

Net book value:
 \$272.8 million
 Balance to be
 repaid:
 \$3.4 million
 Water revenues
 (fiscal year):
 \$7.8 million
 Hydroelectric
 power revenues:
 \$89.6 million
 Operation and
 maintenance expenses:
 \$70.5 million
 (Net Revenues
 1986-1987:
 \$26.9 million)
Hetch Hetchy, page
 15

Leslie K. Bolin is in her first year at the U.C. Davis School of Law. She has a B.A. from Northern Illinois University in French language and literature and did graduate studies at Arizona State University in political science and ecology studies. Before coming to law school, she was a paralegal in Phoenix, Ariz., for five years.



Is restoration of Hetch Hetchy Valley feasible?

By Ken Bogdan
 and Cynthia Patton
 Copyright 1987, U.C.
 Davis Environmental
 Law Society

Secretary of
 Interior Donald
 Hodel's proposal to
 restore Hetch Hetchy
 Valley to its natural
 state has created
 both controversy and
 skepticism.

Politics aside,
 the main concern in
 draining the Hetch
 Hetchy Reservoir is
 whether or not resto-
 ration of the valley
 is feasible. The
 feasibility of the
 proposal involves two
 elements: Whether the
 dam can be removed
 and whether the water
 and power supplies
 lost can be replaced.

Obviously, it is
 physically possible
 for the O'Shaughnessy
 Dam to be destroyed
 and then removed from
 Hetch Hetchy Valley.
 Sufficient explosives
 exist to destroy the
 dam. Techniques also
 exist to remove the
 material once the dam
 has been destroyed.
 The real questions
 are what will be done
 with the dam materi-

als once the dam is
 destroyed, and are
 environmental bene-
 fits attainable?

The physical di-
 mensions of the
 O'Shaughnessy Dam are
 impressive. The 312-
 foot dam rises 430
 feet above its bed-
 rock base. It is 308
 feet thick at its
 base and has a crest
 length of 900 feet.
 The dam was con-
 structed of 750,000
 cubic yards of con-
 crete and 700,000
 pounds of steel, and
 it impounds more than
 360,000 acre-feet of
 water.

Those opposed to
 Hodel's idea have two
 arguments based on
 the dam's removal.
 The first is that the
 dam's removal costs
 would be so great
 that any action other
 than leaving the dam
 in place would be
 ludicrous. The sec-
 ond is that disposal
 of the materials once
 the dam is removed is
 impossible. Neither
 of these arguments is
 persuasive.

The removal
 costs of the
 O'Shaughnessy Dam are
 unknown. Yet, no

matter how large these costs will be, they have been repaid many times over by the profits which San Francisco has obtained from the dam during its lifetime. The City's average yearly profit from the dam in recent years is approximately \$38 million per year. San Francisco obviously recovered all of its construction expenditures decades ago. The total cost to construct the dam, including its two enlargements, was only \$12.6 million. The average profits from a single year totals more than three times those construction costs.

Admittedly, there is a potential problem with disposal of the dam materials once the dam is destroyed. It is no easy task to dispose of such large quantities of concrete and steel. San Francisco Mayor Dianne Feinstein highlighted this problem, and in the Los Angeles Times on August 23, 1987, she wrote, ". . . the demolition of the [dam] . . . would in itself degrade the

environment." Mayor Feinstein feels no acceptable solutions exist. Yet when skyscrapers are demolished, solutions for disposal problems are readily available. One such solution is that the dam materials could be dumped off the coast in an artificial reef, as is done with many other materials, including used tires. The materials could also be placed in a large landfill site.

Environmental benefits are attainable in Hetch Hetchy Valley. It is argued that the physical limitations of the Hetch Hetchy Valley for recreational purposes and the man-made state of the valley provide justification for the continued existence of the dam. It is true that the valley is limited in size; if reclaimed, it would contain only 800 acres of "usable" land on the valley floor. Yet the mere square footage or "usability" of land is not what makes it environmentally precious. The amount of "usable" land in the Grand Canyon is not

large either, but one would not argue that this fact alone justifies its destruction.

It is also true that Hetch Hetchy has been touched by humankind. But simply because mankind has touched an area does not mean it can never return to some semblance of its natural state. If this fact were true, then it would be impossible for mankind to ever repair its past environmental destruction.

Many incalculable environmental benefits would be generated by the reclamation of Hetch Hetchy Valley. The residents of California would obtain another much needed recreation and wilderness area. Congestion and overcrowding in nearby Yosemite would be relieved somewhat, even if only to a small extent. Researchers could study how the environment overcomes mankind's degradation. But most of all, the "Grand Canyon of the Tuolumne" would once again emerge in all its magnificence.

Restoring the 1,970 acres of Hetch Hetchy Valley to its natural state would generate many environmental benefits. It would also eliminate the high quality water supply which currently serves San Francisco and other nearby cities. Over the past 11 years, Hetch Hetchy has supplied approximately 214,000 acre-feet of water annually. Restoration would also reduce power benefits from the Hetch Hetchy system. This power reduction is estimated to be as much as 60 percent of the system's dependable capacity and 50 percent of its total annual generation.

Identifying viable water and power replacement alternatives is critical to the pursuit of Hodel's idea. In a report prepared for the National Park Service, the Bureau of Reclamation described various concepts for replacing water and power supplies now generated by the Hetch Hetchy system on the Tuolumne River.

