly (20 percent per year), as necessary, in equal annual increments to a final allowed Production Right. The Production Rights given to AVEK as part of their groundwater supply are specified in Exhibit 4 of the

Judgment (Overlying Production Rights) and shown in **Table 4-1** below. Reference **Appendix E** for the full Exhibit 4 list of Overlying Production Rights and the Appendix F of the Antelope Valley Watermaster 2016 Annual Report. As with the other Parties, starting in 2018, the Agency’s Pre-Rampdown Production right (4,000 AF) will begin to be reduced. AVEK will reach a sustained annual Production Right of 3,550 AF beginning in the year 2022. As a note, this production right has been leased to AVEK’s Customer, LACWWD40 (Agreement dated 2/24/2015).

Exerpt from: Appendix F									
Production for 2016 by Exhibit 4 (Overlying) Parties									
Final 2016 Annual Report Antelope Valley Watermaster									
Original Exhibit 4 Producers	Pre- Rampdown	Ramp-Down Targets (AF)							Production Right (AF)
		2016	2017	2018	2019	2020	2021	2022	
AVEK	4,000.00	4,000.00	4,000.00	3,910.00	3,820.00	3,730.00	3,640.00	3,550.00	3,550.00

Table 4-1 Groundwater Production Right given to AVEK per the Judgment

4.2 Imported Water Use

In order to replace any water pumped beyond a Party’s individual Production Right, Imported water will be purchased from local SWC’s (i.e. AVEK, Palmdale Water District, and Littlerock Creek Irrigation District). Further details related to this Replacement Water are to be determined. Any AVEK Imported Water delivered into the portion of the Agency’s service area bound by the Adjudication can be classified as water consumed by AVEK customers (within or without the Judgment), stored water, Imported Water Return Flows, or Replacement Water.

Details provided on the amount of Imported Water delivered into the Antelope Valley watershed region can be found in the Watermaster Annual Report located at www.avwatermaster.net. This includes amounts for recharge (water banking) and that supply sold to local water purveyors. In addition, the Judgment list certain Parties who also have a right to produce Imported Water Return Flows (i.e. water brought into the basin from outside the watershed that provides a net increase in groundwater supply).

4.3 Imported Water - Return Flows

The right to produce and deliver Imported Water Return Flows is limited to those Parties listed in Exhibit 8 of the Judgment. Per Section 5.2.1 of Exhibit A of the Judgment: “Return Flows from Agricultural Imported Water use are 34% and Imported Water Return Flows from Municipal and Industrial Imported Water use are 39% of the amount of Imported Water.” AVEK has an exclusive right to the return flows from those deliveries made within the adjudicated basin to parties that are not listed on Exhibit 8 (Judgment, Section 5.2.2, Exhibit A). Reportable 2017 Imported Water deliveries to AVEK Customers within the Antelope Valley Adjudicated Basin, both listed and not listed on Exhibit 8, are summarized below in **Table 4-2**. These amounts will be used as the basis for AVEK Imported Return Flow calculation made by the Watermaster Engineer. The full table of 2017 Imported Water deliveries is provided in **Appendix F**.

Summary - Appendix H Imported Water Return Flows								
2017 Calendar Year								
AVEK Imported Water	Imported Water Use (AF)							Return Flow (AF) (Ref Only)
	2012	2013	2014	2015	2016	Five Year Average	2017	
AVEK Exhibit 8: Amount sold to users on Exhibit 8	55,596.08	46,228.20	29,680.98	26,097.82	37,270.34	38,974.68	43,775.79	11,771.02
AVEK Non-Exhibit 8: Amount sold to users not on Exhibit 8. Includes groundwater	4,638.44	4,584.57	2,290.76	1,945.53	2,172.65	3,126.39	2,306.04	897.06
Total	60,234.52	50,812.77	31,971.74	28,043.35	39,442.99	42,101.07	46,081.83	12,668.08

Table 4-2 2017 Imported Water Deliveries/Estimated Return Flows (ref only) - AVEK Customers within the Antelope Valley Adjudicated Basin, both listed and not listed on Exhibit 8.

Appendix A

AVEK 2015 Five-Year Strategic Plan

See AVEK Water Agency website: www.avek.org for more information.

Appendix B

AVEK Water Agency Facilities

QUARTZ HILL TREATMENT PLANT:

- Constructed in 1977
 - 2 Clarifiers; 4 Filters
 - 14 mgd
 - Expanded in 1982
 - 4 Clarifiers; 12 Filters
 - Depth)
 - 28 mgd
 - Upgrade)
 - Expanded in 1987
 - 6 Clarifiers; 24 Filters
 - 62 mgd
 - Expanded in 2010
 - Add Plate Settlers to Clarifiers
 - Add Intermediate Ozone Generation
 - Convert Filters to Biologically Active G.A.C.
 - 90 mgd
- Clarifiers: 151 ft. x 30 ft. x 14 ft.
Filters: 28 ft. x 17 ft. (476 sq/ft) @ 4.5 gpm/ft
Flocs: 4 Stages / 8 Flocs per Clarifier
CWR: Two Reservoirs @ 9 mg each (30 ft. depth)
Filter Depth: Sand @ 10" / GAC @ 40" (50" Total)
- Note: All plants have similar filter depths (DBP

ROSAMOND TREATMENT PLANT:

- Constructed in 1978
 - 2 Clarifiers; 4 Filters
 - gpm/ft
 - 14 mgd
 - Expanded in 2010
 - Add Intermediate Ozone Generation
 - Convert Filters to Biologically Active G.A.C.
 - 14 mgd
- Clarifiers: 180 ft. x 40 ft. x 14 ft.
Filters: 23 ft. x 23 ft. (540 sq/ft) @ 4.5
Flocs: 3 Stages / 6 Flocs per Clarifier
CWR: 3.7 mg (15 ft. depth)
Raw Water Reservoir: 5.5 mg

EASTSIDE TREATMENT PLANT:

- Constructed in 1981
 - 2 Clarifiers; 2 Filters
 - 3 mgd
 - Expanded in 1987
 - 4 Clarifiers; 6 Filters
 - 10 mgd
 - Expanded in 2010
 - Add Intermediate Ozone Generation
 - Convert Filters to Biologically Active G.A.C.
 - 10 mgd
- Clarifiers: Phase 1: 16 ft. x 108 ft. x 14 ft.
Phase 2: 36 ft. x 108 ft. x 14 ft.
Filters: 17 ft. x 17 ft. (290 sq/ft) @ 4 gpm/ft
Flocs: 3 Stages / 6 Flocs per Clarifier
CWR: 1.7 mg (15 ft. depth)

