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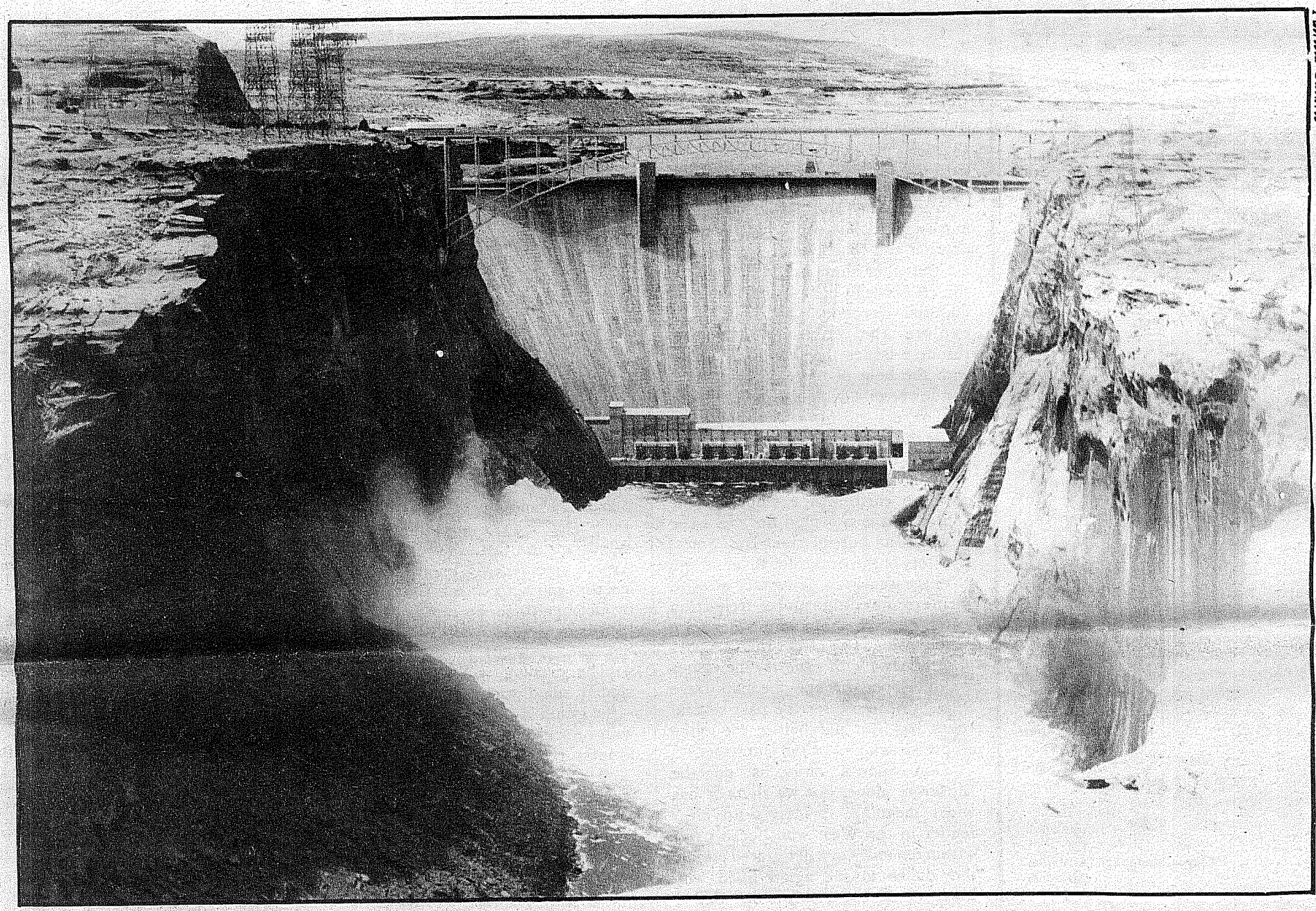
Floods reveal water policy chaos



Patricia Guthrie

Glen Canyon Dam at full flow this summer

An Analysis - The Colorado in Flood- Was the Bureau To Blame?

by James R. Udall

The controversy continues. Was this year's high water a "controlled flood" as the Bureau of Reclamation contends? Or was it, as residents along the Lower Colorado maintain, a "manmade disaster," a "monumental mistake?"

It depends who you ask.

In July, jaunty Jim Watt said, "I'm thrilled. The system worked beautifully. The dams are in good shape. The Bureau's done an excellent job."

In early September, Bureau Commissioner Robert Broadbent was more subdued. He acknowledged that damage to private property and Bureau dams exceeded $50 million and that the flood "raised serious questions, not only with the general public but within the agency as well. Nevertheless, we must remember that this was a record runoff, a 100-year flood. We did what we could, but there comes a point where nothing more could have been done."

Grand Canyon River Ranger Kim Crumbo disagrees. "The Bureau knew damn well they had too much water in Lake Powell on May 1. Why did they sit on so much water until it was too late?"

