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**AGENDA
MUNICIPAL SERVICES COMMITTEE
June 13, 2017**

MEMBERS

Margaret McAustin, Chair, District 2
Terry Tornek, Mayor
Tyron Hampton, District 1
Andy Wilson, District 7

STAFF

Gurcharan Bawa, General Manager
Valerie Flores, Recording Secretary

MISSION STATEMENT

The City of Pasadena is dedicated to delivering exemplary municipal services, responsive to our entire community and consistent with our history, culture and unique character.

Public meeting begins at 4:00 p.m.

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REGULAR MEETING OF THE
MUNICIPAL SERVICES COMMITTEE
Tuesday, June 13, 2017, 4:00 p.m.
100 North Garfield Avenue, Pasadena, Council Chambers

AGENDA

1. **CALL TO ORDER/ROLL CALL**
2. **PUBLIC COMMENTS ON MATTERS NOT ON THE AGENDA**
3. **OLD BUSINESS**
 - A. Water Integrated Resource Plan Status Update*
4. **INFORMATION ITEMS**
 - A. Update from MWD Board Member Cynthia Kurtz
 - B. Water Quality Update*
5. **ADJOURNMENT**

*Attachment

NEXT MEETING

June 27, 2017 – scheduled to be cancelled

Margaret McAustin, Chair
Municipal Service Committee

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Susana Castro

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3.A



PASADENA WATER AND POWER

MEMORANDUM

May 23, 2017

To: Municipal Services Committee

From: Gurcharan S. Bawa 
General Manager

Subject: Water Integrated Resource Plan and Water Supply Update

This item is for information only.

It has been six years since the City Council adopted the Pasadena Water and Power ("PWP") Water Integrated Resources Plan ("WIRP"). This memo provides an informational update on the status of the projects that were approved by the City Council. It also discusses the timing for a formal update to the plan and when this will be of most benefit.

BACKGROUND

The goals of the WIRP are to address water supply challenges, establish a vision for a water supply portfolio, and provide policy guidance for evaluating investments for the City's water resources and conservation programs. The City Council adopted the WIRP on January 31, 2011.

The WIRP evaluated over fifty water supply and conservation options. A water resource portfolio was recommended and it is called the Hybrid 1 Portfolio ("Hybrid 1"). When implemented over a 25-year horizon, Hybrid 1 proposed a sustainable balance between environmental stewardship, supply reliability, affordability, and efficient water use while maintaining Pasadena's quality of life. This memo provides the status of the conservation goals and six projects included in the Hybrid 1 portfolio. Additionally, PWP initiated the Arroyo Seco Canyon Project to enhance stormwater capture, but this project was not included in Hybrid 1.

The WIRP is used as a foundational policy and guidance document to support the development of PWP's Urban Water Management Plan ("UWMP"). The UWMP is a water planning document that water agencies are required to complete and file with the State once every five years.

Status Update of Projects

1. Aggressive Water Conservation

Goal: Reduce demands by 9,000 acre-feet per year (“AFY”).

Status: Achieved. Accomplished 14,300 AF reduced demand as of FY 2016.

PWP engages in education and outreach to promote its conservation programs and provides rebates to incentivize the use of water conserving devices.

Examples of conservation programs and education outreach include workshops on efficient irrigation, turf removal, drought tolerant gardens, and landscape audits for high water users. Rebates for water conserving devices include low flush urinals, high efficiency clothes washers, and weather-based irrigation controllers.

An estimated 2,240 AF per year of quantifiable savings has been conserved from devices installed as a result of PWP’s incentive programs over the past 6 years. Additional water use reductions have occurred as a result of code changes, tiered water rates, drought response, and information/outreach campaigns. The combined impact has resulted in FY2016 water demand at 26,000 AF, or 14,300 AF (35%) less than the WIRP’s 40,300 AF baseline “before conservation” FY2016 water demand forecast. This represents PWP’s lowest water demand since FY1952.

2. Devil’s Gate Dam Storage to Eaton Canyon for Groundwater Recharge

Goal: Provide 627 AFY in groundwater recharge.

Status: The Los Angeles County Department of Public Works (“LACDPW”) is leading this project and is preparing an advanced feasibility study. Project development is on hold pending resolution of sediment removal behind Devil’s Gate Dam.

The project proposes to pump water stored behind the Devil’s Gate Dam to Eaton Canyon Spreading Grounds to increase groundwater recharge.

