



## Pure News: Issue 6

Welcome to Pure News, a newsletter to keep you informed about the latest happenings with the City of San Diego's Water Purification Demonstration Project.

### Moving Right Along



It's hard to believe it has been one year since the Advanced Water Purification (AWP) Facility began operation in June 2011. This demonstration facility purifies one million gallons of recycled water a day for testing and analysis before being diverted back to the City's recycled water system. The purification process uses microfiltration and ultrafiltration, reverse osmosis, and ultraviolet disinfection with advanced oxidation. The AWP Facility will continue to operate and offer tours through next year.

Although the AWP Facility is the centerpiece of the Demonstration Project, other behind-the-scenes work has been taking place as part of the project. For more than two years, staff have been conducting a study of the San Vicente Reservoir, working with California Department of Public Health and the San Diego Regional Water Quality Control Board to define regulatory requirements, and determining the cost of a full-scale project.

A final report compiling the results of the project's components is scheduled for completion at the year's end. The report will be available to the public following its release to the Mayor and City Council.

### Pulling Out All the Stops for Purified Water

When it comes to water purification, many people refer to it as "toilet-to-tap." Although that is a catchy alliteration, it fails to indicate the comprehensive treatment process of purifying recycled water. In fact, recycled water would go through multiple treatment steps before reaching customers' faucets in a full-scale project. These steps provide multiple safety barriers so that public health is protected.

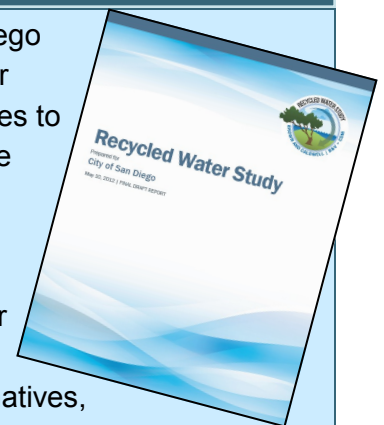
#### **Pre-AWP Facility Barrier: Recycled Water**

Before the purification process, wastewater from homes and businesses is treated at a water reclamation facility to a level suitable for irrigation, manufacturing and other non-drinking purposes. This treated water is called recycled water and is safe for human contact. The Water Purification Demonstration Project further treats the recycled water at the AWP Facility.

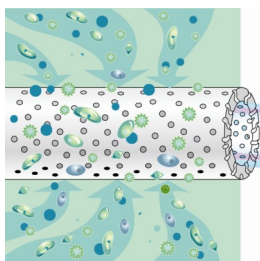
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### Expanding Recycled Water Use

In 2009, the City of San Diego launched a Recycled Water Study to look at opportunities to maximize wastewater reuse and reduce the amount of treated wastewater discharged into the ocean via Point Loma Wastewater Treatment Plant. The Study features reuse alternatives, including water purification, to increase the use of recycled water and to decrease the City's reliance on imported water. A report on the Study's findings was presented to the San Diego City Council on July 17. They are also available online at [sandiego.gov/water/waterreuse/pdf/recycledfinaldraft120510.pdf](http://sandiego.gov/water/waterreuse/pdf/recycledfinaldraft120510.pdf).



## Pulling Out All the Stops for Purified Water *(continued)*



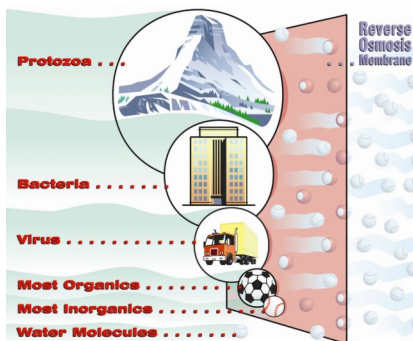
### AWP Facility Barrier 1: Membrane Filtration

The first step upon entering the AWP Facility is membrane filtration. Recycled water is pushed by pumps through the membrane filtration's

thousands of hollow fibers. These fibers have very fine pores that filter out bacteria, protozoa and particles. Microfiltration and ultrafiltration are two types of membrane filtration.