One perceptive politician, Arizona Governor Bruce Babbitt, believes that this has been, literally and figuratively, a watershed year. "We have come upon a different era on the river. This is the first year in history that all the reservoirs were full. As a result the system does not have the flexibility it had in the past. It is time to reassess how we manage the flow of the river; how we balance the tradeoffs between flood control and water storage."

Despite Babbitt's suggestion, it is doubtful any reassessment will take place. The fabric of compacts, institutions, and 'operating criteria' -- collectively known as the "law of the river" -- that govern the watershed is fragile. Aware that all of the Colorado's water has been alloted, the seven states that share in that division fear there is more to lose than gain by reevaluating existing arrangements.

Thus, it's not surprising to see a willingness among Bureau officials and such powerful men as Steve Reynolds, New Mexico's State Water Engineer, to let bygones be bygones. Recently, Reynolds went so far as to say that the Bureau's handling of the record runoff "showed masterful manipulation of the unforeseen."

But an analysis of the Bureau's operation of the watershed during the past year shows that this judgment is nonsense.

Governor Babbitt is right -- it is relevant that last fall all the major reservoirs were close to capacity. Most significantly, Lake Powell was full, for only the second time since its completion in 1963. During the past two decades high spring runoff was simply captured by this immense reservoir, which holds 25 million acre-feet. (The annual virgin flow of the Colorado is 15 maf.)

But after Powell filled last summer, the Upper Colorado River Commission and the Bureau jointly agreed upon a new operating strategy that would leave the lake with only 2.4 maf of 'flood control' capacity on April 1. This was a pivotal yet private decision, made in accordance with the "law of the river," which allows no public participation.

This past spring the Bureau adhered religiously to this agreement even, in the opinion of some, after it became obvious that it was a millstone. For good reason -- at least twice the Bureau suggested to the Upper Colorado River Commission that keeping Lake Powell at 91% of capacity was unnecessary. In each

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case the Upper Basin states threatened to sue if the Bureau released more water than it was legally obligated to.

It now appears Bureau officials knew, as early as February, that a spill from Glen Canyon Dam was a distinct possibility. By late April they knew it was probable -- at that time Bureau engineer John Newman confided to Grand Canyon National Park officials that the chances of a spill were "good."

So, if Lake Powell was unrealistically high this spring (a judgment the Bureau does not publicly concede), it owes more to institutional shortcomings than to Bureau bumbling.

Heading the list of such institutional shortcomings is the absurdity of dividing one watershed into two basins. Ever since the signing of the Colorado River compact in 1922, the states of the Upper Basin -- Colorado, New Mexico, Utah and Wyoming -- and of the Lower Basin -- Arizona, Nevada, and California -- have behaved like greedy spouses in a messy divorce.

At present, a Bureau employee says, "The system's prevailing philosophy is keep *your* reservoir full." Which means that each state and each dam hoards water as if we all lived on the planet Dune. It is ironic that it took a flood to demonstrate the shortcomings of our dread of drought.

Never mind that the Upper Basin has never been able to use all 'its' water, and won't be able to in the foreseeable future -- paranoia doesn't succumb to reason.

The Upper Basin states, says hydrologist Ben Harding, like to have Lake Powell full. "Not because they can do anything with that water once it gets that far downstream, but just to look at. As an item of religion."

But to the extent the Bureau itself, rather than these institutional factors, contributed to the flooding, its actions during May are most suspect.

An analysis of the Bureau's decisions in May is a numbers game. Let's call it Watergate: When did they (or should they) have known that the runoff would exceed predictions? What did they (should they) have done?

On May 1, Lake Powell had 2.2 million-acre-feet of storage available to capture a then predicted May-July runoff of 7 maf. (The actual figure would turn out to be closer to 14 maf.) Had the runoff been 7 maf the math would have worked, but just barely -- with the reservoir reaching its capacity late in June at the peak of the runoff.

But, May turned out to be a meteorological phenomenon. Precipitation in some areas of Colorado, Wyoming and Utah was five times the normal amount. Odd things began to happen. A massive mudslide occurred at Thistle, Utah; the Great Salt Lake reached an all-time high; ski areas in Colorado reopened after receiving up to 8 feet of new snow.

Ski area operators can turn on a dime, but operation of the dams is controlled by a "24-Month Most Probable Operating Plan" which can only be revised on the basis of new runoff predictions. (The predictions themselves are issued by the National Weather Service on the basis of inputs from the United States Geological Survey, the Soil Conservation Service, and the Bureau of Reclamation.)

Therefore, as snow continued to fall, and as Weather Service forecasters worked feverishly to revise their predictions upwards, engineers from the Bureau -- most of whom live in Salt Lake City, the epicenter of all these strange meteorological happenings -- sat and waited, faithfully adhering to their "Most Probable Operating Plan." There is no indication that anyone in the Bureau realized the situation was gettng out of hand until sometime in early June.

