

Final
January 12, 2016

City of Santa Barbara
Water Supply Management Report
2014-2015 Water Year

Prepared by Water Resources Division, Public Works Department





City of Santa Barbara

Water Supply Management Report

2015 Water Year (October 1, 2014 – September 30, 2015)

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INTRODUCTION

The City of Santa Barbara operates the water utility to provide water for its citizens, certain out-of-City areas, and visitors. Santa Barbara is an arid area, so providing an adequate water supply requires careful management of water resources. The City has a diverse water supply including local reservoirs (Lake Cachuma and Gibraltar Reservoir), groundwater, State Water, desalination, and recycled water. The City also considers water conservation an important tool for balancing water supply and demand. The City's current Long-Term Water Supply Plan (LTWSP) was adopted by City Council on June 14, 2011.

This annual report summarizes the following information:

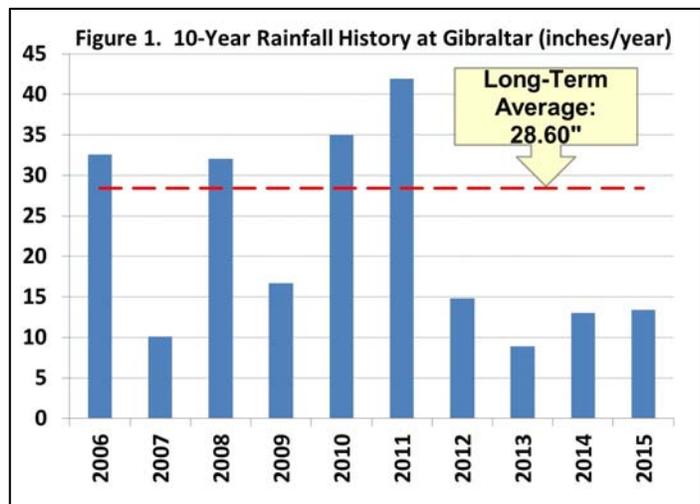
- The status of water supplies at the end of the water year (September 30, 2015)
- Drought outlook
- Water conservation and demand
- Major capital projects that affect the City's ability to provide safe clean water
- Significant issues that affect the security and reliability of the City's water supplies

Appendix A provides supplemental detail. Additional information about the City's water supply can be found on-line at: www.SantaBarbaraCA.gov/Water

WATER SUPPLIES

The City has developed five different water supplies: local surface water; local groundwater (which includes water that seeps into Mission Tunnel); State Water; desalinated seawater; and recycled water. Typically, most of the City's demand is met by local surface water reservoirs and recycled water; and augmented as necessary by local groundwater and State Water. The City's desalination facility has been off-line and is currently under construction for reactivation due to drought conditions.

The City's local surface water comes from Gibraltar Reservoir and Lake Cachuma, both of which are located in the upper Santa Ynez River watershed. The inflow to these reservoirs is rainwater, so rainfall data for Gibraltar Reservoir is important for water supply management purposes. Figure 1 shows rainfall for the past ten years as compared to the 50-year average.



Additional historic information is included in Appendix A. Runoff generated by average rainfall is generally enough to fill Gibraltar; however, it typically takes above-average rainfall to produce any significant inflow to Cachuma. Rainfall in the Santa Ynez River watershed during 2015, as measured at Gibraltar, was 53% below average, and the last four water years (Oct 2011-Sep 2015) have received the lowest cumulative rainfall in recorded history for a consecutive four-year period. Over the last four years, there has been very little inflow to Lake Cachuma. To enhance rainfall, the City participates in the cloud seeding program administered by the County of Santa Barbara. However, cloud seeding only works when there are storm events, of which we have seen very little in the last 4 years.

Table1, below, summarizes the status of the City’s various water supplies at year-end.

| Table 1. End of Year Status of City Water Supplies | |
|--|---|
| The Water Year runs from October 1 through September 30. All data is as of September 30, 2015. | |
| Lake Cachuma | Total Capacity: 184,121 AF (2014 survey for 750’ elevation) End of Year Storage: 32,989 AF (18% of Total Capacity) The City’s share of the Cachuma Project’s normal annual entitlement is 8,277 AF. Due to drought conditions, the entitlement in WY 2015 was reduced by 55% to 3,725 AF. Actual City use was 3,476 AF; remaining entitlement has been carried over to the current year. Total remaining carryover for the City as of September 30, 2015 was 4,394 AF. |
| Gibraltar Reservoir | Total Capacity: 5,246 AF (2013 survey) End of Year Storage: 467 AF (9% of Total Capacity) Gibraltar Reservoir typically fills and spills two out of every three years. Due to drought conditions, the last time Gibraltar spilled was May 2011. Deliveries in 2015 were 398 AF, below the projected long-term average of 4,330 AF under Pass Through Operations ¹ . |
| Mission Tunnel | Groundwater that seeps into Mission Tunnel is an important part of the City’s water supply, providing 728 AF in 2015, about 35% below the long-term average of 1,125 AFY ² . |
| Ground-water | Groundwater levels are lower than normal and are not expected to recover until drought conditions end and groundwater can be replenished during wetter years. Six out of nine potable production wells are currently available for use, with 2 more expected to be available in 2016. The City used 2,160 AF of groundwater in 2015. |
| State Water Project (SWP) | The City has a 3,300 AF “Table A” allotment (with drought buffer), subject to availability. In 2015, the State’s Table A allocation was 20%, or 660 AF for the City. In response to state-wide drought conditions, the City purchased supplemental water conveyed via the SWP. The Coastal Branch and Santa Ynez Extension of the SWP are in place to deliver the City’s water into Lake Cachuma. The City used a total 4,361 AF of supply via the SWP in 2015; of which, 611 AF was exchanged with Sana Ynez River Water Conservation District, Improvement District No. 1 pursuant to the Exchange Agreement. |
| Desal | The desalination plant has been offline but is permitted to provide up to 10,000 AFY of supply. In July 2015, the City awarded a design and construction contract for plant reactivation in order to provide 3,125 AFY of supply (construction anticipated to be complete by October 2016). |
| Recycled Water | The City’s recycled water system serves parks, schools, golf courses, other large landscaped areas, and some public restrooms. Demand from the system was 636 AF, or 6.3% of the total customer water demand, plus 160 AF of process water at El Estero Wastewater Treatment Plant (EEWTP). The total demand of 796 AF was lower than normal due to required demand cutbacks in response to drought conditions, since potable water has been used in recent years for blending to meet water quality standards. In 2015, the recycled system demands were supplied by 673 AF of potable blend water and 123 AF of non-potable groundwater. Construction of an upgraded tertiary filter system was completed in October 2015 to eliminate or significantly reduce the need for potable water blending going forward. |

