

# URBAN WATER INSTITUTE NEWSLETTER



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## Annual Water Conference: August 24-26, 2022



You are cordially invited to Urban Water Institute's Annual Water Conference - *Getting To The Heart Of The Matter.*

This three day, in person gathering will be held at San

Diego Mission Bay Resort on August 24-26, 2022 in San Diego, CA.

Leading experts will discuss getting to the heart of the matter on a wide range of topics.

This is a great opportunity to reconnect with colleagues, form new relationships, share views and learn from one another at this in person conference in San Diego.

For more details please visit the website and for more information you may contact us at: [UrbanWater.com](http://UrbanWater.com) or (949) 679-9676.



## In Focus: Re-Plumbing California

**Re-plumbing California: Preparing for water management under future climate conditions in the most litigious state in the United States**

By: John Spranza, HDR Lakes and Reservoir Practice Lead, Sacramento CA

The California water capture, storage, and delivery infrastructure system is quite possibly the most extensive in the world in that it can capture rainfall at the northern border of the state, store it, and then mobilize it over 750 miles to the southernmost portion of the state along the Mexican border. ... (continued to page two)



## In Focus: Re-Plumbing California (*continued*)



State Water Project Canals moving water from northern to southern California. Source, California Department of Water Resources.

(from page one) ... Drought and hydrologic variability are a way of life in California as the State's climate and hydrology are unlike any other in the nation. With a frequently extreme version of a Mediterranean Climate representing dry summers and wet winters, the state's climate is characterized by dramatic variability and uncertainty. Climatic conditions range from temperate rain forests in the north to the arid deserts in the south. Precipitation varies from year-to-year anywhere from extensive droughts in one year to damaging floods in the next. The 'average water year' in California hydrology simply doesn't exist, which makes managing water in this state particularly challenging. Adding to this complexity is a water management system that was originally conceived in 1919 and centered on capturing snowmelt in the state's vast mountain ranges. The snow water-bank, sometimes representing up to 70 percent of California's water storage, is then slowly released as it melts to provide a year-round supply of water to areas that would otherwise receive no significant rainfall from May to November.

### **Stress On The Water System**

With the growth of California's population from 5.7 million in 1930 to 39.5 million in 2020, the state's water infrastructure backbone has begun to show its age and design limitations. Further stressing the system are the myriad of environmental laws that original designers did not have to consider, but now have to comply with. These laws include national regulations such as the Federal Endangered Species Act (ESA), Clean Water Act (CWA), National Environmental Policy Act (NEPA), as well as those unique to the state and include California Environmental Quality Act (CEQA), California Endangered Species Act (CESA), California Porter-Cologne Water Quality Control Act (Porter-Cologne) and California Water Law. More recently, changing climate and rainfall patterns within the State has become a further challenge for water managers to address, plan for and incorporate into this often, overly complex system.

HDR is playing a major role in addressing all of these challenges by supporting the Sites Project Authority (Authority) in the planning, design, construction, and environmental permitting of the new 1.5-million-acre-foot (MAF) Sites Reservoir. The reservoir represents the first major northern California reservoir to be built since 1978 and the first major new water right in over half a century. HDR's primary task is to recommend, establish, and execute solutions that will allow the Authority to construct and operate this project within the anticipated timeframe, estimated budget, at minimal risk, and approved by all oversight agencies. HDR's new Lakes and Reservoir National Practice Group, maintains key roles on this effort, pulling from their members' diverse expertise in water quality, limnology, reservoir management, environmental permitting, and ecology to provide the Authority with advice and information that gets put into daily decision-making activities in the development of the Project.

### **California's Plumbing**

Out of more than 1,400 reservoirs in the State, forty-two dams and reservoirs, and 1,500 plus miles of major canals, tunnels, and related facilities make up the backbone of the system. This key infrastructure comprises the State Water Project (SWP), which is operated by the California Department of Water Resources (DWR) and the Central Valley Project (CVP), which is run by our federal partner, the US Bureau of Reclamation (BOR). These two projects alone provide drinking water for more than 30 million people, supports 5.75 million ... (*continued to page three*)

## In Focus: Re-Plumbing California (*continued*)

(from page two) ... acres of farmland making up the sixth largest economy in the world. In a delicate balance, California also sustains vast native ecosystems including the largest freshwater tidal estuary in western North America and four runs of salmon (Figure 1).



Figure 1. Major water project in California. Source: Ca Dept. of Water Resources

### A Changing Climate and Water Management Paradigm

California's water infrastructure is designed to capture precipitation during the state's rainy season and store it for use across the state throughout the year. Although 60 percent of the state's population lives in semi-arid Southern California, most of the precipitation falls in the north and east-central portion of the state during the months of December through March (Figure 2). Up to one third of this precipitation falls in the Sierra Nevada Mountains as snow.