There are three reasons for this nonchalance -- one is perceptual, one is practical, one institutional.

Prior to this summer it was difficult for anyone to perceive that the Colorado could ever again be in flood. So much so that Philip Fradkin wrote in his recent book, *A River No More* (note the title) that "To me the river, in its present state, is primarily a product of the political process... rather than a natural phenomenon."

This is an understandable view of a river which is controlled by 14 major dams, and which, though it drains 12% of the United States, carries less water than the Potomac. But to view the river as plumbing is both vain and dangerous. Dangerous because it allows one to forget that the Colorado is a force -- not a faucet. A force that runs high every spring.

Second, the Bureau is a practical agency. Each of its dams are designed to store water, provide for recreation and reclamation, generate power and control floods. The practical, on-the-ground problem is that the first three mandates are inimical to the fourth -- you can't store both space and water in one spot. "We continually walk the fence between too much storage and too little," says one Bureau official. And on the planet Dune it is pragmatic to err on the side of too much.

Institutionally speaking it helps to remember that hydropower generation now plays the leading role in the operation of the Colorado River Storage Project. Even though all the dams are supposedly "multi-purpose," only megawatts make money. In terms of power production, the most lucrative lake is one which is full-to-overflowing.

Furthermore, Glen Canyon Dam is operated as a peaking power facility -- one that generates most of its power, and revenues, during daytime peak demand. The rub is that if, in May, the Bureau had wanted to lower Lake Powell they needed to release a great deal of water during the day and *at night*.

But the Columbia River comes into flood prior to the Colorado, and the Bonneville Power Authority practically gives its springtime power away, so there is almost no market for Glen Canyon hydropower at night. The idea of releasing water without "putting money in the bank" is anathema to the Bureau so it was 'institutionally' impossible for them to lower the level of Lake Powell this spring.

It is worth noting that California, where the Sierra, too, had an immense snowpack, anticipated and avoided the type of floods seen in the Colorado watershed. California hydrologist Phil Williams says that "rarely does the Bureau review or revise their dams' flood control procedures, even though in many instances these procedures were developed in the 1950's. I would suspect that an impartial inquiry would uncover serious deficiencies in the present operating criteria."

In all the news stories about the flooding, there was a far-fetched possibility that no one considered. During the last week of June and the first two weeks of July every major Colorado dam -- with one exception -- was filled to overflowing. In fact, both Lake Mead and Lake Powell were in

Plywood boards restrained Lake Powell

'surcharge.' That is, by mounting 'splash boards' on top of spillway gates, the Bureau had increased the reservoirs' storage capacity. For instance, at the height of the flood, ¾ inch plywood restrained 1 million acre-feet of Lake Powell "That plywood was the most cost effective reclamation project in the Bureau's history," quipped one agency official.

The sole exception to this necklace of overflowing dams and lakes? A reservoir on the Green River in Wyoming, upstream of all the other dams, called Fontenelle.

Fontenelle, even the Bureau admits, was a poor choice for a damsite. When the lake began storing water in the early '60's, the earth-fill dam partially collapsed in an event that, had there been more water in the reservoir, would have caused another Teton Dam disaster. Fontenelle was patched up, but today it is so riddled with leaks that it has a 'poor' safety rating.

In June, Bureau officials, worried about the dam's integrity, decided that the lake should be kept less than two-thirds full. Sometime in July, however, after the dam had 'settled' one half inch during a twelve day period, a decision was made to lower the lake even further, for fear that the dam might fail.

It is intriguing to speculate on what would have happened in the unlikely event that Fontenelle had collapsed and sent 230,000 acre-feet downstream.

These things most certainly would have occurred: Green River, Wyoming would have been inundated; the reservoir behind Flaming Gorge Dam would have risen 6 feet and come very close to overtopping the dam; uncontrolled releases from Flaming Gorge would have reached 30,000 cfs, enough to damage the small towns of Jensen, and Green River, Utah.

Furthermore, there is the nagging question of whether such a collapse at Fontanelle could have endangered the structural integrity of Flaming Gorge. It's a question worth asking, even though it's statistically improbable. For were the Bureau to lose Flaming Gorge, the survival of all the other dams, lined up like downriver dominoes -- Glen Canyon, Hoover, Parker, Davis -- would be debatable.

If, as it seems, this is not the most prudent way to operate a multi-billion dollar system which supplies a portion of the drinking water used in Denver, Albuquerque, San Diego, Los Angeles, and, shortly, Tucson, Phoenix, and Tijuana, one must only wish the Bureau godspeed in their efforts to lower Lakes Power and Mead 'off the splashboards;' repair the spillways at Glen Canyon and Flaming Gorge dams; and reseal Fontenelle.

For despite the heated controversy, the snow will, once again, soon begin to fall.