Appendix B con't

AVEK Water Agency Facilities

ACTON TREATMENT PLANT:

- Constructed in 1991
 - 2 Clarifiers; 4 Filters
 - gpm/ft
 - 4 mgd
 - Expanded in 2010
 - Add Intermediate Ozone Generation
 - Convert Filters to Biologically Active G.A.C.
 - 4 mgd
- Clarifiers: 16 ft. x 75 ft. x 14 ft.
Filters: 16 ft. x 16 ft. (256 sq/ft) @ 2.7
- Flocs: 3 Stages / 6 Flocs per Clarifier
CWR: 1.6 mg (23 ft. depth)
WW Tank: 170,000 Gallons
WW Basin: 250,000 Gallons

WESTSIDE WATER BANK:

- Constructed in 2012
 - 9 Potable Recovery Wells with Disinfection Facilities
 - One 4 mg Treated Water Reservoir
 - 22 mgd (After 7 Years of Banking)
- Expanded in 2017
 - 11 Potable Recovery Wells with Disinfection Facilities
 - Casing Depth: 600 ft.
 - Pump Depth: 400 ft.
 - Sanitary Seal: 200 ft.
 - Horsepower: 250 to 400
 - Pump: FlowServe
 - Motor: U.S. Motors
 - Static Level: 160 ft. to 210 ft.
 - Casing: 18"
- Two 4 mg Treated Water Reservoirs
- 26 mgd (After 7 Years of Banking)

EASTSIDE WATER BANK:

- Constructed in 2014
 - 3 Potable Recovery Wells with Disinfection Facilities
 - Casing: 18"
 - Casing Depth: 650 ft.
 - Pump Depth: 340 ft.
 - Sanitary Seal: 200 ft.
 - Horsepower: 350
 - Pump: FlowServe
 - Motor: U.S. Motors
 - Static Level: 300 ft.
- East Branch 'Pump Back' Capability
- 3 mgd (After 7 Years of Banking)

BENCH RANCH WELL FIELD:

- Constructed in 2015
 - 3 Potable Extraction Wells (Using Existing Disinfection Facilities)
 - Casing: 28"
 - Casing Depth: 590 ft.
 - Pump Depth: 385 ft.
 - Sanitary Seal: 200 ft.
 - Horsepower: 350
 - Pump: FlowServe
 - Motor: U.S. Motors
 - Static Level: 160 ft. to 170 ft.
- 4 mgd capacity

PIPELINE FEEDERS:

- 145 Miles Ranging from 60" diameter to 12" diameter
 - South Feeder: 12 miles
 - South Feeder Parallel: 10 miles
 - East Feeder: 12 miles
 - Acton Feeder: 7 miles
 - SNIP System: 20 miles
 - Rosamond Systems:
 - West Feeder: 25 miles
 - Central Feeder: 10 miles
 - North Feeder (to BPS): 30 miles + 1 mile to MPUD Tank
 - Boron Tank to Phillips Lab: 3 miles
 - Cal City Feeder: 7 miles
 - Mojave Feeder: 8 miles

PRODUCTION:

- Quartz Hill Treatment Plant: 27,136 Acre Feet
- Rosamond Treatment Plant: Off
- Eastside Treatment Plant: 2,694 Acre Feet
- Acton Treatment Plant: Off
- AVEK/PWD Intertie (Acton): 1,179 Acre Feet
- Westside Water Bank: 4,467 Acre Feet (to Kern County)
1,564 Acre Feet (to L.A. County)
- Eastside Water Bank: 1,137 Acre Feet
- Total Production: 38,177 Acre Feet

RECHARGE:

- Westside Water Bank: 67,600 Acre Feet
- Eastside Water Bank: 762 Acre Feet
- High Desert Water Bank (Pilot Testing): 2,801 Acre Feet

- Total Recharge: 71,163 Acre Feet

Appendix C

AVEK Water Banking Site Details

AVEK Groundwater and Banking Facilities 2017

Westside Water Bank (WWB):

- Located in an area surrounding 135th Street West and Ave B
- Consist of 1500 acres, of which, approximately 80% is used for banking. Remaining land is either undeveloped, in development, drying or being maintained.
- Water travels to the bank via AVEK's DWR turnout near Fairmont, through 7 miles of West Feeder pipeline into multiple turnouts. Water flows into individual ponds by a network of above ground piping, channels, culverts and weirs.
- Potable well system consists of 11 wells that pump into a web of collection piping that come together into meter and chlorine injection vaults, and finally, into two-4mg clearwells. From the clearwells, water travels by gravity East through SNIP Connector pipeline. At Ave B and 80th Street West water travels both South to the LACoWW turnout at 80th Street West and Ave H, and North to the SNIP Pump Station North, located at AVEK's Rosamond Water Treatment Plant.
- Water moving North supplies Rosamond, Mojave, Cal-City, EAFB, North Edwards and Boron
- Well levels are recorded both electronically and manually on monthly basis.

Eastside Water Bank (EWB):

- Located on an 80-acre site near 96th Street East and Ave U, Littlerock.
- Water travels to the bank via AVEK's DWR turnout approximately ¼ mile South of the site, through a pipeline and into a splitter-box, which allows equal distribution into three, 2-acre engineered ponds.
- Potable well system consists of 3 wells that are pumped into collection piping and may be directed using valves and an air-gap, into a raw water system or stay in a potable system. Raw water returns to the aqueduct from a raw water holding tank being pumped by low-head pumps. Potable water leaves the site after being chlorinated and travels East through a pipeline for approximately 2.5 miles and into the clearwell at AVEK's Eastside Water Treatment Plant. Water from the clearwell serves the communities of Pearblossom, Littlerock, Sun Village and Lake Los Angeles.
- Site is operated and maintained by EWTP staff
- Well levels are recorded both electronically and manually on monthly basis.

High Desert Water Bank (HDWB):

- Located in an area near 300th Street West and Ave B
- Water is pumped into 3 separate ponds from the 294th Street turnout. The smaller pond receives approximately 350 gpm, while the larger ponds receive nearly 1500 gpm.
- WWB staff is on site daily
- Well levels are recorded both electronically and manually on monthly basis.

