



CITY OF PASADENA

WATER AND POWER DEPARTMENT

15TH ANNUAL DRINKING WATER QUALITY REPORT

Message From General Manager

I am pleased to present to you Pasadena Water and Power's (PWP's) Annual Drinking Water Quality Report. Once again, I am delighted to report that the water delivered to Pasadena's residents has complied with all health-based drinking water standards set by the United States Environmental Protection Agency (EPA) and the California Department of Health Services (DHS). Although Pasadena has always maintained high water quality standards, more advanced treatment technologies, increased monitoring and stricter laws and guidelines that have worked in combination to enhance the quality of water delivered to the consumer.

In our efforts to provide reliable, high quality water at competitive prices, PWP is making water quality and operational improvements. Two years ago, PWP launched an 18-year, \$234 million program to refurbish Pasadena's entire aging water system. The plan includes replacing water main pipelines built in the early part of the last century and ensuring our wells and reservoirs have the capability to stand up to major earthquakes. Since the commencement of the project PWP has replaced more than 23 miles of pipeline, including a 117-year-old section of pipe along Colorado Boulevard. The new pipes are projected to last another 100 years.

Pasadena continues to be a leader in the effort to find an efficient, economical, and reliable method to remove perchlorate from our aquifer and stop the perchlorate plume movement to the east of the City. This effort will also benefit our neighboring utilities threatened by the spread of the perchlorate plume.

In closing, I hope you find this report informative.

Sincerely,

Phyllis E. Currie

ABOUT THIS REPORT



The 2004 Annual Water Quality Report contains information about the quality of the drinking water delivered to you. No violations occurred in year 2004. PWP will continue to work hard to provide the highest quality water possible to Pasadena's customers.

This report addresses the following topics:

- Where does our water come from?
- What are the possible sources of contaminants in tap water?
- How is PWP's drinking water treated?
- What, if any, contaminants have been detected in PWP's drinking water?
- Is there reason for concern about perchlorate or other contaminants in PWP's water?
- Are certain people more vulnerable to the effects of some contaminants in drinking water?
- What are the definitions of the regulatory and technical terms in the report?
- Who to contact for more information?

JUNE 2005

PASADENA GROUNDWATER AND MWD TREATED SURFACE WATER DATA

Parameter	MCL	PHG	Pasadena Wells		MWD Weymouth Plant		MCL Violation	Typical Source of Contaminant
			Average	Range	Average	Range		
Primary Standards								
Radiologicals								
Gross Beta (pCi/L)	50	n/a	n/a	n/a	ND	ND-5	No	Decay of natural and man-made deposits
Gross Alpha (pCi/L)	15	n/a	2	1-3	ND	ND-4	No	Erosion of natural deposits
Combined Radium (pCi/L)	5	n/a	0.4	0.1-0.7	ND	ND	No	
Uranium (pCi/L)	20	0.43	12	6-16	ND	ND-3	No	
Inorganic Chemicals								
Aluminum (ppb)	1,000/200 (1)	600	ND	ND-71 (2)	ND	ND	No	Erosion of natural deposits
Arsenic (ppb)	50	0.004	ND	ND-3 (2)	ND	ND	No	
Fluoride (ppm)	2	1	1.3	1-1.5	0.2	0.16-0.21	No	
Mercury (ppb)	2	1.2	ND	ND-1.3 (2)	ND	ND	No	
Nitrate (NO3) (ppm)	45	45	20	11-38	2	ND-3	No	Runoff and leaching from fertilizer use
Secondary Standards (1)								
Chloride (ppm)	500	n/a	27	2-41	86	76-104	No	Runoff, leaching from natural deposits
Color (Units)	15	n/a	ND	ND-1 (2)	2	1-3	No	Naturally-occurring organic materials
Corrosivity (SI)	non-corrosive	n/a	0	-0.3 - 0.3	0.2	0.1-0.3	No	Elemental balance in water
Iron (ppb)	300	n/a	ND	ND-259 (2)	ND	ND	No	Leaching from natural deposits
Manganese (ppb)	50	AL=500	ND	ND-22 (2)	ND	ND	No	
Odor Threshold (Units)	3	n/a	0	0	2	2	No	Naturally occurring organic materials
Specific Conductance (micromhos/cm)	1,600	n/a	466	396-552	762	641-867	No	Substances that form ions in water
Sulfate (ppm)	500	n/a	57	23-80	145	104-189	No	Runoff, leaching from natural deposits
Total Dissolved Solids (ppm)	1,000	n/a	286	238-357	445	371-515	No	
Unregulated Chemicals Requiring Monitoring								
Boron (ppb)	AL = 1,000	n/a	186	ND-480	140	140-150	No	Erosion of natural deposits
Chromium VI (ppb)	n/a	n/a	5	2-8	ND	ND	No	Industrial waste discharge
Dichlorodifluoromethane (Freon 12) (ppb)	AL = 1,000	n/a	ND	ND-1	ND	ND	No	
Perchlorate (ppb)	AL = 6	6	ND	ND-12.5 (3)	ND	ND	No	
Trichloropropane (1,2,3 TCP) (ppt)	AL = 5	n/a	3	ND - 14	ND	ND	No	
Vanadium (ppb)	AL = 50	n/a	8	ND - 15	ND	ND-4	No	Naturally occurring, industrial waste discharge

