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Dam costs skyrocket

By: Gus Thomson, Journal Staff Writer

Costs have ballooned for a multipurpose dam at Auburn, according to a new report released Tuesday.

Basing calculations on a 1978 design, the U.S. Bureau of Reclamation report pegs the total projected cost for an Auburn dam at \$9.6 billion -- billions more than previous estimates.

Using more modern engineering techniques and working with a major redesign, the dam could still cost an estimated \$6 billion, the study states.

Over the past two decades, the cost estimates for a multipurpose dam on the American River had ranged from less than \$1 billion for a flood-control-only structure to estimates of \$1 billion to \$3 billion for a multipurpose dam.

U.S. Rep. John Doolittle, R-Roseville, had requested revised numbers last year in the wake of the Hurricane Katrina disaster. The bureau's report was commissioned in 2005 and made public three months after a mid-term election that left Doolittle's Republican Party in the minority in both the Senate and Congress.

Doolittle said that he had asked for the report to provide new estimates on costs and benefits of an Auburn dam.

But the congressman -- the dam's leading advocate in Washington -- said that with the shift in Washington to the Democrats, the report doesn't hold the weight it would have held if Republicans were still in the majority.

"It's going to provide the foundation for further progress but conditions in Congress are not right for it at this time," Doolittle said.

Tim Woodall, the president of Protect American River Canyons, an Auburn group opposed to the dam, said the new report's estimates provide more reasons not to build.



Ben Furtado/Journal File The concrete work that was part of the original dam construction project in the 1960s and 1970s can be seen above heavy equipment used as part of work now taking place in the American River canyon to restore the river channel.

"Wow," Woodall said. "Those are mind-boggling numbers. Who on earth is going to agree to pay for a \$6 billion to \$10 billion dollar dam?"

The report updates cost estimates for a plan engineered in the late 1970s for a concrete curved gravity dam. The initial plan for a flowing concrete-arch dam had been scrapped after the Oroville earthquake of 1975 sparked concerns about seismic safety at the Auburn site.

New cost estimates are that the "field cost" of the dam would be \$5.4 billion. The total includes \$2.09 billion for the actual concrete dam, \$578 million for the power plant, \$76 million for electric power transmission and a substation, \$469 million for highway and road relocation, \$79 million for site preparation and \$904 million for contingencies.

At the same time, the report says new land purchases above what has already been bought would amount to \$2.3 billion. Mitigation costs would add another \$1.5 billion to the cost of the dam.

Using those two numbers as a base amount for mitigation costs, Doolittle said he was amazed that \$3.8 billion in environmental mitigations would eclipse the costs of the actual dam.

On the positive side for Doolittle, bureau projections indicate that hydroelectric generation would add a substantial new source of power to the grid. While the dam's initial 1963 cost-benefit analysis estimated hydroelectric power would be worth about \$6.5 million a year, the new study indicates that it would be worth between \$53 million and \$113 million. All estimates are in 2006 dollars.

"I'm pleased on the positive side on the quantification of the revenue stream for hydroelectric power," Doolittle said.

While not a cost-benefit analysis, the \$1 million report does provide a new perspective on benefits a multipurpose dam designed in the late 1970s would produce.

Irrigation was envisioned to be the main beneficiary in 1963, but the dollar amount of its benefit for the agricultural community has dropped from \$45.3 million to between \$25.4 million and \$42.5 million.

Flood-damage reduction is valued at \$9.6 million to \$75 million a year, compared with the \$400,000 of estimates made in 1963.

Using several formulas, the bureau report estimates a loss of recreation in the canyon of as much as \$21.7 million - or a gain in value of as much as \$6 million. In 1963, with the Auburn reservoir created by the dam expected to become a magnet for water sports, the recreational benefit was quantified at \$6.6 million.

Woodall said the new report underscores the folly of building an Auburn dam.

"The fact is that dam proponents were unable to attract investors when construction costs were estimated at \$3 billion," Woodall said. "Now that we know the actual cost would be two to three times that amount, it is hard to imagine anyone continuing to argue with a straight face that the dam remains a realistic proposal."

Mike Finnegan, area manager for the bureau's Folsom office, said the report had to use "a tremendous number of assumptions" because it was basing its projections on a dam design that would not be used today.