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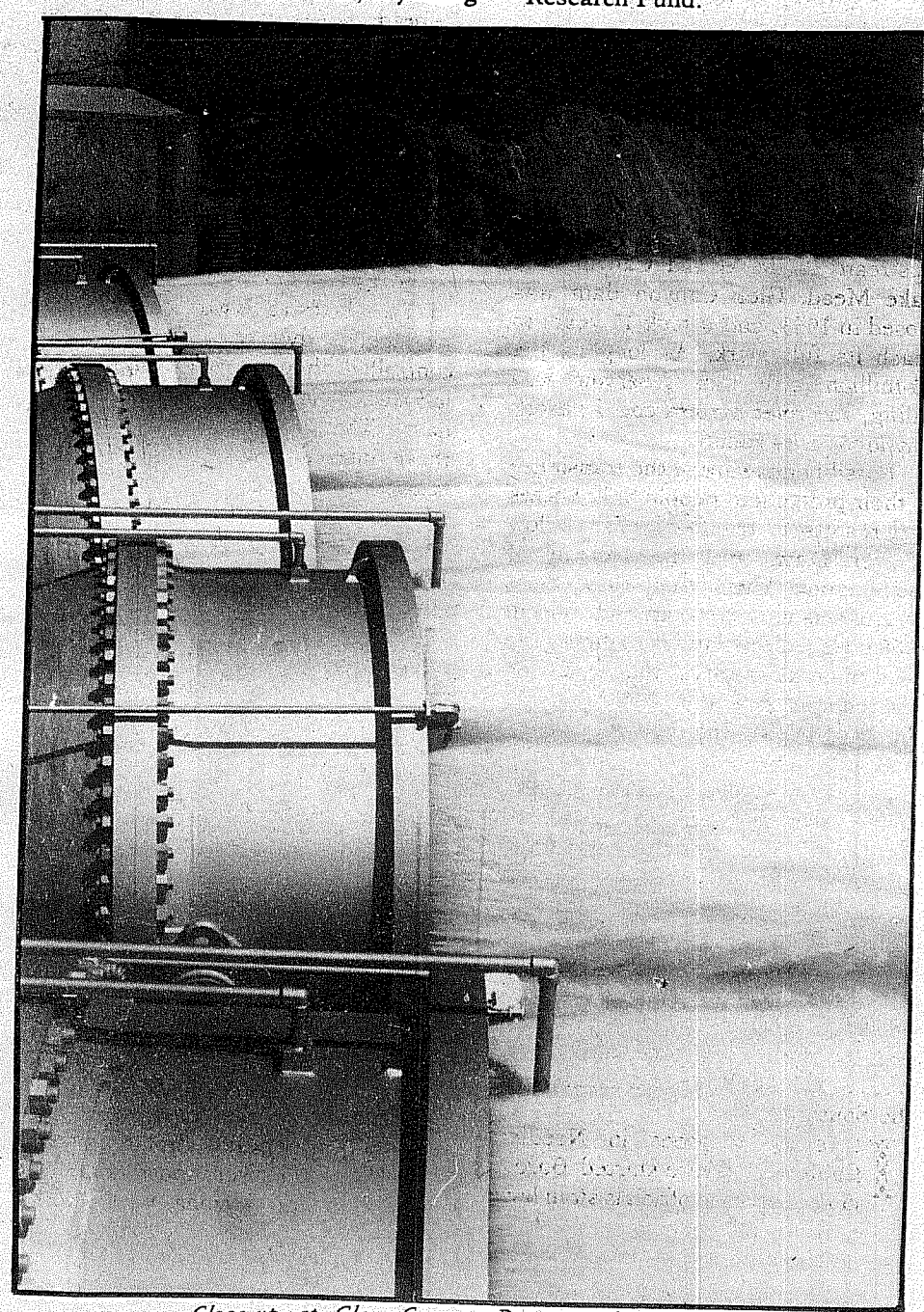
James R. Udall has worked as a professional boatman on the Colorado. He has written about the river for various publications and he currently lives in Denver. This article was paid for by the *High Country News* Research Fund.

