

1.2 OWOW Plan 1.0 Moving Towards Sustainability



Wild pigs drinking from the Santa Ana River

The Planning Process

The development of this One Water One Watershed (OWOW) 2.0 Plan is built upon the planning process of the past to address the challenges of the future. The first phase of OWOW, known as *OWOW 1.0*, produced a broad-based, stakeholder-driven assessment of the watershed. Rather than engage a consultant to prepare a plan, SAWPA developed and convened a process whereby all segments of the water community worked in various workgroups called “Pillars” to produce an Integrated Regional Water Management Plan (IRWMP) for the watershed. Over 300 stakeholders described current conditions within the watershed and developed specific strategies and targets to make the watershed sustainable in 2030.

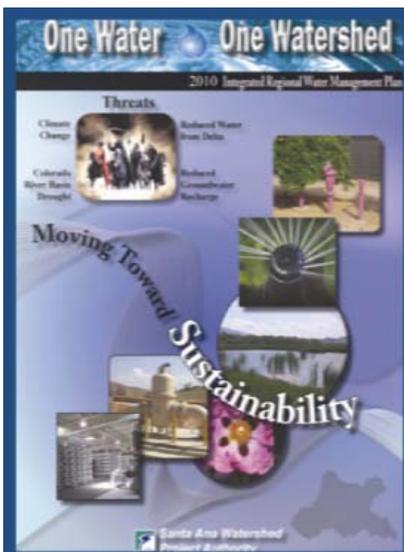
All aspects of water were considered, from flood risk management to water supply reliability, to habitat and open space. To manage such a complex process, SAWPA engaged the broader community and created a Steering Committee consisting of county supervisors, mayors, and business leaders, as well as water agency officials. At the conclusion of OWOW 1.0, the Steering Committee recommended funding several new integrated projects under Proposition 84 Integrated Regional Water Management (IRWM) funding that provide regional benefit. A wide variety of projects was selected from across the watershed and from varied disciplines, including local water supply development, and stormwater and habitat management. All projects considered provided multiple benefits to a broad area, leveraging scarce resources for many purposes.



With the development of integrated watershed planning, multi-benefit and multi-purpose projects have moved to the forefront and have become one of the primary goals of the OWOW implementation. Past efforts, with a few notable exceptions, primarily focus on single purpose projects. The additional effort required to develop multi-objective solutions has made true multi-benefit projects relatively uncommon. In California, much of which has been prompted by SAWPA's historical integrated watershed programs, there has been an effort to incentivize collaborative planning through IRWM planning and associated funding sources.



Some of the earliest multi-benefit water projects were done through a partnership between those interested in flood and groundwater management. Spreading grounds along the front slopes of local mountains have attenuated flood flows and recharged groundwater basins for nearly 100 years. Orange County Water District partnered early with Orange County Flood Control District (OCFCD) to provide recharge basins within flood control basins. More recently, Inland Empire Utilities Agency has worked with San Bernardino County Flood Control District to modify the operation of the flood control system to maximize recharge opportunities. Irvine Ranch Water District has partnered with the OCFCD to store recycled water in some flood basins. All of these projects primarily were facilitated by operational changes rather than the construction of new infrastructure, although in some cases the flood control system was upgraded. Operational changes could occur only when both parties understood the needs and assets of the other.



Although OWOW planning identifies numerous projects that implement the OWOW vision, the need exists to continually develop high level watershed management concepts, that when implemented, create the opportunity to make significant strides in efforts to make this watershed fully sustainable from a water resource perspective within a 30-year planning horizon. Inherent in this effort is the need to understand where we are today, and identify where we collectively want to be as a watershed in the future. SAWPA began efforts in 2011 to update and refine our IRWMP as the OWOW 2.0 Plan, and take the vision to the next level, encouraging stakeholders to focus on the key water resource management needs in the watershed, and to identify high-level watershed concepts for further development. With this vision in mind, regional stakeholders have been able to work collaboratively, thus improving the process associated with resource planning.

OWOW 1.0 Challenges

Significant water crises have arisen over the past decade, prompting SAWPA and regional stakeholders to collaboratively find solutions. A vision for the watershed was established as a sustainable watershed that is drought-proofed, salt-balanced, and that supports economic and environmental viability. To achieve this vision, stakeholders under the OWOW 1.0 Plan agreed to address four major threats that SAWPA has labeled as the *Four Horsemen of the Apocalypse*. They are:

Climate Change resulting in reduced water supplies combined with increased water needs in the region.

Colorado River Drought Conditions resulting in threats to imported supply due to upper basin entitlements and continued long-term drought.

San Joaquin Delta Vulnerability resulting in reductions or loss of supply due to catastrophic levee failure or changing management practices of the Delta.

Population Growth and Development resulting in interruptions in hydrology and groundwater recharge while increasing water needs.

Further description as to why these crises must be addressed herein follows.

