

FOLLOW-UP FLASHES

PROGRESS ON REGIONAL WETLANDS PLANNING continued, as the Estuary Institute's Josh Collins completed an in-depth survey of the region's past and current wetlands distribution and placed it in a computerized atlas. The atlas is one piece of the groundwork necessary to come up with regional wetland protection goals; interagency communication is another. Bay-Delta agencies have been actively meeting to try and agree on common terms and wetland classifications and on areas of collective interest. This newly established common ground will in turn, facilitate the series of scientific workshops planned for this February. (510)231-9539

2/94 & 4/94

MAKING THE STATE A 404 PERMITTING AGENT for the U.S. Army Corps will be the subject of a pilot program currently under development. The year-long pilot, expected to be up and running next spring, will give the S.F. Regional Board and the S.F. Bay Commission responsibility for local wetlands permitting. Public comment on the pilot will be sought early next year. (510)286-1325 8/93

MINERS USING SUCTION DREDGES to extract gold from the state's waterways must now meet new Cal Fish & Game regulations issued last May that among other things, reduce the allowable dredge nozzle size from 8 to 6 inches, close certain rivers and streams to mining and shorten the dredging season. Fish & Game is now preparing a supplemental CEQA document with an eye toward amending the new clean-up regs sometime next year. (916)657-2392 2/94

THE S.F. BAY COMMISSION COULD BE ABOLISHED if a legislative measure now being developed by Caltrans succeeds. The Commission has already dodged one legislative bullet this year: SB1933 would have required the state to reduce overlap and duplication among several agencies (and thus possibly eliminated the Commission), but the bill died in committee. Caltrans' new idea is to streamline shoreline permitting by leaving enforcement of the Commission's already-established Bay Plan to local jurisdictions. (510)286-4444 6/94

ESTUARY

YOUR BAY - DELTA NEWS CLEARINGHOUSE

Bull-Dogging Diazinon

When Val Connor tested the rain that had collected in pie pans she'd scattered around the Central Valley last January, she found enough di-azinon to kill an aquatic organism. Connor's agency, the Central Valley Regional Board, has been tracking the pervasiveness of this widely used farm and garden pesticide in rivers and runoff for several years. Last year Connor conducted some extensive urban studies that showed year-round diazinon movement from city yards and verges into waterways. Other Board studies, meanwhile, have documented waterborne pesticide pulses emanating from stone fruit and nut orchards along the Sacramento and American Rivers. But the high diazinon levels found in Connor's crude pie pan experiment suggest the pesticide may also be being translocated between cities and orchards over the airways.

As the diazinon trail soars skyward, the Board is in hot pursuit. In fact Connor recently asked the U.S. Geological Survey's Mike Majewski to get her some hard

data this winter by sampling the skies for the pesticide at two sites — one in an orchard area and one in the city.

"We're going to correlate diazinon concentrations in air and rain with wind speed and direction," says Majewski. The study will be expanded to five sites in its second year.

Majewski's study should yield new points on a map of diazinon's aerial and aquatic travels that is so wide-reaching it has regulators worried. The pesticide has turned up in the Bay-Delta's major rivers, in creeks as far apart as Hayward's San Lorenzo and San

Joaquin's Orestimba, and even in municipal sewer water. Because diazinon can be toxic to aquatic organisms, the State Water Board began talks with the Department of Pesticide Regulation about the possible need for control. The department, in turn, asked Cal Fish & Game to do a hazard assessment — a draft of which is already making the rounds. The assessment process, according to Fish & Game's Mary Menconi, uses available data to come up with a recommended numerical level for the protection of aquatic life. No

In this special issue dedicated to follow-up, we tracked down the protagonists of every story printed in ESTUARY over the past two years so that we could tell you how it all came out in the end. Here are the highlights of what we discovered. If you'd like to see the original stories, just call us for a copy (original publication date appears at story end).

agency has set such a level to date; indeed the only aquatic diazinon guideline on the books is the National Academy of Science's 0.009 parts per billion (ppb). While Menconi would not disclose what that the level suggested in her assessment will be, she says "We're very confident about our numbers. We had a lot of good quality data to base them on."

Menconi's assessment has no regulatory clout; it's just a bureaucratic building block. Indeed the Department of Pesticide Regulation's John Sanders says his agency's current focus is on solving the problem through education and voluntary activities on the part of growers. To this end, Saunders is currently overseeing studies of sev-

eral specific BMPs for orchards — among them the planting of vegetative strips to filter and trap the diazinon and the application of polyacrylamide gels that absorb the pesticide and bind to the soil. Both could theoretically keep diazinon from being mobilized by runoff.

Sander's agency is also actively monitoring the presence of 15-20 pesticides in the Sacramento, Russian, Salinas and Merced Rivers, and a new Geological Survey study may give them an interesting clue when it comes to diazinon. Peak storm runoff usually means peak pesticide levels, but not so in the case of diazinon. In a new Survey study of

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NEWS ROUND-UP

AN ANGLER DROPPED A FOOT-AND-A-HALF-LONG SILVERY FISH on the desk of Cal Fish & Game's Jim Starr in late October and said he and his buddies had been catching fish like this all year. Starr thinks the fish was probably an aquarium-bred *tilapia*, though this African intruder hasn't yet been identified in the Delta or caught at the State Water Project fish facility, which could indicate that their introduction has been fairly recent. Fish & Game will be investigating for a potential invasion of this highly fecund species. (209)948-7800

