

California Delta Canal Déjà Vu?

Amid unanimous agreement that the Sacramento-San Joaquin Bay is in an ecological, economic, and management crisis, myriad ideas have been proposed for saving the area. One idea, soundly defeated decades ago, is gaining support: a peripheral canal that would transfer water destined for Southern California around the Sacramento-San Joaquin Delta, unlike the current system which runs water through it.

A peripheral canal was first proposed in the 1960s as part of the State Water Project. With a capacity of 22,000 cubic feet per second (cfs), it would have begun on the Sacramento River just below Sacramento and flowed 43 miles around the delta to the Clifton Court Forebay, the reservoir for the water pumped south.

The peripheral canal initially received considerable support, with the California Department of Water Resources officially adopting it as part of the State Water Project in 1966, and the U.S. Bureau of Reclamation calling for Congress to approve the project in 1969. However, increased environmental awareness and associated legislation passed in the late 1960s and 1970s (including the Endangered Species Act, the National Environmental Policy Act, the Clean Water Act, and the Safe Drinking Water Act) caused support for the peripheral canal to erode. In 1982, the peripheral canal was defeated in a state referendum due to environmental concerns and arguments that it would constitute a major “water grab” from Northern California by Southern California.

Fast forward 25 years. The ecological health of the delta is rapidly declining. Populations of endangered species are falling. Levees are fragile and costly to maintain. Pumps that pull water out of the delta for Southern California had to be turned off for a while in an effort to protect species, threatening the water supply for downstream communities.

A February report by the Public Policy Institute of California (PPIC) states that the forces driving the delta’s future are well beyond the control of environmental, agricultural, urban development, local, and other interests now fighting at cross purposes for its restoration. Subsiding land, rising sea levels, earthquakes, climate change, invasive species, and urbanization are all increasing the risks and consequences of a sudden levee collapse and are steadily degrading the delta’s overall health. Furthermore, the report states that the commonly held perception that the delta is a naturally stable freshwater system—and should be maintained as such—is wrong. In fact, in its natural state, the delta was subject to strong tidal cycles and other fluctuations in water quality.

The PPIC report recommended a smaller peripheral canal, not necessarily following the same route as the earlier one, with capacity of perhaps 10,000 cfs, as one of nine alternatives that should be considered by the state in planning the delta’s future. The smaller canal would be supplemented by reduced direct pumping from the delta. Governor Schwarzenegger and some state legislators have endorsed a canal of some sort, arguing it would obviate the need for pump shutdowns and thus protect the fish, protect the state’s water-delivery system from threat of levee failures, and allow the delta to be managed with an environmental emphasis. But environmentalists, farmers, and delta communities fear a peripheral canal would mean the delta would be abandoned, left to become increasingly saline and stagnant, unfit for agriculture and certain species. In addition, questions about payment and land acquisition for such a canal remain to be addressed.

The 1980s fight over the canal was considered one of the biggest north-south water battles Californians have weathered. It remains to be seen how far the current proposal will go.

*The PPIC report, *Envisioning Futures for the Sacramento-San Joaquin Delta*, is available at www.ppic.org/main/publication.asp?i=671.*

WWF on Desalination: Option or Distraction?

Making drinking water out of sea water is a growing trend but a potential threat to the environment that could also exacerbate climate change, said the global conservation organization WWF in a review of desalination plants worldwide.

The WWF review, *Making Water: Desalination—Option or Distraction for a Thirsty World?* shows that some of the driest and thirstiest places are turning to desalination. These include regions where water problems affect large, populous areas—Australia, the Middle East, Spain, the United Kingdom, and the United States, with India and China following suit.

“Desalinating the sea is an expensive, energy-intensive, and greenhouse gas-emitting way to get water,” says Jamie Pittock, Director of WWF’s Global Freshwater Program.

“It may have a place in the world’s future freshwater supplies but regions still have cheaper, better, and complementary ways to supply water that are less risky to the environment.”

It is estimated that around 60 percent of freshwater needs in the Arabian Gulf are met through desalination, and the Australian city of Perth may be looking to supply one-third of its freshwater the same way. Spain is devoting an astonishing proportion of its desalinated water to agriculture—at 22 percent, the highest level in the world—and to vacation resorts in arid areas.

Impacts of desalination include brine build-up, increased greenhouse gas emissions resulting from high energy demands, destruction of prized coastal areas, and reduced emphasis on conservation of rivers and wetlands. Many of the areas of the most intensive proposed or

planned desalination activity also have a history of damaging natural water resources, particularly groundwater, through poor water management.