80th & Avenue H Well Field (Bench Ranch):

- Located in an area between 70th and 80th Street West along West Ave H.
- Site has three wells, BR1, BR2, BR3, LACoWW turnout, chlorine injection facility and a low-head pump station. Currently, BR1 and BR2 are run (approximately 1000 gpm each) every few weeks to keep water fresh. When pumping, water is chlorinated and pumped into WW's turnout. BR3 is not currently running into the system. Water runs through low-head pump station by gravity, however, operating pumps is not necessary.
- Site is operated and maintained by WWB staff
- Well levels are recorded both electronically and manually on monthly basis.
- Agricultural Wells
- AVEK owns multiple agricultural wells within WWB site and along the West Feeder running East along Gaskell Road to 60th Street West. In the past, AVEK has used the following wells for production water for RWTP: RG2, RG3, RG4, RG6, RG7, C8 and C9.

Appendix D

AVEK Well Levels – Westside Water Bank

Table 2-8

AVEK Groundwater Well Levels – Westside Water Banking Site
2014 – 2017

Date	Well	EW3	EW4	EW5	EW6	EW15	EW16	EW17	EW18	EW19	EW23	EW24
2014	Jan-14	NR	NR	NR	NR	NR	229	NR	220	212	NR	NR
	Feb-14	214	219	226	231	220	275	224	NR	316	NR	NR
1Q	Mar-14	NR	NR	NR	NR	NR	288	243	NR	305	NR	NR
	Apr-14	NR	NR	NR	NR	NR	350	365	314	368	NR	NR
	May-14	323	338	340	351	NR	357	376	332	356	NR	NR
2Q	Jun-14	378	375	386	360	NR	350	380	364	377	NR	NR
	Jul-14	378	NR	381	362	NR	360	346	330	NR	NR	NR
	Aug-14	394	386	397	351	NR	353	368	354	367	NR	NR
3Q	Sep-14	382	386	387	NR	389	354	353	334	364	NR	NR
	Oct-14	382	388	387	NR	390	355	359	347	365	NR	NR
	Nov-14	270	291	382	NR	398	349	338	291	398	NR	NR
4Q	Dec-14	355	380	374	NR	369	345	364	346	395	NR	NR
2015	Jan-15	362	384	374	347	389	353	365	358	317	NR	NR
	Feb-15	392	394	NR	354	392	355	373	360	320	NR	NR
1Q	Mar-15	382	393	NR	354	391	352	361	345	382	NR	NR
	Apr-15	342	394	NR	356	393	354	350	331	396	NR	NR
	May-15	369	397	NR	358	394	287	346	334	335	NR	NR
2Q	Jun-15	281	301	NR	297	397	355	361	327	378	NR	NR
	Jul-15	366	392	NR	360	399	355	346	339	317	NR	NR
	Aug-15	394	399	NR	360	400	361	357	364	331	NR	NR
3Q	Sep-15	354	376	385	350	400	352	300	337	346	NR	NR
	Oct-15	375	384	387	358	197	359	295	300	345	NR	NR
	Nov-15	331	368	391	358	90	344	293	297	328	NR	NR
4Q	Dec-15	295	364	384	351	171	350	290	294	341	NR	NR
2016	Jan-16	296	370	382	353	90	360	335	295	291	NR	NR
	Feb-16	354	373	376	351	113	293	327	339	342	NR	NR
1Q	Mar-16	346	376	380	354	225	291	341	294	341	NR	NR
	Apr-16	358	380	388	356	392	362	352	302	354	NR	NR
	May-16	342	374	380	354	392	359	353	301	348	NR	NR
2Q	Jun-16	294	300	312	360	396	286	277	281	283	NR	NR
	Jul-16	288	294	376	290	393	280	270	283	265	NR	NR
	Aug-16	284	287	293	283	393	279	301	283	263	NR	NR
3Q	Sep-16	357	362	367	291	396	351	287	301	335	NR	NR
	Oct-16	287	293	374	290	395	355	283	293	331	NR	NR
	Nov-16	281	286	364	281	396	279	265	282	320	NR	NR
4Q	Dec-16	278	279	285	273	396	270	261	279	333	NR	NR
2017	Jan-17	276	280	345	275	389	316	264	276	256	NR	NR
	Feb-17	272	276	281	268	395	328	260	272	256	NR	NR
1Q	Mar-17	270	273	339	265	395	330	257	269	251	NR	NR
	Apr-17	259	259	262	249	389	NR	245	260	233	NR	NR
	May-17	251	249	251	237	389	NR	239	259	346	NR	NR
2Q	Jun-17	308	330	327	235	265	252	225	253	330	250	257
	Jul-17	242	240	242	226	261	250	225	285	346	262	343
	Aug-17	187	187	189	197	223	205	211	191	190	242	252
3Q	Sep-17	182	183	184	190	341	204	210	190	190	313	305
	Oct-17	167	169	172	181	370	192	190	174	173	234	246
	Nov-17	166	162	168	175	362	188	184	168	169	230	239
4Q	Dec-17	165	156	161	168	194	180	175	161	160	224	236

Appendix E

Exhibit 4 - Overlying Production Rights

See Exhibit 4 list of Overlying Production Rights below.