SCIENTISTS NETTED FIVE CHINESE MITTEN CRABS in the South Bay recently, enough to conclude the Chinese delicacy is living and breeding in the Bay (three were females laden with eggs). The crab invaded German waters in the 1930s, climbing up spillways and even onto city streets, where they blocked roads and entered homes. In its native China, the 6-inch-long, hairy-clawed crab has been known to crawl 800 miles upriver and feed on the shoots of young rice plants. Biologists are worried that California's rice fields — only 200 miles upstream — could be at risk and that the crab's burrowing could undermine Delta levees. The crab also carries Oriental lung fluke, a parasite that can give humans who consume inadequately cooked crab lung problems similar to tuberculosis. Scientists suspect someone who likes to eat the crabs intentionally released them into the Bay. Contact: (415)364-2760

INTERIOR SECRETARY BRUCE BABBITT PRESENTED JEAN AUER WITH THE HIGHEST HONOR he can bestow on a private citizen this November — Interior's Conservation Service Award. Auer was recognized for her two decades of service on water management boards and commissions; her outstanding leadership in the San Joaquin Valley Drainage Program; her important contributions to the S.F. Estuary Project, the Commonwealth Club, the League of Women Voters and the State Water Resources Control Board; and her infinite patience in developing consensus among water users. KA

THE CCMP IMPLEMENTATION COMMITTEE VOTED TO SUPPORT BAIR ISLAND'S PURCHASE for the S.F. Bay National Wildlife Refuge this fall. Restoring the Bay's Ruth Gravanis says the island's addition "would bring the refuge to critical mass" and protect California clapper rail habitat. In her appeal to the committee for support, Gravanis said development now threatens some 2,000 acres of the 3,000-acre site, which she called the South Bay's largest remaining parcel of restorable wetlands. Despite some members concern about eminent domain issues, the committee voted 11 to one to endorse the proposed acquisition with four abstentions. In other action, the Committee supported a proposed Medford Island Habitat Conservation Area and formed a watershed management committee. No new members were added to the Committee pending a decision from the Executive Council. (510)286-0780

MONO LAKE WON ITS WATERSHED BACK this September after twenty years of pleading its case in board rooms and on bumper stickers. An agreement was reached to raise the long-sinking lake level over a 20-year period from the current 6374 feet above sea level to 6392. To make up for the 90,000 acre feet that will now flow from Mono Basin streams into the lake instead of to City of Los Angeles faucets, two new Southern California water reclamation projects are to be built. The reclaimed water, along with conservation measures, should make up for the loss of the Mono Basin diversions without placing more strain on other water sources. State water officials are confident that their agreement will meet L.A.'s water needs without transferring the problem to the already ecologically stressed S.F. Bay-Delta — another L.A. water source. (818)972-2720

HOW I SEE IT



JOHN WODRASKA,
GENERAL MANAGER
METROPOLITAN
WATER DISTRICT

"MWD is spending \$20 million a year to encourage water conservation in Southern California. We've found there are six factors we need to consider in order to be successful. First, we need to explain the water supply problem so the public understands the need for conservation. The public sector often doesn't communicate with people clearly enough.

"Second, we need to reduce the issues to an understandable action that the public can take. For example, we have 16 million consumers with more than 10 million toilets in service. Each averages about 4 gallons a flush. We wanted to replace these with new toilets that use 1.6 gallons per flush, so we set up a toilet exchange program. Overall, 750,000 toilets have been changed out so far, saving us almost 30,000 acre-feet of water per year.

"As we developed the exchange program, we found that many of the toilets that use the most water were in the lower-income areas of L.A., so we partnered with community groups and churches. The pastor of the First American Episcopal Church, L.A.'s oldest black church, expected a lot of jokes when he start-

ed preaching toilets from the pulpit but the community embraced the idea. We exchanged over 42,000 toilets last year through that church, and they in turn received over \$1 million from MWD. The church hired 52 people to run the program, took over an old 3-story Victorian home and rebuilt it for their offices. It's the House that Toilets Built.

"Third, we need to develop trust among the agricultural, urban and environmental communities. Obviously right now there's very little trust, so we're trying to build bridges and honor what we in the water industry say we'll do. Fourth, we need to develop an outreach program. The problem is that the technocrats in the water industry all went to the same schools and studied the same subjects. We speak in abstract gobbledygook. Concepts like CFSs and acre-feet need to be translated into layman's terms.

"Fifth, we need to give people a chance to talk back — they don't want to be lectured to by the water industry; they want to be listened to, which leads to number six. We must develop listening skills and close the loop by soliciting their feedback. Getting people to conserve water is a continuous process. KA

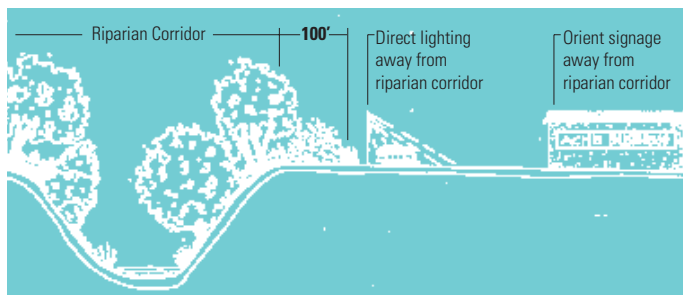
IN THE CITIES

SETBACK SCORES BIG-TIME

Environmentalists shot for the setback moon and got it in May 1994, when the San Jose City Council approved 100-foot setback guidelines for all land uses adjacent to creeks. Of the 40-odd speakers heard at a crowded final council meeting, only two opposed the full setback (and they "slunk up" to the microphone according to one observer). The clamor for the most stringent possible riparian protection guidelines surprised the city's planning staff, who called the 100-foot setback "pie in the sky" in April. "The environmental community really hung in there," says the city's Pat Colombe.