According to the report, managing water demand and assessing impacts of any large-scale engineering solution are needed early in order to avert irreversible damage to nature and the cost overruns, often paid by citizens over the long haul. Sustainable sources of water start with protecting natural assets such as rivers, floodplains and wetlands that purify and provide water as well as protect against extreme or catastrophic events.

“Large desalination plants might rapidly become ‘the new dams’ and obscure the importance of real conservation of rivers and wetlands,” adds Pittock.

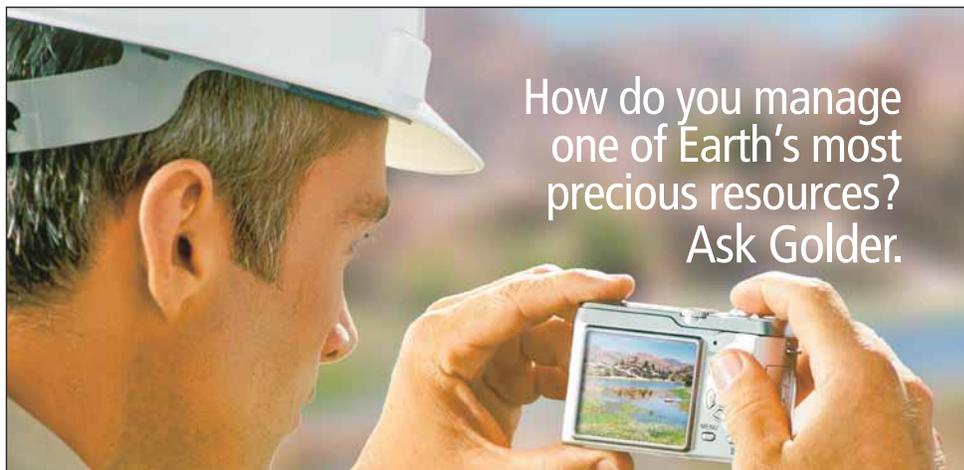
“As with any relatively new engineering such as large dams that grew up in the 50s, the negatives become known when it is too late or too expensive to fix. What we need most is a new attitude toward water, not unchecked expansion of water engineering.”

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Pupfish on the Move: Good News/Bad News

Rare pupfish recently discovered in test ponds near the Salton Sea are both good and bad news, according to the *Riverside Press-Enterprise*. The fish are in small, shallow ponds filled by water pumped from the Salton Sea and a nearby river and carried through a 1.5-mile pipeline to the ponds. The pump was designed to keep the fish out, but clearly some are making—and surviving—the journey, according to the newspaper. The abundance of juveniles found indicates that the fish are breeding in their new home as well; the *Press-Enterprise* said U.S. Geological Survey scientists initially estimated that more than 1,000 fish were in three of the four test ponds.

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R & D (continued)

While the surprising discovery was good news for survival of the species and offers opportunities to study their sensitivity to salinity, temperature, and predators, it raised some complicated issues.

According to the *Press-Enterprise*, the test ponds were created on land donated by the Imperial Irrigation District by USGS scientists seeking to determine whether small ponds could attract any of the hundreds of migratory bird species that frequent the Salton Sea. Under current water management agreements, the Salton Sea will shrink in size significantly when more water is diverted away from it beginning in 2017, bringing what many fear will be an ecological collapse. If the smaller ponds successfully attract birds, said the newspaper, larger versions will be created as the Salton Sea shrinks.

IID offered use of the land for a three-year pilot test of the ponds, reported the *Press-Enterprise*. But now that the endangered fish have moved in, federal and state endangered species laws could require that the ponds be maintained. If that happens, IID is wondering who will be responsible for supplying water to the ponds. While the district supports the project in the short term, a district spokesman expressed concern to the newspaper about future water obligations.

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Desert Dust Speeds Distant Snowmelt

According to a study led by National Snow and Ice Data Center scientist Tom Painter, wind-blown dust from drought-stricken and disturbed lands can shorten the duration of mountain snow cover hundreds of miles away by one month. The study, which appeared June 23, 2007 in the online edition of *Geophysical Research Letters*, found that seasonal snow coverage in Colorado's San Juan Mountains disappeared a month earlier

because of deposition of heavy dust from the Four Corners region of the Colorado Plateau, 200 miles away. Dust reduces the snow's reflectivity, allowing more of the sun's energy to warm the snowpack and causing it to melt earlier.