**Judicial Council Coordination
 Proceeding No. 4408
 Santa Clara Case No.: 1-05-CV-049053**

Producer Name	Pre-Rampdown Production	Overlying Production Rights	Percentage Share of Adjusted Native Safe Yield
60th Street Association Water System	2.16	2.16	0.003%
Adams Bennett Investments, LLC	0.00	0.00	0.000%
Antelope Park Mutual Water Company	208.75	169.89	0.240%
Antelope Valley Joint Union High School District	71.74	41.00	0.058%
Antelope Valley Mobile Estates	19.88	8.75	0.012%
Antelope Valley Water Storage LLC	1772.00	1772.00	2.507%
Aqua-J Mutual Water Company	44.90	44.35	0.063%
AV Solar Ranch 1, LLC	96.00	96.00	0.136%
AVEK	4000.00	3550.00	5.022%
Averydale Mutual Water Company	257.95	254.35	0.360%
Gene Bahlman	5.25	5.00	0.007%
Baxter Mutual Water Company	44.75	35.02	0.050%
Mark W. and Nancy L. Benz	1.00	1.00	0.001%
Big Rock Mutual Water Company	0.00	0.00	0.000%
Bleich Flat Mutual Water Company	33.50	33.50	0.047%
Sheldon R. Blum, Trustee of the 1998 Sheldon R. Blum Family Trust	50.00	50.00	0.071%
Bolthouse Properties LLC	16805.89	9945.00	14.069%
Thomas and Julie Bookman 2007 Trust	272.50	136.00	0.192%
James and Elizabeth Bridwell	1.00	1.00	0.001%
Brittner Trust, Glen Brittner, Trustee	4.00	4.00	0.006%
Burrows/300 A40 H LLC	295.00	295.00	0.417%
John A. Calandri; Calandri Water Company, LLC; John A. Calandri and Shannon C. Calandri as cotrustees of "The John and Shannon Calandri 1992 Trust"; Katherine J. Calandri Nelson, Trustee of "The Katherine J. Calandri Nelson 2008 Trust"	3803.00	1776.00	2.512%
Sal and Connie Cardile	1.00	1.00	0.001%
Irma Ann Carle Trust, Irma-Anne Carle, Trustee	1.00	1.00	0.001%
Effren Chavez	44.00	44.00	0.062%
C. Louise R. Close Living Trust	1.00	1.00	0.001%
Colorado Mutual Water Co.	25.90	25.54	0.036%
Copa De Oro Land Company	325.00	325.00	0.460%
County Sanitation Districts of Los Angeles #14 and 20	8000.00	3400.00	4.810%
Del Sur Ranch LLC	600.00	600.00	0.849%
Diamond Farming Co. LLC/Crystal Organic LLC/Grimmway/Lapis	3354.00	1986.00	2.810%
Randall and Billie Dickey	1.00	1.00	0.001%
El Dorado Mutual Water Company	276.05	272.16	0.385%
eSolar Inc.; Red Dawn Suntower LLC	150.00	150.00	0.212%
eSolar, Inc.; Sierra Sun Tower, LLC	5.76	3.00	0.004%
eSolar Inc.; Tumbleweed Suntower LLC	0.00	0.00	0.000%
Lawrence Dean Evans, Jr. and Susan Evans	1.00	1.00	0.001%

**Judicial Council Coordination
 Proceeding No. 4408
 Santa Clara Case No.: 1-05-CV-049053**

Producer Name	Pre-Rampdown Production	Overlying Production Rights	Percentage Share of Adjusted Native Safe Yield
Evergreen Mutual Water Company	69.50	68.54	0.097%
Ruth C. Findley	1.00	1.00	0.001%
First Mutual Water Company	15.62	5.25	0.007%
Leah Frankenberg	1.00	1.00	0.001%
Denise Godde, Steven F. Godde, Pamela M. Godde and Gary M. Godde; Denise Godde and Steven Godde as Trustees of the D & S Godde Trust	1461.50	683.00	0.966%
Gorrindo Resourceful LLC	629.00	629.00	0.890%
Granite Construction Company (Big Rock Facility)	126.00	126.00	0.178%
Granite Construction Company (Little Rock Sand and Gravel, Inc.)	400.00	234.00	0.331%
LAURA GRIFFIN, trustee of the FAMILY BYPASS TRUST created under the LEONARD W. GRIFFIN AND LAURA GRIFFIN TRUST, dated July 9, 1993	1170.00	668.00	0.945%
H & N Development Co. West Inc.	1799.75	808.00	1.143%
Jane Healy and Healy Enterprises Inc.	700.00	700.00	0.990%
Gailen W. Kyle and Julie Kyle, Trustees of The Kyle Revocable Living Trust	9275.00	3670.00	5.192%
Land Projects Mutual Water Co.	622.50	613.54	0.868%
Landale Mutual Water Co.	157.75	155.57	0.220%
Landinv Inc	2000.00	969.00	1.371%
Lands of Promise Mutual Water Company	64.61	21.69	0.031%
G. Lane Family (Frank and Yvonne Lane 1993 Family Trust, Little Rock Sand and Gravel, Inc., George and Charlene Lane Family Trust) [Does not include water pumped on land leased to Granite Construction]	1402.00	773.00	1.094%
James M. Leer, III and Diana Leer	1.00	1.00	0.001%
Littlerock Aggregate Co., Inc., Holliday Rock Co., Inc.	405.00	151.00	0.214%
Llano Del Rio Water Company	572.65	279.00	0.395%
Llano Mutual Water Company	0.00	0.00	0.000%
City of Los Angeles, Department of Airports	7851.00	3975.00	5.623%
Jose M. Maritorenna & Marie P. Maritorenna, Trustees of the Maritorenna Living Trust Dated March 16, 1993	3800.55	1775.00	2.511%
Dennis M. and Diane K. McWilliams	1.00	1.00	0.001%
Richard Miner	1089.40	999.00	1.413%
Miracle Improvement Corporation dba Golden Sands Mobile Home Park dba Golden Sands Trailer Park	45.40	27.00	0.038%
Barry and Sharon Munz 2014 Revocable Trust, Terry A. & Kathleen M. Munz	5.00	5.00	0.007%
Eugene B. Nebeker	4016.00	1775.00	2.511%

**Judicial Council Coordination
 Proceeding No. 4408
 Santa Clara Case No.: 1-05-CV-049053**

Producer Name	Pre-Rampdown Production	Overlying Production Rights	Percentage Share of Adjusted Native Safe Yield
Richard Nelson, Willow Springs Co.	180.65	135.00	0.191%
Northrop Grumman Systems Corporation	2.00	2.00	0.003%
NRG Solar Alpine, LLC	64.21	38.00	0.054%
R AND M RANCH, INC.	1458.00	686.00	0.970%
John and Adrienne Reca	501.45	251.00	0.355%
Suzanne J. Richter	1.00	1.00	0.001%
Rosamond High School	586.40	202.23	0.286%
Rosamond Ranch, LP	598.00	598.00	0.846%
Rose Villa Apartments	22.72	7.62	0.011%
Sahara Nursery and Farm	22.18	22.00	0.031%
Saint Andrew's Abbey, Inc.	175.00	102.00	0.144%
Lawrence J. Schilling and Mary P. Schilling, Trustees of the L&M Schilling 1992 Family Trust	4.00	4.00	0.006%
Lilia Mabel Selak, TTEE; Barbara Aznarez Decd Trust and Selak, Mabel Trust	150.00	150.00	0.212%
Service Rock Products, L.P.	503.00	267.00	0.378%
SGS Antelope Valley Development, LLC	57.00	57.00	0.081%
Shadow Acres Mutual Water Company	52.60	51.74	0.073%
Sheep Creek Water Co.	0.00	0.00	0.000%
Jeffrey and Nancee Siebert	200.00	106.00	0.150%
Sonrise Ranch, LLC	662.00	0.00	0.000%
Southern California Edison Company	17.75	8.00	0.011%
Sundale Mutual Water Company	472.23	472.23	0.668%
Sunnyside Farms Mutual Water Company, Inc.	75.40	74.26	0.105%
Tejon Ranchcorp and Tejon Ranch Co.	3414.00	1634.00	2.312%
Tierra Bonita Mutual Water Company	40.75	40.32	0.057%
Tierra Bonita Ranch	505.00	430.00	0.608%
Triple M Property Co.	15.00	15.00	0.021%
Turk Trust dated December 16, 1998	1.00	1.00	0.001%
Marie A. Unini and Robert J. LeClair	1.00	1.00	0.001%
U.S. Borax	1905.00	1905.00	2.695%
Craig Van Dam, Marta Van Dam, Nick Van Dam, Janet Van Dam	1037.00	640.00	0.905%
Gary Van Dam, Gertrude Van Dam, Delmar Van Dam, Delmar D. Van Dam and Gertrude J. Van Dam, as Trustees of the Delmar D. and Gertrude J. Van Dam Family Trust – 1996, Craig Van Dam, Marta Van Dam, High Desert Dairy Partnership, High Desert Dairy	9931.50	3215.00	4.548%
Vulcan Materials Co., Vulcan Lands Inc., Consolidated Rock Products Co., Calmat Land Co., and allied Concrete & Materials	519.10	260.00	0.368%
WAGAS Land Company LLC	984.15	580.00	0.821%
WDS California II, LLC	2397.00	1159.00	1.640%
Michael and Dolores A. Weatherbie	1.00	1.00	0.001%

