

# MANAGEMENT REPORT FOR 2017-2018



12/18/2018

Kinneloa Irrigation District

Prepared by Melvin L. Matthews, General Manager



# MANAGEMENT REPORT FOR 2017-2018

## SUMMARY OF PRODUCTION SOURCES, CUSTOMER SALES, RAINFALL, POWER COSTS, LONG AND SHORT-TERM STORAGE AND ACTIVITIES AND INITIATIVES FOR THE YEAR OF 2017- 2018, JULY THROUGH JUNE

### Production

The Kinneloa Irrigation District (KID) produced 822.1 acre-feet from our wells and tunnels during this period as shown in Figure 1B. 734.9 acre-feet was produced for our retail customers and 87.2 acre-feet was produced for delivery to the City of Pasadena. Water production for our retail customers was 17.3% greater than the 626.5 acre-feet produced for retail customers last year. Figures 1A & 1B include data for all production sources from 1994-1995 through 2017-2018 as well as for surface water and ground water which is diverted from our system for which we receive a spreading credit. Figure 2 shows total production from the KID wells and tunnels. This year our wells produced approximately 85% of the water and the tunnels produced 15% of the water. Tunnel production level is dependent on rainfall in the current and previous years and has ranged from a high of 530.1 acre-feet in 2005-2006 to a low of 112.4 acre-feet in 2015-2016. The tunnel production for 2017-2018 was significantly below the 24-year average of 246.5 acre-feet. Figure 3 is a pie chart showing the percentage of total production by source.

### Sales

Total sales to retail customers were 628.4 acre-feet as shown in Figure 4. The average monthly sales of water during the year from 1994-1995 to 2017-2018 are shown in Figure 5. Peak sales are usually in the July through October period and minimum sales usually occur in December through March period. Weather conditions in a year can cause these periods to shift and can drastically affect the total sales for the year. The rainfall this year was below the average rainfall and it is uncertain whether the six-year drought has ended. Figure 6 shows an analysis of the distribution of monthly water usage per customer for the month of June in the five years from 2012 to 2018. June was chosen for this analysis because it represents average monthly water usage for the year. The data shows the percentage of our customers with usage of 10 units or less per month in June 2018 was 23.4% as compared to 21.8% in June 2017; usage between 11 and 50 units per month in June 2018 was 46.9% as compared to 42.8% in June 2017; usage between 51 and 100 units per month in June 2018 was 23.2% as compared to 25.1% in June 2017; usage more than 100 units per month in June 2018 was 6.4% as compared to 10.3% in June 2017. Each unit is equivalent to one hundred cubic feet (CCF) or 748 gallons. This usage pattern has been relatively constant over the past seven years but this year there was a greater percentage of customers in the two lower ranges of usage.

### Water Use Efficiency

The KID has extensively promoted measures to increase water use efficiency over the past twelve years and has participated in rebate programs to provide incentives to our customers to reduce water usage. Although the usage was up substantially in 2017-2018 as compared to 2016-2017, the data indicates a 26% decrease in usage as compared to the base year of 2006-2007

when water use efficiency became a mandate from the State and a priority for the KID. The 2017-2018 usage is 9% lower than the 24-year average of 690.5 acre-feet. However, it is too soon to know whether there has been permanent reduction in water usage due to state regulations, our water conservation program or the extensive media coverage during the drought and the current media encouraging water use efficiency. A comparison of total water sales for January 2013 through June 2018 is shown in Figure 7. The percentage reduction for the calendar year of 2017 as compared to 2013 was 16%.

## Non-Revenue Water Use and Water Loss

The difference between the water produced and water sold (which is the water loss for the system) was 106.5 acre-feet or 14.5% as shown in Figure 1B. The loss is attributed to system leaks, main flushing for water quality purposes, fire flow tests, unmetered water used for various other purposes, normal operational procedures at KID facilities and water meter inaccuracies. This loss is greater than the 24-year average of 77.6 acre-feet or 10.2%. A water loss of less than 10% is excellent by industry standards. The reason for the increase as compared to 2016-2017 was not attributed to any specific cause.

## Rainfall

Rainfall for 2017-2018 was 10.3 inches as shown in Figures 1B and Figure 8 as compared to 24.1 inches in the previous year and the 24-year average of 20.8 inches. Whether this is an indication of the continuation of the previous six-year drought is uncertain. Nevertheless, it will take multiple years of above-average rainfall before there is a significant recovery of tunnel production and spreading credits. The KID continues to lease additional pumping rights from other agencies to offset this decline and to meet customer demand, but this supplemental production source is not guaranteed and an increase in water-use efficiency may be needed to offset the loss of available water for production.

## Power Cost

Figure 9 shows the total cost and the power cost per acre-foot of total production for 2017-2018. Since most of our power consumption is for pumping, it is also an approximate indirect measure of production efficiency. However, it should be noted that this indicator does not consider the percentage of well production vs. tunnel production nor does it consider rising electricity rates. In years of high tunnel production, less water is pumped from our wells saving us considerable power cost.

Although electricity rates have increased over the years, we have been able to mitigate most of the increases by participating in various time-of-use and interruptible power programs that restrict our use of power to non-peak hours in exchange for lower rates. We have also installed higher-efficiency motors when equipment has been replaced. The net effect has been to stabilize our power costs. The 2017-2018 cost was \$143 per acre-foot of total production as compared to \$173 per acre-foot for the previous year and the 24-year average of \$111 per acre-foot. Even though we will continue to take advantage of cost-reduction programs, it will be more difficult to maintain our current cost especially considering the announced rate increases and the mandated switch to more “green” power in the years ahead.

## Long-Term Storage

The Raymond Basin Management Board (RBMB) established a long-term storage program to cover situations such as prolonged drought or unusually high demand that might lead to over

pumping of our water rights in the current year. This program is the equivalent of a savings account for surplus water. The KID activated our long-term storage account for the first time in 2004-2005 by adding 327 acre-feet of surplus water as shown in Figure 1A. The following year we added additional storage to bring the account to 848 acre-feet. Some of this storage was used in 2006-2007 to support our water sales to the City of Pasadena so the remaining storage at the end of 2006-2007 was 729 acre-feet. The net addition to our long-term storage in 2007-2008 was 69 acre-feet and the total was 798 acre-feet at the end of that year. Due to declining water levels in the Raymond Basin, the RBMB voted to suspend the program and freeze the total at the end of the 2008-2009 year.

The result of the additions and withdrawals, as shown in Figure 10, is that we still have 790 acre-feet in the account that may be used to offset any shortages in the future. We will not be able to add any surplus to the account unless the RBMB changes the policy. Our current plan is to use this water only if we are unable to lease temporary pumping rights at a reasonable cost or unable to acquire additional pumping rights from another Raymond Basin member. This additional water in storage is especially important to the KID considering that the RBMB has implemented a 30% reduction of our adjudicated pumping rights to address declining water levels in the basin. The RBMB will continue to monitor basin pumping levels to see if stabilization can be achieved without the injection of imported water or other recovery efforts. The Board could also approve elimination of the long-term storage program and KID could lose the ability to pump the 790 acre-feet in our account.

