



A very full Ballona Creek after a rain event earlier this month.

At least nine atmospheric rivers blasted California between December 20th and January 15th, causing flooding and extensive damage, while also delivering much needed precipitation to our parched state. The Los Angeles County Public Works Department [announced](#) recently that more than 33 billion gallons of stormwater have been captured in the early months of the winter storm season, which will be enough to supply 816,000 people with enough water for an entire year. These capture efforts are a part of Los Angeles' scheme to build local water resilience and implement stormwater capture projects throughout the county. Officials are making progress, but there's still a long way to go.

This post takes stock of Los Angeles' performance in meeting its stormwater capture goals and discusses rainwater capture as another opportunity to enhance local water supply. First, let's settle on some definitions.

Stormwater vs. Rainwater

There's an important distinction between stormwater and rainwater. [Stormwater](#) is the water that drains off a land surface from rainfall before it reaches a natural water body. It occurs when the rate of precipitation is greater than the rate at which it can infiltrate or soak into the soil (in other words, when the soil is saturated). It includes rain that falls on rooftops, directed through gutters and downpipes onto land or into drains, and rain falling

on ground surface areas, such as roads, driveways, gardens, footpaths, and lawns. Collecting and reusing stormwater can conserve potable water, diminish downstream environmental impacts, and help prevent overflowing of the stormwater system. Stormwater after being treated is safer, and as such becomes a “recycled water” supply.

[Rainwater](#) refers only to the rain that can be captured in a storage tank prior to any contact with the ground. Rainwater quality is much higher, given that groundwater generally contains more contaminants, including soil, organic matter, fertilizers from gardens, and oil residue from driveways. Rainwater has many benefits and potential uses, such as washing clothes, watering gardens, flushing toilets, and washing cars.

Stormwater Capture in L.A.

Stormwater capture plays an important role in the city and county of Los Angeles’ [overall plan](#) to conserve and source water locally. In 2018, Los Angeles County voters approved [Measure W](#), a special parcel tax funding the Safe Clean Water Program. The program allocates \$280 million annually for multi-benefit stormwater projects throughout the county. California Natural Resources Secretary Wade Crowfoot called Measure W a “[world-leading policy](#),” that can also help reduce pollution [flowing into](#) oceans and bays. As a result of Measure W, L.A. has more resources than almost any other place in the country to harness rainfall to recharge groundwater basins for future use.

Measure W is working. Since its approval, the Los Angeles County Department of Public Works has awarded \$400 million to over 100 regional infrastructure [projects](#), such as the Rory M. Shaw Wetlands Park Project to convert a 46-acre landfill into a wetlands park that can collect stormwater runoff. And updates to the [Tujunga Spreading Grounds facility](#) in the San Fernando Valley doubled its ability to capture stormwater from 8,000 acre-feet per year to 16,000, which can potentially provide enough water for 64,000 households each year. This month, Vice President Kamala Harris [joined](#) state and local leaders at the Tujunga Spreading Grounds to highlight the work taking place at the facility and in California as a paradigm for the rest of the nation.

Despite the implementation of these successful projects, county officials have said it will take [three to five decades](#) to build a stormwater capture system that will provide enough water for the area. The ultimate goal is to capture 300,000 acre-feet, or roughly 98 billion gallons, of water annually. Last year, L.A. collected [only about 8%](#) of the water the county consumes in a given year. Part of the challenge is that L.A.’s current hundred-year-old

system was built with flood protection, rather than drought, in mind. City planners placed millions of barrels of concrete to get rid of water as fast as possible, channelizing the L.A. River, Ballona Creek, and nearly every other waterway in the area. Although a few regional watersheds, like the Upper San Gabriel River, possess good soils and systems for capturing stormwater, they are few and far between.

Managing the influx of water in a historic drought is tricky. During normal rain events, green infrastructure projects such as parks and gardens can help capture and store more water. But during extreme events, like the recent atmospheric rivers, larger infrastructure investments are necessary. It can also be difficult to garner public and political support for building big stormwater projects during dry times. A silver lining of the recent storms is that they have motivated the State Water Resources Control Board to fast-track stormwater capture efforts. “The state is capturing more water supply by accelerating groundwater recharge permitting and projects that mitigate the impacts of prolonged drought and support long-term sustainable groundwater management,” [said](#) Department of Water Resources Director Karla Nemeth.