Producer Name	Pre-Rampdown Production	Overlying Production Rights	Percentage Share of Adjusted Native Safe Yield
West Side Park Mutual Water Co.	280.75	276.86	0.392%
White Fence Farms Mutual Water Co.	783.05	772.13	1.092%
Donna Wilson	10.00	7.00	0.010%
William Fisher Memorial Water Company	4.53	4.53	0.006%
Totals	105878.08	58322.23	

Appendix E con't Exhibit 4 Overlying Production (Appendix F)

See Exhibit 4 Overlying Production (Appendix F) - Antelope Valley Watermaster 2016 Annual Report below

Appendix F

Production for 2016 by Exhibit 4 (Overlying) Parties

Appendix F Exhibit 4 (Overlying) Parties Production, 2016

Type ID	Original Exhibit 4 Producers	Transferees (see Appendix L for details)	Pre-Rampdown Production ¹ (AF)	Ramp-Down Targets (AF)							Production Right (AF)	2016 Total Groundwater Production ² (AF)	Carry Over Water, end of 2016 (AF)
				2016	2017	2018	2019	2020	2021	2022			
1100	60th Street Association Water System	-	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	Not reported	?
1100	Adams Bennett Investments, LLC	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Not reported	0.00
1100	Antelope Park Mutual Water Company	-	208.75	208.75	208.75	200.98	193.21	185.43	177.66	169.89	169.89	117.00	52.89
1100	Antelope Valley Joint Union High School District ²	-	71.74	71.74	71.74	65.59	59.44	53.30	47.15	41.00	41.00	225.30	0.00
1100	Antelope Valley Mobile Estates	-	19.88	19.88	19.88	17.65	15.43	13.20	10.98	8.75	8.75	1,721.00	0.00
1100	Antelope Valley Water Storage LLC	-	1,772.00	1,772.00	1,772.00	1,772.00	1,772.00	1,772.00	1,772.00	1,772.00	1,772.00	1,558.44	213.56
1100	Aqua-J Mutual Water Company	-	44.90	44.90	44.90	44.79	44.68	44.57	44.46	44.35	44.35	Not reported	?
1100	AV Solar Ranch 1, LLC	-	96.00	96.00	96.00	96.00	96.00	96.00	96.00	96.00	96.00	Not reported	?
1100	AVEK	Leased to District No. 40. See Appendix O.	4,000.00	4,000.00	4,000.00	3,910.00	3,820.00	3,730.00	3,640.00	3,550.00	3,550.00	11,649.20	0.00
1100	Averydale Mutual Water Company	-	257.95	257.95	257.95	257.23	256.51	255.79	255.07	254.35	254.35	271.75	0.00
1100	2014 Revocable Trust, Terry A. & Kathleen M. Munz	-	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	Not reported	?
1100	Baxter Mutual Water Company	-	44.75	44.75	44.75	42.80	40.86	38.91	36.97	35.02	35.02	37.06	0.00
1100	Big Rock Mutual Water Company	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1100	Bittner Trust, Glen Brittner, Trustee	-	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	Not reported	?
1100	Bleich Flat Mutual Water Company	-	33.50	33.50	33.50	33.50	33.50	33.50	33.50	33.50	33.50	11.50	22.00
1100	Bolthouse Properties LLC	-	16,805.89	16,805.89	16,805.89	15,433.71	14,061.53	12,689.36	11,317.18	9,945.00	9,945.00	15,838.90	0.00
1100	Burrows/200 A40 H LLC	-	295.00	295.00	295.00	295.00	295.00	295.00	295.00	295.00	295.00	Not reported	?
1100	C. Louise R. Close Living Trust	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	Not reported	?
1100	City of Los Angeles, Department of Airports	-	7,851.00	7,851.00	7,851.00	7,075.80	6,300.60	5,525.40	4,750.20	3,975.00	3,975.00	5,125.90	0.00
1100	Colorado Mutual Water Co.	-	25.90	25.90	25.90	25.83	25.76	25.68	25.61	25.54	25.54	16.00	9.54
1100	Copa De Oro Land Company	-	325.00	325.00	325.00	325.00	325.00	325.00	325.00	325.00	325.00	Not reported	?
1100	County Sanitation Districts of Los Angeles 14 & 20	-	8,000.00	8,000.00	8,000.00	7,080.00	6,160.00	5,240.00	4,320.00	3,400.00	3,400.00	348.30	3,051.70
1100	Marta Van Dam, Nick Van Dam, Janet Van Dam	-	1,037.00	1,037.00	1,037.00	957.60	878.20	798.80	719.40	640.00	640.00	Not reported	?
1100	Del Sur Ranch LLC	-	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	600.00	0.00	600.00
1100	Dennis M. and Diane K. McWilliams	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	Not reported	?
1100	Diamond Farming/Crystal Organic LLC/Grimmway/Lapis	-	3,354.00	3,354.00	3,354.00	3,080.40	2,806.80	2,533.20	2,259.60	1,986.00	1,986.00	3,577.35	0.00
1100	Donna Wilson	-	10.00	10.00	10.00	9.40	8.80	8.20	7.60	7.00	7.00	Not reported	?
1100	Effren Chavez	-	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	44.00	41.50	2.50
1100	El Dorado Mutual Water Company	-	276.05	276.05	276.05	275.27	274.49	273.72	272.94	272.16	272.16	238.95	33.21
1100	eSolar Inc.; Sierra Sun Tower, LLC	-	5.76	5.76	5.76	5.21	4.66	4.10	3.55	3.00	3.00	Not reported	?
1100	eSolar Inc.; Tumbleweed Suntower LLC	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Not reported	0.00
1100	eSolar Inc.; Red Dawn Suntower LLC	-	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	Not reported	?
1100	Eugene B. Nebeker	-	4,016.00	4,016.00	4,016.00	3,567.80	3,119.60	2,671.40	2,223.20	1,775.00	1,775.00	1,861.00	0.00
1100	Evergreen Mutual Water Company	-	69.50	69.50	69.50	69.31	69.12	68.92	68.73	68.54	68.54	62.80	5.74
1100	First Mutual Water Company	-	15.62	15.62	15.62	13.55	11.47	9.40	7.32	5.25	5.25	Not reported	?
1100	Landinv Inc.	Partial Production Right=736.44 AF] to North Rosamond Solar on 7/21/16 and then to First Solar on 12/15/16. See Appendix L.	2,000.00	2,000.00	2,000.00	1,793.80	1,587.60	1,381.40	1,175.20	969.00	969.00	Landinv not reported. First Solar did not pump in 2016.	?
1100	Trustees of The Kyle Revocable Living Trust	-	9,275.00	9,275.00	9,275.00	8,154.00	7,033.00	5,912.00	4,791.00	3,670.00	3,670.00	6,774.00	0.00
1100	Van Dam Family Trust - 1996; High Desert Dairy	-	9,931.50	9,931.50	9,931.50	8,588.20	7,244.90	5,901.60	4,558.30	3,215.00	3,215.00	Not reported	?
1100	Gene Bahiman	-	5.25	5.25	5.25	5.20	5.15	5.10	5.05	5.00	5.00	5.00	0.00
1100	James M. Leer, III and Diane Leer	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	Not reported	?
1100	Gorrindo Resourceful LLC	-	629.00	629.00	629.00	629.00	629.00	629.00	629.00	629.00	629.00	0.00	629.00
1100	Granite Construction Company (Big Rock Facility)	-	126.00	126.00	126.00	126.00	126.00	126.00	126.00	126.00	126.00	Not reported	?
1100	Granite Construction Company (Little Rock Sand and Gravel, Co.)	-	400.00	400.00	400.00	366.80	333.60	300.40	267.20	234.00	234.00	Not reported	?