## Short-Term Storage

The RBMB established a short-term storage program in 2016 for the Pasadena subarea for agencies with carryover rights of less than 300 acre-feet to allow operational flexibility and allow for better planning and utilization of leases, management of decreed rights and maximize beneficial use of spreading credits. The maximum amount of water is limited to 300 acre-feet and must be used within the time specified by the RBMB rules. The KID had 191 acre-feet in our account in 2017-2018 and this will be the first water pumped in 2018-2019 Watermaster year. If the combined balance of the 10% carryover rights and short-term storage exceeds 300 acre-feet on June 30<sup>th</sup>, the excess amount is deducted from short-term storage and lost for future pumping.

## Production Issues

Figure 1B shows that the Wilcox Well only produced 2.7 acre-feet of water in 2017-2018 as compared with 272.4 acre-feet in the peak year of 1999-2000. The declining level in the Raymond Basin aquifer at this facility has caused a 50% reduction in the available operational flow rate from this well because the output needs to be restricted to prevent entrainment of air and damage to the pump. This operational necessity is inefficient from a power standpoint and relegates this well to emergency and supplemental supply uses only. This also means that the lost production is shifted to the K-3 Well which accounted for 85% of our total annual production in 2017-2018. A continued decline in basin levels could also affect the K-3 Well in future years and our increased dependence on a single production source diminishes production reliability.

The declining production from the KID's tunnels has also become a significant issue. Tunnel water is not counted in our adjudicated pumping rights and is our only source of low-cost supplemental water. Multiple years of above-average rainfall will be needed to increase the contribution to our total production from the current 15% to the more typical 25-50%. Nevertheless, continued maintenance of our tunnel sources is a high priority.

## Supply Issues

The court-ordered adjudication of pumping rights in the Raymond Basin no longer matches the natural replenishment rate. The voluntary 30% pumping reduction in the Pasadena subarea has helped to reduce the rate of decline in the basin level, but the RBMB has not yet developed an external replenishment source. Therefore, additional water resources, conservation measures and reduced pumping are being considered to stabilize the basin level.

All water agencies in the area except for the KID purchase imported supplemental water from the Metropolitan Water District of Southern California (MWD) or through its wholesale distributor, Foothill Municipal Water District (FMWD). The KID has not needed to purchase imported water because our local tunnel water, adjudicated pumping rights, spreading credit and available leases have been enough to meet customer demand. However, our independence from imported water is not assured unless we are able to continue to lease or purchase unused pumping rights from other water agencies in the area. We will also continue to rely on our interconnections with the City of Pasadena for a water supply during system emergencies or for planned facility maintenance purposes, but that water must be returned to Pasadena as soon as possible after an event or purchased at the retail rate. The KID will continue to work with the FMWD to develop a long-term plan for supplemental water in case our ground water pumping rights are permanently reduced and leased or purchased pumping rights are no longer available. Since there is no pipeline from MWD or FMWD to the KID, a new connection would be needed, or an arrangement made with an adjacent water agency to wheel FMWD/MWD water through its pipelines to the KID. FMWD is the only source of supplemental water currently available to the KID.

## Capital Improvement and Maintenance Projects

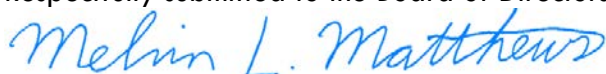
The KID continues to perform projects identified in the ***Water Master Plan for the Kinneloa Irrigation District*** and other planning documents to improve the District's emergency preparedness and operational performance. Fourteen major pipeline projects remain to be completed at the estimated cost of \$3,000,000. Although increased fire-flow capacity is the primary objective of these projects, other benefits include replacement of older portions of the distribution system that have reached the end of their useful life cycles. In addition, approximately \$1,000,000 in facility improvements and equipment are on the planning horizon.

Major maintenance and upgrade projects included repairs and improvements to our Supervisory Control and Data Acquisition (SCADA) System, upgrades to our automated meter reading equipment and software and replacement of our principal data computer that is used for our customer information and billing system.

## Administrative Activities

The primary objectives of the General Manager beyond the general and financial management of the KID were to fill two vacant administrative positions and to develop a staff management plan and to prepare an organizational structure to effectively manage and provide continuity in future years. The office is now fully staffed and written procedures have been prepared for major office and customer service functions. The vacant field position has also been filled and this employee is being trained to assume full operational responsibilities soon.