Climate Change

One horseman impacting not just our region or State, but the entire world, is climate change. Climate change is occurring and must be addressed immediately to offset the impacts to water resources and the environment. The International Panel on Climate Change has stated that the world's climate is warming by an average of 1.3 degrees Fahrenheit in the past century. Unless current trends are reversed, global warming is projected to keep increasing and raise temperatures by as much as 11.5 degrees by the end of the century. The California Department of Water Resources' report entitled, *Managing an Uncertain Future: Climate Change Adaptation Strategies for California's Water*, details how climate change already is affecting the State's water supplies, and sets forth a number of recommendations to help avoid or reduce climate change impacts to water resources. The report indicated that global warming will present significant challenges to future water supply, water quality, ecosystem protection, and flood management.





Assessments on water supply and other impacts from climate change indicate likely reductions in snow pack, earlier and larger peak stream flows, potential reduction in runoff, greater evaporative losses, declining ecosystem health, sea level rise, and more extreme weather events, including flood and droughts. Other management activities affected by climate change include the need to consider energy use and greenhouse emissions of water resource projects, as well as the regional vulnerability of water systems.

Colorado River Drought Conditions

In addition to the statewide drought, another horseman of the Apocalypse that has impacted the Santa Ana River Region is the growing threat of possible future imported water flow decreases to Southern California from the Colorado River. For most of the first decade of the 21st century, the Colorado River Basin experienced some of the driest consecutive years in the history of the basin. If similar drought

conditions were to continue, reservoirs along the river, such as Lake Powell and Lake Mead, will continue to drop, and thereby reduce storage releases and energy production.

As reported by N. Christensen in his 2004 Climate Change report, *The Effects of Climate Change on Hydrology and Water Resources of the Colorado River Basin*, projections show that by 2050 the Colorado River flow would decline by 18% with the average Colorado River Basin water storage declining by 32%. Experts conducting studies of tree ring data in the Colorado River Basin have determined that severe and prolonged droughts, lasting up to 60 years or more, have occurred in the past and likely will occur again. As population continues to grow throughout the dry desert southwest, the water levels at Lake Powell and Lake Mead likely will continue to drop, with some projections indicating that the lakes may become dry by 2025.

Metropolitan Water District of Southern California, which serves as the importing water agency for most of Southern California, relies heavily on the flows from the Colorado River Aqueduct to assure that water demands are met. Because the drought conditions, as well as climate change, impact the entire Colorado River Basin, river flows are anticipated to decrease. Although under the Colorado River Compact Agreement, Southern California has senior water rights, and under the Quantification Settlement Agreement, is limited to 4.4 MAF. Greater stress will be upon all the Colorado River Compact Agreement parties to reopen the settlement agreement, as drought conditions exacerbate the ability of all parties to take from the river to meet their continued water demands.



San Joaquin Delta Vulnerability

The San Joaquin Delta is home to over 750 plant and animal species. Out of 29 identified indigenous fish species, 12 of them are threatened either with extinction or already have become extinct. Endangered species include the spring-run and winter-run Chinook salmon and the Delta smelt. Other fish species are threatened as well, including longfin smelt, threadfin shad, and striped bass. Water diversions, urban development, loss of habitat, impaired water quality due to pesticides, and increased competition from invasive species, are all factors thought to be influencing the decline. Many scientists have warned that an ecological crash of the food web and the Delta food web is possible.

The crisis of the Delta centers not just on water pumping issues, but also on the condition of the Delta's levees, many of which were not properly designed. Concerns have arisen that if several key levees should fail, due to increasing sea levels or earthquake conditions, water deliveries could be interrupted again. Looking long-term, rising sea levels caused by climate change also could push additional salt into the Delta, potentially affecting the quality or availability of drinking and irrigation water. Further, climate change also likely will reduce snow pack affecting the volume of water available for export. As a result, public agencies are working together to find a solution to the co-equal Delta goals of reliable water supply deliveries from the Delta and ecosystem restoration, at the same time becoming less dependent on Delta water to meet local water demands for the future.

Population Growth and Development

Most of the precipitation and snowmelt runoff occurs in the northern part of California, but the majority of the population lives in the drier central and southern portions of the State. This imbalance is not expected to change. According to population estimates issued by California's Department of Finance, Southern California counties will add more than five million people between now and 2050, an increase of 25% over the 2010 census numbers. Los Angeles is expected to remain the most populated county in California, followed by Riverside County, San Diego County, San Bernardino County, and Orange County, all of which portions of the most heavily populated areas fall within the watershed. With the projected increases in population growth, efforts to assure adequate water supply for the region will become more difficult. The crisis to water resources is not the growth of development *per se*, but how the water is used in new development that assures sustainability.



Huge areas of land gradually are being paved over in the watershed, which historically captured and recharged natural runoff into the groundwater and provides important replenishment water for pumping. Instead, the runoff from development is directed to storm sewers and channels that discharge to downstream rivers and streams and eventually are lost to the ocean. This tremendous amount of water that is no longer percolating into the ground is picked up along parking lots and streets and further contaminated by oil, grease, trash, bacteria, and fertilizer additives applied to adjacent landscaping. These byproducts represent a major water quality threat to downstream water bodies, many of which have been listed by water quality regulators as impaired, requiring total maximum daily loads. Taken cumulatively, the water lost from the resulting development when sustainable land use and water use practices are not in place, if continued unchecked, will become a major water crisis for the region, and is one of the four horsemen of the Apocalypse impacting water resources. The need for a water ethic for the preciousness of water, increased water capture and percolation, and improved land use practices will be required to handle this looming problem.