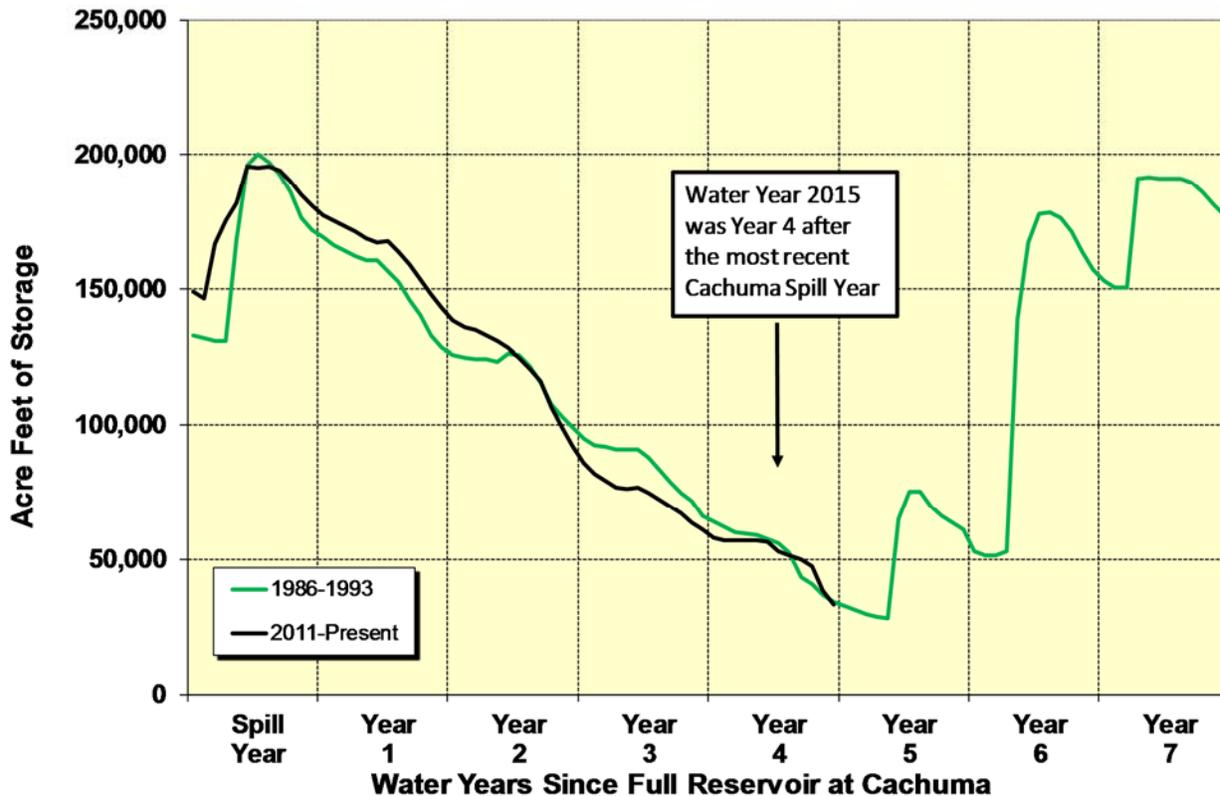
¹ Stetson, 2013. *Hydrologic Analysis of the Pass Through Operations at Gibraltar Reservoir*. Prepared for the city of Santa Barbara. July 2013.

² SWRCB et al., 2011. *Final Environmental Impact Report for the Cachuma Project Water Rights Hearings*. Prepared for the State Water Resources Control Board. December 2011.

DROUGHT OUTLOOK

Because the City depends heavily on local surface water, our water supply reliability is vulnerable to prolonged drought. Lake Cachuma is our primary source of surface water and its storage level is the most important indicator of potential near-term drought impacts. Figure 3 shows a recent history of storage levels at Lake Cachuma. The severe drought period of 1987-1992 is also shown for comparison. Cachuma members normally begin to take voluntary reductions in deliveries when the reservoir storage drops below 100,000 AF as a way of stretching supplies in case drought continues. At the end of 2014, the City used 61% of its entitlement, and carried over the remainder to 2015. In 2015 and 2016, Cachuma allocations were reduced to 45% and 0% of normal entitlement, respectively. Due to these historic low allocations, all of the City's remaining Cachuma water currently available was carried over from previous years.