San Jose's new guidelines, to be published in final form as the *Riparian Corridor Policy Study* by the end of this year, cover not only setbacks, but also toxics runoff, restoration and planting procedures, lighting, building orientation and recreational use (golf courses were one of the land uses that were counting on but didn't get a lesser setback). Colombe says the Council didn't stop with mere riparian protection. It also voted for a strong restoration policy and action plan and set up a referral process that notifies environmentalists of projects applying for permits near creeks. Colombe says delight over the recent sighting of salmon in the city's Guadalupe River fueled the riparian protection fervor. Contact: Pat Colombe (408)277-4576 4/94 ARO

SETBACKS FOR COMMERCIAL/INDUSTRIAL & PROFESSIONAL DEVELOPMENT



NEW DRILL ON DENTAL AMALGAM

Dentists and San Francisco officials are cooking up some housekeeping BMPs to keep scraps of amalgam from slipping down the drain. Earlier this year, a city public works study showed that dental amalgams make up 8-13% of the mercury-containing waste that arrives at local sewage treatment facilities. After a year of meetings between dentists and city officials, the jury is still out on whether good housekeeping is all that is needed to solve the problem. Mercury treatment and removal systems may also need to be installed, according to the City's Daniel Standfree. Seattle will require such systems as of July 1995. San Francisco's Standfree says this spring the city will put both housekeeping and treatment approaches to the test. It will then test the drain discharges of participating dentists to determine if either or both bring them within San Francisco's 0.5 ppm local discharge limit. Contact: Daniel Standfree (415)695-7363 2/94 ARO

POLLUTION PREVENTION KUDOS

Alameda County's campaign to prevent anything but rainwater from disappearing down storm drains won second place nationwide in an EPA awards program recognizing excellence in stormwater pollution control. First place went to a small town of 14,000 in New Jersey — a speck on the national stormwater map compared to Alameda's 14 cities, 1.3 million residents, 38,809 storm drains and 85 billion annual gallons of stormwater. In particular, EPA commended Alameda's development of BMPs for municipal main-

tenance, efforts to retain vegetation in flood control channels, sponsorship of teacher workshops (Kids in Creeks) and demonstrated success in educating the public and changing behavior. To the West, the City of San Francisco also got a 1994 EPA medal — this time a first place for its innovative, pollution-preventing pretreatment-focused regulation of local businesses discharging into city sewers. Contact: Sharon Gosselin, Alameda (510)670-6547 & Steve Medbery, S.F. (415)695-7310 4/94 & 6/94 ARO

DEAR FOLKS

THANK YOU!

ESTUARY would like to thank its 400 subscribers for supporting our efforts to provide an invaluable news clearinghouse on Bay-Delta water issues. We'd also like to recognize the U.S. Fish & Wildlife Service, the U.S. Army Corps of Engineers, the S.F. Bay Regional Water Quality Control Board, the S.F. Bay Conservation and Development Commission, the Bay-Delta Oversight Council and the State Department of Water Resources. The larger donations of these sustaining subscribers, combined with the many smaller ones of our individual subscribers, make an enormous difference when it comes to paying our bills!

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HAPPY HOLIDAYS!

TWO-TIME REBATE

A Richmond apartment complex will pocket its second runoff rebate in a row this January under a city program offering a \$20-a-unit rebate on its \$32-a-unit stormwater utility fee to landlords who work hard to curb polluted runoff. To win the rebate, the 194-unit Creekside apartment complex banned car washing, mandated oil leak repair and spill clean up, conducted storm drain inspections, enclosed dumpsters and prohibited gardeners from storing pesticides on site. Creekside recently passed its second site inspection with flying colors, qualifying for another rebate. But this year marks the first time city public works authorities will try to confirm improvements seen on their site tours with some water quality tests. Contact: Henry Tingle (510)620-6538 12/93 ARO

SPECIES SPOT

SMELT ZONE OUT

Final results of a summer field study aimed at revealing the real-life interaction between water project operations and distribution and losses of Delta smelt may cast some doubt on long-standing theory on the subject.

"The zone of influence of the pumps under the study's conditions for Delta smelt wasn't as great as conventionally thought," says Leo Winternitz of the Department of Water Resources, which commissioned the research. The study, conducted by Hanson Environmental in June and July 1994, examined whether or not a statistically significant increase in juvenile smelt abundance would occur at sampling locations within the Old and Middle Rivers (generally thought to be within the zone of influence) as a direct result of an increase in water project exports. The relationship was also explored at sampling locations throughout the Delta. The investigation detected no significant change in the distribution of smelt in response to the increased export rate. Indeed, the fish's distribution remained similar during both low and high exports.

"Now we have empirical evidence on actual impacts; before only theoretical impacts have been used to regulate flows," he says, adding that the study only indicates impacts under its specific time period and conditions. The study has been criticized for its timing during a period when critics felt many smelt had moved out of range of the pumps.