In 2009, the Station Fire burnt a large area of the Arroyo Seco watershed which was followed by significant winter storms in 2010 and 2011. More than a million cubic yards of sediment flowed into the Hahamongna Reservoir. In order to increase the capacity behind the dam, LACDPW is proposing to remove over 2 million cubic yards of debris over a four year period beginning in 2018. The sediment removal is necessary to create a pool for the pumps to draw water to Eaton Canyon.

In 2014, LACDPW was sued for the sediment removal project. The hearing began in February 2017 and the judge’s initial findings had determined that portions of the Environmental Impact Report (“EIR”) failed to adequately analyze potential impacts to the environment. In March 2017, the judge made a final ruling that the EIR was deficient and would require a recirculation. This will result in a significant delay in the sediment removal that is necessary for this project to be viable.

3. Recycled Water for Irrigation at Brookside Golf Course and Nearby Parks

Goal: Provide 1,130 AFY in recycled water for irrigation.

Status: On-going.

Expected Project Completion: Phase 1, which will provide up to 700 AFY of non-potable water supply, is expected to be completed in early to mid-2020.

In 2016, the environmental impact report was certified for the Pasadena Non-Potable Water Project which will provide 3,100 AFY in recycled water at build-out. Currently, PWP is pursuing State and Federal grants and regulatory permits for Phase 1, which will provide 700 AFY of recycled water. Concurrently, PWP is negotiating an agreement with Glendale Water and Power for a renewal of the existing recycled water agreement, and will be developing a retail rate structure to account for the capital, operating, and maintenance costs for the project.

The State Water Resources Control Board (“State Water Board”) is currently reviewing one of the submittals that is required of the grant application. Until the State Water Board deems the submittal and the remaining application package adequate and complete, the agency cannot make a final determination if the Phase 1 project qualifies for grant funding under Prop 1. PWP staff is working closely with the State Water Board for resolving any open issues with regards to the application package.

In late 2016, PWP submitted an application for grant funding under the U.S. Bureau of Reclamation (“USBR”) Title XVI program. PWP staff met with local representatives of the USBR in April 2017 and the federal agency indicated by late May or early June 2017 it will be sending out notices for projects that qualify for federal grants.

4. Recycled Water for Recharge at Eaton Canyon Spreading Grounds

Goal: Provide 921 AFY in recycled water for groundwater recharge.

Status: Pending future phases of the Pasadena Non-Potable Water Project.

Expected Project Completion: Dependent on implementation of future phases of the Pasadena Non-Potable Project and/or LACDPW’s Devil’s Gate Dam Storage to Eaton Canyon for Groundwater Recharge Project.

A preliminary study was completed in 2012 to evaluate recharging recycled water at Eaton Canyon Spreading Grounds. Due to regulatory requirements and costs, the recycled water must be blended with other sources such as storm water. The project requires a dedicated pipeline to the City’s east side (Phase 6 of the Non-Potable Water Project) or for LACDPW to build the pipeline from Devil’s Gate Dam to Eaton. Project planning will occur in tandem with future phases of the Non-Potable Water Project or when LACDPW proceeds with the pipeline to Eaton Canyon project.

5. Groundwater Storage of Imported Water

Goal: Provide 4,890 AFY in groundwater storage.

Status: Storage program on-hold.

The project, known as the Conjunctive Use Program (“CUP”), allows for storage of surplus water from Metropolitan Water District of Southern California (“MWD”) in the Raymond Basin aquifer. The objective is to store water when supplies are plentiful for use during droughts or emergencies. However, due to recent hydrological conditions and changes in storage policies, storing excess water in the Raymond Basin aquifer is not likely to occur in the near future.

California faced a prolonged drought from 2012 to 2015 which required MWD to begin drawing from its reserves. Conditions have since improved so MWD’s priority for the next several years is to restore its reserves in its surface reservoirs and existing storage programs. Due to the lack of surplus water, MWD ended its groundwater replenishment program in 2012 and is phasing out its CUP.

Over several decades, water levels in the Raymond Basin aquifer have lowered, especially in the Pasadena Sub-basin. Pumpers in this basin reduced pumping by 30% to mitigate this problem, and the Watermaster issued a moratorium on adding water to storage. The concern of the Watermaster is that MWD may direct agencies storing the excess water to begin pumping at the least opportune time. During or following a drought, for example, reliance on groundwater is already increased. Additionally, low precipitation does not allow for natural recharge of the aquifer. As a result the aquifer can exhibit excessive lowering of the groundwater and introduce other issues.