Climate models predict growing variability in weather patterns throughout California. Additional variability can lead to longer and increasingly severe droughts and floods, which present significant challenges to California water supply. These models also predict a shift of more precipitation to fall as rain and not snow, breaking the current water management paradigm in the State. Models also predict that less snow and more rain will shift peak discharge up to 3 months sooner, moving from April into February. Perhaps the most challenging prediction is that rising sea levels will bring more saltwater into the Sacramento-San Joaquin Delta (Delta)—the heart of the California water supply system and a key source of water for 25 million Californians along with millions of acres of prime farmland. To keep the saltwater out, more freshwater will need to be pushed through the Delta by increased river discharge,

decreasing the amount of water available for people who historically relied on it (Figure 3). Add in increasing frequency of extreme and exceptional droughts, catastrophic wildfires, declining groundwater reserves, the continued decline of endangered salmon, a collapsing Delta ecosystem and continuing population growth—California is facing unprecedented challenges to a water management system that was designed for a distant and very different landscape that once was.

### A New "Old" Project Emerges

Beginning in 1955, DWR and BOR initiated the evaluation of expanded surface water storage in the Sacramento and San Joaquin Valleys. Sites Reservoir was part of that evaluation. In 2016 a new entity, the Sites Project Authority was formed to pursue the development and construction of the Sites Reservoir Project, which since 1955 has been viewed as an ideal location for additional offstream storage to provide direct and real benefits to instream flows, the Delta ecosystem, and California water supply. Sites Reservoir would not rely on snowmelt but rather capture winter runoff below the existing reservoirs in the Sacramento Valley. Because of this different water capture approach, it will be a new source of water and inherently adapt to future climate conditions. The Project will be operated to improve water supply resilience to the predicted changes in weather. Much of the rainfall from extreme events – especially those that occur back-to-back when the ground is saturated – runs off before it can be captured by the SWP and CVP for maximum environmental, urban, and agricultural benefit. By capturing a portion of ... (*continued to page four*)

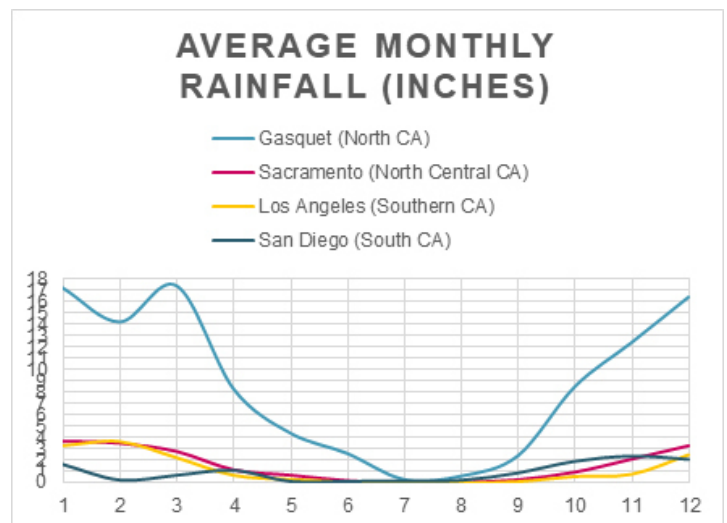


Figure 2: Monthly Average Rainfall from the Northern to Southern California Boarder.

## In Focus: Re-Plumbing California (continued)

(from page three) ...these high-flow events from the Sacramento River and operating in conjunction with other CVP and SWP reservoirs, the Sites Reservoir would increase the resiliency of water supplies by not relying on spring snowmelt for filling but instead will capture winter storm-related runoff that is not normally accessible for storage. Unlike most major reservoirs in the State the Sites reservoir would not block a major stream or river, would be located 17 miles west of the Sacramento River, and would provide on average an additional 250,000 to 300,000 acre-feet of water in dry and critically dry years. Water during these extreme periods would notably help endangered salmon, improve water quality conditions, and meet urban and agricultural demand.

### Support For California's Water Future

Since 2018, HDR has been supporting the Authority by acting as embedded staff, program managers, project managers, scientists, engineers, water operations specialists, and environmental permitting specialists. A key part of this effort has been to support the Authority's Environmental Permitting and Planning Manager (EPP Manager) by managing the day-to-day activities of the extensive state and federal



Figure 4. The new Sites reservoir would be an off-stream reservoir that would increase northern California's water storage capacity by up to 15 percent and help address the effects of climate change by increasing the flexibility, reliability, and resiliency of CVP and SWP.

