Selenium Poisons Refuge, California Politics

Drainage from the San Joaquin Valley has dumped selenium into a wildlife refuge and pitted two federal agencies against each other

Palo Alto, Calif. Four years ago, the San Luis Drain began to carry undiluted sump water from farms in the San Joaquin Valley northward to a marsh about 130 miles below San Francisco. The place at the end of the drain is called the Kesterson National Wildlife Refuge. Overnight, it was transformed from a refuge into a death trap for several species of fish and migratory birds.

The toxic agent is selenium, an element that abounds in the soil of the Central Valley. A small amount of selenium in the diet is beneficial, but high levels have caused cancers in laboratory animals and other problems in farm animals.

It is clear now that the drainwater threatens wildlife over a broad area, the wintering ground for migratory birds in the Pacific flyway. In addition, it has raised the possibility that selenium and heavy metals may have leaked into the Central Valley's deep aquifer.

The crisis came to a head on 15 March at an emotional hearing near Kesterson chaired by Representative George Miller (D–Calif.), the pro-environment chairman of the House subcommittee on water and power resources. At that meeting, the regional Department of Interior chief, Carol Hallet, acting on instructions from Secretary Donald Hodel, promised that the drainage would be stopped immediately.

Farmers of 42,000 affected acres claimed they would be driven out of business. Ultimately the problem could affect several hundred thousand acres of highly profitable (and federally subsidized) farms in the San Joaquin Valley. Two weeks after the Miller hearing, the department signed a compromise with farm interests that gives them until 1986 to stop the pollution. It also promised to supply irrigation water indefinitely "into the future."

Interior sits at the center of the problem because it helped build the drain. The Environmental Protection Agency has not been involved because an amendment to the Clean Water Act backed by farmers in 1977 exempts agricultural runoff.

Everyone is waiting to see what will happen. The first federal deadline (20 percent less drainwater by 30 September) will come at the end of the summer irrigation season. Reductions of 20 percent will be made every 2 months until total stoppage is reached by 30 June 1986.

Meanwhile, the Interior Department has promised to have ready by 5 July a plan for cleaning Kesterson. The Westlands Water District, which is dumping the toxic water, has pledged to modify its system and send the waste water into yet-unbuilt evaporation ponds further south. Critics call it the "mini-Kestersons" option. But Westlands officials say they will make the new ponds sterile so that birds will not get toxic food from them.

There is no evidence that drinking water has been affected, but children and pregnant women have been warned not to eat birds from the polluted area. Most severely at risk, according to one observer, are Southeast Asian highlanders (the Hmong) who settled near Kesterson after fleeing the communist takeover in Vietnam.

San Luis Drain

Three key players are sister agencies in the U.S. Department of the Interior: the Bureau of Reclamation (BUREC), builder of the irrigation and drain systems; the Fish and Wildlife Service (FWS), entrusted with protecting the wildlife and comanager of Kesterson with BUREC; and the Geological Survey (USGS), which has been called upon to settle points disputed by the others. The disagreement between BUREC and FWS has been acrimonious, and several FWS officials accused BUREC and its agribusiness clients of trying to quash dissent and bury data.

One retired 33-year FWS veteran, former California area manager William Sweeney, gave a blistering talk on this subject last fall. He charged that the Central Valley Water Project has brought about "unparalleled destruction" of migratory birds and fish and "turned the San Joaquin River into the lower colon of California—a stinking sewer contaminated with salts, heavy metals, trace elements, and the residue from the annual applications of hundreds of tons of insecticides, herbicides, and fertilizers."

Sweeney mentioned the plight of the salmon in the San Joaquin. Their numbers have declined in 30 years from 100,000 to 5,000 or 10,000, "mostly supported by hatcheries, with no natural spawning in the San Joaquin itself." Other species standing in the way of development may have the same fate, Sweeney said, unless citizens sue to make federal agencies enforce wildlife protection laws.