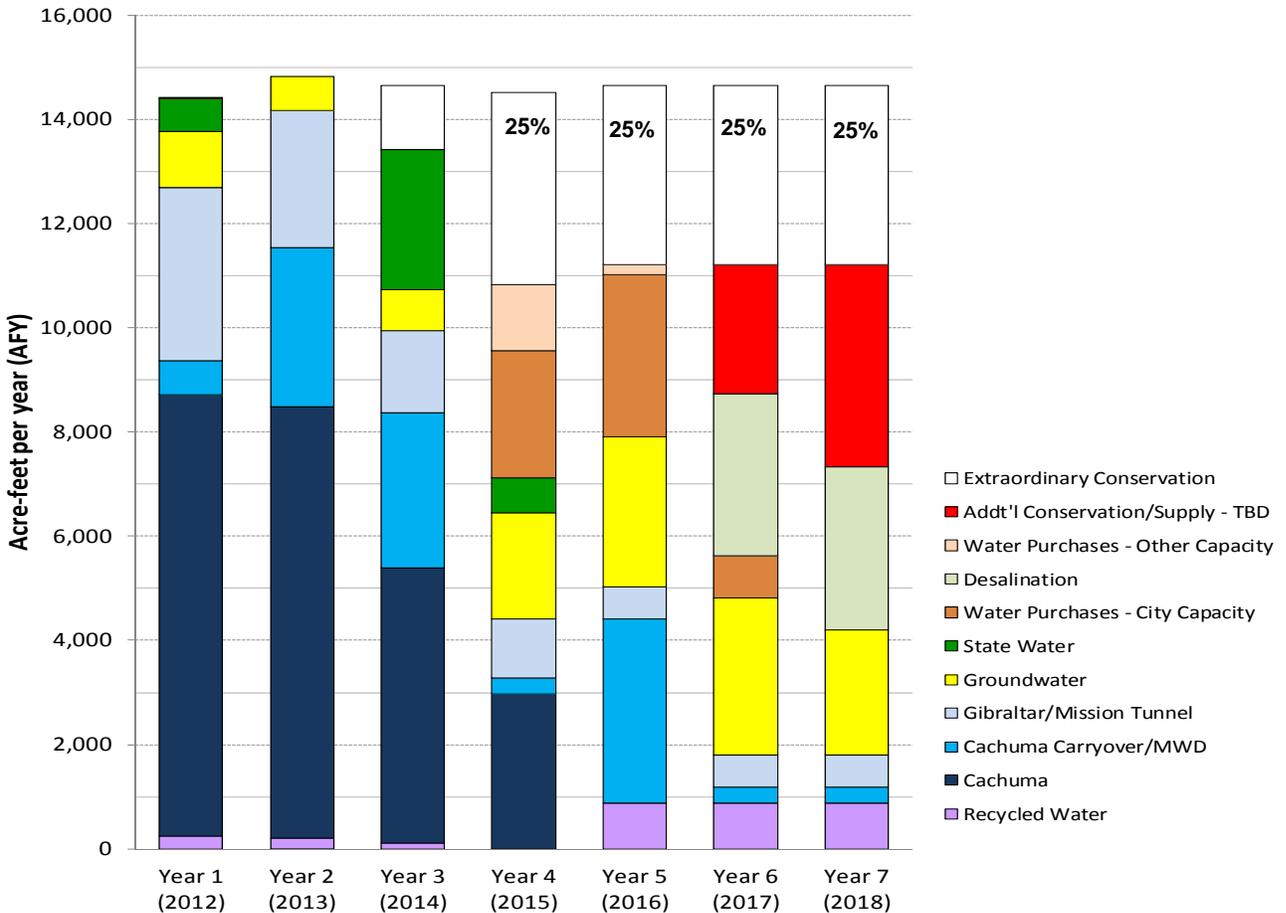
Figure 3.
Recent History of Lake Cachuma Storage Levels (AF)
With 1987-1994 Period Shown for Comparison



Under the adopted 2011 LTWSP, the City's planned water supply meets 100% of unrestricted customer demand in most years and no less than 85% of demand during the latter portion of a 6-year period of below average rainfall, which defines our "critical drought period." When rainfall is below average, there is limited inflow to Lake Cachuma and the storage level continues to drop. Our management plan assumes the first year after a spill at Cachuma may be the first year of a 6-year critical drought period.

Figure 4 shows a projection of the current water supply strategy over a 6-year period. Since 2011 was the last spill at Lake Cachuma, 2015 was Year 4 of a critical drought period, and we are now in Year 5. The 2011 LTWSP drought water supply strategy is based on available supply during the 1947-52 critical drought period, which was considered the “design drought” for planning purposes. Because the current historic drought has been worse than the “design drought”, the current drought supply strategy has been adapted to reflect a more conservative assumption of 1) no additional inflows to Gibraltar or Cachuma; and 2) no additional Table A allocation of State Water. These assumptions are based on an extended duration of recent drought conditions.

**Figure 4.
Current Drought Water Supply Strategy**



The supply strategy reflects the management policies adopted in the 2011 LTWSP; however, the planned demand reduction has been increased to 25%, meaning supplies are targeted to meet 75% of unrestricted customer demand in later years of the drought. This is consistent with Governor Brown’s January 2014 declaration of drought state of emergency and April 2015 mandate for a State-wide 25% demand reduction. The level of required demand reduction will be re-assessed in spring 2016 once more information is known regarding water supplies after the rainy season.

The City Council declared a Stage One Drought condition on February 11, 2014, Stage Two Drought condition on May 20, 2014, and Stage Three Drought condition on May 5, 2015. The City’s adopted 2011 Water Shortage Contingency Plan outlines the stages of drought and actions to achieve planned demand reductions. A Stage 3 Drought condition is the most critical

stage. Under the current Stage 3 Drought condition, the City Council adopted regulations for drought water use restrictions (Resolution 15-036) and adopted drought based water rates. In addition, public outreach and messaging has increased to communicate the status of drought conditions and need for extraordinary water conservation.

MONITORING OF WATER SUPPLY AND DEMAND

Water demand has historically been measured by total water supply production, which is the total amount of supply from all sources to serve demands on the potable and recycled distribution systems. New State requirements for water conservation have established a “20% by 2020” target based on gallons per capita per day (GPCD) for potable water use. Since the supply production numbers provide historical context on our demand, and per capita water use is the new mandatory metric, both are being tracked. Figure 2.A illustrates the historical tracking of demands based on total water supply produced. Total water production was 10,171 AF for 2015 (excluding water produced for El Estero process demands). Figure 2B shows monthly potable water GPCD water use values, as well as a moving 12-month GPCD average. Usage for 2015 was 90 GPCD. In both charts, demands show a decline in 2014 and 2015 in response to the Stage 2 and 3 drought conditions requiring mandatory reductions in water use.

Figure 2.A.