Currently there are no opportunities to store excess MWD water for the reasons mentioned above. However, conditions may change in the future. CUP requires improvements to infrastructure that will allow for increased pumping of stored supplies. Over the past six years, PWP completed the Eastside Well Collector Pipeline project, the Monk Hill Treatment Plant to restore four wells, and installed two disinfection plants. The third and final disinfection facility is near completion. In addition, PWP will be installing two new wells and rehabilitating another well. These improvements will allow PWP to take advantage of storing excess supplies when the opportunity arises.

PWP maintains storage accounts that were initiated prior to the WIRP and as an on-going resource management program in the Monk Hill sub-basin. The storage accounts include a balance of 16,050 AF on behalf of MWD and 22,785 AF for PWP. At MWD’s request, PWP is currently working to draw down MWD’s storage balance over a 15 to 20 year time horizon. PWP will add to or draw down its Monk Hill storage for managing its resources to adjust for changes in demand and supply conditions.

6. On-site Storm Water Capture for Landscaping and Groundwater Recharge

Goal: Provide 138 AFY in storm water capture for on-site use.

Status: On-going. Achieved 12 AF in lifetime savings with use of rain barrels.

This project includes encouraging use of residential rain barrels and gardens, residential and commercial bio-swales, and permeable pavement. In the past 3 years, PWP issued more than 1,200 rebates for rain barrels, which has conserved 4 AF and a projected lifetime savings of 12 AF. In 2011, PWP collaborated with the Planning Department and Public Works Department to install a rain garden as an educational and community engagement demonstration project.

PWP is developing a plan for a residential infiltration pilot project to use as a demonstration and encourage further savings. In 2015, the City adopted a Low Impact Development Strategy and Green Street Policies to support on-site storm capture for residential and commercial properties.

Non-WIRP Water Supply Project: Arroyo Seco Canyon Project

Goal: Provide an average of 1,000 AFY in stream water capture for recharge.

Status: Project is in the final design and permitting stages. Commenced infrastructure improvements and regulatory permitting. Completion of the project may be significantly delayed due to environmental challenges.

PWP continues work on the Arroyo Seco Canyon Project ("ASCP") to capture storm water on a larger scale. This project was not specifically called out in Hybrid 1, but it aims to take advantage of storm water flows in the Arroyo Seco stream. This project is partially funded under Proposition 1 that provides up to \$3.3 million in grant funding. PWP has received approximately \$573,200 in grant funds for work completed to date.

The Arroyo Seco stream captures runoff from the watershed during storm events, but the flow is highly seasonal. One of the key features of this project is to modernize the intake so during higher stream flows more water can be diverted for beneficial use by spreading. When completed, this project will provide approximately 600 AFY in pumping credits, which equates to a savings of \$500,000 per year versus purchasing imported water from MWD.

In addition to the water supply component, this project also proposes to provide recreational enhancements and environmental improvements in two areas of the upper Arroyo. In preparation for this construction, a contract was awarded in September 2016 for the installation of temporary structures to span two existing bridges in the Arroyo Seco so that heavy loads from construction equipment needed for the work can access the upper canyon. Starting the work for the temporary bridges in advance of the ASCP construction is important so that accessibility is less of an issue and the schedule is compressed for the remaining construction. As of this date, construction of the temporary structure spanning Bridge 1 has been completed.

In 2015 a lawsuit was filed against the City seeking to invalidate the City's approval of the California Environmental Quality Act Initial Study/Mitigated Negative Declaration. While the City prevailed on many of the petitioner's claims, on March 23, 2017, the City received an unfavorable preliminary decision from the court. The City is currently waiting for the final terms of the judgement in the form of a writ from the court. Once the terms are known, the City will reevaluate its next steps for proceeding with the project based on the additional environmental requirements resulting from the judgement and the potential loss of the remaining grant funding.