The \$9.6 billion figure reflects the 1978 footprint but costs with new technology and dam-building techniques could lower the final bill to closer to \$6 billion, he said.

The Journal's Gus Thomson can be reached at gust@goldcountrymedia.com.

Fast Facts: The Auburn dam

A report by the U.S. Bureau of Reclamation released Tuesday provides new numbers for the long-standing Auburn dam debate:

The new estimate on the cost for an Auburn dam project is between \$6 billion and \$9.6 billion.

Expenditures totaling \$315 million that have already been made since the dam was first authorized by Congress in 1965 are not included in the estimate.

The report says environmental and other mitigation costs totaling \$1.5 billion and new land costs of up to \$2.3 billion are two major factors driving the increases in new cost estimates.

Total annual benefits would range from \$76 million to \$240 million, compared with the \$60 million estimate in 1963 projections.

Much of the gain would come from hydroelectric power generation. Forty-two years ago, the estimated annual benefit was pegged at \$6.5 million. The yearly range is now believed to be from \$53 million to \$113 million.

Source: U.S. Bureau of Reclamation

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The Sacramento Bee

Auburn dam price tag soars

Study puts cost at twice earlier estimates, says it wouldn't protect capital in giant flood.

By Matt Weiser - Bee Staff Writer

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A new study puts the cost of constructing an Auburn dam somewhere between \$6 billion and \$10 billion — at least twice the cost of earlier estimates.

The report, released Tuesday by the U.S. Bureau of Reclamation, yielded other sobering revisions to previous assessments of building a concrete dam on the American River near Auburn: As originally designed, the dam would provide far less drinking and irrigation water than once believed and would cause more harm to adjacent recreation areas. The study also found the dam would not protect Sacramento from a worst-case flood.



An artist's rendering shows a 1978 design for the Auburn dam that would have been 685 feet high and store 2.5 million acre feet of water.

U.S. Bureau of Reclamation

The report was ordered in 2005 by Rep. John Doolittle, R-Roseville, who has led a decades-long campaign to build the Auburn dam.

Doolittle was undeterred by the new numbers Tuesday, arguing the dam is critical to flood control in the Sacramento region and that the costs could be recouped through water and power sales.

"Cost is only relevant when compared to something else," he said. "This dam will pay for itself through sale of hydropower and flood control benefits. This report doesn't detract from the compelling need for this dam."

The Auburn dam was first authorized by Congress in 1965. Construction was halted a decade later, following an earthquake centered near Oroville. That temblor revealed a fault directly beneath the Auburn dam site.

Construction never resumed, nor did controversy wane.

After supporting the project in the 1980s without success, Sacramento city and county officials gave up on the dam's chances in Congress and turned their attention to alternative flood-control solutions. Since then, they have lobbied hard for Folsom Dam upgrades, ultimately winning congressional support. Construction on those upgrades, to begin this fall, will cost an estimated \$1.6 billion and double flood protection for the Sacramento region by 2014.

Doolittle and other supporters continue to tout the Auburn dam as the only true solution to Sacramento's grave flood risk.

Rep. Dan Lungren, R-Gold River, is among those who support a dam at Auburn. In a news release, he said the report makes a "convincing case" for the dam and that it offered enough information about potential benefits to justify a more detailed study.

"It is paramount we take the important steps to obtain maximum flood protection to secure our region from a future catastrophe," Lungren said.

For others, the costs associated with such a dam were a staggering deterrent. Even the \$6 billion cited as the low end of the cost range is double the previous estimate cited by dam supporters.

"I'm stunned," said Ronald Stork, senior policy advocate at Friends of the River, a dam opponent. "Those are big, big numbers. From Sacramento's perspective, this really confirms their good judgment to invest in Folsom Dam. That's looking like a pretty good bargain."

The new report cost \$1 million, and Bureau of Reclamation officials were quick to note its limitations. Chief among them was the authorizing legislation for the study, which limited review to a 1978 dam design chosen in response to earthquake concerns.

That design is a 685-foot-high concrete gravity dam storing 2.5 million acre-feet of water. It would flood the north and middle forks of the American River.

Mike Finnegan, area manager for the bureau, said this design would not be built today. He said a modern design likely would cost closer to the low end of the range — \$6 billion — because it would require fewer materials and man-hours.

There are other uncertainties.