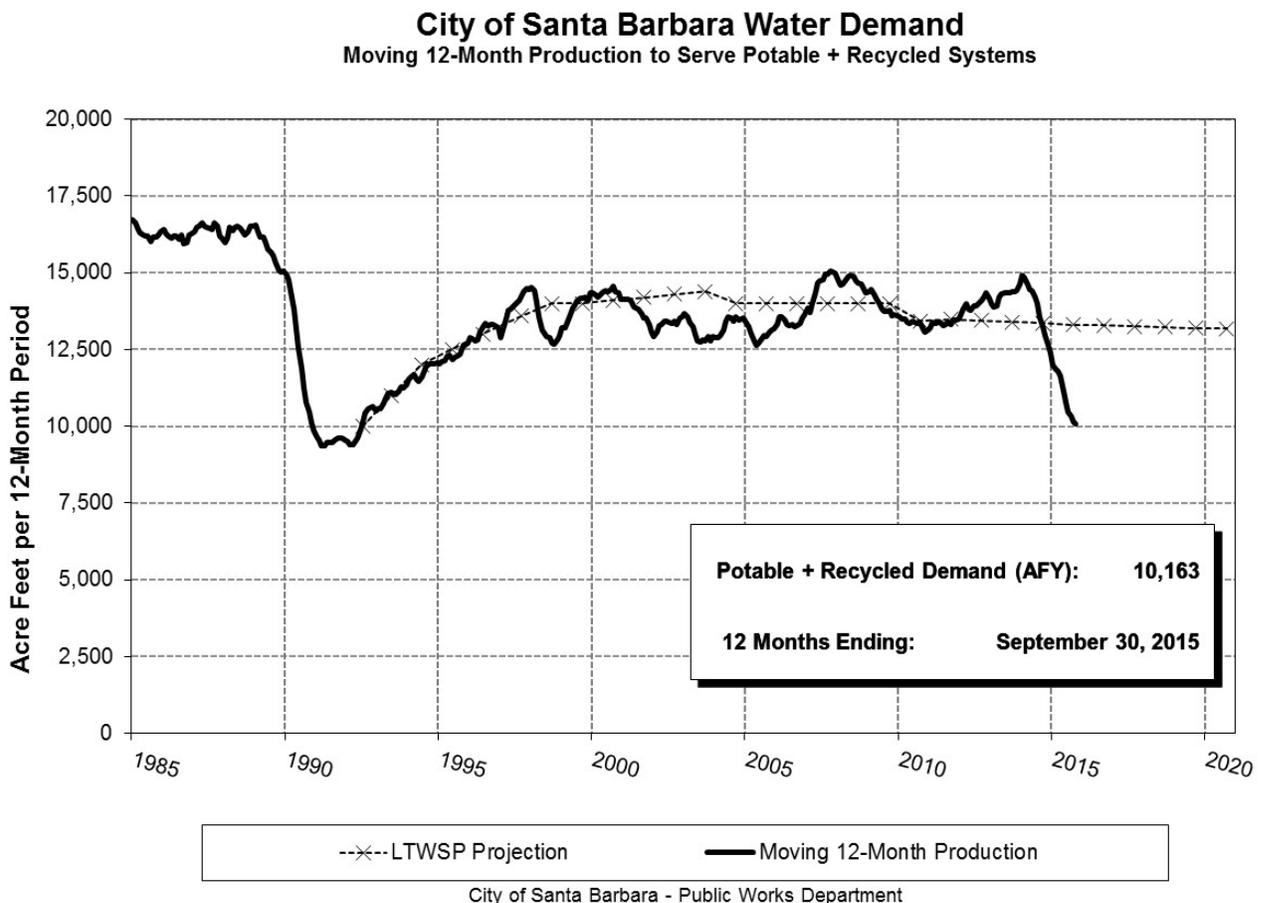
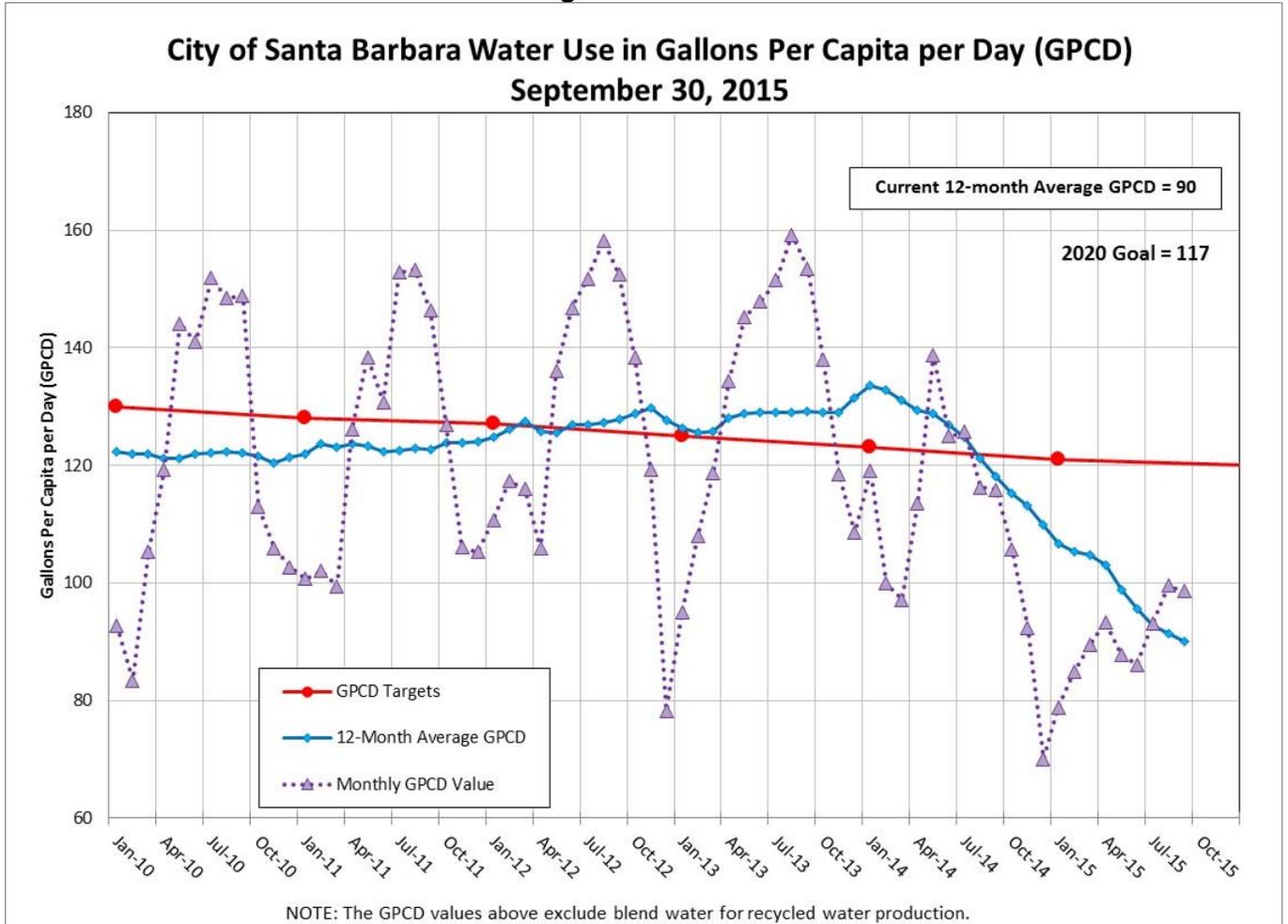