Respectfully submitted to the Board of Directors,



Melvin L. Matthews, General Manager

## Figure 1A

### Data for Watermaster Year (July through June) 1994-1995 to 2008-2009

<b>Production in Acre-Feet</b>																
<b>Source</b>	<b>1994-1995</b>	<b>1995-1996</b>	<b>1996-1997</b>	<b>1997-1998</b>	<b>1998-1999</b>	<b>1999-2000</b>	<b>2000-2001</b>	<b>2001-2002</b>	<b>2002-2003</b>	<b>2003-2004</b>	<b>2004-2005</b>	<b>2005-2006</b>	<b>2006-2007</b>	<b>2007-2008</b>	<b>2008-2009</b>	
Wilcox Well	93.2	119.6	170.2	165.4	209.6	272.4	216.9	203.7	213.7	148.9	60.2	37.2	70.2	5.6	5.6	
K-3 Well	285.3	238.3	263.8	330.9	567.3	562.5	425.2	514.3	457.1	551.0	319.3	423.5	860.1	543.9	611.2	
<b>Total Well</b>	<b>378.5</b>	<b>357.9</b>	<b>434.0</b>	<b>496.3</b>	<b>776.9</b>	<b>834.9</b>	<b>642.1</b>	<b>718.0</b>	<b>670.8</b>	<b>699.9</b>	<b>379.5</b>	<b>460.7</b>	<b>930.3</b>	<b>549.5</b>	<b>616.7</b>	
Hi-Low Tunnel	71.3	217.0	177.2	146.6	143.1	132.6	111.1	86.0	57.6	59.8	125.6	171.9	131.0	107.6	89.2	
House Tunnel	37.8	43.9	35.4	33.1	41.1	31.5	26.2	21.5	16.7	12.7	12.6	44.9	26.5	20.6	12.8	
Eucalyptus Tunnel	56.5	64.9	62.6	58.7	62.4	54.0	44.3	38.6	29.5	41.5	50.0	50.4	44.6	43.2	39.1	
Delores Tunnel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	126.5	223.3	83.6	63.7	40.2	
Far Mesa Tunnel	73.6	69.1	67.7	68.3	78.9	74.1	56.7	52.0	47.7	45.6	68.2	39.6	13.1	48.6	42.9	
<b>Total Tunnel</b>	<b>239.2</b>	<b>394.9</b>	<b>342.9</b>	<b>306.7</b>	<b>325.5</b>	<b>292.2</b>	<b>238.3</b>	<b>198.1</b>	<b>151.5</b>	<b>162.0</b>	<b>382.9</b>	<b>530.1</b>	<b>298.8</b>	<b>283.7</b>	<b>224.2</b>	
<b>Total Production</b>	<b>617.7</b>	<b>752.8</b>	<b>776.9</b>	<b>803.0</b>	<b>1102.4</b>	<b>1127.1</b>	<b>880.4</b>	<b>916.1</b>	<b>822.3</b>	<b>861.9</b>	<b>762.5</b>	<b>990.8</b>	<b>1229.0</b>	<b>833.2</b>	<b>840.9</b>	
Deliveries from Pasadena	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.5	0.0	0.0	18.8	0.0	0.0	1.5	
Deliveries to Pasadena	0.0	0.0	0.0	-139.5	-325.8	-222.9	-64.1	-87.3	-61.7	0.0	0.0	-160.6	-321.8	0.0	-42.4	
<b>Net Import/Export</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-139.5</b>	<b>-325.8</b>	<b>-222.9</b>	<b>-64.1</b>	<b>-87.3</b>	<b>-30.2</b>	<b>0.0</b>	<b>0.0</b>	<b>-141.8</b>	<b>-321.8</b>	<b>0.0</b>	<b>-40.9</b>	
<b>Total Production for Retail Customers</b>	<b>617.7</b>	<b>752.8</b>	<b>776.9</b>	<b>663.5</b>	<b>776.6</b>	<b>904.2</b>	<b>816.3</b>	<b>828.8</b>	<b>792.1</b>	<b>861.9</b>	<b>762.5</b>	<b>849.0</b>	<b>907.2</b>	<b>833.2</b>	<b>800.0</b>	
<b>Diversions in Acre-Feet</b>																
<b>Source</b>	<b>1994-1995</b>	<b>1995-1996</b>	<b>1996-1997</b>	<b>1997-1998</b>	<b>1998-1999</b>	<b>1999-2000</b>	<b>2000-2001</b>	<b>2001-2002</b>	<b>2002-2003</b>	<b>2003-2004</b>	<b>2004-2005</b>	<b>2005-2006</b>	<b>2006-2007</b>	<b>2007-2008</b>	<b>2008-2009</b>	
Hi-Low Tunnel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.3	0.0	0.0	0.0	0.0	0.0	0.0	
House Tunnel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	0.0	25.6	0.0	0.0	0.0	4.2	
Kinneloa Canyon	140.7	50.2	54.3	56.8	48.6	52.1	33.4	28.9	12.2	9.5	31.2	40.4	45.4	27.2	21.4	
Eucalyptus Tunnel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	0.0	0.0	0.0	0.0	0.0	0.0	
Brown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.9	16.7	0.0	0.0	0.0	
<b>Eaton Wash Sub Total</b>	<b>140.7</b>	<b>50.2</b>	<b>54.3</b>	<b>56.8</b>	<b>48.6</b>	<b>52.1</b>	<b>33.4</b>	<b>28.9</b>	<b>38.0</b>	<b>9.5</b>	<b>81.7</b>	<b>57.2</b>	<b>45.4</b>	<b>27.2</b>	<b>25.6</b>	
Delores Tunnel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.4	31.1	21.5	44.5	0.0	0.0	0.0	0.0	
Long Tunnel	35.8	37.2	39.2	39.2	38.9	37.7	38.1	38.0	36.0	35.3	46.8	44.7	37.4	36.0	34.3	
Far Mesa Tunnel	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	0.0	0.0	30.2	42.5	0.0	0.0	
Glen Wash	429.3	396.3	262.5	321.3	359.1	174.8	156.7	52.7	26.7	28.1	933.9	161.4	74.0	56.7	59.0	
Tent Tunnel	5.1	5.5	5.4	5.3	5.8	3.4	2.4	2.3	2.1	2.0	3.2	3.5	2.9	2.5	2.1	
<b>Pasadena Glen Sub Total</b>	<b>470.2</b>	<b>439.0</b>	<b>307.1</b>	<b>365.8</b>	<b>403.8</b>	<b>215.9</b>	<b>201.8</b>	<b>134.4</b>	<b>95.9</b>	<b>86.9</b>	<b>1028.5</b>	<b>239.8</b>	<b>156.7</b>	<b>95.2</b>	<b>95.4</b>	
<b>Sierra Madre Villa DB Outflow</b>	<b>-256.7</b>	<b>-32.8</b>	<b>-7.2</b>	<b>-33.7</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>-459.7</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	
<b>Net Pasadena Glen Sub Total</b>	<b>213.5</b>	<b>406.2</b>	<b>299.9</b>	<b>332.1</b>	<b>403.8</b>	<b>215.9</b>	<b>201.8</b>	<b>134.4</b>	<b>95.9</b>	<b>86.9</b>	<b>568.8</b>	<b>239.8</b>	<b>156.7</b>	<b>95.2</b>	<b>95.4</b>	
<b>Total Diverted</b>	<b>354.2</b>	<b>456.4</b>	<b>354.2</b>	<b>388.9</b>	<b>452.4</b>	<b>268.0</b>	<b>235.2</b>	<b>163.3</b>	<b>133.9</b>	<b>96.4</b>	<b>650.5</b>	<b>297.0</b>	<b>202.1</b>	<b>122.4</b>	<b>121.0</b>	
<b>Other Data</b>																
<b>Source</b>	<b>1994-1995</b>	<b>1995-1996</b>	<b>1996-1997</b>	<b>1997-1998</b>	<b>1998-1999</b>	<b>1999-2000</b>	<b>2000-2001</b>	<b>2001-2002</b>	<b>2002-2003</b>	<b>2003-2004</b>	<b>2004-2005</b>	<b>2005-2006</b>	<b>2006-2007</b>	<b>2007-2008</b>	<b>2008-2009</b>	
Rainfall (inches)	43.61	22.64	22.80	52.29	14.46	18.82	20.04	7.86	24.48	10.12	58.00	21.79	5.81	24.61	16.10	
Water Sales (Acre-Feet)	584.3	668.8	679.9	600.4	666.3	782.9	710.9	739.1	717.7	772.6	672.6	785.8	847.3	754.1	729.7	
Water Loss (Acre-Feet)	33.4	84.0	97.0	63.1	110.3	121.3	105.4	89.7	74.4	89.3	89.8	63.2	59.9	79.0	70.3	
Water Loss (%)	5.4	11.2	12.5	9.5	14.2	13.4	12.9	10.8	9.4	10.4	11.8	7.4	6.6	9.5	8.8	
RMBB Storage Account (Acre-Feet)											326.9	847.9	728.6	797.9	790.0	
Power (\$)	71,086	55,137	68,132	57,193	86,488	97,064	77,780	111,676	111,062	100,410	87,537	82,476	112,924	89,011	92,204	
Power (\$ per AF of Total Production)	115	73	88	71	78	86	88	122	135	116	115	83	92	107	110	