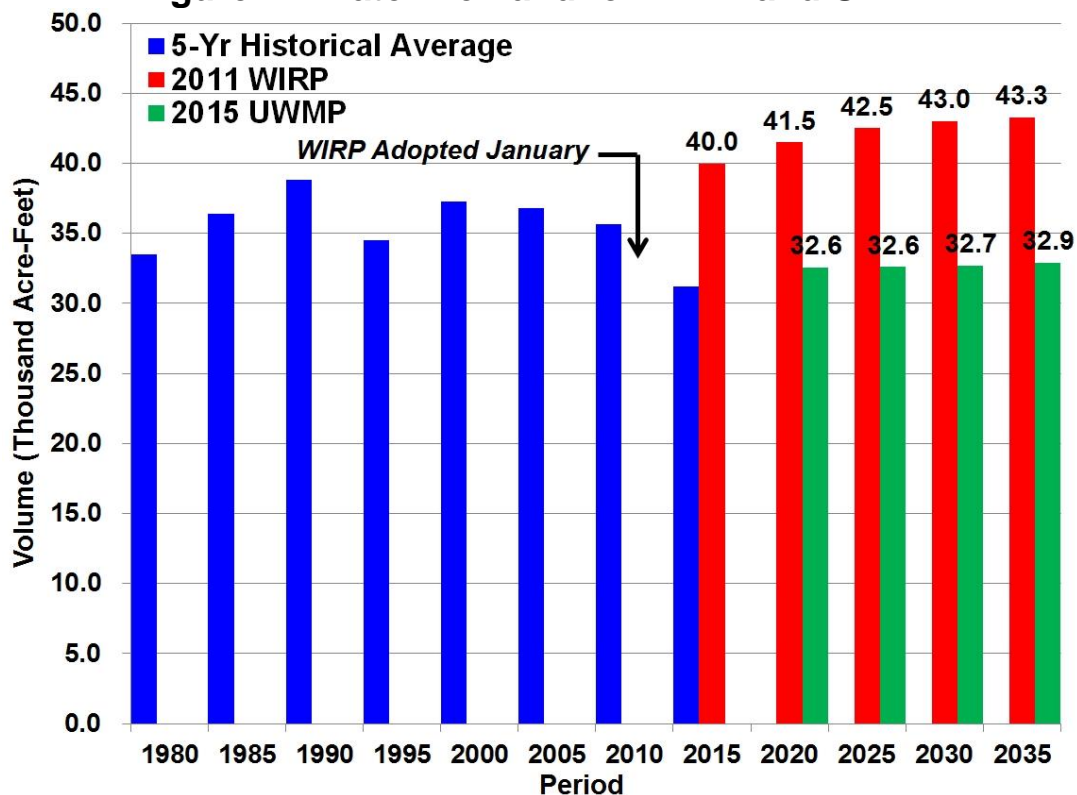
WIRP Adaptive Management Strategy

Implementing a long-term water supply strategy faces uncertainty due to a variety of reasons generally beyond control of PWP, however, the WIRP incorporated an adaptive management strategy. As conditions change, the Hybrid 1 projects are reassessed to determine if their implementation continues to be the best strategy. Since adopting the WIRP, the two most significant changes include lowered water demands and increased regulations.

Water Demands

Figure 1 illustrates PWP's historical "five-year average" water demand from 1975 to 2015, and the projected water demand forecasts used in the WIRP and the 2015 UWMP. The 2015 UWMP, which was completed in June 2016, analyzed the City's future water resources and demands over a 25-year time horizon. The WIRP and the 2015 UWMP applied a long-term analysis of the City's water supply and reliability challenges. Note that the demand projections for the WIRP and the 2015 UWMP include "unaccounted for water" (unmetered usage, losses, leaks, etc.) as well as savings from passive conservation (i.e. code based savings), but it does not account for savings from active conservation programs. The 2015 UWMP forecast was recalibrated to reflect significant conservation and changes in demand experienced between 2010 and 2013.

Figure 1 - Water Demand for WIRP and UWMP



The historical demand was generally in a gradual upward trend leading to the development of the WIRP, but the five years that followed were dramatically downward. By 2016, demands dropped to 26,000 AF which was the lowest since 1952. The WIRP projected a demand of 40,000 AF in 2015 and 43,300 AF by 2035. In comparison, actual demand in 2015 was 29,300 AF. The demand projections were re-analyzed while preparing the 2015 UWMP. Based on updated population data and new conservation standards and programs, the 2035 demand is projected to be 32,900 AF, which is 10,400 AF or 25% lower than the projection in the WIRP.