Figure 2.B.



CITY WATER CONSERVATION PROGRAM

In accordance with the LTWSP, the Water Conservation Program is operated to minimize the use of potable water supplies, meet the requirements of the California Urban Water Conservation Council Best Management Practices, and achieve compliance with the State's 20% x 2020 per capita water use reductions. Water conservation measures are evaluated for cost effectiveness based on the avoided cost of additional water supplies. Highlights of the City's Water Conservation Program include the following activities:

- **Free Water Checkups:** Checkups are provided to all water customers to assist in evaluating water usage indoor and out and to offer efficiency recommendations. 1,628 free water checkups were provided in Water Year 2015.
- **Landscape Training:** Lectures and workshops geared toward homeowners and landscape professionals; many in conjunction with horticultural organizations and local irrigation stores. Highlights from Water Year 2015 include: 4 landscape transformation lectures, 10 hands-on workshops, a Drought Symposium with the Master Gardeners, and a Water Conservation Summit with Assemblymember Das Williams.

- Smart Landscape Rebate Program: 50% rebate on eligible, pre-approved material costs for landscape water efficiency. 601 pre-inspections were completed and 466 rebates were issued in Water Year 2015.
- Marketing and Outreach: Continuing to implement the comprehensive South Coast Water Conservation Marketing Plan and the Drought Response Marketing Plan. Highlights from Water Year 2015 include: increased training for landscape professionals, targeted advertising with specific calls to action, tailoring the website to drought response, and providing guest speakers to neighborhood and community organizations.
- Water Education Program: Free in-class presentations, tours to the El Estero Wastewater Treatment Plant, and school assemblies with music to highlight where our water comes from and how to conserve it. 4,462 students were reached in Water Year 2015.
- Additional Programs in Water Year 2015: 56 high efficiency washing machine rebates; 2,430 free sprinkler nozzles redeemed; and 414 free mulch delivery participants.

Workload for the Water Conservation Program continues to remain high as a result of the drought. A comparison of Water Year 2015 to Water Year 2014 (both during drought) conservation activities shows an increase in demand for water conservation services and programs, with an average percent increase in customer services of 69% (see table below for a summary of certain programs). Note that a comparison of Water Year 2014 to Water Year 2013 (pre-drought) showed a dramatic increase in customer services of 1300%.

| Item | Oct 2013 – Sept 2014 | Oct 2014 – Sept 2015 | Percent Increase |
|--|----------------------|----------------------|------------------|
| Water Checkups | 1,396 | 1,628 | 16% |
| Smart Landscape Rebate Pre-Inspections | 271 | 601 | 121% |
| Free Mulch Deliveries | 213 | 414 | 94% |
| Water Waste Complaints | 810 | 1,148 | 42% |

CAPITAL PROJECTS

Staff continues work on a number of projects to improve the reliability and maintain quality of City water supplies:

- **Cachuma Emergency Pump Project:** Cachuma Operation and Maintenance Board was the lead agency responsible for construction of the pumping project on behalf of the South Coast Cachuma Member Units. Due to severe drought conditions, the gravity fed conveyance system to receive water from Lake Cachuma was anticipated to no longer be operable as the lake level fell below the intake portal to the South Coast Conduit. The Cachuma Emergency Pump Project (EPP) was necessary to allow for continued use of allocated Cachuma water and conveyance of State Water (via Cachuma). This project

consisted of a pumping system to convey water from low lake levels to the intake portal of the South Coast Conduit, including installation of 3,600 feet of pipeline and placement of seven pumps on a floating barge. Additionally, sediment blocking the lowest intake portal was dredged to allow for the intake of water at lower elevations. The Cachuma EPP has been in operation since August 2015, and COMB continues to monitor lake level projections to assess possible relocation of the pumping barge to a deeper part of the lake, should that be necessary due to continued drought conditions. Without substantial inflows to Cachuma, latest projections show the need to relocate the barge by June 2015.

- **Recycled Water Treatment Plant Rehabilitation:** On November 2, 2015 the newly rehabilitated recycled water treatment facility went online. This project rehabilitated the original treatment plant that was built in 1989. The goal of this project was to eliminate or significantly reduce the need to use potable water for blending to meet water quality regulations and to position the plant to meet more stringent water quality requirements in the future.
- **Groundwater Well Projects:** Groundwater is an important part of the City's water supply to meet peak demands, provide back-up for depleted surface supplies during drought, and provide an emergency water supply in the event of catastrophic supply interruptions, such as tunnel failure. The following is a summary of well status and work currently underway:

Storage Unit #1 Basin:

- *Corporation Yard:* Online.
- *Alameda:* Online.
- *High School:* Offline due to water quality issues. Piping conveyance to Ortega Groundwater Treatment Plant is currently complete. Construction of wellhead improvements forthcoming. Well expected to be online in Spring 2016.
- *Vera Cruz:* Online.
- *City Hall:* Online.
- *Ortega:* Offline due to need for major rehabilitation or replacement.