(1) - Chemical is regulated by a secondary standard to maintain aesthetic qualities (taste, odor, color). (2) - Result from one well when the well was out of service, water delivered to consumers was ND. (3) - One time measurement from one well, water delivered to customers was blended in a reservoir to ND. **MWD:** Metropolitan Water District; **ND:** not detected; **n/a:** not applicable; Pico curies per liter (**pCi/L**): a measurement of radioactivity in water; parts per million (**ppm** or mg/l), parts per billion (**ppb** or ug/l), and parts per trillion (**ppt** or ng/l): standard units of measure for water analysis

PASADENA WATER DISTRIBUTION SYSTEM AND MWD TREATED SURFACE WATER DATA

Parameter	MCL	PHG	Pasadena		MWD Weymouth Plant		MCL Violation	Typical Source of Contaminant
	[MRDL]	[MCLG]	Average	Range	Average	Range		

Disinfection Byproducts and Disinfectant Residuals

Total Trihalomethanes (ppb)	80	n/a	38	ND - 76	55	45 - 72	No	By-products of drinking water chlorination
Haloacetic Acids (ppb)	60	n/a	17	ND - 43	27	16 - 45	No	
Total Chlorine Residual (ppm)	[4]	[4]	1.3	1.1 - 1.7	2.4	1.7 - 3.0	No	Drinking water disinfectant added for treatment

Sixteen locations in the Pasadena distribution system are tested quarterly for total trihalomethanes and haloacetic acids. Maximum Residual Disinfectant Level [MRDL] is the level of a disinfectant added for water treatment that may not be exceeded at the consumer's taps. Maximum Residual Disinfectant Level Goal [MRDLG] is set by the USEPA to determine the level of a disinfectant added for water treatment below which there is no known or expected risk to health. **ND**: not detected; **n/a**: not applicable; parts per billion (**ppb** or ug/l), and parts per million (**ppm** or mg/l): standard units of measure for water analysis

Microbiological Contaminants

Total Coliform Bacteria (%)	5 *	[0]	0.2 **	0 - 1.8	0	0	No	Naturally present in the environment
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130 to 159 locations of the Pasadena distribution system are tested monthly for total coliforms. * - No more than 5% of the monthly samples may be total coliform-positive. ** - Highest percentage of positive samples in any month was 1.8%.

PASADENA WATER SYSTEM - LEAD AND COPPER LEVELS AT RESIDENTIAL TAPS

Parameter	MCL	PHG	90 th Percentile Value	Number of Sites Exceeding Action Level	AL Violation	Typical Source of Contaminant
Lead (ppb)	AL = 15	2	2	1 out of 50	No	Corrosion of household plumbing
Copper (ppm)	1	0.17	0.14	0 out of 50	No	

Every **three** years, 50 residences are tested for lead and copper levels at the tap. The most recent set of samples was collected in 2002. Only one lead sample exceeded the regulatory action level (AL). No violation occurred in 2002 because less than 10 percent of the samples exceeded the lead AL. The copper notification level was never exceeded. The next sampling is scheduled for July/August 2005. **MCL**: Maximum Contaminant Level, **PHG**: Public Health Goal