According to Painter, "The connection between dust and lower snow reflectance is already established, but the amount of the impact, measured and modeled, in this integrated system of disturbed desert and mountains stunned us. The fact that dust can reduce snow cover duration so much—a month earlier—transforms our understanding of mountain sensitivity to external forcings."

Prior to the widespread disturbance of the western United States in the late 1800s and its likely enhancement of dust emission to the mountains, the cleaner snow cover would have lasted several weeks longer, the study said. The progression of climate change may alter the reliability of spring snow melt's quantity, timing, and duration.

"Recent studies agree that with global warming, the southwest U.S. will be warmer and drier. Enhanced dust deposition is likely, further shortening snow cover duration," Painter said. "Ultimately, a warming climate and the dust it generates will affect river runoff and soil moisture in the mountains, not only in the western United States, but across many of the world's mountains."

Visit the National Snow and Ice Data Center at the University of Colorado at Boulder at nsidc.org. Also visit www.agu.org/journals/gl/.

Prison Flushing: Who Knew?

An article in the *Sacramento Bee* reported that prison flushing is the cause of massive—and unnecessary—amounts of wastewater that can overwhelm treatment facilities and pollute groundwater. It turns out inmates flush their toilets for more than just the usual reason. According to the article, "by flushing the toilets in their

cells, prisoners communicate with one another, relieve boredom, protest prison conditions, dispose of contraband, and even create in-cell swimming pools,” the latter created by one prisoner who stopped up both his toilet and his cell door and kept on flushing. Successive flushing down a row of cells can communicate the approach of a guard.

To address this problem, California prisons are installing “flushometers,” electronic devices that “restrict the number of flushes, delay flushing, and empty toilets in random patterns,” according to the *Bee*. After they were installed in Corcoran State Prison in Central California, wastewater production by the 120 inmates decreased 80 percent from 42,000 gallons per day to 8,300 gallons per day, the newspaper said. Ten other state prisons, as well as several county jails, have also been retrofitted.

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Metal Phytostabilization at Arizona Mines

Summarized from EPA's *Technology News and Trends* newsletter, July 2007

University of Arizona researchers have been conducting field and greenhouse studies to evaluate the revegetation of barren mine sites with native plants capable of sequestering metals in the root zone without taking metals up into the plant tissues. This type of phytostabilization was studied at two semi-arid mine sites in Arizona, and focused on identifying simple, low-cost revegetation strategies with minimal site preparation, compost application, or vegetation maintenance. Stabilization is needed to keep heavy metals out of groundwater or stormwater runoff, but they must also not accumulate in plant tissues where animals can consume them.

In an 18-month field trial at the 100-acre Boston Mill mine-tailings site adjacent to the San Pedro River in southern Arizona, salt- and drought-

tolerant four-wing saltbush (*Atriplex canescens*) had an 80 percent survival rate with or without compost amendments to the site's neutral-pH soil and, with the exception of lead, did not exceed regulatory guidelines for metals.

Quailbush (*Atriplex lentiformis*) was tested under greenhouse conditions on the lower-pH tailings from the Klondyke mine, a state-designated Superfund site. Results showed that a tailings amendment of 15 percent compost was required for normal plant growth, but that little metal accumulation occurred.

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New Clearing House Contains Truckee River Info

The University of California at Davis and several state and local entities in Nevada are collaborating on a new Truckee River Information Gateway website and seeking relevant information to include. The site is designed to be a central clearinghouse for data and reports related to the Truckee River in Nevada. It contains data sources;

online documents and reports in the categories of water quality, hydrology, biota, modeling, and regulations; a bibliography of abstracts, papers, and reports; images, maps, and GIS layers; hydrologic and watershed models; and links to external sources of information.

The website is part of a larger program focusing on the water quality of the Truckee River from the California border to Pyramid Lake, Nevada. Its objectives are to:

- use available water quality data to determine the potential for water quality improvements through restoration and stream-bank stabilization;
- determine the necessity of additional data collection (monitoring) to prove benefits from restoration;
- determine the role of anthropogenic and naturally occurring nitrogen, phosphorus, and total dissolved solids (TDS) on the water quality and aquatic habitat of the Truckee River.

Mike Brisbin, water quality coordinator at the Truckee Meadows Water Reclamation Facility, is a primary organizer of the clearinghouse and seeks additional content for the site. Visit www.truckeeriverinfo.org.



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