Water Resources hopes to conduct a follow-up study next spring, when the smelt are smaller, closer to the pumps and more susceptible to exports. But the recently released draft Fish & Wildlife Biological Opinion on the smelt, which lays down pump management and other conditions for its survival under the Endangered Species Act, may limit fish collection for certain research. Water Resources will be questioning these limitations in its comments on the opinion, according to Winternitz. "Otherwise we're going to have a lot of untested theories," he says. Contact: Leo Winternitz (916)227-7548 8/94 ARO

IN THE FIELD & LAB

HERBICIDE TESTED ON SLOUGH WEED

Scientists conducting test sprays of the herbicide Komeen on the exotic aquatic weed *Egeria densa* found that the waterway-clogging plant was better controlled in a single large-scale application than in several smaller ones. The U.S. Department of Agriculture's Dr. Lars Anderson, who was charged with assessing the effectiveness of the Komeen and with measuring the potentially harmful impacts on the water column of the copper it contains, carried out two trials this summer in Sand Mound Slough. In the first, he treated three one-acre areas, applying 16 gallons of the herbicide per acre. In the second, he treated one five-acre plot at the same application rate. The latter approach proved more effective.

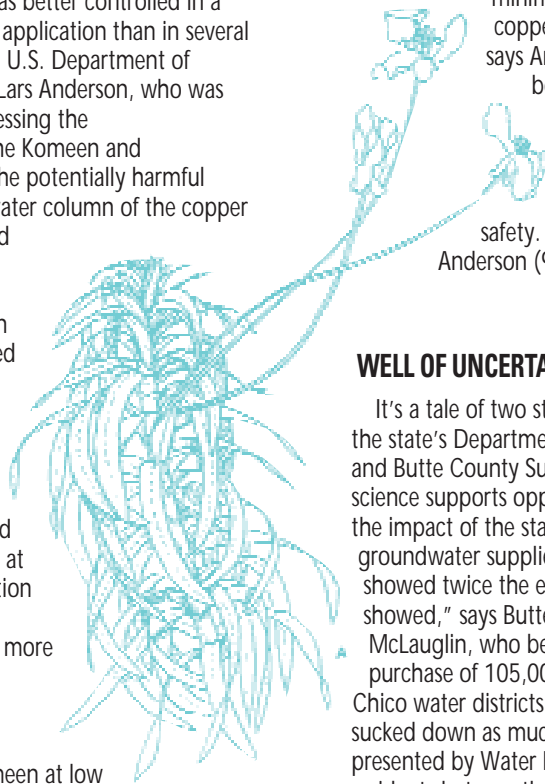
Anderson's method involved applying the Komeen at low tide, then testing copper levels in the water every two hours until the next high tide, and in the plants after 24 hours. In the first trial with the one-acre applications, the highest level of copper he found was 0.65 ppm. Within six hours, the level was down to one tenth of this maximum; within 24 hours, it was indistinguishable from background. In the plants, copper levels measured 200 ppm, and biomass decreased by 50-80%. But Anderson says the *egeria* started to grow back within two weeks. "It's kind of like mowing the lawn," he says.

The second larger trial left more copper — 0.5-1.5 ppm — in the water and increased the *egeria*'s exposure time. Their uptake jumped to a more effective 300-400 ppm, according to Anderson. "The larger plot with the longer contact time at a higher rate gave us a better, more

widespread and more uniform reduction of the biomass," he says. Anderson followed up with lab tests to see if the Komeen worked cumulatively, applying the herbicide three days in a row. But by the second day, the plant had little ability left to take up the copper.

"What all this tells us is small treatments may defeat the purpose, which is to minimize the addition of copper to the ecosystem," says Anderson. His results will be considered by state regulators trying to balance water quality impacts with boating convenience and safety. Contact: Dr. Lars Anderson (916)752-6260

8/94 ARO



WELL OF UNCERTAINTY

It's a tale of two studies in Chico, where the state's Department of Water Resources and Butte County Supervisors both say science supports opposite positions about the impact of the state water bank on groundwater supplies. "Our model showed twice the effect of what they showed," says Butte Supervisor Ed

McLaughlin, who believes the state's 1994 purchase of 105,000 acre-feet from two Chico water districts caused wells to be sucked down as much as 30 feet. A model presented by Water Resources to county residents last month, however, shows levels only falling by 5-10 feet, according to the Department's Dan McManus. McManus says Butte's model is not as accurate as his agency's; McLaughlin says Butte's model used far more information. While the latter model spins out more scenarios over the next few months, Water Resources is cooperating with the requests of a coalition of Butte County water districts to suspend purchases from their area. McLaughlin sees this cooperation as a "self-admission" on the Department's part that there is a problem. McManus thinks Butte County has modified a "no-new-wells" ordinance to aim it at areas where potential water bank sellers live. Contact: Ed McLaughlin (916)891-2808; Dave McManus (916)529-7361

10/94 FH

IN THE VALLEY

SUPPLY-SIDE SELENIUM

A plan to separate selenium-tainted drainage water from wetland refuge supplies has been creeping ahead since last spring, but if all six water districts in the Grasslands area don't participate, it won't work, says the Central Valley Regional Board's Joe Karkoski. The plan would redirect the drain water away from channels serving refuges and then down Mud Slough and the San Luis Drain, whose potential reopening, however environmentally beneficial, remains a political red herring due to the drain's starring role in the Kesterson duck Armageddon. Despite Congressional caution, however, negotiations continue between the Regional Board, environmental groups, farmers and water districts. Currently, the talks are revolving around three issues: how to get all the drainers to sign on (several remain reluctant); how to address contaminated sediments in the drain bottom, whose 20-30 ppm of selenium could be remobilized by reintroducing flows to the now idle drain (sending more selenium downstream to the Delta); and at what level should selenium load reduction milestones, which regulators would like to set for the next five years, be pegged?