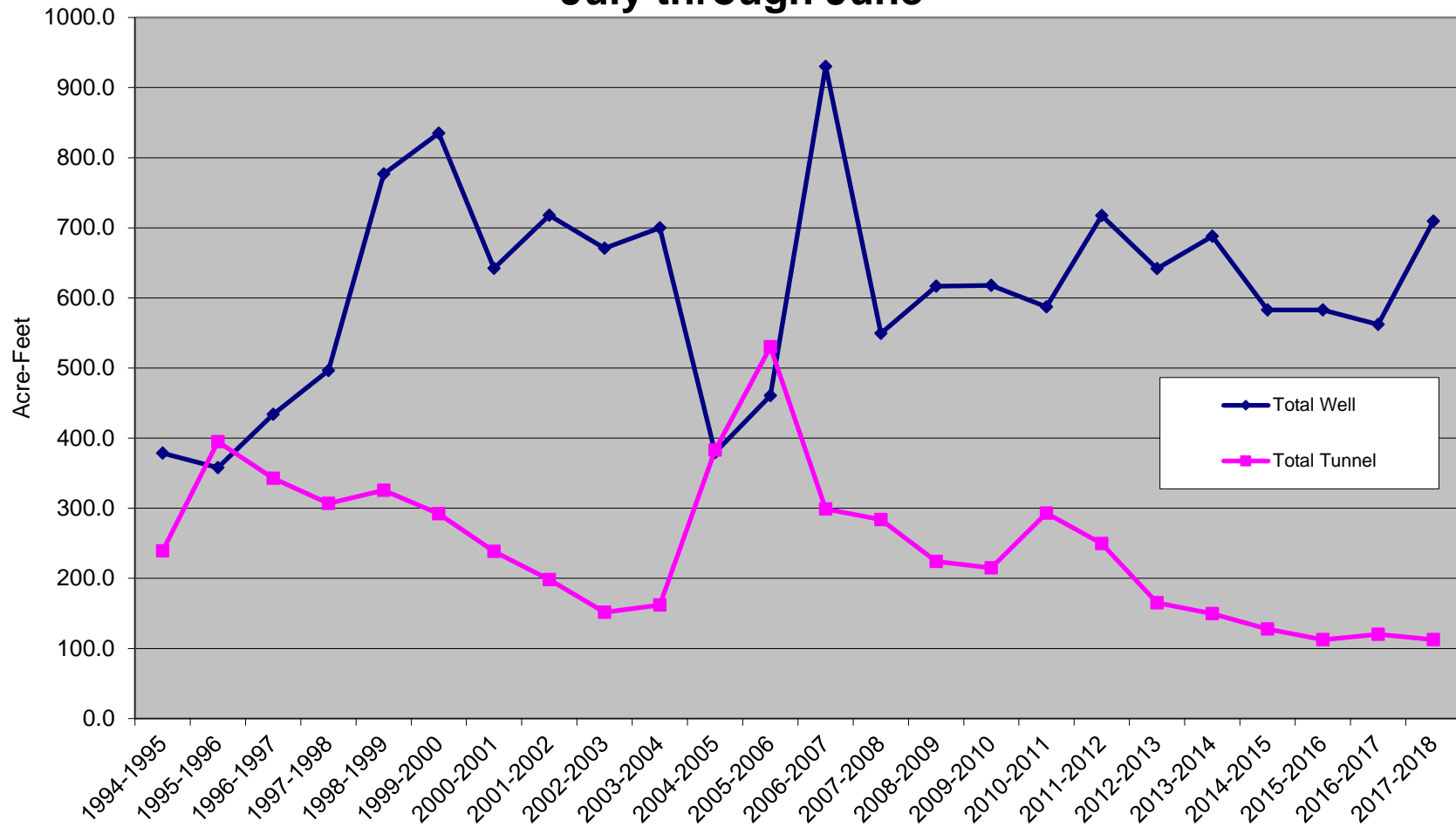
## Figure 1B

### Data for Watermaster Year (July through June) 2009-2010 to 2017-2018

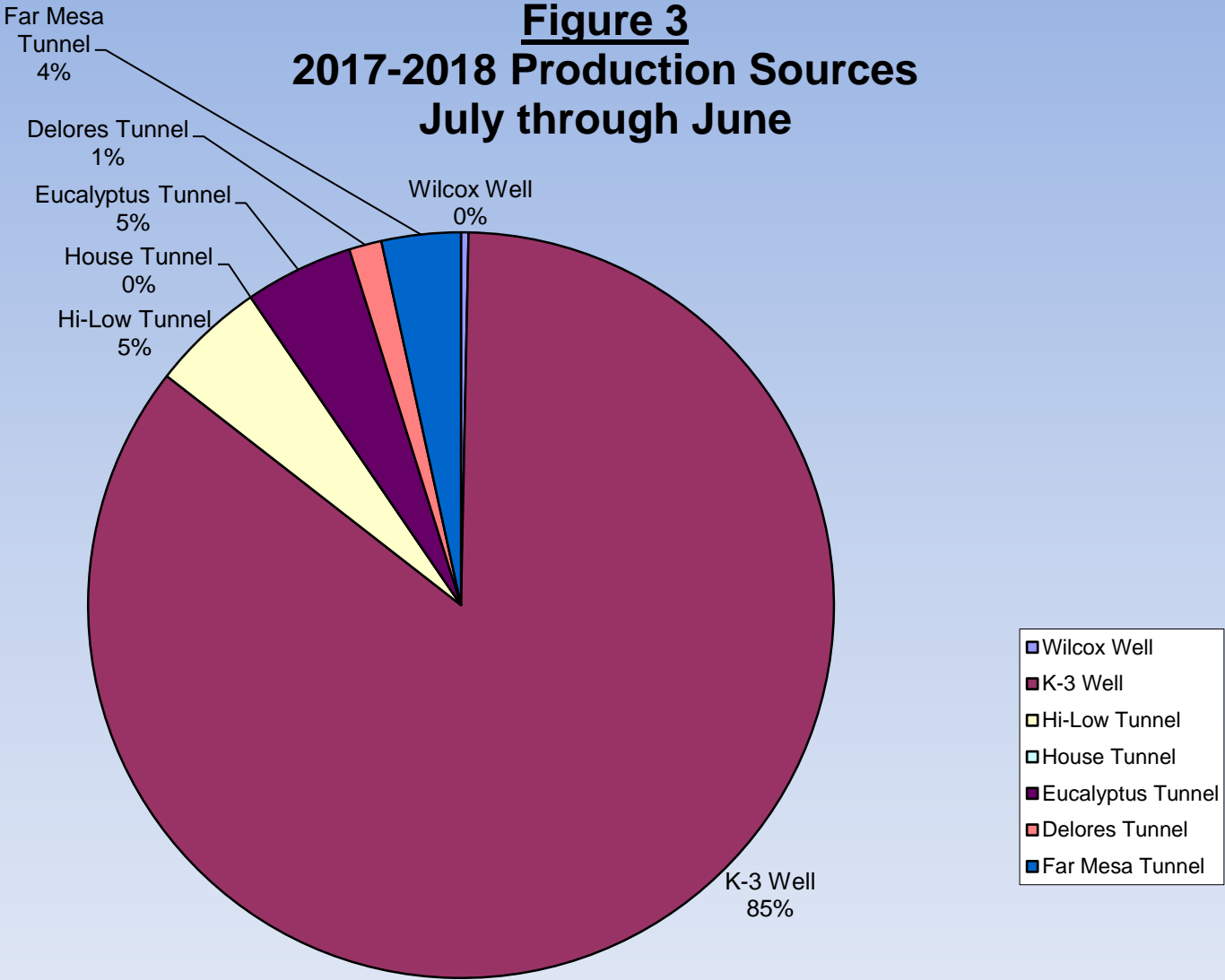
Production in Acre-Feet										24 Year
Source	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	Average
Wilcox Well	7.3	7.1	9.5	57.6	11.5	8.7	8.3	5.1	2.7	87.9
K-3 Well	610.6	580.2	708.0	584.2	676.6	574.2	574.4	556.9	706.7	521.9
<b>Total Well</b>	<b>617.8</b>	<b>587.3</b>	<b>717.5</b>	<b>641.9</b>	<b>688.0</b>	<b>582.9</b>	<b>582.7</b>	<b>562.0</b>	<b>709.4</b>	<b>609.8</b>
Hi-Low Tunnel	80.1	98.8	94.3	53.5	36.2	40.2	36.7	40.9	33.5	97.6
House Tunnel	13.8	14.5	15.7	14.3	10.2	0.6	0.0	0.0	0.0	20.3
Eucalyptus Tunnel	37.4	39.8	40.5	40.7	41.5	40.0	39.4	39.0	48.1	46.1
Delores Tunnel	44.8	98.5	57.7	17.4	22.9	11.0	5.1	11.7	2.3	33.8
Far Mesa Tunnel	38.9	41.2	41.2	39.3	38.6	35.9	31.3	28.5	28.8	48.7
<b>Total Tunnel</b>	<b>215.0</b>	<b>292.8</b>	<b>249.3</b>	<b>165.2</b>	<b>149.4</b>	<b>127.6</b>	<b>112.4</b>	<b>120.0</b>	<b>112.7</b>	<b>246.5</b>
<b>Total Production</b>	<b>832.9</b>	<b>880.0</b>	<b>966.8</b>	<b>807.0</b>	<b>837.4</b>	<b>710.5</b>	<b>695.2</b>	<b>682.0</b>	<b>822.1</b>	<b>856.3</b>
Deliveries from Pasadena	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	2.2
Deliveries to Pasadena	-105.1	-217.4	-239.0	-47.8	0.0	-9.0	-86.4	-55.5	-87.2	-94.7
Net Import/Export	-105.1	-217.4	-237.8	-47.8	0.0	-9.0	-86.4	-55.5	-87.2	-92.5
<b>Total Production for Retail Customers</b>	<b>727.8</b>	<b>662.7</b>	<b>729.1</b>	<b>759.3</b>	<b>837.4</b>	<b>701.5</b>	<b>608.8</b>	<b>626.5</b>	<b>734.9</b>	<b>763.8</b>
Diversions in Acre-Feet										24 Year
Source	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	Average
Hi-Low Tunnel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
House Tunnel	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	1.4
Kinneloa Canyon	21.2	37.8	37.8	35.6	27.7	30.4	30.6	33.0	16.8	38.5
Eucalyptus Tunnel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
Brown	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7
<b>Eaton Wash Sub Total</b>	<b>21.2</b>	<b>37.8</b>	<b>37.8</b>	<b>35.6</b>	<b>27.7</b>	<b>30.7</b>	<b>30.6</b>	<b>33.0</b>	<b>16.8</b>	<b>42.5</b>
Delores Tunnel	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	5.8
Long Tunnel	33.8	39.8	38.4	34.4	29.9	28.5	27.7	33.9	32.7	36.4
Far Mesa Tunnel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2
Glen Wash	45.1	188.0	88.7	89.2	73.1	55.6	52.5	60.5	30.0	174.0
Tent Tunnel	2.0	1.8	2.8	2.3	2.3	2.3	2.3	2.3	2.3	3.1
<b>Pasadena Glen Sub Total</b>	<b>80.8</b>	<b>229.6</b>	<b>129.9</b>	<b>125.9</b>	<b>105.3</b>	<b>88.1</b>	<b>82.4</b>	<b>96.8</b>	<b>65.0</b>	<b>222.5</b>
Sierra Madre Villa DB Outflow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-32.9
<b>Net Pasadena Glen Sub Total</b>	<b>80.8</b>	<b>229.6</b>	<b>129.9</b>	<b>125.9</b>	<b>105.3</b>	<b>88.1</b>	<b>82.4</b>	<b>96.8</b>	<b>65.0</b>	<b>189.6</b>
<b>Total Diverted</b>	<b>102.1</b>	<b>267.4</b>	<b>167.7</b>	<b>161.4</b>	<b>133.0</b>	<b>118.8</b>	<b>113.0</b>	<b>129.7</b>	<b>81.8</b>	<b>232.1</b>
Other Data										24 Year
	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	Average
Rainfall (inches)	23.6	31.3	11.8	8.3	5.2	8.2	12.3	24.1	10.3	20.8
Water Sales (Acre-Feet)	771.0	590.8	654.9	696.2	805.1	642.7	502.6	568.8	628.4	690.5
Water Loss (Acre-Feet)	61.9	71.8	74.2	63.1	32.4	58.8	106.1	57.7	106.5	77.6
Water Loss (%)	8.5	10.8	10.2	8.3	3.9	8.4	17.4	9.2	14.5	10.2
RBMB Storage Account (Acre-Feet)	790.0	790.0	790.0	790.0	790.0	790.0	790.0	790.0	790.0	757.2
Power (\$)	92,700	92,700	93,964	105,248	113,611	114,917	103,595	117,767	117,767	93852.1
Power (\$ per AF of Total Production)	111	105	97	130	136	162	149	173	143	111.9