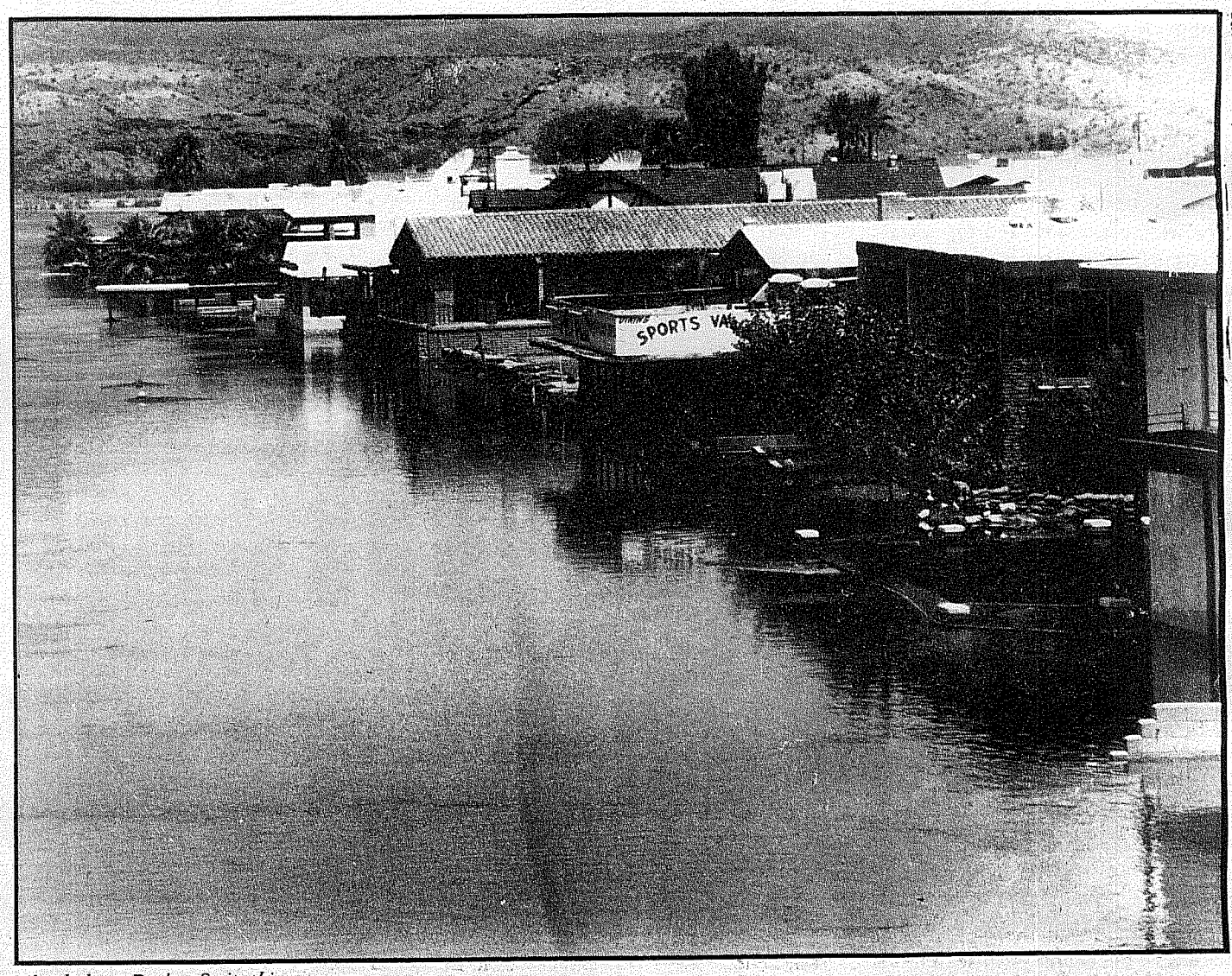


Patricia Gilt...

Close-up at Glen Canyon Dam: steel jet tubes releasing 17,000 cfs this summer

Flood victims now face eviction

by Sandy Tolan and Patricia Guthrie



Rick Velotta, courtesy Arizona Daily Sun

Flooded-out Parker Strip this summer

"The best of the Rockies is yours," sings a cheery chorus on prime-time TV, as fresh-scrubbed, flannel-clad beer drinkers swill down bottle after bottle of mountain brew.

To the people living and working along the Lower Colorado River in Arizona and California, this happy beer jingle has taken on special meaning. Homes, docks, crops and nightclub dance floors are buried under several feet of the best of the Rockies.

These people, part of a generation raised on rhetoric about man's technological prowess, wonder how a river system plugged with 24 major dams mandated for 'flood control' could have the worst flooding since the first dam was plugged into the riverbed 48 years ago.

It's not just the flooded-out people who ask the question. "I find this incredible," scoffs former Interior Secretary Stewart Udall, speaking in Santa Fe. "I think it's bungling of the worst sort. Somebody just ducked out on the responsibility."

But responsibility and accountability are clouded by the many competing demands on the desert river and its reservoirs. Of the conflicting priorities, no two are more at odds than flood control, which requires empty space behind dams, and water for beneficial use, which requires that water be held behind dams.

These two mutually incompatible goals pit the states and their water users, represented by the powerful and shrewd state water engineers, against the people living along the river.

It did not require a crystal ball to see the confrontation coming. The conflict didn't arise earlier because of 17 years of grace offered by Lake Powell, behind Glen Canyon dam, upstream of the Grand Canyon and Lake Mead. Glen Canyon dam was closed in 1963, and it took 17 years to reach its full mark. As long as the 25-million acre foot reservoir was filling, the river system could absorb any amount of runoff.

Possibly unaware of the transience of their protection, people built homes and resorts in the flood plain below Hoover Dam. But the Bureau of Reclamation knew that easy flood control was coming to an end, and in 1968 it issued regulations outlining the flood plain as anything that would be covered by a flow of 40,000 cubic feet per second (cfs). The regulations were reissued in 1980. But homes were built as low as the 28,000 cfs level. It is not clear who is to blame for this -- the residents, the developers, local government or the feds.