State Regulations

The year 2015 marked a pivotal point in California’s water regulations. From 2012 to 2015, the state witnessed consecutive periods of below average precipitation. In northern California, where the state relies heavily for its water supply, the average precipitation was 25% below normal and 2014 had the lowest levels since 1977. Conditions in southern California were worse.

In response to the drought conditions, Governor Brown took decisive actions. From 2014 to 2016, the State issued a number of executive orders mandating state-wide water reductions ranging from 20% to 25%. Each city was assigned a percent target. By May 2016, due to state-wide efforts in conserving water, the State shifted from a mandatory percent reduction to a reliability demonstration by requiring water agencies to adopt the State’s Reliability Stress Test. The intent was to show whether an agency

was prepared to meet its demands over a three year drought period. Pasadena performed the test and demonstrated it could meet the water demands. Agencies demonstrating similar results were no longer mandated to conserve but agencies failing the test were required to reduce its water usage.

In November 2016, the State released a draft report for Making Conservation a California Way of Life. The draft report, which addresses elements in Executive Order B-37-16, provides a framework for using water more wisely, eliminating water waste, strengthening local drought resilience, and improving agricultural water use efficiency and drought planning. Elements of the framework include standards that build upon the 20% reduction by 2020 mandated by Senate Bill X7-7, and a water budget model that would begin in 2025 and continue into the future. Legislation is currently under consideration by State Assembly to implement Executive Order B-37-16.

The winter of 2016/2017 has yielded improved water supply conditions, and as a result Governor Brown issued Executive Order B-40-17 terminating the Drought State of Emergency in most of California on April 7, 2017. Regardless, new regulations for conservation and water use reduction will continue as the new norm. PWP anticipates that water demands will likely stabilize at current historic lows, and may continue to decline as structural behavioral changes take root and water efficiency improves. Applying an adaptive management strategy to account for lowered water usage over the long-term under an increasing regulatory environment warrants an update to the WIRP.

Path Forward

Over the next 18 months, PWP will update the WIRP and the Water Infrastructure Master Plan (“Master Plan”) that was prepared in 2002. The 2002 Master Plan evaluated the existing water system infrastructure and identified necessary improvements so that PWP could adequately produce and distribute water through 2020. Since adopting the 2002 Master Plan, PWP has invested in a number of capital projects. The objectives for updating the 2002 Master Plan are to re-evaluate its water system and to identify new sets of priorities for its on-going capital improvement program considering progress made to date, changes in water demand, and WIRP goals to increase local water supply availability and resiliency.

Whereas the new Master Plan focuses on the ability of the conveyance (i.e. distribution) system to adequately and safely deliver water, the updated WIRP’s central objective is to ensure long-term water supply reliability from a portfolio of water resources. During the Master Plan update and the subsequent year, PWP will continue to work through the Arroyo Seco Canyon Project and the Non-Potable Water Project. It is also expected in the next year or two the State will develop standards and regulations to implement the plan for Making Conservation a California Way of Life. PWP anticipates a much clearer picture as the development of PWP’s new projects continue forward in parallel with promulgation of new regulations on water efficiency, waste, and reduction over the next two years, providing greater certainty in planning PWP’s future water resource needs. PWP anticipates completing work on the WIRP update in fiscal year 2019 to support the 2020 UWMP process.

Water Supply Update

Recent months have had a profound change in California's drought. The winter of 2016/2017 set a new record in rainfall totals and snowfall is 90% higher than average for this time of the year. In northern Sierra, the total rainfall was 93 inches as of May 8th or 186% of season average for that time of the year. This established a new record high exceeding the prior record of 82 inches that occurred in the winter of 1982/1983.

The rainfall this winter continues to fill many of the state's surface reservoirs topping spillways to allow room for runoff. Seventy-five percent of the state's total storage (27.6 million AF or MAF) captures runoff from the Sacramento and San Joaquin rivers, which provide water for the State Water Project ("SWP"). As of May 7, 2017 the total for the current year was 22.0 MAF. Although the water level was lowered at Orville Reservoir due to the damaged spillway, the storage was 2.8 MAF, which is a bit less than the average level of 2.9 MAF for that time of the year.