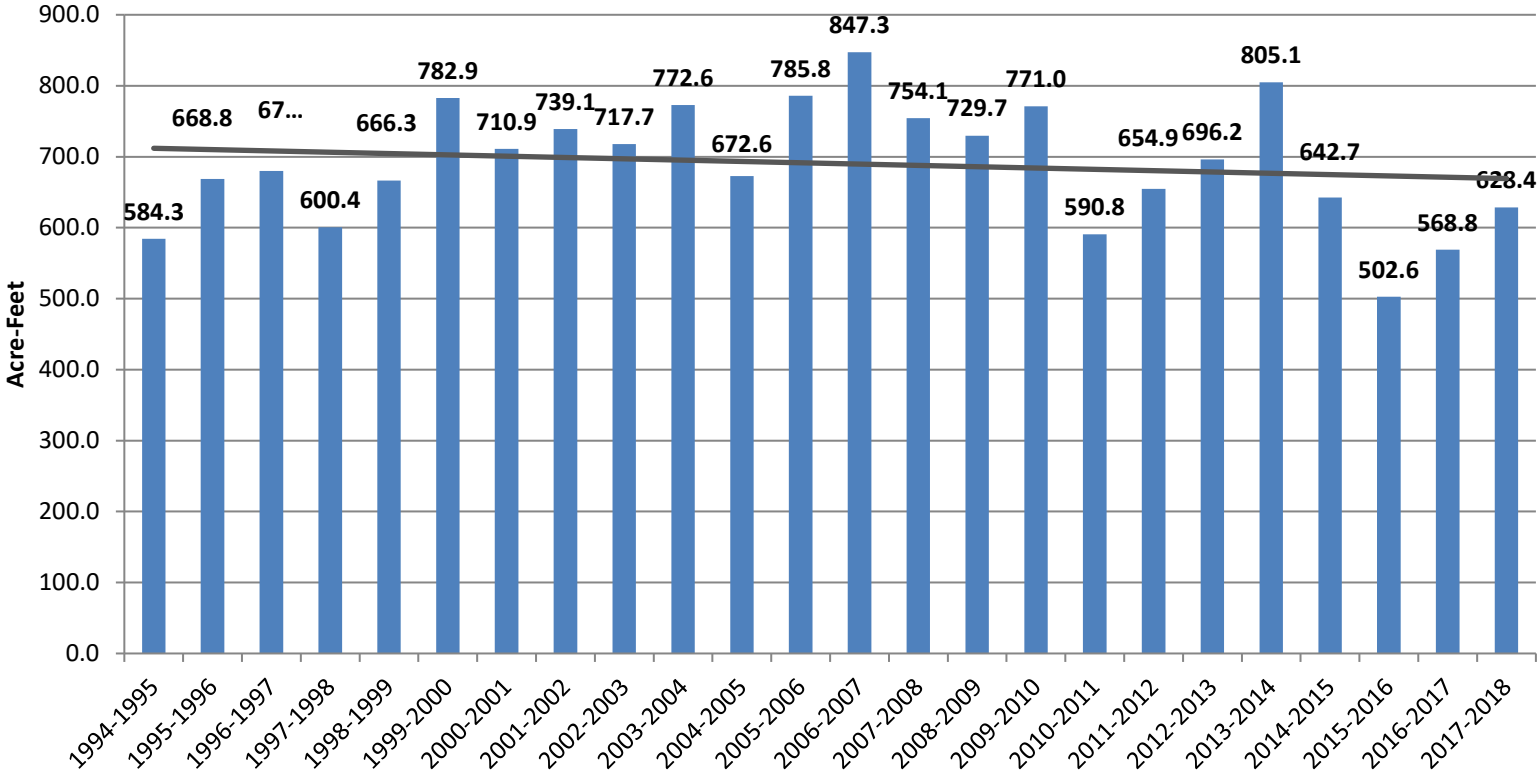
**Figure 2**  
**Total Production**  
**July through June**