PASADENA GROUNDWATER AND MWD TREATED SURFACE WATER DATA

Other Parameters	MCL	PHG	Pasadena Wells		MWD Weymouth Plant	
			Average	Range	Average	Range
Alkalinity (ppm)	n/a	n/a	136	98 - 193	90	75 - 99
Calcium (ppm)	n/a	n/a	49	31 - 59	41	32 - 47
Hardness (ppm)/ (grains per gallon)	n/a	n/a	168/10	106 - 208/6 - 12	181/11	142 - 206/8 - 12
Magnesium (ppm)	n/a	n/a	11	6 - 16	20	15 - 22
N-Nitrosodimethylamine (NDMA) (ppt)	AL = 10	n/a	ND	ND	-	ND - 6
pH (Units)	n/a	n/a	7.7	7.6 - 7.7	8.2	8.1 - 8.2
Total Organic Carbon (ppm)	TT	n/a	n/a	n/a	2	2 - 3

TT: Treatment Technique



REGULATIONS

In order to ensure that tap water is safe to drink, the EPA and the DHS impose regulations that limit the amount of certain contaminants public water systems may have in their water supply.

Drinking water, including bottled water, may reasonably be expected to contain small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

PWP is required by DHS to test well water for organic chemicals, minerals, metals, and bacteria. PWP is also required to test regularly for bacteria and total trihalomethanes in our distribution system. Lead and copper are tested in tap water from selected residences. The Metropolitan Water District of Southern California (MWD), our supplier of imported water, is responsible for testing of their treated water.

PWP performs over 10,000 water quality tests each year. The laboratory testing costs alone are more than \$100,000 a year. Staff time involved in collecting and analyzing the water samples is an additional cost. The State inspects our water system and reviews the test results to ensure that PWP complies with all applicable state and federal regulations. These actions ensure that we serve water to our customers that meet all regulatory testing standards.

TREATING YOUR WATER

PWP uses both chloramines and chlorine for disinfection. Some locations may alternate from chloramines to chlorine depending on operating conditions. Customers with special water quality needs, such as those on kidney dialysis or aquarium owners, should be cognizant of chloramines and chlorine and arrange for the removal of these chemicals. PWP uses additional programs to maintain high water quality including: flushing distribution water mains, maintaining an effective cross-connection control program, cleaning reservoirs and tanks, and testing chemical and bacteria levels in storage facilities and water mains.

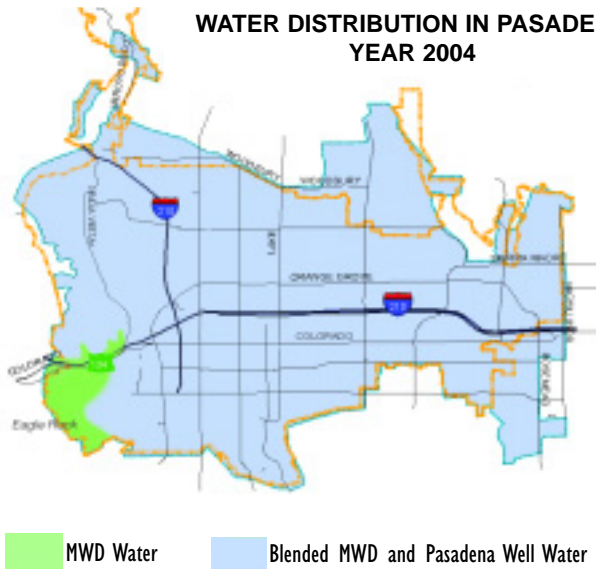
THE WATER QUALITY CHART

As in previous years, the Detected Contaminant Chart compares the quality of your tap water to State drinking water standards. The water quality chart lists all the regulated drinking water contaminants (and unregulated contaminants that require monitoring) that were detected during the 2004 calendar year. More than 100 regulated contaminants have been tested and **were not detected** in drinking water delivered by PWP. The list of non-detected contaminants is not included in the chart. A number of regulated chemicals are required to be monitored once every three years. The most recent testing results and corresponding year, when sampled in accordance with the monitoring regulations, are noted in each table. Some data, although more than one year old is representative of the current drinking water quality.