This is just what happened at Kesterson. A local rancher and duck club owner, R. James Claus, tipped the first domino in the cascading legal actions that forced the Interior Department's hand. Claus knew that his cattle were sick and, when he learned of the selenium problems at Kesterson, he began to file appeals to stop the waste water dumping. He accused the Interior Department of violating the Migratory Bird Treaty Act, which forbids the killing of migratory birds. The state water board was persuaded to intervene (after the regional board would not) on grounds that Kesterson qualified as an unregulated toxic dump. Both Claus and Lloyd Carter, a reporter who has covered Kesterson in the Fresno *Bee*, say they have received

anonymous threats, presumably from local farmers who fear the loss of BUREC water.

BUREC and California farmers planned the San Luis Drain in the 1950's as a small but necessary part of a new water supply leg in the Central Valley, called the San Luis Unit. As early as 1951, farmers knew that the irrigation wells they had drilled in the west side of the valley were running dry. They also knew the San Luis water project would have to include a drain to carry off minerals that were collecting in the root beds. Underlying the west valley is a thick zone of clay that effectively creates a bathtub beneath the fields. A steady flow of fresh water is needed to flush out harmful sediments (mainly salt). Gravity takes the drainwater north toward San Francisco Bay.

In recent testimony, BUREC officials have said they were not aware that irrigating the valley's west side would create any long-term problems other than the buildup of common salt. They expected to build the San Luis Drain all the way to the head of the San Francisco Bay, in the delta at Chubbs Island, and dump the brine there without controversy.

However, Claus and USGS officials cite several documents suggesting that the irrigators ought to have been aware of the problems they were creating. For example, they quote a paper by U.S. Department of Agriculture scientists H. W. Lakin and H. G. Byers, "Selenium occurrence in certain soils in the United States," published in 1939, pointing out a "definite relationship" between selenium-loaded geologic formations and soils that produce disease in animals. The highest selenium concentration Lakin and Byers reported after sampling areas in seven states came from a spot in San Joaquin County called Hospital Creek, about 50 miles from Kesterson.

It now appears that selenium compounds are washed down from the edges of the valley and concentrated by irrigation in the "bathtub" beneath the fields. In the alkaline environment peculiar to this area, the selenium is mobilized in the water, taken up by algae, and bioaccumulated in the fish and waterfowl that eat the algae, magnifying the concentration 50 to 100 times.

None of this was known to BUREC, which built the San Luis irrigation unit and began delivering water in 1967 as planned. Construction of the drain did not begin until 8 years later. A segment 85 miles long ending near Kesterson had been completed by 1976 when funds ran out. Farmers to the north where the drain would end—in the U.S. congressional district of George Miller—were not eager to have the project finished. Environmentalists were opposed. Land and tax reformers described the drain as a subsidy to agribusiness. Congress never voted funds to complete the drain.

BUREC and the Westlands Water District, which had promised farmers it would ship the waste water out of their fields, decided to convert a "controlling reservoir" at Kesterson to a drain terminus and wildlife refuge. The drainwater began flowing in 1978. It was initially mostly surface runoff, but by 1981 farmers had connected their underground sump systems to the drain and the flow entering the refuge was undiluted bottom water, loaded with salt and selenium.