For instance, the bureau relied on a 10-year-old U.S. Fish and Wildlife Service study to estimate the cost of correcting environmental damages. This includes purchasing hundreds of acres of land to replace habitat lost to the dam.

This study was based on an early "dry dam" proposed by the U.S. Army Corps of Engineers at Auburn. A multipurpose dam that continuously floods the area would likely result in greater environmental costs.

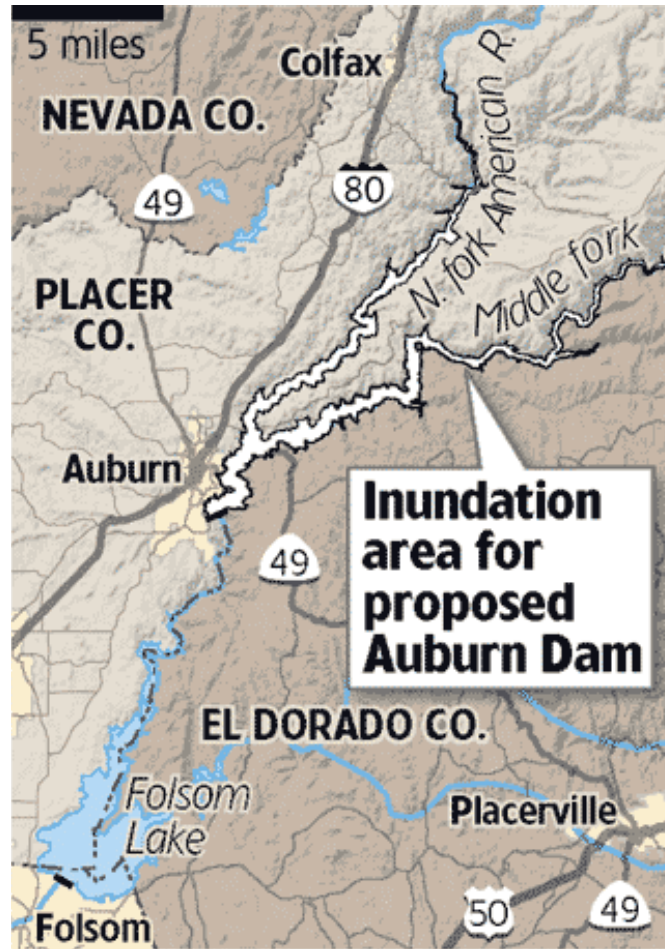
The project's benefits also appear reduced from earlier estimates. The project would produce 200,000 acre-feet of new water supplies. That marks a drop from previous estimates of 350,000 acre-feet, largely because recent rules commit much of the available river flows to protecting fish habitat.

The study found that, while creating opportunities for lake recreation, the dam would flood canyons that have become popular for land-based recreation.

Finally, the report estimates Auburn dam would not save Sacramento from a theoretical 500-year flood, a major rallying cry among those calling for the structure. Even with the dam in place, the city likely would endure billions of dollars in damage in such a worst-case flood, according to the study.

For now, there is no plan to resume construction on Auburn dam; doing so would require additional action from Congress.

"We are simply delivering the report as we were required to do, and that's pretty much the end of the story," Finnegan said.