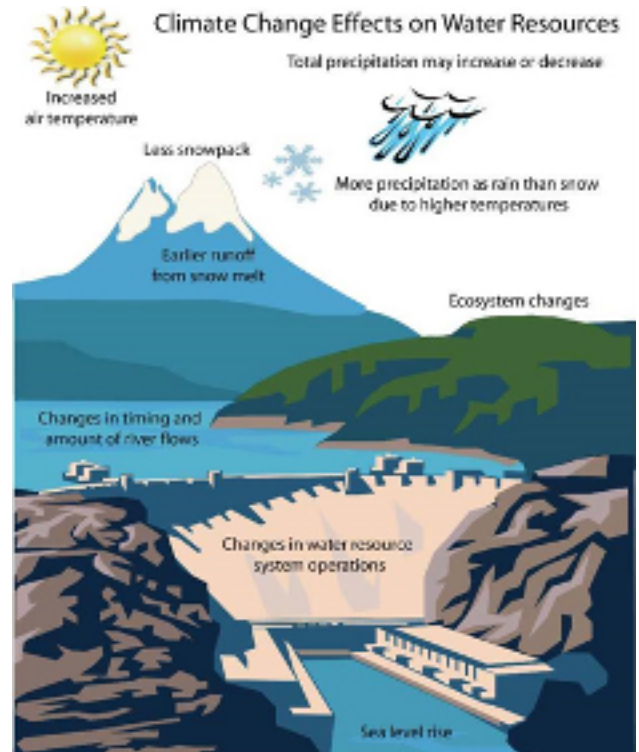


Figure 3. Climate change effects on California water resources, source, DWR

environmental permitting for the construction and operation of the new reservoir. With over 20 state and federal permits required, this is a challenging task in the highly progressive State of California where a single environmental permitting document commonly exceeds a thousand pages with the potential for numerous litigative challenges. The State itself has grown to be a leader in environmental protection and regulation, pioneering some of the toughest state environmental legislation to address environmental issues such as climate change, toxic waste disposal, water quality, pollution and loss of wildlife and habitat.

The Site's Project will inundate over 13,000 acres of grasslands, wetlands, streams, oak woodlands, and farmland, much of which is suitable habitat for rare vegetation communities and threatened and endangered species. The Project will also file for a water right to pump and store up to 1.5 million acre feet (480 billion gallons) of water from the Sacramento River each year.

The scope and size of the Project results in potential effects to the Sacramento, Feather, and American Rivers, as well as the Delta ecosystem, over 150 miles downstream of the Project's Sacramento River diversions. Overall, the Project has the potential to effect ... (continued to page five)

## In Focus: Re-Plumbing California (*continued*)

(from page four) ...13 federally listed species and nine state listed species, including both terrestrial species like the giant garter snake and Swainson's hawk and aquatic species such as several distinct runs of chinook salmon, green sturgeon and delta smelt. Additionally, the Sacramento River supports extensive urban, municipal, and industrial water demands, as well as large recreational and commercial salmon fishing that need to be accounted for and preserved. Given the need to balance all these demands, if you wanted an environmental permitting challenge in California, the Sites Project would be at the top of the list

### The Work Continues

HDR continues to support the Authority in obtaining a water right and permits under the Clean Water Act, State and Federal ESA, National Historic Preservation Act, Bald and Golden Eagle Protection Act, California Streambed Alteration Agreements, and the other dozen or so key permits that would allow the construction and operation of the project. Our goal is simple, support the Authority and its consultants in achieving the goals and objectives of the \$4 billion project. Our work continues as public comments begin coming in on the permitting documents and additional refinements to the Project operations will be requested before the final permits are issued and the terms and conditions implemented before construction is scheduled to begin in mid-2024. The Project also has a several hundred-million-dollar mitigation and adaptive management program to implement, which we will support. To do so we will continue to look for ways to expeditiously carry out the program oversight, technical review and daily support tasks that move the Project from the current planning and permitting phase, into construction and ultimately operation.

For more information please see: <https://sitesproject.org>.



Author: John Spranza, HDR

## Partners In Water: Water Education Foundation - Water 101 Workshop

With California diving deeper into a drought, take advantage of this once-a-year opportunity to attend Water Education Foundation's Water 101 Workshop on April 8, 2022 and gain a deeper understanding of the history, hydrology and law behind California's most precious natural resource.

Go beyond the headlines to learn more about the Sacramento-San Joaquin Delta, disadvantaged communities and the latest on efforts to comply with the Sustainable Groundwater Management Act. Top policy and legal experts will be presenting at our annual workshop held at McGeorge School of Law in Sacramento, with an optional groundwater tour the day before. The workshop is an ideal opportunity for new water district board members and water professionals from all backgrounds to learn from policy and legal experts who bring deep knowledge and insights to their topics.

Among other topics at the workshop are:

- California's geography, history and hydrology
- California's water rights system
- Governing laws and regulations
- Groundwater basics and the Sustainable Groundwater Management Act

For more information, please visit -

<https://www.watereducation.org/foundation-event/water-101-workshop-basics-and-beyond-4>





**SAVE**  
*the*  
**DATE**

*Urban Water Institute's  
29th Annual Water Conference*

*August*

*24-26, 2022*

*San Diego Mission Bay Resort*

*1775 E Mission Bay Dr,  
San Diego, CA 92109*

*For more information, please contact the Urban Water Institute at*

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*Please visit our website [www.urbanwater.com](http://www.urbanwater.com)*