Foothill Basin:

- *San Roque:* Online.
- *Hope:* Offline due to pump failure. Well rehabilitation and pump replacement underway. Well expected to be online in April 2016.
- *Los Robles:* Online.

Storage Unit #3:

- *Valle Verde Well:* Non-potable well utilized to augment supply to the recycled water system.

- **Charles E. Meyer Desalination Facility:** Due to the severity of the present statewide drought, the City is reactivating the Charles E. Meyer desalination facility. In July 2015, City Council authorized execution of a contract for design and construction services for reactivating the desalination facility. The initial construction phase currently underway will provide up to 3,125 AFY of supply. Construction is anticipated to be complete by October 2016. Per the adopted 2011 LTWSP, the primary role of the desalination facility is a drought relief measure. With the investment now being made to reactivate this facility, the long-term role of this supply will need to be revisited as part of a future update to the LTWSP.

WATER SUPPLY ISSUES

There are a number of significant issues related to the City's water supplies, discussed briefly below.

Long-Term Water Supply Plan: The City's 2011 Long-Term Water Supply Plan (LTWSP) was the product of numerous technical studies and over a year-long collaboration between staff and the Water Commission to appropriately quantify our water supplies and develop policies to guide our water supply management over the next twenty years. The plan is available to the public on the City's website at the following address:

www.SantaBarbaraCA.gov/Drought

The next LTWSP Update is anticipated to be initiated in 2017, once we know more information regarding the duration of the current historic drought and its basis for a new "design drought".

The LTWSP is the basis for the City's State-mandated Urban Water Management Plan (UWMP), which is required to be updated every five years. Compliance with the State's Urban Water Management Planning Act maintains the City's eligibility for State grants and loans. The next UWMP Update is due to the State by July 2016. At this time, the policies outlined in the City's 2011 LTWSP will remain the basis for the 2016 UWMP Update. A future LTWSP Update would be incorporated into the next round of UWMP updates (occurring every 5 years).

Recycled Water:

The significant issues associated with recycled water are as follows:

- **Potable Reuse Feasibility Study:** As directed by Council and required by the City's amended National Pollutant Discharge Elimination System (NPDES) permit, staff is currently working to evaluate the feasibility of alternatives to the screened ocean intake for the desalination facility, including subsurface intakes and potable reuse. Potable reuse refers to advanced treatment (purification) of recycled water for drinking water purposes. There are two concepts for potable reuse: indirect potable reuse (IPR) and direct potable reuse (DPR). Current State regulations allow for IPR, in which purified recycled water is held within an environmental storage buffer, such as a groundwater basin, for a certain period of time prior to use for drinking water supply. The purpose of the environmental storage buffer is to provide sufficient response time should there be a failure in the recycled water treatment system. While current regulations don't currently allow DPR, the concept proposes to use an engineered buffer in lieu of an environmental buffer. In some by not all cases, DPR has the potential to increase supply yield and/or reduce facility costs. The State is currently working to develop guidelines for DPR, which will provide a framework for future regulations. The State guidelines for DPR are scheduled to be released by December 2016. Staff is tracking the State's progress and will incorporate most recent information in to the City's feasibility analysis of potable reuse alternatives.
- **Expansion of Non-potable Reuse:** In accordance with the LTWSP, non-potable recycled water use by City customers will be expanded by 300 AFY in the long term, for a total of approximately 1,100 AFY of customer demand, not including the existing process water demand at EEWTP. Additional customers are connected to the system over time, and additional pipeline extensions are required in order to achieve the

additional 300 AFY of demand within the City's service area. While the recycled water treatment plant was under construction and recycled water was not being produced, the City was not pursuing additional customer connections. Now that the plant is back online, policies regarding connection of additional customers will be revisited with consideration given to the current potable reuse feasibility study currently underway.

- **Potable Water Blending:** The City completed an upgrade to its recycled water treatment plant in October 2015, which will significantly reduce or eliminate the need to blend potable water supply into the existing non-potable recycled water system. Now that recycled water supply is being produced, our recycled water customers are no longer subject to Stage Three Drought Regulations for water use restrictions.

Cachuma Project State Water Rights Hearing: The Bureau of Reclamation (Reclamation) and the members of the Cachuma Project continue to await a decision on Cachuma Project water rights by the State Water Resources Control Board (SWRCB). The decision will reflect SWRCB's determination on a long-standing review of the Cachuma Project operations in terms of its effects on downstream water users and on public trust resources (steelhead trout). A December 2002 settlement agreement resolved a number of issues among several of the participants in the hearing, and is under consideration by the SWRCB. The Final EIR for the decision has been officially entered into the hearing record. The draft water rights order for the Cachuma Project remains a high priority water rights issue for the SWRCB, although processing of water rights orders by the SWRCB has slowed due to drought workload. The SWRCB has not yet rescheduled a tentative date for release of the draft order. The SWRCB decision is important to the City because it could affect the amount of water available from Lake Cachuma for water supply purposes.

Cachuma Project Biological Opinion: In 2000, a Biological Opinion was issued by the National Marine Fisheries Service (NMFS) for Reclamation's operation and maintenance of Bradbury Dam (the Cachuma Project). NMFS is the agency that oversees protection of Southern California steelhead. The BO addresses the effects of the proposed Cachuma Project operations on steelhead and its designated critical habitat in accordance with Section 7 of the Endangered Species Act of 1973. Reclamation and the Cachuma Project Water Agencies have developed the proposed revisions to the Project operations since 1993 to improve habitat conditions for steelhead trout while still maintaining water supplies. In 2014, the NMFS formally initiated a reconsultation of the Biological Opinion. A draft BO revision is anticipated in January 2016. Similar to the State water rights decision, the revised BO is important because it could affect Cachuma Project operations and the amount of water available for water supply purposes.