**Inundation
area for
proposed
Auburn Dam**

Map data: ESRI, TeleAtlas, USGS

Sacramento Bee/Nathaniel Levine



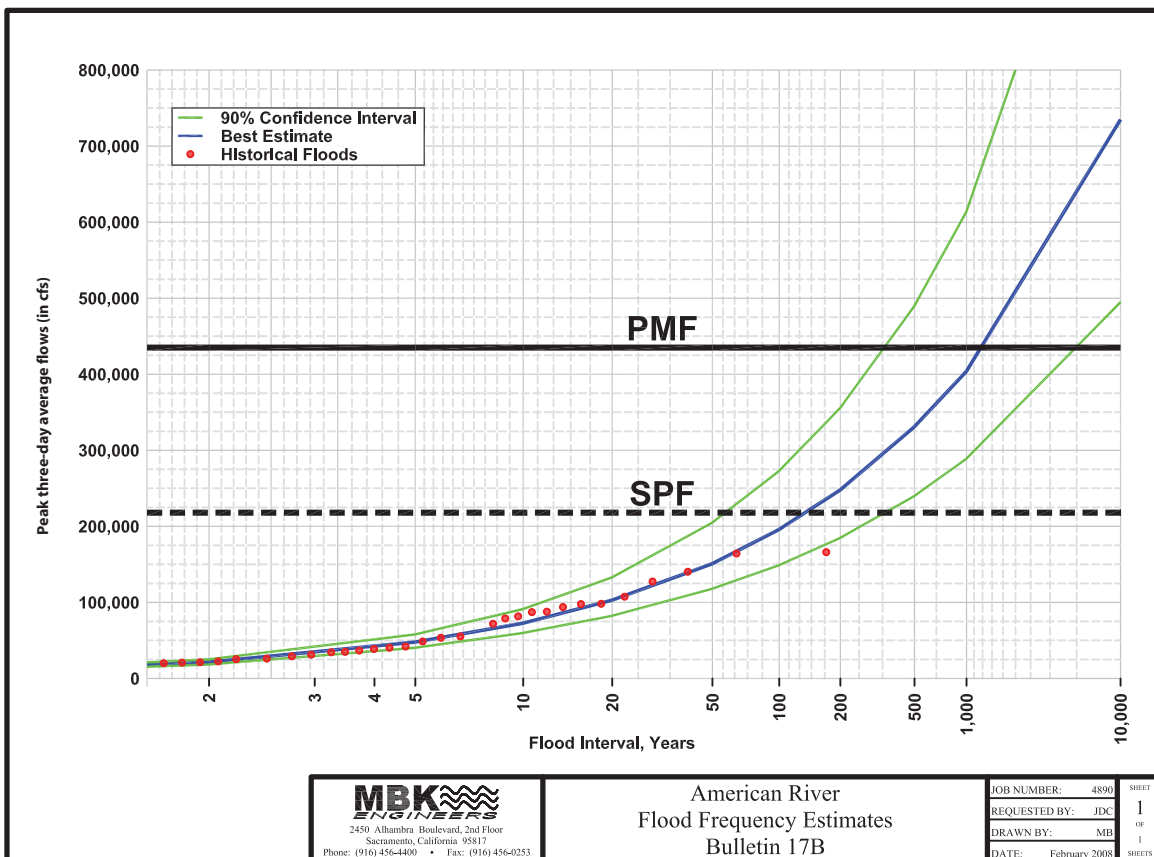
Article notes

It is not surprising that the Auburn dam project authorized in 1965 could not contain the current estimate of the 500-year flood since these flow estimates exceed historic or current worst-case flood estimates. This is unfortunate since the article erroneously implies worst-case flows are associated with the modeled 500-year flood.

In fact, either the Bureau's Auburn dam or it's Folsom Dam spillway improvements should be able to successfully regulate an American River standard project flood, a worst-case flood estimate developed for floodwater-management project planning.

Calculated median (best estimate) hypothetical 500-year flood flows based on unconstrained Bulletin 17b statistical methodologies exceed standard-project-flood flows by a wide margin. 90% uncertainty 500-year flows are dramatically higher, exceeding the impossibly improbable "probable maximum flood" an extremely conservative design used for spillway dam-safety purposes and not for sizing flood-control projects. These exceedances highlight problems with the reality of statistically based 500-year flow estimates in relationship to the actual world, an unaddressed issue in the article.