Currently, the SWP allocation is at 85% and may climb further. MWD is the largest SWP contractor with rights up to 1.91 MAF per year. During surplus years, MWD will add water to its storage (surface reservoirs, groundwater storage and banking programs) for withdrawal during dry years. In addition, MWD maintains emergency storage reserve which is at 0.63 MAF. Applying an 85% allocation for SWP water, MWD anticipates it will add 1.16 MAF in surplus water to storage reserves raising the total to 2.4 MAF (3.1 MAF with emergency supplies), which approaches the record high set in 2012. This is a stark contrast to 2015 when the storage level was at 0.9 MAF. MWD's storage capacity is 5.4 MAF and is planning to store as much water made available this year. Increasing MWD's storage reserves benefit member agencies for future drought years.

PWP's water supplies consist of local groundwater and imported MWD water. PWP has a pumping right of 10,304 AFY and also spreads stream water from the Arroyo Seco and Eaton Canyons converting it to pumping credits. As of May 8th, 2017, Pasadena's rainfall was 108% of average for that time of the year (21 vs 19.5 inches), but recharge by spreading has been minimal. The watershed has been severely impacted by the recent drought. Dry soil conditions require multiple cycles of rainfall before ground conditions become saturated allowing higher flows in the streambed. In addition, sediment has accumulated at the Arroyo Seco stream intake making it challenging to divert flows for recharge. Spreading credits will be around 800 to 900 AF in this fiscal year.

Since 2003, PWP has entered into long-term purchase water agreements with MWD. The agreement provides a fixed volume of water of 22,965 AFY at the lowest cost known as the Tier 1 rate. The contract does not limit PWP from purchasing more than the fixed volume, but additional purchases are at a higher-cost Tier 2 rate.

As described previously, PWP's water demands are currently at historic lows as a result of the drought, conservation efforts, and state regulations. FY 2016 water demand was

at the lowest level since FY 1952. PWP customers are becoming accustomed to using less water. Table I summarizes the short-term demand and supply to FY 2019.

Table I - Projected Water Demand vs Supply (AF)

Fiscal Year	FY 2017	FY 2018	FY 2019
Projected Demand	27,100	27,900	28,800
Less Groundwater Production ¹	10,900	10,900	10,900
Less MWD Tier 1 Purchase	16,200	17,000	17,900
MWD Tier 1 Available Supply ²	22,965	22,965	22,965
MWD Tier 1 Excess ³	6,765	5,965	5,065

1. Production includes 10,304 AF in decreed and approximately 600 AF in spreading credits.
2. The Tier 1 available supply is a fixed amount for the lowest cost of MWD water.
3. The excess represents the difference between the projected Tier 1 purchase and the fixed amount under the Tier 1 rate. Member agencies may purchase more MWD water but at a higher Tier 2 rate.

PWP has multiple sources of water to meet current and future demands. The City's water supply is a combination of local and imported MWD water. Imported MWD water plays a crucial role and the City has a long-term purchase contract with MWD that does not limit the amount of water PWP may purchase. From a short-term outlook, surplus supply will average 21% of the projected demand and ranges between 5,100 to 6,800 AF. In addition PWP will continue to make investments in conservation to ensure greater reliability for years to come.

CONCLUSION

The WIRP applied an adaptive management strategy to identify and promote cost effective solutions to meet the City's long-term water demands. PWP has a very reliable water supply consisting of groundwater and imported MWD water. In addition PWP continues to promote conservation programs while investing in local supply resources such as the Non-Potable Water and Arroyo Seco Canyon projects. Since 2011, when the WIRP was adopted, some criteria that were integral in the decision making process for recommendations in Hybrid 1 changed such as long-term demands and the regulatory environment. Implementing an adaptive management strategy allows for an opportunity for re-examining and refining the assumptions, objectives, and targets in the WIRP as opposed to a rigid set of planned actions over the coming years.

Over the next 18 months, PWP will update the WIRP and the Water Infrastructure Master Plan that was prepared in 2002. Combined, these documents will establish priorities for securing safe and sustainable water resources to meet customer demand along with the long-term capital improvements necessary to safely and reliably deliver these resources to the customer.