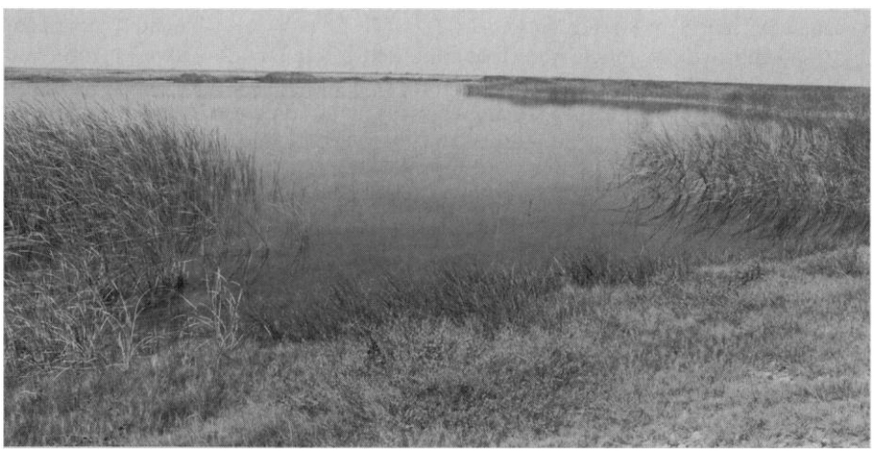
When the soup came to Kesterson, it came with a vengeance. By 1982, the striped and largemouth bass, catfish, and carp were gone. In 1983 the FWS saw a high incidence of death and deformities among newborn coots, grebes, stilts, and ducks, including embryos with twisted beaks, no eyes or wings, and brains protruding from the skull. The mosquito fish—the only fish left—contained the highest levels of selenium ever recorded by the FWS in live fish, 53 parts per million (ppm).

"We were alerted to the high levels of selenium in the water sometime in 1983," says Lawrence Hancock, assistant regional director of BUREC in Sacramento. He and director David Houston were installed last year and do not personally carry the burden of the San Luis decisions. Hancock considers it being a "Monday morning quarterback" to argue that BUREC should have known of the selenium hazard. "I've spent a lot of time reading through the records, and I cannot truthfully say I would have done anything differently."

The unresolved questions today are (i) how big is the selenium problem outside Kesterson? (ii) what will it cost and what is the best way to clean up the refuge? (iii) how should drainwater be disposed of if it continues to flow? and (iv) how much irrigation is tolerable in the San Joaquin Valley? The last question is the most controversial and the furthest from solution. But it will be affected by answers to all the others, and particularly by still unpublished FWS and USGS data which suggest that the selenium problem may be widespread in the northern San Joaquin Valley. For this reason, BUREC is not signing new long-term water delivery contracts at this time.

Another little-studied point is the possibility that chemicals other than selenium may be causing toxic effects. The state water board noted that the Kesterson water contained high levels of arsenic, boron, cadmium, chromium, and copper. Among the many groups investigating this pollution is a committee of the National Academy of Sciences; it has specifically expressed an interest in the heavy metals.

Felix Smith, an environmental analyst for FWS in Sacramento, estimated in a memo of 16 April that the volume of selenium-laden runoff in the Grasslands Water District—which surrounds Kesterson—could be much larger than the amount in the San Luis Drain. This wastewater has never been measured because farmers in Grasslands have the longstanding privilege of draining directly into the San Joaquin River. Water samples taken in the area indicate a high level of selenium, and one USGS sample taken from a Grasslands sump registered 4700 ppm, four times the level needed to qualify as a toxic dump. Birds in the area have shown high levels of selenium as well. "The entire Grasslands could become another Kesterson-type situation," Smith wrote.



The Kesterson reservoir

"Kesterson was our canary in the cave," says William Davoren, another ex-official of the FWS who runs the one-man San Francisco Bay Institute. "Now the canary is dead, and the question is: are we going to do something about it, or keep on with business as usual?" Every big interest in the area has a right to fresh water, Davoren says, but not the Bay. Because it lacks a claim to "beneficial ue" in California's complex water code, it could become a common dumping ground.

Davoren sees Kesterson as a symbol of all that has gone wrong in 30 years of aggressive land and water exploitation in California. He thinks that big-scale farming in the San Joaquin Valley has reached a turning point from which it may not recover.

These are the terms of a water contest that will preoccupy California's resource managers for a decade or more as they try to resolve the competing claims of a powerful farm lobby and an increasingly effective environmental movement.