FOR, April 2008

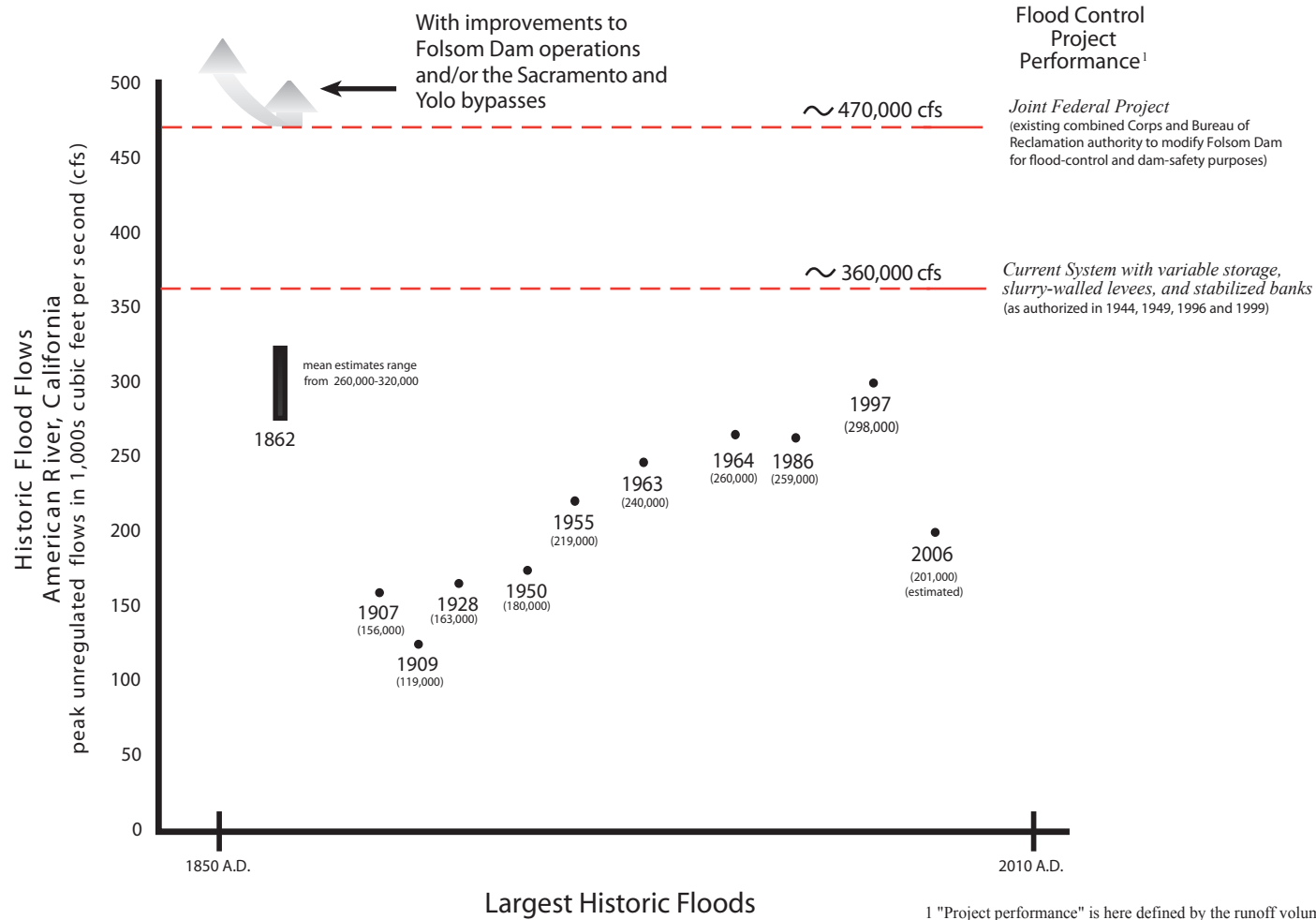


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American River
 Flood Frequency Estimates
 Bulletin 17B

JOB NUMBER:	4890	SHEET	1
REQUESTED BY:	JDC	OF	1
DRAWN BY:	MB	SHEETS	1
DATE:	February 2008		

Record American River Floods, Existing and Authorized Flood Control Project Performance



¹ "Project performance" is here defined by the runoff volume (as measured by the flood peak of the unregulated "design flood" hydrograph) that a particular flood-control system can reliably accommodate. In dam-controlled watersheds, use of unregulated (total flow into rivers and storage) runoff-volume hydrographs allows planners to easily compare the performance of past, existing, and planned flood-control projects against historic, modern, and hypothetical storm-runoff events.



Editorial

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Spending more now to study Auburn dam would be wasteful

The long-awaited federal feasibility study of the Auburn dam offers conclusive evidence ... that a dam on the American River will be darn expensive.

How expensive? How about \$6 billion to \$10 billion, or approximately 10 times higher than original estimates, and two to three times the \$3 billion estimated by the U.S. Army Corps of engineers two years ago.

For comparisons, the military estimates the Iraq War costs about \$4.5 billion per month in operational costs. Conversely, damage from Hurricane Katrina -- the catastrophic flood scenario Congressman John Doolittle and others say could happen to Sacramento -- may top \$150 billion.

So, would continuing to pursue the Auburn Dam be wasteful government spending or a wise investment in 500-year flood prevention?