4.B

Water Quality Update

Presented by
David Kimbrough, Ph.D., Water Quality Manager

Municipal Services Committee

June 13, 2017
Item 4.B



Exceeding Standards

Pasadena Water and Power

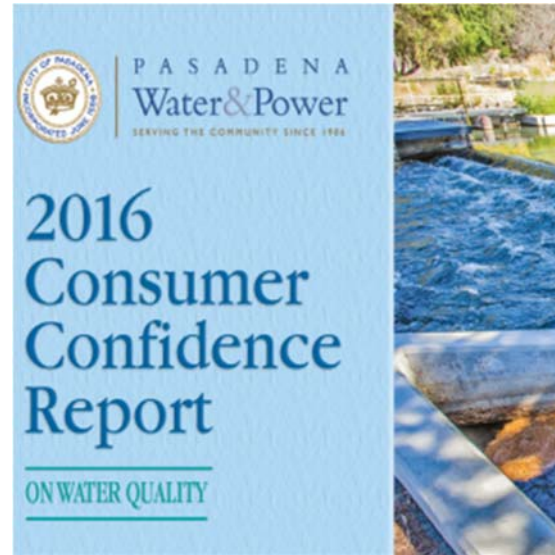
- PWP consistently maintains 100% compliance with federal and state regulations and certificates
- Compliance Reports
 - > Annual Consumer Confidence Report (CCR)- nature of the systems and the quality of the water
 - > Triennial Public Health Goal (PHG) Report - details elements found in the water and the cost of treatment to reduce the concentrations below the PHGs



2016 CCR

Pasadena Water and Power

- 2016 CCR will be Posted on the Web by July 1
 - > PWPweb.com/CCR2016
 - > PWPweb.com/WaterQuality
- Outreach Includes
 - > Bill inserts
 - > CM Newsletter
 - > E-Newsletters



PASADENA

3



Monitoring Water Quality

Pasadena Water and Power

- In-house Laboratory Supports Water Quality
 - > Added benefit of having its own Water Quality Laboratory ensures the high standards are maintained
 - > Team is state certified and monitors daily
 - Draws samples from 300 locations
 - Tests for more than 170 elements
 - > Conduct 36,000 annual chemical and bacteriological analyses which represent more than 90% of PWP's needs (others are contracted out)
 - > 90% of analyses represent State and Federal mandates
 - > 10% of analyses represent process control and customer requests

PASADENA



Key Water Quality Topics

Pasadena Water and Power

- 1,2,3-Trichloropropane (123-TCP)
- Nitrate
- Perchlorate
- Lead
- Rust

PASADENA



123-Trichloropropane

Pasadena Water and Power

- **5 Wells Have Had Detections of 123-TCP in the Last Ten Years**
 - > 123-TCP is a carcinogen
 - > 123-TCP comes from the JPL-NASA facility
 - > There will be a Maximum Contaminant Level (MCL) for 123-TCP which will be adopted later this year
 - PWP to treat these 5 wells to ensure that the concentration of 123-TCP will be less than the MCL
 - Treatment may include blending the 123-TCP containing water with water from other sources without measureable 123-TCP

PASADENA



Nitrate

Pasadena Water and Power

- **Most Wells in California Have Nitrate**
 - > Two Monk Hill wells are not in use because of nitrate
 - > Other wells are close to exceeding the MCL and could exceed it in the foreseeable future
 - > PWP is currently blending wells to comply with the MCL
 - Blending is the lowest cost treatment
 - A new low nitrate blending source is being investigated

PASADENA



Perchlorate

Pasadena Water and Power

- **Many PWP Wells Have Perchlorate at Various Concentrations**
 - > Monk Hill Wells are being treated for perchlorate by Ion Exchange
 - > Other wells are blended to comply with the MCL
 - > The State Board may lower the MCL in the future
 - More expensive to treat perchlorate

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Lead

Pasadena Water and Power

- **Lead in Drinking Water is in the News**
 - > In Flint Michigan, service lines were made of lead
 - > The Great Lakes area water is very soft and corrosive
- **PWP Lead Status**
 - > No PWP Well has lead
 - > No PWP service lines have lead
 - > PWP's water is hard and scale forming

PASADENA



Rust

Pasadena Water and Power

- **PWP's Most Common Consumer Complaint is Discolored Water Caused by Rust**
 - > Rust is not health concern
 - > PWP has a main replacement program to replace older rusty pipes
 - > Rust is released when there is construction in the street and mains are bumped or rapid changes in water flow
 - > Consumer's will get turbid and colored water

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Summary

Pasadena Water and Power

- PWP, as Always, Supplies Its Customers with Clean, Reliable Water
- PWP Continues to Monitor and Anticipate Water Quality Issues