The "logical

first step toward water replacement" is refining of existing Tuolumne facilities. Based on dry-year hydrology, an annual replacement supply of 100,000 acre-feet could be derived by directly diverting water from the Tuolumne River at either the O'Shaughnessy damsite or the Early Intake structure and then conveyed via the Mountain Tunnel to the Bay Area. With modified facilities at the Cherry River system, lakes Eleanor and Lloyd could provide approximately 250,000 acre-feet of additional water. At present, the Cherry River system primarily produces electric power, so some structural changes would be required to permit the Holm power plant discharges to be diverted through the Mountain Tunnel. With a new pumping plant and conveyance facility lower on the Hetch Hetchy Aqueduct, the refining of the New Don Pedro Reservoir would also help replace the water supply lost by restoration. No costs have been esti-

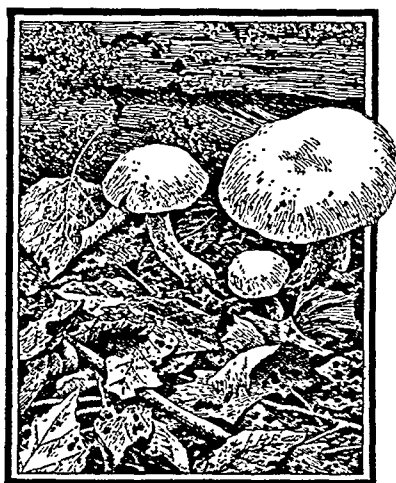
mated for these proposals.

There are several options outside the Tuolumne system which could provide the balance of the water supplies necessary to replace those lost from the Hetch Hetchy Reservoir. Enlarging San Francisco's San Antonio and Crystal Springs Dams would allow both facilities to receive additional winter flows from the Tuolumne River for subsequent release to the City's service area. Construction costs for enlargement of both reservoirs are estimated at \$8 million. Also, new storage sites could be developed to receive water from the Hetch Hetchy conveyance system. The yields for these proposed sites could range from 10,000 to 20,000 acre-feet annually with a supplemental power generation capability. The cost for these sites, however, would be high.

Additional water supplies could become available through "efficiencies" resulting from the coordination of surface

and groundwater supplies in the American and Stanislaus River basins, extended to include the New Don Pedro Reservoir and the Tuolumne River system. The potential gain from these efficiencies is between 150,000 and 225,000 acre-feet of additional water. The potential costs for such basin-wide coordination are estimated to be quite moderate.

A new supply of water could also be made available from the Delta. Although more costly than the replacement alternatives already mentioned, these costs would be shared with other water users. An offstream storage reservoir could be located just south of the Delta at Kellogg Creek. The yield from such a project could be up to 265,000 acre-feet, but the cost is projected at \$805 million. Another suggestion is to enlarge the Shasta Dam and Reservoir located on the upper Sacramento River; increased reservoir capacity would dramatically increase both water and power yields at a cost of



approximately \$3 billion. Replacement supplies could also come from development of offstream storage on several managed wetlands in the San Joaquin Valley. This supply of water would be obtained by providing groundwater recharge or by capturing and recycling the refuge water. There would be high costs involved in pumping and treating this water, however. Also the Lake Berryessa-Putah South Canal-Solano system could be integrated with the North Bay Aqueduct to provide some of the replacement water.

Removal of the O'Shaughnessy Dam would reduce the power generation capacities of the Hetch Hetchy system. The exact amount of power

reduction would depend on the generation capabilities remaining after removal of the dam and after the remainder of the Hetch Hetchy system was optimized for water, power, and recreation. Ultimately, replacing the lost power will result in construction of new power facilities. For approximately the next 20 years, however, there will be enough power available in northern California either through existing or expected projects to replace the amount lost through Hetch Hetchy. The replacement cost is estimated to be approximately \$75 million per year.

The draining of the Hetch Hetchy Reservoir is a promising proposal. Finally, we are beginning to reevaluate prior resource commitments and decide whether or not to dedicate these resources back to a more natural state. A preliminary analysis of this proposal's feasibility seems favorable. Solutions exist for the placement of the dam materials after the dam is destroyed

and for the replacement of water and power supplies lost by draining the reservoir. It will take time to conduct more detailed studies on these alternatives, but the bottom line is that the proposal to return the "Grand Canyon of the Tuolumne" in Yosemite to its natural state is both possible and feasible.

A Requiem for Hetch Hetchy:

"Where so many might have come to know the days and nights and the seasons through the ages. Other sources of power and water were at hand and still are. A few men knew it then; all know it now. But the primeval forest and meadow and stream, serene or jubilant, will not be known again. This is yesterday's valley." Holway Jones, John Muir and the Sierra Club: The Battle for Yosemite (1965)

Maybe the time has come to once again make Hetch Hetchy today's valley rather than yesterday's.

Hodel's motivation for his Hetch Hetchy proposal

By Kerry Zachariasen
Copyright 1987,
U.C. Davis Environmental Law Society

Secretary of the Interior Donald Hodel threw a tastily baited hook to environmentalists on August 6, 1987, when he formally announced his idea to dismantle O'Shaughnessy Dam and release the waters of Hetch Hetchy reservoir.

At first, conservationists received the notion with a mixture of delight and skepticism. It seemed unfeasible and expensive; it might mean giving in on the Auburn Dam; it was a serious threat to San Francisco's water and power supply. On the other hand, the possibility of freeing the Grand Canyon of the Tuolumne was exciting.

Little by little, as more studies come out and the real possibilities sink in, the initial

skepticism seems to have worn off. There is a strong consensus among environmental groups that the plan might actually work. However, there may still be room for skepticism, at least in questioning and evaluating Hodel's motives for this substantially out-of-character suggestion.

Fryar Calhoun wrote in the Friends of the River's newsletter, "Maybe we should distrust his motives, but it doesn't matter." Headwaters, Oct.-Nov. 1987, p.1. It is not so clear that it doesn't matter. There are any number of considerations that could be contributing to Hodel's enthusiasm.

Among these are the issues of expanding Yosemite's recreational resources and Hodel's interest in oil exploration and development in Alaska. There is also speculation regarding his tendency toward