Gibraltar Pass Through Operations: The 2007 Zaca Fire burned approximately 60% of the Gibraltar Reservoir watershed, which normally contributes up to 35% of the City's water supply. On top of historical siltation, the additional sediment load resulting from the fire reduced the reservoir's storage capacity by 1,535 AF, leaving a current storage volume of about 5,250 AF. In 1989, the City entered into the Upper Santa Ynez River Operations Agreement (the "Pass Through Agreement") with other Santa Ynez River water agencies. The City agreed to defer its planned enlargement of Gibraltar Reservoir in exchange for provisions that would allow the City to "pass through" a portion of its Gibraltar water to Lake Cachuma for storage and delivery through Cachuma Project facilities. Due to the Zaca Fire effects, the City has elected to commence this phase of operations and is working with the Reclamation to negotiate a "Warren Act" contract as the preferred approach of accounting for the City's Pass Through water. In order to execute any Warren Act contract, Reclamation must prepare an environmental assessment under the National Environmental Policy Act

(NEPA). Computer modeling work to assess the effects of Pass Through operations is now complete and is the basis for the environmental review currently underway. In anticipation of a potential Gibraltar spill event this winter, staff is also considering alternative accounting approaches should the Warren Act contract be further delayed. The Pass Through operations will allow the City to stabilize its Gibraltar deliveries as the reservoir continues to fill with sediment. An updated assessment of sediment management options is also planned, per the LTWSP.

State Water Project/Delta Issues: Significant issues include:

- **Delta Issues:** The Sacramento-San Joaquin Delta is a critical conveyance link for all water moved to the south by the State Water Project (SWP). However, the reliability of State Water supply is at risk due to drought, environmental restrictions, and seismic events. The Bay Delta Conservation Plan (BDCP) proposed a solution to balance coequal goals of water supply and environmental benefits. A Draft Environmental Impact Report (EIR) and Draft Environmental Impact Statement (EIS) for the BDCP were made available for public review from December 2013 to July 2014.

In April 2015, State and Federal agencies announced a new alternative which would replace the BDCP as the State's proposed project. The new alternative reflects the state's proposal to separate the conveyance facility and habitat restoration measures into two separate efforts: California WaterFix and California EcoRestore. These two efforts are a direct reflection of public comments on the BDCP EIR/EIS and fulfill the requirement of the 2009 Delta Reform Act to meet co-equal goals.

A Recirculated Draft Environmental Impact Report (RDEIR)/Supplemental Draft Environmental Impact Statement (SDEIS) that incorporates the California WaterFix alternative were made available for public review and comment from July 2015 through October 2015. No final decisions have been made regarding California WaterFix or in selecting an alternative; those decisions will only occur after the completion of the CEQA and NEPA processes.

- **CCWA Contract Extension:** The City receives State Water through the Central Coast Water Authority (CCWA), a regional wholesale water provider for areas within Santa Barbara County and San Luis Obispo County. Santa Barbara County's contract for State Water is set to expire in 2035. CCWA is currently negotiating a contract extension with DWR as well as other contract amendments.
- **State Water Storage Programs:** The City relies on State Water to a limited extent, but it can be an important source of water for banking as a way of increasing the reliability of our water supply. The City currently has State Water stored in groundwater banking programs in the western San Joaquin Valley. While this water has not been available for delivery in the current drought, it will help with meeting requirements of some of the City's agreements for supplemental water purchases that require water be returned in the future. The City will continue to look for groundwater banking opportunities in order to improve reliability and avoid loss of State Water during future San Luis Reservoir spill events.

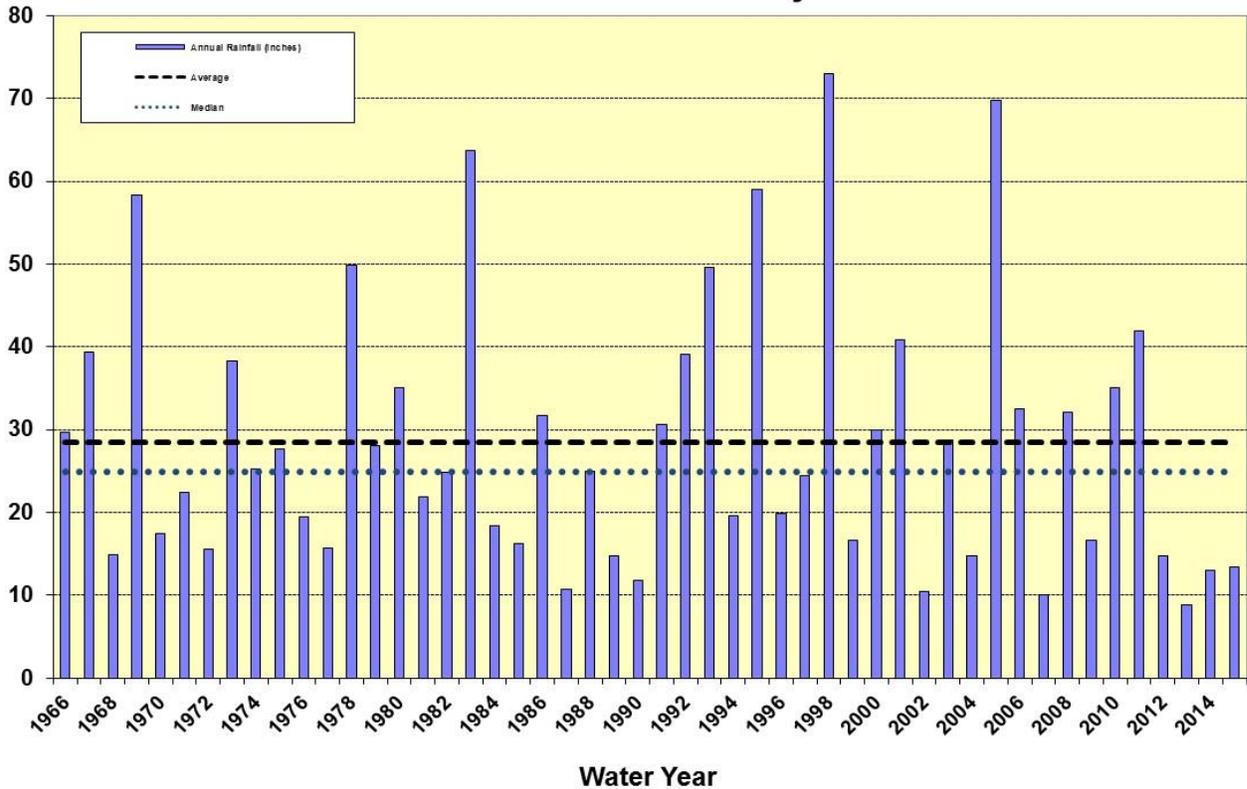
Groundwater Management Plan: The City has relatively small groundwater storage, but it plays an important part in meeting demand during drought periods. It is also our only currently active potable water supply that is truly local. The latter is important in the event