If these issues can't be resolved, Karkoski says the Regional Board may have to adopt and enforce a selenium standard for waterways carrying Grasslands drainage. To protect the San Joaquin River, into which these waterways drain, Karkoski's been laying the technical groundwork for a Board *Basin Plan* amendment that would set a selenium TMDL (total maximum daily allowable load) for the river. His amendment will be reviewed by the Board as early as this March. In the meantime, Karkoski says he's working on the "trickier" part, a "justifiable" TMDL implementation plan. This may include a tradable discharge permit system developed by the Environmental Defense Fund. For implementation fodder, Karkoski is also reviewing the recommendations of the San Joaquin Valley Drainage Program — a late 1980s consensus- and information-building response to the Kesterson tragedy. In addition, he's evaluating how effective the Board's existing *Basin Plan* approach on selenium — voluntary source reduction — has been.

Whatever the implementation plan approach, any kind of comprehensive selenium reductions could be costly. "We're at a turning point," says Karkoski.

"When it comes right down to it, it's a matter of how much protection can we afford?" Contact: Joe Karkoski (916)255-3097 ARO

HARD SCIENCE

VACU-BOOM BOMBS

Though a mobile cleaning unit hosed down, sucked up and vacuumed out runoff from three Sacramento gas stations ten times last winter, a two-year before and after study indicated that this high-tech BMP did not reduce pollution. The study, funded in part by the S.F. Estuary Project, compared pre-BMP 1992-1993 wet season runoff with post-BMP 1993-1994 runoff. In addition to the \$600-a-pop visits from the mobile clean-up unit, study and station managers invested in litter control, storm drain stenciling, spill clean-up materials, public notices and employee training.

According to a newly released study report (see *Now in Print*), the one BMP with the most significant chance to affect runoff quality was the mobile high-pressure water cleanings. But although field crew observations confirmed that the cleanings — in which runoff was collected with a boom and then vacuumed and pumped into an on-site sewer cleanout — removed a significant amount of pollutants, results showed no statistical difference in the pre- and post-BMP concentrations (except for oil and grease whose levels measured higher after the BMPs).

Researchers speculate that the cleanings may have made more pollutants "available" for wash off by the next storm or clean up. Contributing factors may have included rough surface texture, incomplete wash off after cleaning or heavy pollutant build-up. The study showed that build up occurs during dry periods, and runoff concentrations reflect the length of the build-up period.

Study manager Jon Goetz of Sacramento County Public Works thinks the fact that it rained more during the 1993-1994 season may have muddied the results. "A wet year does a better job of cleaning," says Goetz, who recommends limiting any further studies to one rain year in which three gas stations serve as reference sites and three others try BMPs. Goetz also thinks the results hint that regional solutions, such as off-site stormwater detention basins, may be more effective and less costly than on-site high-pressure hose-downs. "If we force gas stations to do one BMP, such as mobile cleaning, it sets an expensive precedent for every other station, road and parking lot in the county," says Goetz. Contact: Jon Goetz (916)552-8913

10/93 ARO

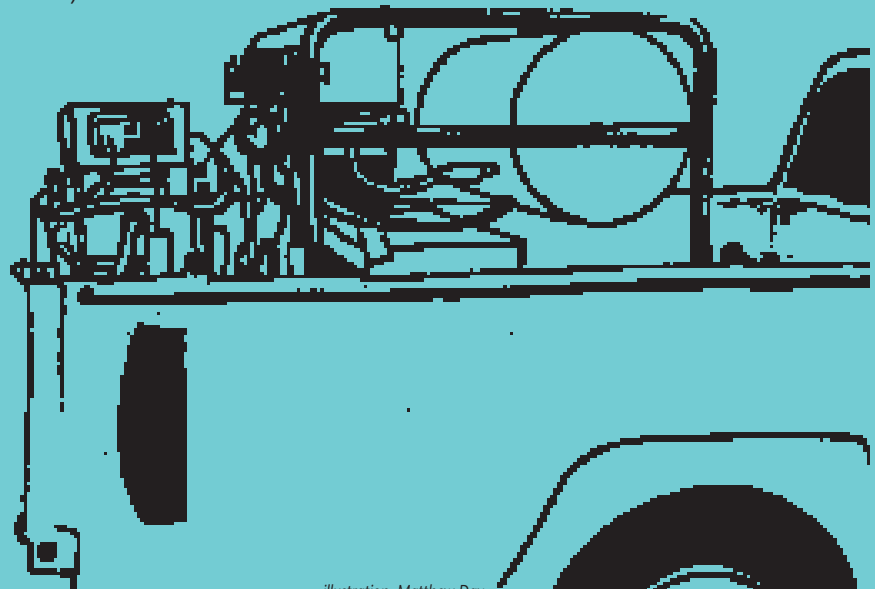


illustration: Matthew Day

ON THE RIVER

SALMON SONG & DANCE

The tactic that worked in legend for the Pied Piper of Hamelin and seems to save some baby salmon doesn't seem to hurt adult fish either, a new federal study shows. Underwater music played in the correct key, which keeps fish away from nuclear power plants on the East Coast, has succeeded at Georgiana Slough but failed at Grimes in leading endangered Sacramento River salmon to safety.

A \$1.7 million study by State Water Resources and BurRec is showing adult salmon are not distracted from swimming up river



by underwater speakers designed to warn baby salmon away from Georgiana Slough, says the Department's Darrel Hayes.