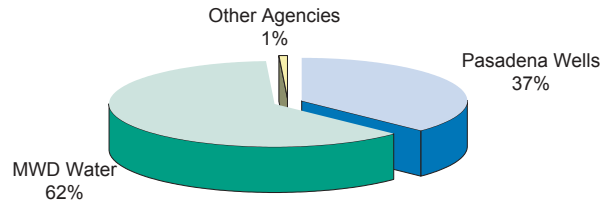
Definitions of terms used in the water quality chart

- **Action Levels (AL)** are health-based advisory levels established by DHS for chemicals in drinking water that lack maximum contaminant levels (MCLs). When chemicals are found at concentrations greater than their action levels, DHS provides certain requirements and recommendations for utilities to follow.
- **Maximum Contaminant Level (MCL)** is the highest level of a contaminant that is allowed in drinking water. **Primary MCLs** are set for contaminants that affect health, along with their monitoring and reporting requirements, and water treatment requirements. **Secondary MCLs** are set to protect the odor, taste, and appearance of drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as economically and technologically feasible.
- **Maximum Contaminant Level Goal (MCLG)** is the level of a contaminant in drinking water below which there is no known or expected risk to health. The U.S. Environmental Protection Agency sets MCLGs.
- **Public Health Goal (PHG)** is the level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.
- **Treatment Technique** is a required process intended to reduce the level of a contaminant in drinking water.

WATER DISTRIBUTION IN PASADENA YEAR 2004



WHERE DID OUR WATER COME FROM IN YEAR 2004?



pick up substances resulting from the presence of animals or from human activity. These substances can contaminate the surface water and groundwater.

Contaminants that may be present in source water include:

- 1) microbial contaminants, such as virus and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife;
- 2) inorganic contaminants, such as salts and metals, that can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming;
- 3) pesticides and herbicides that may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses;
- 4) organic chemical contaminants, including synthetic and volatile organic chemicals (VOC), that are by-products of industrial processes and petroleum production, can come from gas stations, urban storm water runoff, agricultural application, and septic systems; and
- 5) radioactive contaminants, can be naturally occurring or be the result of oil and gas production and mining activities.

Most contaminants detected in our groundwater and surface water sources occur in your drinking water from erosion of natural deposits in soils. However, several detected contaminants that are present in tap water can be the result of the treatment process itself or from industrial discharges: see charts for explanation.

Assessments of the drinking water sources for Pasadena's water system and MWD Colorado River and State Water Project were completed in 2002. A copy of the complete assessment for Pasadena's sources is available at PWP's office, 150 South Los Robles Avenue, Suite 200. A copy of MWD's assessment can be obtained by calling (213) 217-6850.

YOUR WATER DEPARTMENT

PWP serves approximately 164,500 people in the City of Pasadena and surrounding unincorporated areas of Los Angeles County. The City's water supply in year 2004 consisted of eight active deep wells located throughout the City and five connections with MWD. The City has interconnections with seven other local water agencies that can supply water during emergencies, periods of supply shortage, or periods of high demand.

In 2004, PWP produced 38,330 acre-feet of water. This is equivalent to nearly 13 billion gallons. Thirty seven percent (37%) of the water produced in 2004 was groundwater pumped from the Raymond Basin, a water-bearing zone underlying Pasadena, Altadena, La Canada-Flintridge, and portions of San Marino and Arcadia. Chlorine is added to all groundwater pumped from City wells before the water enters the City's distribution system.

The remaining water was purchased: 62% from MWD, a regional wholesaler of imported surface water, and 1% from other agencies. The MWD's water is a blend of Colorado River water delivered through MWD's Colorado River Aqueduct and surface water from Northern California, delivered through the California Aqueduct. MWD's water is filtered and disinfected with chloramine (chlorine plus ammonia) at the Weymouth Filtration Plant in La Verne. Chloramine and chlorine kill microorganisms and prevent re-growth of bacteria in storage reservoirs and distribution pipelines.

SOURCES OF DRINKING WATER

In general, the sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can

PERCHLORATE

As we have stated in previous reports, PWP has detected perchlorate in a number of its wells located near the Jet Propulsion Laboratory (JPL). PWP has proactively taken those wells out of service until a treatment solution is in place. PWP is actively pursuing the development of two perchlorate treatment facilities. PWP continues to work with the National Aeronautic Space Administration (NASA), the current owner of JPL, and is in the final stage of negotiating an agreement with NASA to fully fund one of the new treatment facilities, which is to be located near Arroyo Seco.