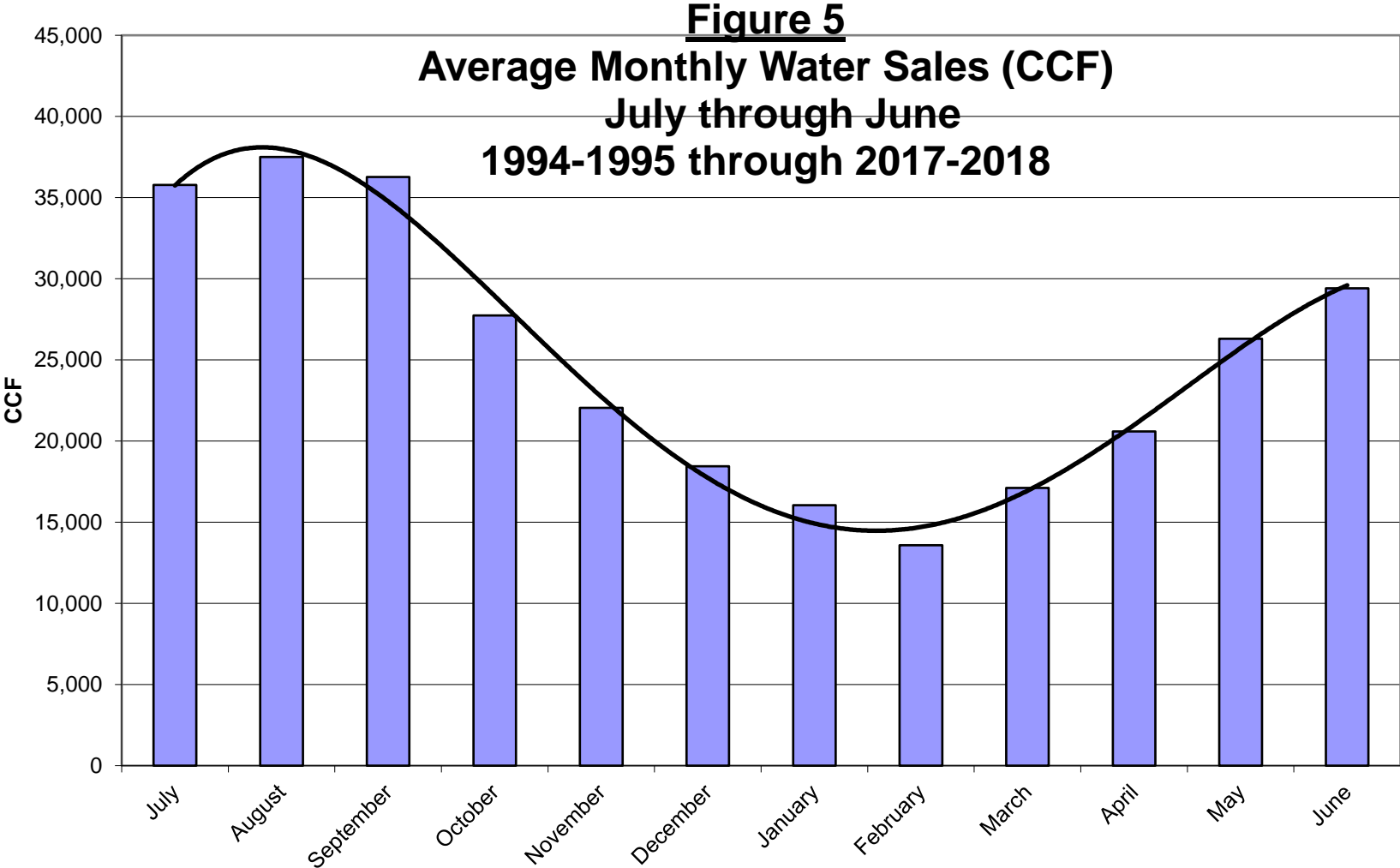


**Figure 3**  
**2017-2018 Production Sources**  
**July through June**

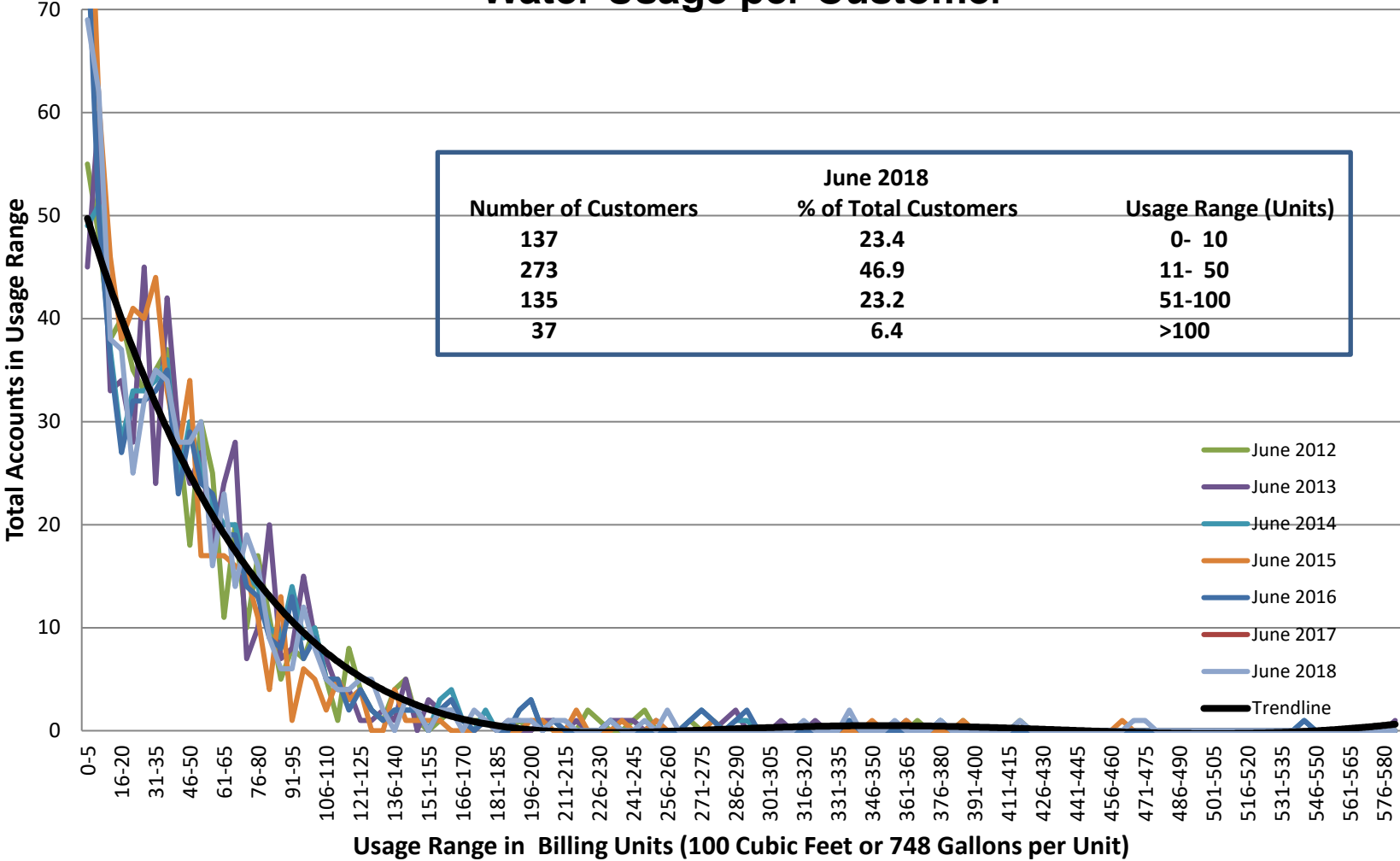


### Figure 4 Annual Water Sales July through June

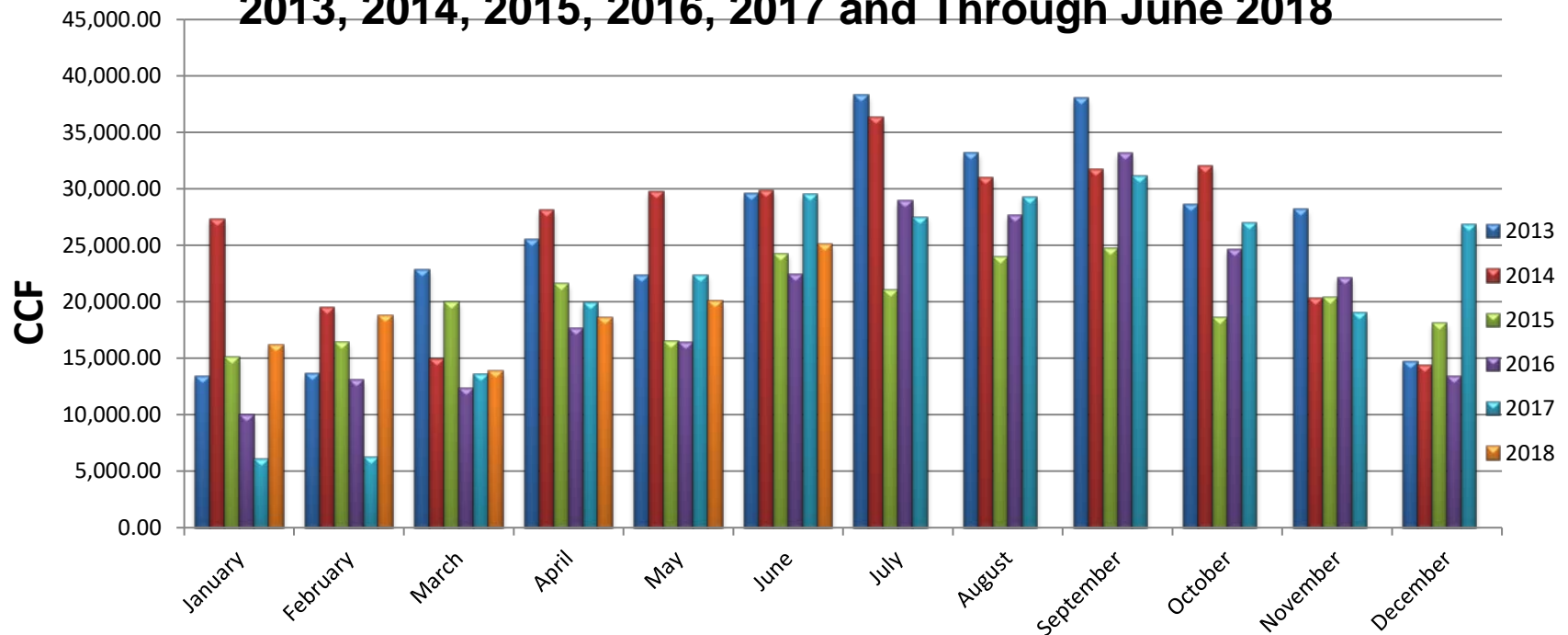




**Figure 6**  
**Water Usage per Customer**

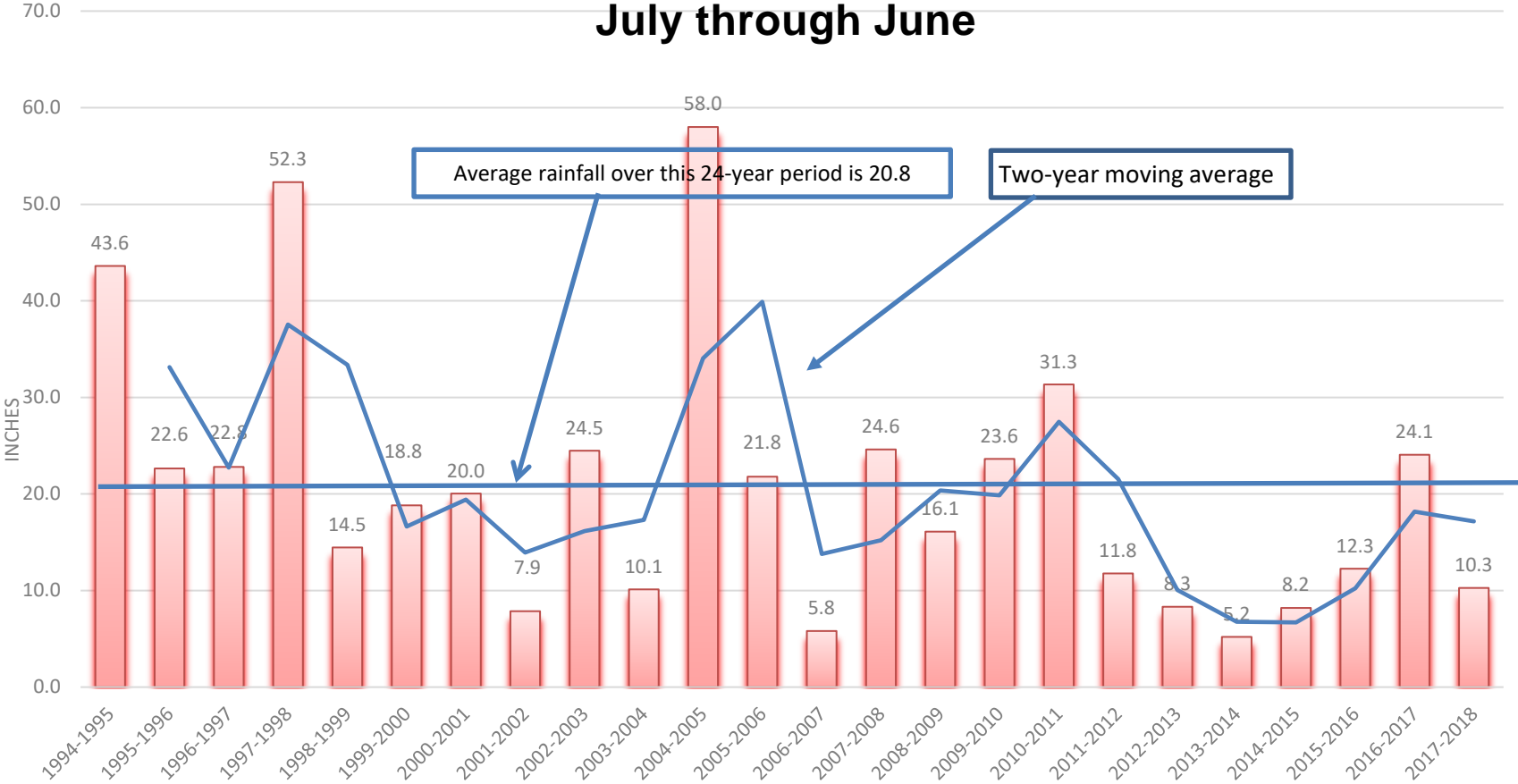


**Figure 7**  
**Total Monthly Water Sales**  
**2013, 2014, 2015, 2016, 2017 and Through June 2018**



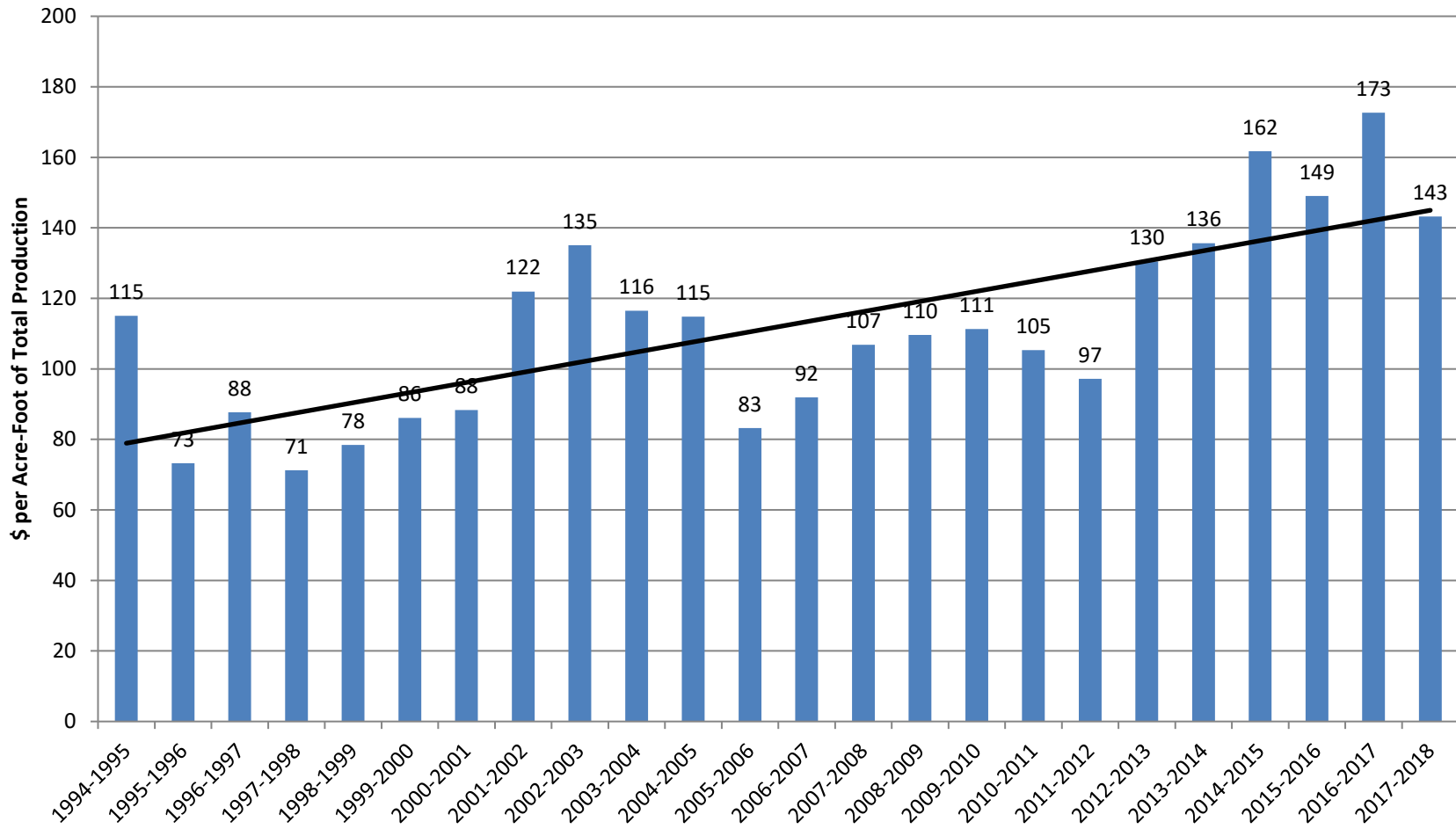
Monthly Unit Sales and Conservation Percentage as Compared to the Previous Year												
	2013	2014	%	2015	%	2016	%	2017	%	2018	%	2018 to 2013 Percentage
January	13,433.84	27,346.09	103.6%	15,139.14	-44.6%	9,976.03	-34.1%	6,087.44	-39.0%	16,209.81	166.3%	20.7%