The study began in April and will conclude in December, but its early portion indicates that 50 percent of the baby fish that might have entered the slough were successfully chased away by underwater sound. The study's more recent portion shows that adult winter-run salmon aren't distracted by the sounds. Research involved netting, tagging and tracking adults, as well as scanning the river with radar for every object over 17 inches long for 10 days at the end of November. None of these experiments indicated any negative effects on adult fish, says Hayes.

The news hasn't been so good for Reclamation District 108 near Grimes on the Sacramento River, which has also been experimenting with a musical fish screen, according to Cal Fish & Game's Dan Odenveller. District officials have said high river velocities may have kept tiny fish from avoiding the mound, whether they want to or not. Others blame the velocity rather than the technology for the screen's poor performance. "The problem is when something doesn't seem to be working, they change it rather than taking the time to prove it doesn't work," says Odenveller. "That doesn't leave us with a lot of usable data at the end of the year."

Because RD 108 water goes into a rice field, says Odenveller, the musical screen must have a success ratio of 95% or better. "At Georgiana Slough a success ratio of 50% may be good, but it's not enough here." Contact: Dan Odenveller (916)654-2731 6/93 FH

SUBMERGED SCREENS SUCCEED

Despite a mystery over how a fish screen could become a fish incubator and a tangle with a floating 65-foot-tall cottonwood tree, the experimental Pelger Mutual Water Company fish screen is working, federal and state officials say. These submersible tank screens stuck in a deep-water hole at the end of a giant tube are now being studied along the Sacramento River. This year, irrigation water for Pelger's tomato and rice farmers was successfully diverted through the screen, says screen engineer Gilbert Cosio. Meanwhile, farmer Scott

Tucker says a cottonwood tree that fell into the river was snagged by underwater deflector piles designed to keep floating debris away from the screens. When the tree cleared, divers from three agencies checked the screen but found no damage.

Baby fish were found in the ditch where the water that flows through the screen dumps out, says Cosio. He believes the squawfish eggs may have grown inside the Volkswagen-sized tank while it was shut off but that the fish may have entered the ditch from somewhere else. "We know there is no way the fish could have gotten through the mesh," says Cosio. Contact: Gilbert Cosio (916)456-4400 6/94 FH

TASK FORCE PLUGS BANK PROTECTION

A 34-member public-private task force will meet on January 10 to complete its recommendations for how best to stave off a Sacramento flood. The task force's job is to provide the Sacramento Area Flood Control Agency with a locally preferred alternative for managing 26 miles of the American River upstream from the city. The alternative soon-to-be ratified by the task force is a river-mile-by-river-mile plan for state-of-the-art bank and levee improvements, riparian habitat restoration, and mitigation for construction activities and for flood impacts that may be referred downstream by the improvements.

"This is a chance to undo a 15-year-old adversarial relationship between flood control agencies and advocates for resource protection," says task force facilitator Scott McCreary of CONCUR. "It's also a chance to save a lot of money." Bank protection generally costs less than dam construction and requires far less mitigation. Indeed dams figure in the flood control agency's two other alternatives, one of which is to build a dam at Auburn Canyon and the other to undertake a "reoperation" of Folsom Dam (i.e., putting aside more reservoir space for flood protection, which could in turn mean less space for water supply). The flood control agency will decide between the three alternatives this February, or may choose a hybrid (see calendar). Contact: CONCUR (510)649-8008 6/94 ARO

THE MONITOR

RIVERS MEASURE UP

Eighteen months of sampling Sacramento and American River waters had three area agencies breathing easier, as levels of most of the metals, solids and other constituents monitored measured low enough to comply with EPA water quality criteria. The three city and county agencies launched the monitoring program in 1991 in the hopes of developing better information about actual ambient water quality conditions to help guide policy and regulatory decisionmaking. Since the program began 18 months ago, consultants have compiled data on 12 trace elements, cyanide, suspended solids, organic carbon and water hardness at six sites along the two rivers. Much of this information was recently published (see *Now in Print*) and made available through a data base clearinghouse containing over 23,000 result records. The only result of concern, according to Malcolm McEwen of Larry Walker Associates, was that mercury occasionally exceeds criteria in the Sacramento River.

Contact: Malcolm McEwen (916)753-6400 8/93 ARO

ON THE MARSH

HAYWARD MANEUVERS

Curbing flows through a 145-acre wastewater treatment marsh may have temporarily exacerbated rather than reduced ammonia in the Hayward wetland. Managers had hoped to reduce levels of this potential fish toxin by lowering effluent flows through the marsh from 10 to a maximum of 5 million gallons per day and by making a complementary series of physical and biological improvements. These steps were all aimed at fueling the growth of a bacteria that transforms the ammonia into a harmless nitrate. Since chlorine, another effluent constituent, kills this desirable bacteria, the improvements attacked the ammonia problem via the chlorine.

Since summer 1993, marsh managers have built a series of permanent baffles that promote chlorine evaporation by forcing the water through a maze of concrete piers and redwood slabs. The redwood, in turn, offers sound substrate for bacterial growth, backed up by 3500 clumps of additional hosts in the form of bulrush recently planted in bands crisscrossing the marsh.

While managers waited this year for the bulrush to mature (bands will be expanded with new plantings soon) and for two new dechlorination tanks to go in (installation is slated for this coming January), the lower flow levels had an unexpected side-effect. The water hung around in the marsh longer, promoting localized algae blooms that changed the pH in the marsh and thus converted more ammonia

ENVIRO CLIP

DEAL OR STEAL ON MAYHEWS?