Besides the Arroyo Seco facility, PWP will be building an additional treatment facility at the City's Corporate Yards to help stop the perchlorate plume from moving to the eastern region of the City. The two new treatment facilities will enable PWP to bring eight groundwater wells back to service. In resuming service of these wells, an additional 9,000 gallons of water will be available every minute. The two new plants will use an ion-exchange technology, the same technology used in water softeners.

NASA has already constructed and is operating an on-site perchlorate treatment facility. This on-site treatment is a critical part of the groundwater cleanup effort. It allows NASA to remove chemicals at the source area. Removing chemicals from groundwater at the source area will help reduce the amount of time needed for treatment at two future plants in Pasadena.



LEAD AND COPPER

Lead and copper have not been detected in our sources. These metals, however, can increase when water comes into contact with plumbing materials in your home. Because domestic plumbing is the primary source of these metals, drinking water regulations require testing tap water samples for lead and copper inside a number of representative homes every three years. If more than 10 percent of the tap samples from homes exceed the action level set by the USEPA, the water system is required to treat the water in a way that reduces the corrosiveness of the water. Our next testing is scheduled for July/August 2005. The results of the testing will be reported to you in next year's report. As usual, we will report the results directly to homeowners who participate in the in-house testing. The last sampling was completed in 2002. While the sampling found lead and copper in some households, it was well below the action level of concern.

Lead levels in your home could be higher than in other homes in the community as a result of the plumbing materials used. Infants and young children are more vulnerable to the effects of lead in drinking water than the general population. You can minimize exposure to lead by "flushing" the water out of your tap before drinking by running the water for a few minutes, and collecting this water for something other than drinking: watering your plants or using it to do your laundry.

TRICHLOROPROPANE (1,2,3-TCP)

Last year, PWP sampled its wells for new emerging chemicals, which are not yet regulated, but could be regulated in the future. We used the latest instrumentation, capable of measuring traces of chemicals down to parts per trillion levels (ppt). A part per trillion is one thousand times less than part per billion. With this instrumentation we were able to identify a chemical called 1,2,3-TCP in some of our wells. This chemical previously was not detected when measured in parts per billion levels. Two of the wells exceeded new drinking water action levels (AL) of 5 ppt, which was established by the DHS for 1,2,3-TCP. Water from these wells was blended with other waters in water pipeline system, before it reached the first consumer. It is unlikely that the water customers received any detectable 1,2,3-TCP.

MESSAGE TO VULNERABLE POPULATION

Some people may be more vulnerable to contaminants in drinking water than the general population. Immune-compromised persons, such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.