February	13,647.60	19,531.19	43.1%	16,426.97	-15.9%	13,087.06	-20.3%	6,260.89	-52.2%	18,825.09	200.7%	37.9%
March	22,864.75	14,992.66	-34.4%	20,017.80	33.5%	12,329.17	-38.4%	13,607.67	10.4%	13,905.15	2.2%	-39.2%
April	25,580.22	28,144.68	10.0%	21,618.07	-23.2%	17,691.97	-18.2%	19,985.39	13.0%	18,676.28	-6.6%	-27.0%
May	22,344.18	29,731.87	33.1%	16,540.07	-44.4%	16,451.27	-0.5%	22,399.45	36.2%	20,065.74	-10.4%	-10.2%
June	29,605.73	29,878.35	0.9%	24,248.07	-18.8%	22,444.33	-7.4%	29,548.21	31.7%	25,095.13	-15.1%	-15.2%
July	38,314.11	36,366.62	-5.1%	21,045.33	-42.1%	28,938.82	37.5%	27,507.42	-4.9%			
August	33,199.17	31,022.84	-6.6%	24,001.09	-22.6%	27,685.37	15.4%	29,322.57	5.9%			
September	38,084.37	31,754.34	-16.6%	24,753.39	-22.0%	33,175.96	34.0%	31,192.59	-6.0%			
October	28,679.52	32,084.57	11.9%	18,597.68	-42.0%	24,632.13	32.4%	27,026.88	9.7%			
November	28,223.52	20,371.82	-27.8%	20,412.15	0.2%	22,153.05	8.5%	19,043.64	-14.0%			
December	14,695.84	14,383.35	-2.1%	18,124.47	26.0%	13,392.46	-26.1%	26,845.02	100.4%			
<b>Total</b>	<b>308,672.85</b>	<b>315,608.38</b>	<b>2.2%</b>	<b>240,924.23</b>	<b>-23.7%</b>	<b>241,957.62</b>	<b>0.4%</b>	<b>258,827.17</b>	<b>7.0%</b>	<b>112,777.20</b>		

### Figure 8 Rainfall July through June





**Figure 9**  
**Power Cost in Dollars per Acre-Foot of**  
**Total Production**



**Figure 10**  
**Long Term Storage**

