Environmental and Water Supply Benefits from New Surface Storage

September 2007

Department of Water Resources

California has a diverse set of strategies for managing its water resources, all of which are necessary for a vital economy, healthy environment, and a high standard of living. Surface storage reservoirs provide a foundation for many of those strategies.

Storage is a Vital Part of the State's Water Infrastructure

Without its ambitious system of water supply infrastructure, including surface storage facilities throughout the state, California could not support 37 million residents and its vital agriculture industry. The system also provides vital flood protection, allowing cities and farms to thrive in the Central Valley floodplain.

At the same time, however, any dams constructed on major river systems have altered riverine ecosystems in ways that have been harmful to fish passage, the natural transport of sediment, seasonal variation in flows and other ecological processes driven by that variation.

Meeting Future Water Needs

Future water management strategies in California must provide reliable water supplies but also address a broad range of public benefits including habitat and restoration needs such as refuge water supply, instream flows and river temperature requirements; flows to manage Delta salinity; management of the timing of diversions from and releases to rivers and streams; effective conjunctive use of surface and groundwater; and flood management.

Impact of Climate Change on Water Management

Achieving these objectives becomes more challenging in light of climate change, increasing water quality concerns, growing population, and more widespread recognition of needs associated with California's aquatic, wetland, and riparian ecosystems.

Three proposed new surface storage facilities; Sites Reservoir (Colusa County), Temperance Flat (Fresno County), Los Vaqueros Expansion (Contra Costa County)

Climate change is already diminishing the annual Sierra snow pack, effectively shrinking the state's largest "reservoir" and increasing reliance on existing dams for water supplies. Climate change is also inducing greater variability in weather and runoff, with more severe droughts and more powerful floods.

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Need for New Investments, New Strategies

In the future, Californians will need more water supply reliability and more flood protection from their reservoirs. At the same time, reservoirs must be operated to protect and improve the environment and reverse past mistakes.

We need more water management tools and greater flexibility to cope with future conditions. The tool with the greatest potential is water conservation. Climate change will make it even more essential that we move aggressively to increase our water use efficiency on farms and in our cities. Stronger conservation programs must be a major part of future water management.

Greater Flexibility to Manage Water for Tomorrow's Challenges

While conservation can help reduce demand, it does not provide much additional flexibility. A unique attribute of water storage is its flexibility. Surface storage in particular has the ability to deliver and store water quickly. While groundwater storage is a critical strategy, aquifers are limited by how quickly they can be filled or discharged.

Ideally, surface and groundwater storage can be implemented together to use the advantages of each. This type of integrated implementation will significantly improve the reliability and flexibility of water management systems to meet future needs and cope with future uncertainty and variability.

New Reservoirs will have Multiple Benefits

The proposed Sites Reservoir provides an illustration of the ways new surface storage can work with existing water systems and other water management strategies to meet future needs and do it in ways that reduce the impacts that existing dams have had on the environment.

For example, Sites Reservoir could eliminate the need for the Red Bluff Diversion Dam, long an impediment to fish passage. Operating Sites in conjunction with other reservoirs such as Shasta, can maintain flood protection and deliver water to urban and agricultural users while reserving more water in Shasta to ensure cool water for spawning salmon. Combining Sites Reservoir with extensive setback levees will improve flood protection and regain some riparian forests that have been lost.

Moving Forward with a Comprehensive Plan that Includes Surface Storage

In the end, the two big challenges will be to address the issues of reservoir operations and project cost. Are Californians willing to operate a new reservoir in ways that truly offer multiple benefits? And are we willing to pay the high cost of improved reliability and flexibility? Compared to the challenges of coping with climate change and redoubling our conservation efforts, the answers are clear and compelling. Skeptics of surface storage need to outline the guarantees necessary to assure proposed operations. Proponents need to agree to pay their share of the costs.

The argument shouldn't be over which tools we will need in the future. California will need all of them. The focus should be on using every water management strategy properly to assure a vital economy, a healthy environment, and a high standard of living.

Surface Storage Provides:

- Reliable water supplies
- Ecosystem benefit
- Flood Protection
- Flexibility to respond to climate change impacts
- Recreation enhancements
- Emergency water supplies