—ELIOT MARSHALL

Polish Universities Face Crackdown

Despite protests at home and from abroad, the Polish government's drive to take control of the country's 99 universities is proceeding at a rapid pace. On the verge of abolishment are broad self-governing powers that were wrung from the government in 1980 in negotiations with Solidarity, the Independent Students' Union, and the teachers' union.

The heart of the concessions that came out of the labor and social unrest of the early 1980's was a system of elected university senates, faculty councils, and student groups. The government aims to scrap these democratic forums as early as this summer, sources say. Tiers of appointed officials whose political views mirror those of government leaders would take the place of elected university leaders. What remains to be seen is how harsh the government will be in tightening its grip on the academic community.

Polish officials are justifying their actions on the grounds that the management freedoms allowed university community are being abused. The political activism that has been permitted is incompatible with the goals of the socialist state, officials charge.

Not only are academic freedoms slated to be curtailed but the futures of at least several thousand academics and university staff members are at risk. The proposed changes in the university management system were unveiled by the Socio-Political Committee of the Council of Ministers in January. These proposals, which the Sejm (Poland's parliament) likely will enact this month, appear to impose tougher restraints on academia than were in place during the 1970's.

The Main Council for Higher Education and Research, the highest self-governing academic body in Poland, is expected to be rendered ineffective in influencing Polish education policy and university operations. Although the government's Minister of Higher Education, Benon Miskiewicz, has held a voting position on the council comprised of elected university professors, he not been able to dominate its affairs. Now his ability to dictate university policy will be fundamentally strengthened under the proposed changes.

University rectors, vice rectors, deans, and department heads currently are elected and report to university senates and department councils. The new rules, which amend the 1982 Law of Higher Education, empower the minister of education to select management personnel throughout the university system. This expanded authority extends to the review of university research projects, teacher selection, retention of tenure, and student organizations that until now have had a say in university affairs.

With the Polish government being the sole employer in the university arena, the clear implication is that academics must buckle under or lose their jobs, notes Letitia Rydjeski, a spokeswoman for the New York-based Committee In Support of Solidarity. But for those faculty members that are identified as sympathizers of the Solidarity movement, or campus activists, falling in step with the Polish government's latest dictates may not save their careers.

Indeed, there are ominous signs that the government wants to purge campuses of faculty and student activists. For example, State Department officials note that since October 1984 the number of political internees has risen from 22 to an estimated 185. There are reports of increasing numbers of professors, researchers, and other university faculty members being detained by Polish police for questioning, or arrested. During the height of the state's crackdown on the Solidarity movement in 1982, as many as 2000 Poles were jailed for political offenses. By last summer, all but 22 had been released by the government.

The number of scientists and university faculty who fail to pass the Polish government's litmus test for loyalty could run into the thousands. This may be best measured by what happens at four larger universities that are strongholds of resistance to the clampdown on academic and civil freedoms in Poland: Adam Mickiewicz University in Poznan, the University of Warsaw, Jagiel Lonian University in Krakow, and Boleslaw Beirut University in Wroclaw. A poll conducted by *Pygodnik Mazowsze*, an underground newspaper at Adam Mickiewicz University, indicates that only 20 percent of the faculty support the government's sweeping changes.

At this point there appears to be little chance of dissuading the Polish government from instituting its plan. The Main Council for Higher Education and Research has protested the changes, 2000 students in Warsaw have openly demonstrated against it, and 150 academics in the United States have written the Polish government. But there are no signs of any moderation in course. "The government does not seem to be taking the West's opinion into regard," says Rydjeski.

The prospect of the U.S. government having any influence on the outcome is even bleaker, State Department officials concede. "We don't really have very much leverage," says one official, noting that U.S.–Polish relations are at an all time low. In the meantime, should the coming crackdown on academic freedoms produce a flood of refugees from the Polish university community, State Department officials say they will try to adjust immigration ceilings to accommodate those who seek to come to the United States. —MARK CRAWFORD