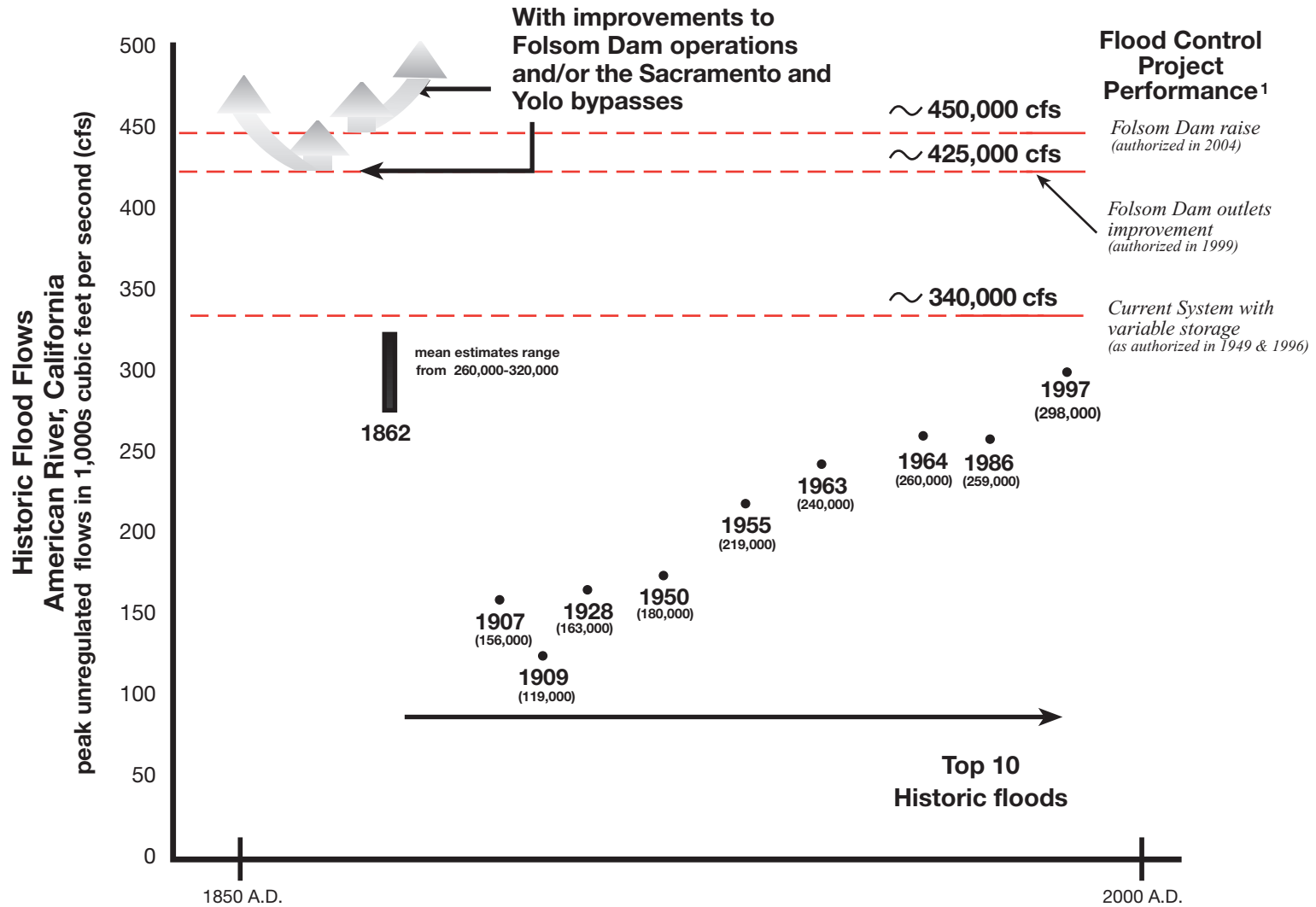


How Good is Sacramento's American River Flood Control System?