Because Los Angeles County has 88 cities and 200 water agencies, it is important to have regionwide policies like Measure W that prioritize collaboration among water managers and ensure that funds are being distributed throughout the county. As Bruce Reznik, Executive Director of LA Waterkeeper, [stated](#), urban stormwater runoff is “death by 1,000 cuts,” and it requires solving “with 1,000 different solutions.” Achieving the county’s stormwater capture goals calls for continued regionwide efforts, regarding stormwater as an asset rather than a liability, and prioritizing water resilience even in the absence of catastrophe.

Rainwater Capture

Collecting rainwater is another way for Angelenos to build local water resilience. Households can install rainwater systems that catch rain from the roof of their properties and siphon it to a large barrel, tank, or cistern. [Underground capture systems](#) can also be used, which works by capturing rain that lands on a permeable surface and filtering it through several layers of rock before it collects in underground containers.

For many years, rainwater collection was actually illegal in California to prevent commercial entities from disrupting natural ecosystems by constructing large reservoirs with the capacity to amass millions of gallons of water that would normally flow to a watershed. The State Water Resources Control Board used to require all would-be appropriators to apply for

and acquire a permit to appropriate water from any source, including water falling in the form of precipitation. But in 2012, Governor Brown passed Assembly Bill 1750, or the [Rainwater Capture Act](#), which allows private citizens to install, use, and maintain systems for collecting rainwater for specific purposes, assuming they meet certain requirements. Homeowners can collect rainwater for non-potable uses, including gardening, landscaping, and washing vehicles. The State of California does not regulate the number of gallons of rainwater that homeowners can collect as long as there are no threats to public health.

In 2015, the State Legislature passed [Proposition 1](#), which allocates state funds for water supply infrastructure projects, including rainwater harvesting systems. The law is intended to hold businesses accountable for their water usage by requiring them, through new construction codes, to use captured rainwater in their toilets and for irrigation. Additionally, [Proposition 72](#), which amended the State Constitution, aims to encourage rainwater catchment by excluding the value of rainwater capture systems installed between January 1, 2019 and December 31, 2028 from property tax assessments. The value of the catchment system would be included in the value of the home when it is sold. The savings for homeowners under Prop. 72 varies. An inexpensive system may result in only a few dollars saved in property taxes. But bigger, more expensive systems can cost thousands to install and would otherwise raise property taxes a noticeable amount.

Harvesting rainwater has many benefits. Because rainwater tanks have limited capacity, rainwater collectors are forced to be careful with how they use the water they capture, which can significantly help reduce water waste, relieve the pressure on local reservoirs, and lower municipal water bills. Additionally, because [one fifth](#) of California's electricity is consumed by pumping and processing water, rainwater collection reduces demand on public potable water supplies and lowers energy consumption for water treatment and distribution. Harvesting rainwater also decreases the volume and velocity of stormwater runoff, leading to decreased flooding, reduced stream bank erosion, and fewer pollutants entering waterbodies. In addition, the use of untreated rainwater for irrigation reduces the amount of chemicals needed to make municipal water supplies safe, preventing more chemicals from leaching into local groundwater. Rainwater capture can help households achieve water self-sufficiency, which is particularly valuable in light of the [state's](#) and [county's](#) adopted water restrictions.

Although rainfall isn't always reliable in Southern California, Los Angeles receives around [15 inches](#) of rain per year, and every inch of rain yields around 625 gallons of water on a 1000-square-foot roof. Installing rainwater capture systems can also be expensive, but [rebates](#), like the SoCal Water\$mart Rebate Program, can help offset costs for residential and commercial owners seeking to obtain a rain barrel or cistern. The City of [Santa Monica](#)

also offers a rebate of up to \$2,000 for property owners to install rainwater harvesting systems, depending on the size of the system. Measures may need to be taken to keep contaminants, like dust or mosquitos, out of the rainwater. Households should also check their Homeowners Association bylaws for any restrictions on rainwater capture systems.

Takeaways

L.A. has implemented municipal and regional infrastructure projects throughout the county to capture and clean up stormwater with robust funding from Measure W. But continued regionwide efforts are necessary to meet the county's ultimate water supply goals. Rainwater capture presents another opportunity to enhance local water supply, with the added benefits of lowering municipal water bills, cutting energy consumption for water treatment and distribution, and reducing pollution in surrounding waterbodies and local groundwater.