At this point, blame isn't the issue. The issue is who gets to suffer for past mistakes and who escapes responsibility. The issue is: for whose benefits will the river be managed? That issue, and the future winners and losers, were on hand last month at hearings in the Southwest.

It is 103 degrees in Needles, California. White-shirted Bureau of Reclamation officials sit in lawn chairs, trying to cool off under a palm tree on the high school lawn. Inside, the House Interior Committee is holding its second day of hearings on the management of the Colorado River. People shift uncomfortably on the rows of cushioned auditorium seats, fanning themselves with the hearing testimony.

"One of the major purposes of the Colorado River reservoirs is conserving water for irrigation, municipal and domestic use," says Myron Holburt of California's Colorado River Board. "It is well to remeber that they were authorized by Congress as multi-purpose reservoirs, and that the maximization of one purpose usually diminishes the benefits of the other purposes."

To Holburt and other state engineers, the river is simply a controlled channel that brings cities, industries and farms what they must have. The engineers, on behalf of those interests, have fought consistently in letters to the federal government, and at the recent hearings, to keep the levels of Lakes Powell and Mead as full as possible, thereby preventing untapped water from flowing needlessly downstream into Mexico -- especially since demand on the river will soon exceed supply. If a few people suffer because of this policy, the argument goes, it is for the greater good.

"Should this valuable resource be threatened by early dumping to assure the protection of a couple hundred homes and businesses which were thoughtlessly constructed in the flood plain?" asked Lowell Weeks, general manager of the Coachella Valley (Calif.) Water District. "I think not," he answered.

The states have fought each other frequently in the past over their rights to their share of the overburdened river, most notably in the landmark Arizona v. California case of 1963. But on this issue they are together. If the states have their way, not one gallon will pass through the dams without being harnessed for "beneficial consumptive use."

To the state engineers and their constituents, who view the reservoirs as their "insurance policies" for current needs and future use, the only solution seems to lie in moving the people who have built in the flood channel.

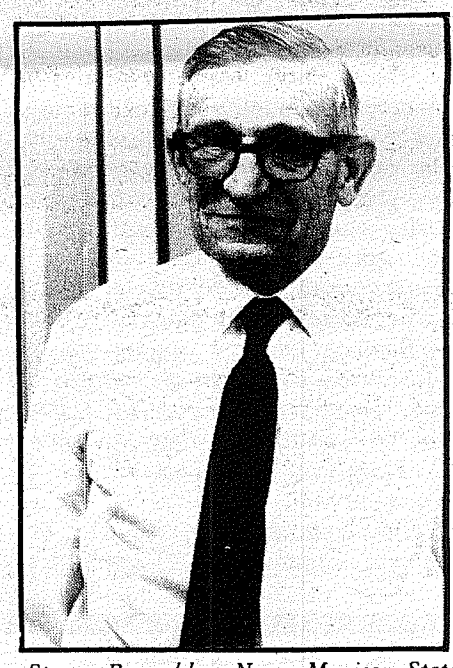
"The basic problem leading to damage," said Steve Reynolds, state engineer of New Mexico, "was encroachment on channel capacity. Except for those encroachments, there would have been minimal, if any, damage." (In fact, much of the flood-related damage is reported outside of the flood plain.)

Wes Steiner, Reynolds' counterpart in Arizona, testified: "We must do everything we can to remove all development from the design floodway that is subject to damage from controlled releases from upstream reservoirs "

These are fighting words to the people who live on the river bank. "The cause of this year's 'controlled' flooding is simple," charged a front-page editorial in the *Needles Desert Star*. "The government started the snow run-off period with all reservoirs approximately 90 percent full. They tried to pour a glass of water into a glass that was already almost full, and this will never work."

The river, declared the editorial, is controlled by "selfish water-users," and by the "water engineers, (who) are no different than any other profession... Without proper restraints they will gradually lose their sense of balance. They are the 'experts' and all others are merely peons, and have no right to interfere or to question...This arrogancy becomes an important part of their psychological health, of their macho."

The controversy between the states and the people living along the river was nearly invisible before 1980 because Lake Powell had room to hold the heaviest run-off without spilling a drop. Now "the system is full," as Reclamation officials like to say, and the gap between those who rely on concrete canals to bring them Colorado River water and those who live on the river's banks is clearly and deeply drawn.



Mary Tolan

Steve Reynolds, New Mexico State Engineer

People in Yuma, Needles, and the Parker Strip want a new way of managing the river -- one that guarantees flooding will not become routine. The states, meanwhile, want assurance that water will be conserved and not sent downstream unnecessarily.

"We are caught in the middle," admits Broadbent. "There's going to be a continued battle over whether you ought to conserve it and take a chance on floods, or whether you ought to lower it and not take a chance on some floods. We're probably going to have to reach a balance somewhere in between. And that's the tough place. Where in between do you reach that balance?"