### AWP Facility Barrier 2: Reverse Osmosis

The water treated by membrane filtration then enters the reverse osmosis units. In this step, water is pumped through semi-permeable membranes which let water molecules pass through, but blocks microorganisms, such as viruses.



### AWP Facility Barrier 3:

#### Ultraviolet Disinfection/Advanced Oxidation

After reverse osmosis, hydrogen peroxide is mixed into the water before undergoing ultraviolet treatment. The added hydrogen peroxide reacts with ultraviolet light to form powerfully reactive molecules that destroy any remaining organic matter in the water. This advanced oxidation process completely disinfects the water of any remaining organisms in addition to destroying any remaining contaminant chemicals.

### Post-AWP Facility Barrier: San Vicente Reservoir

Now that the water has gone through membrane filtration, reverse osmosis, and ultraviolet disinfection

with advanced oxidation, the resulting water is similar to distilled water quality. During the Demonstration Project, this water is returned to the recycled water distribution system for irrigation and industrial uses; it is not currently added to the drinking water supply. If a full-scale water purification project were approved, the purified water would be sent to San Vicente Reservoir via a 23-mile pipeline.



At San Vicente Reservoir, the purified water would mix with and be diluted by

the existing water supply. The reservoir also provides further treatment by exposure to sunlight and other natural cleansing processes.

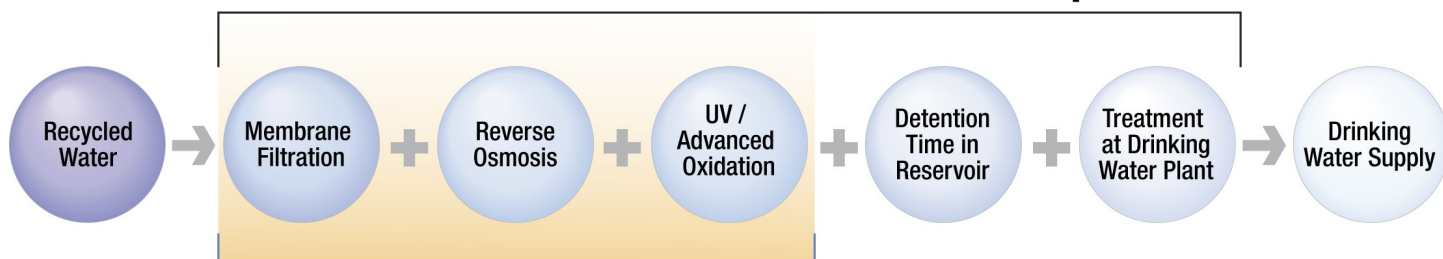
### Post-AWP Facility Barrier: Drinking Water Treatment Plant

The final step for the blended water (raw water from the reservoir and the purified water) before reaching customers would be a drinking water treatment plant. There the blended water would undergo additional treatment to make it safe to drink.

### Testing & Monitoring

Throughout the entire process, water would be tested and monitored to ensure contaminants are removed and the final product meets state regulations. If any anomalies were detected with the water quality at any point, the process would be halted and the water would not reach customers. Although the multiple barrier process may seem excessive, these safeguards ensure that San Diegans would receive the highest quality and safest water possible.

## Multi-Barrier Water Purification Steps



Water Purification Process



## Celebrating a Year of Tours

When the AWP Facility opened in June 2011, the City supplemented its existing outreach program with something more tangible: a tour experience. From the very first tours of the facility, tour guides have engaged visitors and explained the need for a local and reliable water supply, led them through an up-close experience with the water purification equipment, and challenged them with a quiz comparing purified water to tap and recycled water. Almost 200 tours later, the tour program continues to provide guests a unique insight into water purification.

Nearly 2,500 guests have toured the AWP Facility since its opening. Visitors range from members of the public to elected officials; from elementary school classes to fourth-year medical students; from Girl Scout troops to professional societies; from people who live down the street from the facility to people all the way from Australia, the UK, India, and other countries.

The Demonstration Project has welcomed many San Diegans to the AWP Facility, and it's not stopping yet. Tours are expected to continue through summer 2013.