Appendix F Exhibit 4 (Overlying) Parties Production, 2016

Type ID	Original Exhibit 4 Producers	Transferees (see Appendix L for details)	Pre-Rampdown Production ¹ (AF)	Ramp-Down Targets (AF)						Production Right (AF)	2016 Total Groundwater Production ² (AF)	Carry Over Water, end of 2016 (AF)	
				2016	2017	2018	2019	2020	2021				2022
1100	H & N Development Co. West Inc.	-	1,799.75	1,799.75	1,799.75	1,601.40	1,403.05	1,204.70	1,006.35	808.00	808.00	Not reported	?
1100	Irma Ann Carle Trust, Irma-Anne Carle, Trustee	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
1100	James and Elizabeth Bridwell	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	Not reported	?
1100	Jane Healy and Healy Enterprises Inc.	-	700.00	700.00	700.00	700.00	700.00	700.00	700.00	700.00	700.00	Not reported	?
1100	Jeffrey and Nancee Siebert	-	200.00	200.00	200.00	181.20	162.40	143.60	124.80	106.00	106.00	210.00	0.00
1100	Calandri Water Company, LLC.	-	3,803.00	3,803.00	3,803.00	3,397.60	2,992.20	2,586.80	2,181.40	1,776.00	1,776.00	7,691.00	0.00
1100	John and Adrienne Reca	-	501.45	501.45	501.45	451.36	401.27	351.18	301.09	251.00	251.00	Not reported	?
1100	Trustees of the Maritorea Living Trust	-	3,800.55	3,800.55	3,800.55	3,395.44	2,990.33	2,585.22	2,180.11	1,775.00	1,775.00	476.80	1,298.20
1100	Land Projects Mutual Water Co.	-	622.50	622.50	622.50	620.71	618.92	617.12	615.33	613.54	613.54	Not reported	?
1100	Landale Mutual Water Co.	-	157.75	157.75	157.75	157.31	156.88	156.44	156.01	155.57	155.57	127.90	27.67
1100	Lands of Promise Mutual Water Company	-	64.61	64.61	64.61	56.03	47.44	38.86	30.27	21.69	21.69	Not reported	?
1100	Lane Family Trusts	-	1,402.00	1,402.00	1,402.00	1,276.20	1,150.40	1,024.60	898.80	773.00	773.00	Not reported	?
1100	Laura Griffin Trustee of the Family Bypass Trust	-	1,170.00	1,170.00	1,170.00	1,069.60	969.20	868.80	768.40	668.00	668.00	Not reported	?
1100	Lawrence Dean Evans, Jr. and Susan Evans	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	Not reported	?
1100	Lawrence J. and Mary P. Schilling Trustees of the L&M Schilling 1992 Family Trust	-	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.70	0.30
1100	Leah Frankenberg	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	Not reported	?
1100	Lilia Mabel Selak; Barbara Aznarez Decd Trust and Mabel Selak Trust	-	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	150.00	0.00	150.00
1100	Littlerock Aggregate Co., Inc., Holliday Rock Co., Inc.	-	405.00	405.00	405.00	354.20	303.40	252.60	201.80	151.00	151.00	Not reported	?
1100	Llano Del Rio Water Company	-	572.65	572.65	572.65	513.92	455.19	396.46	337.73	279.00	279.00	0.00	279.00
1100	Llano Mutual Water Company	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1100	Marie A. Unini and Robert J. LeClair	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	Not reported	?
1100	Mark W. And Nancy L. Benz	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	Not reported	?
1100	Michael and Dolores A. Weatherbie	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	Not reported	?
1100	Miracle Improvement Corporation dba Golden Sands Mobile Home Park/Tailer Park	-	45.40	45.40	45.40	41.72	38.04	34.36	30.68	27.00	27.00	Not reported	?
1100	Sal and Connie Cardile	All Production to Noel Pool in July 2015. See Appendix L.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	Not reported	?
1100	Northrop Grumman Systems Corporation	-	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	Not reported	?
1100	NRG Solar Alpine, LLC	-	64.21	64.21	64.21	58.97	53.73	48.48	43.24	38.00	38.00	Not reported	?
1100	R and M Ranch, Inc.	-	1,458.00	1,458.00	1,458.00	1,303.60	1,149.20	994.80	840.40	686.00	686.00	Not reported	?
1100	Randall and Billie Dickey	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.10	0.90
1100	Richard Miner	-	1,089.40	1,089.40	1,089.40	1,071.32	1,053.24	1,035.16	1,017.08	999.00	999.00	59.00	940.00
1100	Richard Nelson, Willow Springs Co.	-	180.65	180.65	180.65	171.52	162.39	153.26	144.13	135.00	135.00	Not reported	?
1100	Rosamond High School	-	586.40	586.40	586.40	509.57	432.73	355.90	279.06	202.23	202.23	91.00	111.23
1100	Rosamond Ranch	All Production to Willow Springs then to First Solar, Grant Deed dated 2/7/17. See Appendix L.	598.00	598.00	598.00	598.00	598.00	598.00	598.00	598.00	598.00	0.00	598.00
1100	Rose Villa Apartments	-	22.72	22.72	22.72	19.70	16.68	13.66	10.64	7.62	7.62	Not reported	?
1100	Ruth C. Findley	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	Not reported	?
1100	Sahara Nursery and Farm	-	22.18	22.18	22.18	22.14	22.11	22.07	22.04	22.00	22.00	6.20	15.80
1100	Saint Andrew's Abbey, Inc.	-	175.00	175.00	175.00	160.40	145.80	131.20	116.60	102.00	102.00	186.70	0.00
1100	Service Rock Products, L.P.	-	503.00	503.00	503.00	455.80	408.60	361.40	314.20	267.00	267.00	357.90	0.00
1100	SGS Antelope Valley Development, LLC	-	57.00	57.00	57.00	57.00	57.00	57.00	57.00	57.00	57.00	Not reported	?
1100	Shadow Acres Mutual Water Company	-	52.60	52.60	52.60	52.43	52.26	52.08	51.91	51.74	51.74	96.06	0.00
1100	Sheep Creek Water Co.	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Not reported	0.00
1100	Sheldon R. Blum, Trustee of the 1998 Family Trust	-	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	0.00	50.00
1100	Sonrise Ranch, LLC	-	662.00	662.00	662.00	529.60	397.20	264.80	132.40	0.00	0.00	Not reported	0.00