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Another Bureau official was less diplomatic. The real question, he said, comes down to "do you devastate 2,000 (people) or irritate 15 million?"

While the states and the local communities debate over whose rights are more inalienable, it is clear something has to give. Either the reservoirs must be lowered to protect people encroached in the flood plain, or those people must be moved.

Testimony and interviews from the recent hearings, as well as conversations with water officials and letters written to the federal government by the states indicate that the Bureau is leaning toward the second option.

During the hearings, the states uniformly praised the Bureau's performance during the floods. "Masterful manipulation of the unforeseen," said New Mexico's Steve Reynolds. "A fine job," said California's Myron Holburt. "Reasonable and consistent," said Colorado's Bill McDonald. "Exemplary and deserving of high praise," said Arizona's Was Steiner.

A resident of the Lower Colorado offered his opinion for the flow of compliments from the states to the Bureau. "The water-users are getting their way, so they all kiss the Bureau's ass," said Bill Claypool, a lifelong resident of Needles, who helped organize the testimony of people living along the Lower Colorado.

Whatever the reason for the state engineers' praise, Broadbent appeared to return the favor. "My feeling is that the states are entitled to the development of their water resources and as much as they should be allowed to develop and use their water," the commissioner said.

After his testimony, Broadbent was more specific. Despite claiming he favors a "balanced" solution, he endorsed a recent report by the Federal Emergency Management Agency that "indicates that there are two solutions. One of them is moving people out of the flood plain, and the other is 'flood-proofing' " (For example, building dikes and levees around structures within the flood channel.) "I think it's going to have to be a combination of both," Broadbent said.

Other Bureau officials confirmed that this solution is strongly favored over any major change in the flood-control requirements. If, as it appears, the Bureau and the states are together on this solution, the people along the river will stand virtually alone, against more than 15 million water-users, in their attempts to get the river's management plan reworked.

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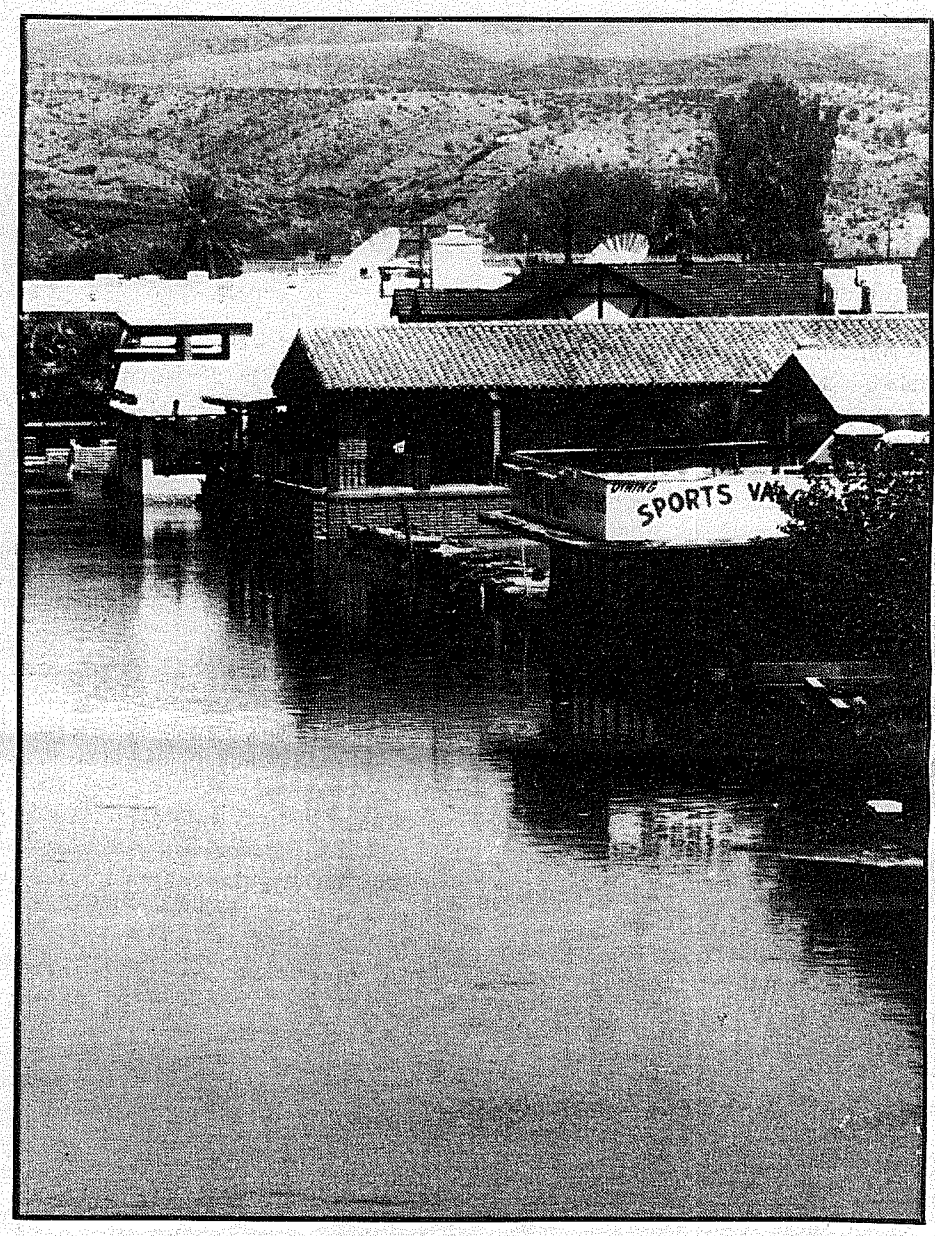
Sandy Tolan and Patricia Guthrie report for the *Desert News Service*, in Flagstaff, Arizona, on behalf of various publications. This article was paid for by the *High Country News* Research Fund.