So gather your friends, family, neighbors, coworkers and organizations to come for a look at what may be one of San Diego's future



water sources. To register for a tour, visit [purewatersd.org/tours.shtml](http://purewatersd.org/tours.shtml). If you can't make it out for a tour, staff would be happy to make a presentation to your organization. Contact [purewatersd@sandiego.gov](mailto:purewatersd@sandiego.gov) to schedule a presentation or to register a large group for a tour. Hope to see you soon!

### Out of the Mouths of Babes:

Dear Tour Leader,

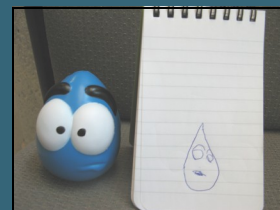
I Love the raindrop. I liked The Tours  
I Love the part when they changed from  
badwater to clean water. Thank you for the  
Tour.



Dear tour leader,

I enjoyed the movie and the droplets. Thank you for taking some of your time to give my class a tour of the plant.

Thank you for teaching me how to use less water. I enjoyed when you showed me what stages it goes through until it goes to my house.



## Get Social

The Demonstration Project is social-media savvy! We are on Facebook, Twitter and YouTube and want your participation. By "liking," following, and subscribing to the Demonstration Project on Facebook, Twitter, and YouTube, you can interact with the Demonstration Project team and find out what's going on with the future of San Diego water.



Find us on Facebook at [facebook.com/SanDiegoWPDP](https://www.facebook.com/SanDiegoWPDP). There you can read the latest information about the project, view photos of the AWP Facility and tour participants, ask questions of the Demonstration Project team and find links to interesting articles about water issues in California and around the globe. Our Facebook page is a great first step to learning about the Demonstration Project.

Follow us on Twitter [@PureWaterSD](https://twitter.com/PureWaterSD) to not only keep current on the Demonstration Project, but to also participate in the dialogue of the sustainable water community. Tweet at us for a direct reply, and retweet to your followers what you find interesting.

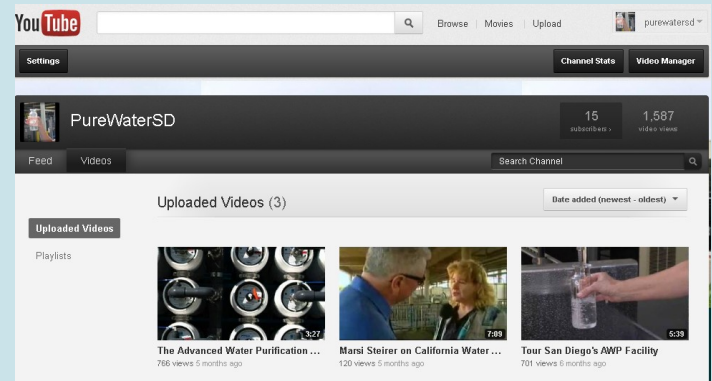


Subscribe to our YouTube page at [youtube.com/PureWaterSD](https://www.youtube.com/PureWaterSD) and view a virtual tour of the AWP



Facility. You can also watch how the multi-barrier filtration process works to

produce clean, clear water from recycled water. There is also a clip from California's Gold with Huell Howser featuring project director Marsi Steirer explaining the water purification process. Comment on the videos and let us know what you think.



Your participation on our social media platforms ensures your active contribution toward the future of San Diego's water supply. We look forward to hearing from you!

 [@PureWaterSD](https://twitter.com/PureWaterSD)



### Get the latest online

For our smartphone-savvy readers, use your barcode-scanning app of choice to scan the quick response (QR) barcodes to the left and right. You'll be an official Demonstration Project fan in no time!

Not receiving email updates from the Demonstration Project? Sign up at [www.purewatersd.org](http://www.purewatersd.org) or email [purewatersd@sandiego.gov](mailto:purewatersd@sandiego.gov).

 [SanDiegoWPDP](https://www.facebook.com/SanDiegoWPDP)



To schedule a presentation for your organization, email [purewatersd@sandiego.gov](mailto:purewatersd@sandiego.gov) or call (619) 533-6638.

Visit [www.purewatersd.org/tours.shtml](http://www.purewatersd.org/tours.shtml) to sign up for an AWP Facility tour.



PureWaterSD.org