In the 1950s, Margaret Lewis captured frogs in the brackish ponds of Newark's Mayhews Landing and chased snakes on its rolling grasslands. In the 1980s, she fought the efforts of developer Ed De Silva to put a housing tract on the grasslands portion. Today, she and 40 local environmental groups have objected to a price tag of \$175,000 per acre for the grasslands and \$5,000 per acre for the wetlands.

U.S. Fish & Wildlife agreed on July 1 to pay \$7.5 million to add 108 acres of Mayhews Landing grasslands and wetlands to the S.F. Bay National Wildlife Refuge. Lewis says this price would set a precedent in the valuation of wetlands all over the Bay Area and propel them out of the economic reach of conservation groups.

Fish and Wildlife's John Doebel says the Interior Department Inspector General will commence an investigation of the Mayhews purchase this December at the request of Hayward Congressman Pete Stark, whom the environmentalists contacted with their concerns. In 1992, the Inspector reported that government was often overcharged for wildlands, despite use of certified appraisers and correct procedures. But Doebel doesn't expect the Inspector to find anything wrong with the Mayhews deal.

"Real estate in the Bay Area is too expensive," he says. "That is just a reality of doing business here."

Florence La Riviere, whose Citizens Committee to Complete the Refuge is credited with gaining 1988 legislation to double the size of refuge holdings around San Francisco Bay, says their once sound working relationship with Fish & Wildlife is now "severely threatened." She questioned the agency's appraisal history and process.

"Not only was the original appraisal unrealistically high to start with, but for them to declare no change since 1991 in the face of local land value depressed by 10, 20 and 30% since then, simply surpasses all credibility," says La Riviere.

Doebel says three 1990 appraisals were updated and that Fish & Wildlife procedures have been followed at all times. He says the high price stems from the fact that more than half the property is developable grasslands and uplands.

Requiring buyers like the federal government to pay closer to full-market value for lands like Mayhews where wetland regulations have derailed development may get a boost from the new Republican Congress. In the meantime, the Inspector General is set to publish new guidelines for Interior Department purchases this December.

Contact: Florence La Riviere
(415)493-5540 FH

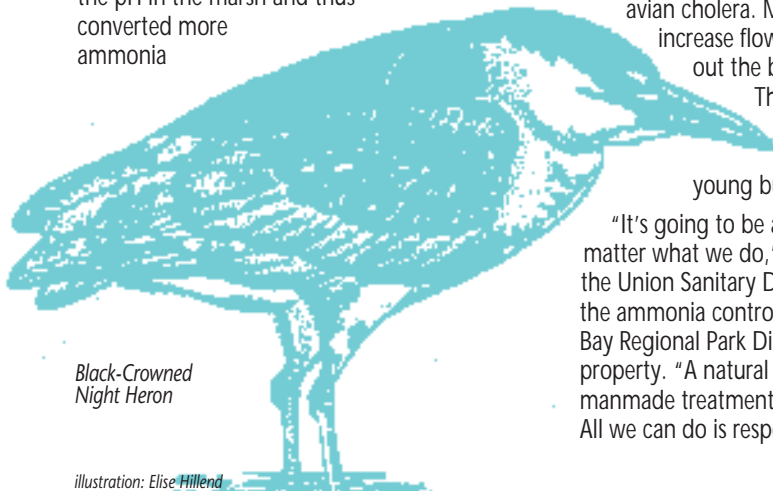
from its nontoxic to toxic form. Another problem cropped up with the arrival of migratory waterfowl and an outbreak of avian cholera. Managers had to increase flows to dilute and flush out the bird-killing microbes.

The higher flows, in turn, submerged and killed some of young bulrush plantings.

"It's going to be a balancing act, no matter what we do," says Rich Cortes of the Union Sanitary District, a partner in the ammonia control project with the East Bay Regional Park District, which owns the property. "A natural marsh isn't like a manmade treatment plant. It's dynamic. All we can do is respond," he says.

Finding a sound medium will be the focus of experiments to be conducted once the dechlorination tanks are in place. "We'll be looking for the ideal water height and flow rate to maximize plant growth and minimize ammonia," says Mark Taylor of the Park District. Despite the difficulties, Taylor says there's been one obvious benefit. Egrets and black-crowned night herons arrived last year to nest in the new bulrush — birds that usually prefer more arboreal nesting turf. Taylor counted over 115 egrets in the marsh this November.

Contact: Rich Cortes (510)790-0100 ext. 228 6/93 ARO



Black-Crowned
Night Heron

illustration: Elise Hillend

AT THE TAP

TAP WATER TIGHTROPE

EPA inched another few steps down the tap water treatment tightrope this year in an effort to negotiate some kind of balance between two different health risks — those from disease-causing microbes and those from carcinogenic by-products of the disinfection process used to kill them. Three new draft drinking water rules have been added to the books since last year. The first, called the *Information Collection Rule*, requires larger water utilities to test source waters before, during and after treatment for both microbes and disinfection by-products. The second, the *Disinfectant By-Products Rule*, sets interim numerical standards for a variety of disinfection chemicals and their by-products. The third, the *Enhanced Surface Water Treatment Rule*, “makes sure no one backs off microbe treatment to comply with the new disinfection by-product standards,” says EPA’s Bruce Macler. Data rolling in as a result of the first rule will help in the development, review and implementation of the other two, says Macler.