Dam supporters, including Doolittle, can point to the study and cite benefits of water supply, hydro-electric power and flood control associated with the 70-story concrete dam. The study estimates annual benefits of \$76 million to \$240 million for these features.

Dam opponents can quote the potential \$22 million annual loss in recreation benefits, or that the cost of land to re-route roadways and mitigate environmental damage could be exorbitant, or that seismic uncertainty is a risk that should take the project off the table completely.

Of course, these are the same arguments made before the \$1 million study was commissioned. And considering the study is based on a 30-year-old design of the dam outdated by modern-day engineering standards, one has to wonder what taxpayers got for their money.

The study admits as much.

"Statutory requirements, project operations, demographics, and science have all changed significantly since the original formulation," the bureau wrote in its executive summary.

"This placed Reclamation in the position of adapting the 1978 design to meet current conditions which, along with the projected future conditions, are different than what was known or projected 50 years ago."

Dam supporters might be inclined to say the report shows the need for yet another feasibility report, with an updated dam design that could lower cost estimates. Doolittle was pushing for just such a study before being stripped of his majority power position in the last election.

But let's be honest. There is virtually no support for the dam outside the Fourth Congressional District, now that Republicans have lost Congress and the federal government is staring at a war invoice that might reach into the trillions.

Meanwhile, the state has offered little support for the dam, either through lobbying or in sponsoring an in-depth -- and costlier -- feasibility study, as Doolittle hoped for several months ago.

Instead, work continues on raising the height of Folsom Dam and providing an auxiliary spillway, and California is spending billions in state voter-approved bonds to repair Central Valley levees.

These measures should get the region to 200-year flood protection -- a level that should buy the time necessary to better understand the complex dynamics of the Central Valley river system.

It's time to take a breather. Unless the state does a turnabout and becomes a willing partner in the venture, dedicating more money on a dam that has little support and sketchy economics seems like wasteful spending at a time when every dollar counts.

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OPINION

Forget an Auburn dam

Study: Little bang for very big bucks

It's an old trick in politics: keep an issue alive by studying it. And it works, so long as the study itself doesn't kill the idea by revealing some new, unflattering facts.

Rep. John Doolittle took a risk of that happening when he snuck into a bill some language requiring the Bureau of Reclamation to review his longtime favorite project, a dam in the American River near Auburn. The study is out, and its results show what a risk Doolittle took. The findings: Auburn Dam could cost nearly \$10 billion. It would provide half the water yield that was originally advertised. And the economic costs of losing a free-flowing river in these canyons are greater than the economic benefits of the boaters atop the new reservoir.

As the saying goes, be careful what you wish for.

Dams can be very necessary to helping a downstream civilization to survive a devastating flood and a long drought. A case in point: Sacramento simply couldn't exist as it does today without Folsom Dam on the American River. The question is what additional benefit society would get by adding a second dam upstream.

This new study reaffirms something that can be hard to understand: Building a new upstream dam that is more than twice the size of Folsom (as reviewed by the bureau in this study) doesn't result in twice the new water supply. In fact, the result is precisely the opposite. Big Auburn would only provide a small fraction of the water supply that the smaller Folsom holds.

Why? Because Folsom is quite the workhorse as it captures and releases the runoff from the Sierra. There are some big flows in the biggest of rainy years that presently go out to the ocean; an Auburn Dam could capture these. But this benefit is marginal, according to this study.

Then there is flood control. Again, Folsom is being retooled to be a remarkable flood control device. Spending roughly \$1 billion to add a spillway and increase the dam elevation by less than 10 feet provides an impressive amount of additional flood protection. An Auburn dam would further protect downstream property by roughly 10 percent at perhaps nine times the cost of the pending flood improvements downstream.

This study affirms the incredible wisdom of the Sacramento Area Flood Control Agency's decision to focus on Folsom Dam and leave Auburn to be a lively argument for the chattering class.

As an idea, an Auburn dam was a long shot even before Doolittle and the Republicans lost control of Congress. Nobody has stepped forward to buy the water it would hold or help pay for the flood protection it would provide. Nobody will if it's too much for too little.

For a cadre of crusaders (they gather at a local Coco's once a month), the dream of an Auburn dam will never die. For those who look for achievable, cost-effective water and flood control solutions, an Auburn dam may not be dead, but it belongs in the deepest of hibernations.