of a catastrophic interruption of water supplies from one or both tunnels through the Santa Ynez Mountains. During 2013, staff continued efforts to develop a formal Groundwater Management Plan to ensure that groundwater resources are managed so as to be available to contribute to the City's water supply during normal years, drought periods, and emergency conditions. Due to drought workload and competing priorities since 2013, development of the formalized GMP was put on hold. However, this effort is expected to be ramped up again and will address the State of California's newly adopted Sustainable Groundwater Act of 2014. For State-ranked priority basins, the act requires the formation of a local groundwater sustainability agency that must assess conditions in their local water basins and adopt locally-based management plans. The Sustainable Groundwater Management Act provides local GSAs with tools and authority to 1) require registration of groundwater wells, 2) measure and manage extractions, 3) require reports and assess fees, and 4) request revisions of basin boundaries, including establishment of new sub-basins.

Appendix A – Supplemental Water Supply Information

Long-Term Rainfall Data

Rainfall at Gibraltar Reservoir by Water Year



Groundwater Balance

Project conditions of the State Water Project (SWP) require the City to use SWP water to offset any demonstrated groundwater basin overdraft. Under the LTWSP, the City uses groundwater conjunctively with surface supplies, such that significant groundwater use only occurs when surface supplies are reduced. Basins are rested following periods of heavy pumping to allow water levels to recover.

The estimated groundwater yield over a 5-year drought period is based on previous numerical groundwater modeling performed by the United States Geological Survey. As summarized in Table A-1, the estimated yield exceeds actual pumping over the last 5 years, and the City’s primary groundwater basins are in long-term balance with no overdraft projected in the next year.

Table A-1. Groundwater Balance

| | |
|--|----------|
| Storage Unit 1 Basin | |
| Estimated 5-Year Drought Storage Yield for City Use ¹ : | 7,418 AF |
| City Groundwater Production last 5 years (October 2010 – September 2015): | 2,131 AF |
| Remaining 5-Year Drought Storage Yield for City Use: | 5,287 AF |
| Projected City Groundwater Production for 2016: | 2,260 AF |
| Foothill Basin | |
| Estimated 5-Year Drought Storage Yield for City Use ¹ : | 5,563 AF |
| City Groundwater Production last 5 years (October 2010 – September 2015): | 2,930 AF |
| Remaining 5-Year Drought Storage Yield for City Use: | 2,633 AF |
| Projected City Groundwater Production for 2016: | 620 AF |
| ¹ Nishikawa, 1998. USGS Report 97-4246A <i>Simulation/Optimization Model for Water Resources Management, Santa Barbara, CA, Tables A-14 and A-15.</i> | |

The City used non-potable groundwater from Valle Verde well located in Storage Unit III to augment supply to the recycled system while the recycled water treatment plant upgrades were under construction. The City pumped a total of 123 AF from Valle Verde well during January 2015-October 2015, which is less than the historical maximum annual pumping by the City of 216 AF in 1990. The estimated average annual Storage Unit III yield available for use by the City is approximately 100 AFY. Valle Verde well is currently offline to rest Storage Unit III now that the recycled water supply is available, and long-term use of Valle Verde well is being evaluated.

Projection of Supply Availability

Table A-2 summarizes the City's water supply sources and fulfills a requirement of the project conditions for the SWP. The Water Year (WY) 2015-2016 Supply Plan reflects a projected total demand of 11,286 AF including ~180 AF for El Estero process water, which reflects a 25% reduction in potable water demand as required by the current Stage Three Drought condition.

Table A-2. Sources of Supply (AF)

| Source of Supply | WY 2015 Original Supply Plan | WY 2015 Actual | WY 2016 Supply Plan (Projected) |
|--|---|---------------------------|--|
| Gibraltar Reservoir | 500 | 398 | 0 |
| Cachuma Project | 5,923 | 2,851 | 3,646 |
| Mission Tunnel | 531 | 728 | 615 |
| Devil's Canyon | 0 | 0 | 0 |
| Juncal Res. (300 AF from MWD) | (w/ Cachuma) | (w/ Cachuma) | (w/ Cachuma) |
| State Water /Water Purchases | 2,200 | 4,361 | 3,303 |
| Groundwater (potable) ^A | 2,220 | 2,036 | 2,882 |
| Desalination | 0 | 0 | 0 |
| Recycled Water | 306 | 0 | 840 |
| Groundwater (non-potable) ^A | 0 | 123 | 0 |
| Net Other Supplies ^B | (na) | -166 | (na) |
| Total Production: | 11,680 | 10,331 | 11,286 |
| Total Demand: | 11,680^C | 10,331^D | 11,286 |

^A The City uses potable groundwater supply from Storage Unit I and Foothill, and non-potable groundwater supply from Storage Unit III.

^B Represents miscellaneous production sources (positive values) and water used from the distribution system for purposes such as transfers to adjacent water purveyors or groundwater recharge.

^C Planned demands include ~240 AFY for El Estero process water.

^D Actual 2015 demand includes 9,535 AFY potable demand, 636 AFY recycled demand, and 160 AFY El Estero process demand.