Appendix F Exhibit 4 (Overlying) Parties Production, 2016

Type ID	Original Exhibit 4 Producers	Transferees (see Appendix L for details)	Pre-Rampdown Production ¹ (AF)	Ramp-Down Targets (AF)							Production Right (AF)	2016 Total Groundwater Production ² (AF)	Carry Over Water, end of 2016 (AF)
				2016	2017	2018	2019	2020	2021	2022			
1100	Southern California Edison Company	-	17.75	17.75	17.75	15.80	13.85	11.90	9.95	8.00	8.00	Not reported	?
1100	Steve, Pamela & Gary Godde c/o Rife Silva & Co LLC	-	1,461.50	1,461.50	1,461.50	1,305.80	1,150.10	994.40	838.70	683.00	683.00	1,013.60	0.00
1100	Sundale Mutual Water Company	-	472.23	472.23	472.23	472.23	472.23	472.23	472.23	472.23	472.23	395.16	77.07
1100	Sunnyside Farms Mutual Water Company, Inc.	-	75.40	75.40	75.40	75.17	74.94	74.72	74.49	74.26	74.26	Not reported	?
1100	Suzanne J. Richter	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
1100	Tejon Ranchcorp and Tejon Ranch Co.	-	3,414.00	3,414.00	3,414.00	3,058.00	2,702.00	2,346.00	1,990.00	1,634.00	1,634.00	2,695.65	0.00
1100	Thomas and Julie Bookman 2007 Trust	-	272.50	272.50	272.50	245.20	217.90	190.60	163.30	136.00	136.00	304.76	0.00
1100	Tierra Bonita Mutual Water Company	-	40.75	40.75	40.75	40.66	40.58	40.49	40.41	40.32	40.32	33.90	6.42
1100	Tierra Bonita Ranch	-	505.00	505.00	505.00	490.00	475.00	460.00	445.00	430.00	430.00	Not reported	?
1100	Triple M Property Co.	-	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	Not reported	?
1100	Turk Trust dated December 16, 1998	-	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	Not reported	?
1100	U.S. Borax	-	1,905.00	1,905.00	1,905.00	1,905.00	1,905.00	1,905.00	1,905.00	1,905.00	1,905.00	Not reported	?
1100	Vulcan Materials Co., Vulcan Lands Inc., Consolidated Rock Products Co., Calmat Lands, Co., Allied Concrete & Materials	-	519.10	519.10	519.10	467.28	415.46	363.64	311.82	260.00	260.00	252.37	7.63
1100	WAGAS Land Company LLC	-	984.15	984.15	984.15	903.32	822.49	741.66	660.83	580.00	580.00	Not reported	?
1100	WDS California II, LLC	-	2,397.00	2,397.00	2,397.00	2,149.40	1,901.80	1,654.20	1,406.60	1,159.00	1,159.00	0.00	1,159.00
1100	West Side Park Mutual Water Co.	-	280.75	280.75	280.75	279.97	279.19	278.42	277.64	276.86	276.86	201.20	75.66
1100	White Fence Farms Mutual Water Co.	-	783.05	783.05	783.05	780.87	778.68	776.50	774.31	772.13	772.13	466.90	305.23
1100	William Fisher Memorial Water Company	-	4.53	4.53	4.53	4.53	4.53	4.53	4.53	4.53	4.53	Not reported	?
	Total	-	105,892.63	105,892.63	105,892.63	96,378.55	86,864.47	77,350.39	67,836.31	58,322.23	58,322.23	64,151.84	9,740.69

Data updated through July 24, 2017

1. Exhibit 4 of the Judgment shows a Pre-Rampdown Production total of 105,878.08 AF due to the inadvertent omission of the last two entries in the sum on Exhibit 4 (Donna Wilson and William Fisher Memorial Water Company). The corrected sum of 105,892.63 will be used going forward.

2. Pursuant to Section 5.1.8 of the Judgment, Antelope Valley Joint Union High School District has an additional 29 AF of Production for use on its athletic fields and other public spaces. When recycled water becomes available to Quartz Hill High School at a price equal to or less than the lowest cost of any of the following: Replacement Obligation, Replacement Water, or other water that is delivered to AVJUHS at Quartz Hill High School, AVJUHS will stop producing the 29 AF groundwater and use recycled water.