A river once more?



Has the spring 1983 flooding transformed the Colorado into "a river once more?" Not according to Philip Fradkin, author of *A River No More*, whose theme is that dams and aqueducts have transformed the Colorado into plumbing.

The California author said he believes the river is still plumbing. In a telephone interview September 22, he also said he'd already been asked the same question by *National Geographic* and *Mother Jones*.

He had told those magazines that the flooding and the ripping out of spillways by the surge of water is a temporary phenomenon. "In a few years we'll be back to where we were. If you look over rainfall records, it's a jagged curve."

This year's high runoff, he guesses, is temporary. "To talk of a 'river once more' you have to say the high water levels will extend ten to fifteen more years."

Fradkin, who has spent the last several months in Sale Lake City working on his next book, says he is aware of the rising of the Great Salt Lake and of speculation that the West is entering another wet cycle.

But even a long wet period, he says, won't free the Colorado and turn it back into a river. If the West is in a new wet cycle, he predicts, the dam builders will simply get back to work.

"If it keeps spilling, there would be a cry to build more reservoirs." And with more water to store, "More people would come into the area." At least until the cycle again turned dry.

- Ed Marston

Did a mum Bureau foresee the floods?

It doesn't make any practical difference. But it would be nice to know if the Bureau of Reclamation saw the flood coming, but bowed to Upper Basin political pressure and kept the floodgates closed during the winter and early spring.

There is evidence the Bureau knew by early spring that very heavy flooding was possible. In April, Bill Plummer, director of the Bureau's Lower Colorado Basin Office, proposed to increase releases "in excess of downstream requirements." That means the Bureau wanted to let more water flow to California than California wanted.

He made the proposal in a letter to Myron Holburt, chief engineer of California's Colorado River Board. Plummer, citing "record high precipitation events" and "reductions in downstream demands," proposed a modified plan to make room for coming runoff. In the jargon, he called it "space evacuation releases for flood control." Plummer was citing "record high precipitation events" at a time when official forecasts showed snowpack accumulations more or less normal.

It didn't take long for New Mexico's Steve Reynolds to get the letter. Reynolds, who jokes that he has been the state water engineer "forever," objected to Plummer's proposal, fearing it might be an attempt "to depart from the Law of the River."

Reynolds wasn't as hardnosed as he could have been. He carefully wrote on May 3, "It seems marginally possible that a full explanation of the probably unique situation and some indication that your current proposal is based on this uniqueness and not reflective of any intent to depart from the Law of the River in the future might dissuade the Upper Division States (Upper Basin) from seeking whatever recourse is available to them at this point."

It is difficult for outsiders to understand bureaucrats writing in code. But Reynolds, in his May 3 letter, appears to acknowledge the "probably unique current situation" and to tentatively offer to "not seek whatever recourse is available." Reynolds seems to be saying the Upper Basin won't sue the Bureau if this once they let a bit more water go downstream than the Upper Basin thinks is legal.

It is interesting that Reynolds' offer to bend the sacred Law of the River came on May 3, when the official run-off forecast was only 117 percent of normal. That is by no means a crisis. It took another six weeks for the forecase to jump to 191 percent of normal -- which is a crisis. In the end, spring runoff was 210 percent of normal, which was a disaster.

The point isn't that Reynolds and his fellow Upper Basin state engineers were to blame for the flooding. In fact, the Bureau went ahead in April with its increased releases. But those releases, following the winter trickle, did little good.

The letters written by Plummer and Reynolds are interesting because they indicate the experts knew in the late winter or spring, 1983, that the region was in for trouble. The question is: Did they know how much trouble? Their letters can be interpreted in two ways.

First, that they were concerned about even a small above-normal runoff because Lake Powell is now full. And second, that they didn't trust the official forecasts showing near-normal runoff, and were far more worried than they have ever let on.

-S. Tolan and P. Guthrie