Answering Your Questions: Home Water Treatment Devices

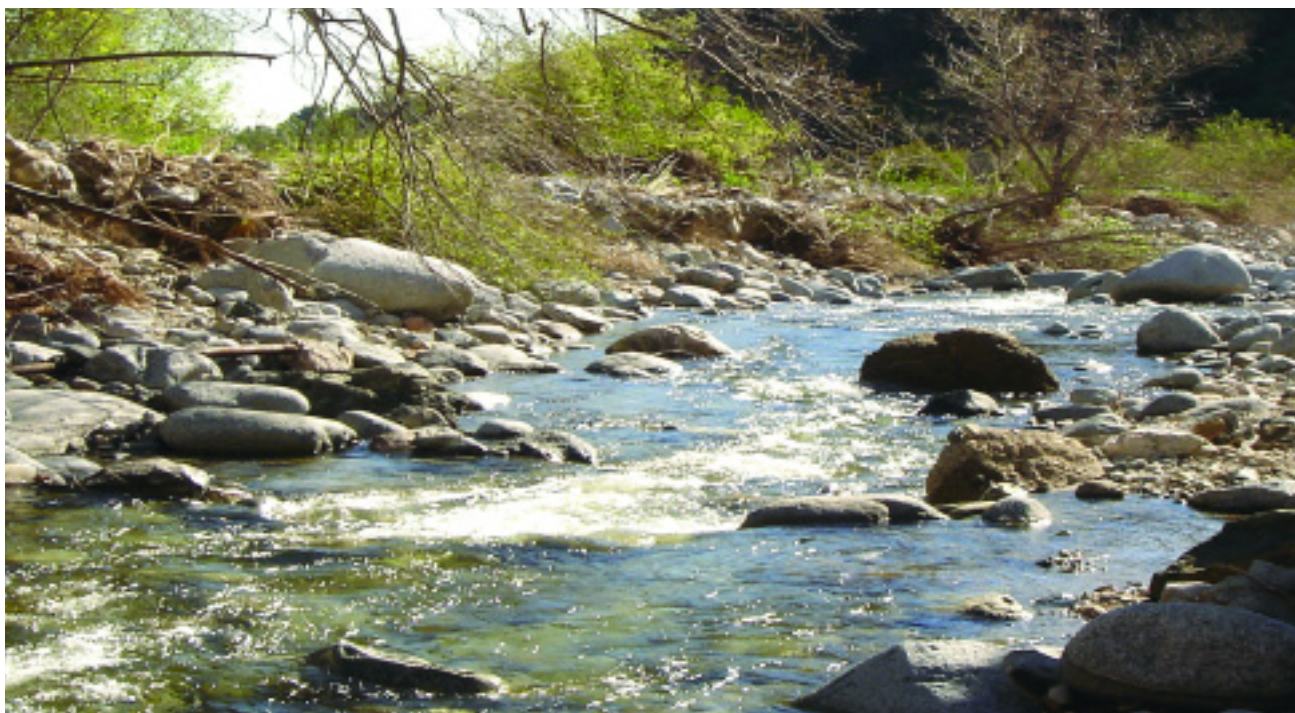
Newspaper headlines questioning the quality of drinking water have encouraged the aggressive marketing of home water treatment systems. These systems can improve the taste of your tap water or prevent spots on your dishes. But water quality health concerns should not be the reason if you decide to install these point-of-use (POU) devices. California drinking water standards are some of the most stringent in the nation. Even bottled water does not have the testing requirements of your tap water.

Common POU devices include Granular Activated Carbon (GAC) filters, Reverse Osmosis units, and water-softening systems. GAC filters can remove chlorine, tastes, odors, and organic compounds. They are generally used in a pour-through pitcher mounted to the faucet or installed under the sink. The GAC car-

tridges have a limited life and need to be replaced on a regular basis to be effective.

Reverse Osmosis (RO) units utilize a membrane that will remove most minerals, metals, and organics. Because they usually include pre-filters and a storage tank, they require more space. With this type of system, you can expect your water bill to increase, as RO systems typically use 5 to 10 gallons of tap water to produce one gallon of purified water.

Another common water treatment device is a water-softening system. Water hardness is caused mostly by calcium and magnesium and is not a health issue. Hard water requires more soap to produce lather and leaves a scale on hot water fixtures. Softeners use a process called ion exchange where the calcium and magnesium are replaced by sodium.



Este informe contiene información muy importante sobre su agua de beber. Tradúzcalo o hable con alguien que lo pueda entender, o llame al (626) 744-3838.

ANNUAL DRINKING WATER
QUALITY REPORT
June 2005

PASADENA
Water & Power



PRSR STD
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PASADENA, CA
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WE WANT TO HEAR FROM YOU

Comments from the public are welcomed and may be presented at the a City Council meeting. City Council meetings are typically held every Monday at 6:30 PM, at the Pasadena Senior Center at 85 East Holly Street (in the Multi- Purpose Room), Pasadena, CA 91103. PWP encourages your water quality questions and participation.

Pasadena Water and Power
150 S. Los Robles Ave., Suite 200
Pasadena, CA 91101

For more information please contact:
Customer Care Answer Line

(626) 744-6970
www.pwpweb.com

Water Quality:

Inna Babbitt (English)
Tony Estrada (Spanish)

(626) 744-4465
(626) 744-3838

Metropolitan Water District of Southern California

(213) 217-6850
www.mwdh2o.com

California Department of Health Services
Division of Drinking Water and Environmental Management

(213) 580-5723
www.dhs.ca.gov

U.S. Environmental Protection Agency
Office of Ground Water and Drinking Water
Safe Drinking Water Hotline

(800) 426-4791
www.epa.gov/safewater

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www.cityofpasadena.net/waterandpower/water_qualityreports.asp