Appendix F**Appendix H - Imported Water Deliveries
(Return Flow calculations for reference)**

See Appendix H - AVEK Imported Water Deliveries (Return Flow calculations for reference) below.

**Appendix H Imported Water Return Flows
2017 Calendar Year**

Imported Water - Users Exhibit 8	Imported Water Use (AF)							Water Use Type	Return Flow Percent (Ref Only)	Return Flow (AF) (Ref Only)	
	2012	2013	2014	2015	2016	Five Year Average	2017				
A.V. Materials	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	M&I	39%	0.00
Antelope Valley Country Club	134.14	125.57	76.78	105.17	88.00	105.93	109.62	109.62	M&I	39%	42.75
AVEK (Amount sold to parties not on Exhibit 8. Includes groundwater) ¹	2,668.56	2,389.40	2,155.94	1,897.88	2,132.00	2,248.76	2,260.03	2,260.03	M&I	39%	881.41
Antelope Valley Water Company	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Ag	34%	15.64
Antelope Valley Water Storage, LLC ²	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	M&I	39%	0.00
Antelope Valley Water Storage, LLC - Banking ²	57.68	0.00	0.00	0.00	0.00	11.54	0.00	0.00	Ag	34%	0.00
Boron CSD	201.59	197.01	180.13	158.55	162.21	179.90	171.75	171.75	Banking	N/A	N/A
California Department of Parks	6.00	6.00	5.50	9.07	6.57	6.63	6.00	6.00	M&I	39%	2.34
California Water Service Company	108.96	108.37	197.30	108.54	114.72	127.58	131.96	131.96	M&I	39%	51.46
Copa de Oro Land Co.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Ag	34%	0.00
Crystal Organic Farms	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Ag	34%	0.00
Desert Lake CSD	116.14	90.67	82.21	92.50	78.99	92.10	81.46	81.46	M&I	39%	31.77
Diamond Farming Company	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Ag	34%	0.00
Edgemont Acres MWC	191.86	182.31	165.51	131.33	154.34	165.07	159.85	159.85	M&I	39%	62.34
El Dorado MWC	0.00	4.58	4.59	1.02	3.57	2.75	1.53	1.53	M&I	39%	0.60
Eyherabide Sheep Co.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Ag	34%	0.00
Godde, Forrest	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Ag	34%	0.00
Granite Construction Co	2.00	1.50	0.50	1.00	0.00	1.00	0.00	0.00	M&I	39%	0.00
Grimmway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Ag	34%	0.00
H&N Development Co. West	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	M&I	39%	0.00
Harter, Scott	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Ag	34%	0.00
LADPW - District No. 40 SWP	31,358.96	31,070.84	12,757.55	10,067.89	28,874.72	22,825.99	25,382.75	25,382.75	M&I	39%	9,899.27
LADPW - District No. 40 GW ³	475.90	1,060.70	10,850.90	10,279.40	3,884.60	5,310.30	1,563.70	1,563.70	Banking	N/A	N/A
LADPW - District No. 40-Banking ⁴	1,500.00	0.00	0.00	0.00	0.00	300.00	0.00	0.00	Banking	N/A	N/A
Landale MWC	0.00	8.51	0.00	32.29	0.00	8.16	18.78	18.78	M&I	39%	7.32
Lane Family Trust	19.78	22.59	15.61	15.90	15.70	17.92	15.40	15.40	Ag	34%	5.24
Littlerock Aggregate, Co.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	M&I	39%	0.00
Littlerock Creek ID	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	M&I	39%	0.00
Palm Ranch ID	97.91	35.53	2.85	3.00	56.64	39.19	30.98	30.98	M&I	39%	12.08
Palmdale WD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	M&I	39%	0.00
Quartz Hill WD	4,229.00	3,352.78	3,436.24	2,608.19	2,453.25	3,215.89	2,385.86	2,385.86	M&I	39%	930.49
Quartz Hill WD - Banking ⁴	550.00	2,400.00	691.90	1,000.10	0.00	928.40	0.00	0.00	Banking	N/A	N/A
Rosamond CSD	40.09	122.85	30.42	1.41	10.38	41.03	19.92	19.92	M&I	39%	7.77
Rosamond CSD - Banking ⁴	390.65	585.49	0.00	0.00	0.00	195.23	0.00	0.00	Banking	N/A	N/A
Shadow Acres MWC	204.88	235.25	84.39	139.70	139.12	160.67	161.40	161.40	M&I	39%	62.95
Shadow Acres MWC - Banking ⁴	150.00	0.00	21.11	0.00	0.00	34.22	0.00	0.00	Banking	N/A	N/A
St. Andrew's Abbey, Inc.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	M&I	39%	0.00
Sunnyside Farms MWC	159.16	148.46	103.37	55.98	111.12	115.62	123.87	123.87	M&I	39%	48.31
Tejon Ranch Co.	1,046.80	1,801.00	0.00	0.00	0.00	569.56	0.00	0.00	Ag	34%	0.00
Tejon Ranch Co. - Banking ⁵	12,737.49	3,045.74	0.00	0.00	0.00	3,156.65	12,028.00	12,028.00	Banking	N/A	N/A
U.S. Borax	1,617.09	1,172.19	866.80	1,127.86	931.87	1,143.16	1,165.22	1,165.22	M&I	39%	454.44
Warnack Trust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Ag	34%	0.00
Westside Park MWC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	M&I	39%	0.00
White Fence Farms MWC	200.00	230.26	86.24	158.92	184.54	171.99	217.74	217.74	M&I	39%	84.92
White Fence Farms MWC - Banking ⁴	0.00	220.00	21.08	0.00	0.00	48.22	0.00	0.00	Banking	N/A	N/A
Total	60,234.52	50,812.77	31,971.74	28,043.35	39,442.99	42,101.07	46,081.83				12,668.08

Notes

1. AVEK Imported Amounts updated for Years 2012-2016 to include deliveries to Edwards Air Force Base and other non-Exhibit 8 parties within the Antelope Valley Adjudicated Boundary.
2. Antelope Valley Water Storage, LLC (as an Imported Water User of Exhibit 8) added.
3. Groundwater deliveries made from AVEK Westside Water Bank via 80th & Avenue H Turnout facility.
4. Imported Water deliveries made on behalf of the User for local recharge and storage per agreements executed 2010 thru 2013.
5. Banking amount includes direct recharge of AVEK exchange water returned under agreements executed in 2008 and 2009, and "In-Lieu" water stored under agreement with AVSWCA executed in 2009.