History Can Be A Guide

CONTROLLING AMERICAN RIVER FLOODS

Understanding the past, meeting the challenges of the future

One hundred and fifty years of historic flood experience along the American River underscores the fact that by continuing to upgrade the existing Folsom Dam and downstream river levees, Sacramento area residents can build a flood control system capable of managing American River floods substantially larger than any floods that have occurred on the river since the founding of the City.

Since their completion in the 1950's, flood control works along the American River have been able to contain record high flows within the development-narrowed floodway. However, these flows have approached the capacity of the old flood-control system³ — with flows that geologists characterize as typical of extreme flood events in the past.⁴

In response, Sacramento has embarked on a program to improve its flood-control system. Over the last decade, considerable work was undertaken to improve the reliability of Sacramento's levees — and additional floodwater-management space was dedicated (during wetter winters) at Folsom Dam.

In 1999, Congress authorized two additional changes: 1) higher capacity outlets for the 50-year-old Folsom Dam upstream from the City of Sacramento, 2) levee raises to prevent planned emergency releases from Folsom Dam from causing flooding in Sacramento. (Meaningful construction at Folsom Dam has not yet begun because of design and contacting problems with the Folsom Dam modifications, which could take as long as 10 to 15 years to complete given constrained Corps funding and the potential need to reauthorize this project. The levee-raise projects could be ready to begin in 2006 or 2007.)⁵

Additional performance enhancements are also possible. In 1992 and again in 1999, Congress directed that federal flood operations from Folsom Dam be optimized — including a renewed emphasis on beginning flood-control operations when enormous flood flows are forecast. Such operations should materially improve the performance of the Folsom Dam outlet modifications authorized in 1999.

In 2004, at the urging of Sacramento Community leaders the U.S. Congress authorized a plan to make additional changes to Folsom Dam — raising the dam by seven feet to increase space available for floodwater management purposes, along with associated river and American River Parkway environmental mitigation and restoration projects.

Additional reviews and studies are also being undertaken that someday may result in increasing the flow capacity of the Yolo & Sacramento bypasses — as well as setting

back Natomas basin Sacramento River levees away from erosive river flows. Such improvements could lower high river levels on the Sacramento and Lower American Rivers — as well as providing even more capacity, flexibility, and reliability for area and Sacramento Valley flood-control operations.

Standing astride the confluence of two major and dynamic rivers, confronting floodwater and floodplain management responsibilities will always be important to Sacramento. By assembling the history of flood information and looking to the future, Sacramento can make informed judgements and thoughtful decisions that will stand the test of time.

endnotes

1. "Project performance" is here defined by the runoff volume (as measured by the flood peak of the unregulated "design flood") that a particular flood control system can reliably accommodate. (Performance estimates derived from MBK Engineers and U.S. Army Corps of Engineers [COE].) (Unregulated flow estimates are from the COE, USBR, & MBK Engineers.) In dam-controlled watersheds, use of unregulated (total flow into rivers and storage) runoff volumes allows planners to easily compare the performance of past, existing, and planned flood control projects against historic, modern, and hypothetical storm runoff events.

2. Ostenaar, D. A. and Klinger, R.E., et al, *Summary of Major Findings: Paleoflood Study for Folsom Dam*. Presentation to the National Research Council Workshop on American River Flood Frequencies, July 13, 1998. Sacramento: "Geomorphic and stratigraphic evidence also indicates that there have been floods somewhat larger than the January 1997 flood, but there is a complete absence of evidence for floods with peak discharges substantially larger than the January 1997 peak flows."

3. In 1997, unregulated runoff in the American River watershed approached 90 percent of the flood control system's peak capacity. In 1986 and 1997, unregulated runoff in this watershed also approached 90 percent of the more directly system performance related 3-day "design flood" volume capacity of the system.

4. Ostenaar & Klinger, et. al., 1998, *Summary of Major Findings*: "Study results indicate that the flood experience over the past 50 years is not anomalous. Floods with a similar magnitude to the January 1997 flood have occurred repeatedly during the past few hundred years."

5. In June 2000, Sacramento voters voted for assessments to fund the local share of this project. That same year, California voters approved a bond measure to finance the state share of water project improvements, including flood control facilities in Sacramento. Both the Folsom Dam outlet modification and flood-control dam raise projects have also been authorized by the California legislature.