EPA has also been tackling arsenic — a drinking water contaminant that occurs in so many places naturally that its regulation might require treatment of almost every groundwater source in the country. Intense discussion on the arsenic issue is now centering on whether the 50 ppb EPA currently allows should be reduced to somewhere in the range of 2-20 ppb. If the new standard falls at the 2 ppb end, it could present problems for water suppliers drawing on the Delta, where ambient arsenic levels have been measured at 5 ppb. Contact: Bruce Macler (415)744-1884 [4/93 ARO](#)

BURREC PUSHES PLANNING

Twenty out of the more than one hundred water districts served by BurRec’s Central Valley Water Project have water conservation plans that meet the agency’s strict new evaluation criteria. BurRec published the new criteria in April last year, as required by the 1992 CVPIA — also known as the Miller-Bradley bill. By April

TECHNO FIXES

FROM TOILET TO TAP?

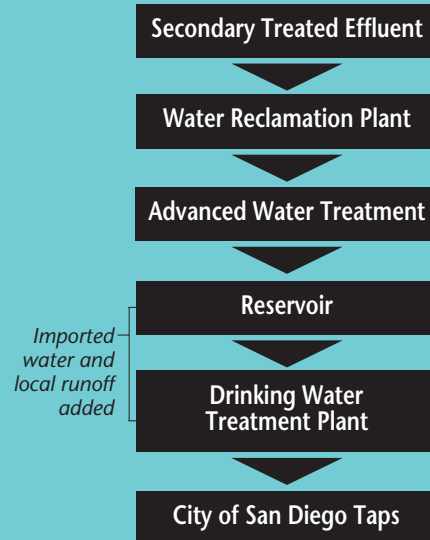
We’d all like to think our drinking water burbles up from a pristine mountain spring before pouring out pure and clear from our faucets. Yet in reality, water is used, treated, then used again — a fact the San Diego County Water Authority hopes it can teach its customers so an innovative water reuse project can get underway. The Water Authority’s Patricia Tennyson says the agency wants to treat reclaimed water to create a new potable water supply. The plan is to send effluent through a water reclamation plant for tertiary treatment, then to an advanced water

treatment facility for repurification using microfiltration, reverse osmosis, nitrate removal and other treatment processes. This water would be conveyed to a reservoir to mix with local runoff and imported water supplies. The blended water would then undergo conventional drinking water treatment before being piped to consumers.

Tennyson says the repurified water can meet or exceed the quality of the raw water supply now in the city’s reservoirs. “We’ve gone to great lengths to ensure the safety of this potential water source,” she says. “Our biggest hurdle is overcoming the public’s perception that the water is unsafe.”

Although San Diego relies on imported water for 90% of its supply, surveys showed that only 20% of its residents understood their water had been used before. “Once people realize how the water supply process works and understand this new technology, they agree that we can make the water clean,” Tennyson says. One other hurdle may be treated water’s cost — an estimated \$924 an acre-foot. But Tennyson says this amount is comparable to or cheaper than the cost of developing other water supplies such as a desalination plant. The state’s Department of Health Services has given its conditional approval to the project, vastly increasing the potential uses for reclaimed water statewide. “Regardless of whether we end up doing this project, it shows us that any city in California could use repurified water for drinking,” says Tennyson. Contact: Patricia Tennyson (619)692-9356 [KA](#)

SAN DIEGO’S WATER REPURIFICATION SCHEME



1994, BurRec had used the criteria to evaluate around 120 district water conservation plans, 95 of which had been updated to meet the new criteria, but only 22 of which met them. The other 73 are still being evaluated or revised.

BurRec’s Debra Goodman says districts must show what conservation BMPs they plan to employ, and how and when they will be implemented. Without adequate plans, their CVP water contracts may not be renewed. To help districts improve their plans, BurRec is offering technical assistance through the state Department of Water Resources and will have two new water conservation specialists in the field by early next year.

Goodman couldn’t say how much water has been saved yet as a result of the planning effort. But the new criteria do require districts to measure water inputs and outputs, something many will be doing for the first time, and then to provide BurRec with an annual progress report. Some figures may be forthcoming soon; some are already being plugged into a new conservation data base.

Goodman says the two next big steps are a 1996 update of the CVP users criteria and the early 1995 release of the BurRec’s new “WestWide” conservation criteria for all 17 western states. Both will be available for public comment. Contact: Debra Goodman (916)978-5313 [6/93 ARO](#)

IN PORT

CHEMICALLY CHALLENGED MUD

The “contaminated” label brings such a stigma to Bay mud dredged up from the region’s waterways that managers recently felt compelled to come up with the more pc term, “chemically challenged.” Whatever the label, there are at least five million cubic yards of the stuff — about 10% of the region’s projected total volume of dredged material — to be cleared from local waterways in the next ten years.

Several disposal options — namely placing it in a confined aquatic or landfill site — are now being explored through an interagency, multi-interest effort called LTMS (*Long-term Management Strategy*). Indeed “confined aquatic disposal,” or CAD, is the subject of a proposed new feasibility study. The idea behind a CAD is to place dredged sediments in near-shore shallow areas with high natural deposition and low current activity, and then cap them with clean sediments. The new study, as yet only partially funded, will screen potential CAD sites regionwide, explore environmental impacts and habitat restoration opportunities, and examine different CAD construction methods.

“CADs aren’t the cheap and easy panacea that some in the port community think,” says the Port of Oakland’s Jim McGrath. “It takes a lot to do capping right.” Right means a host of expensive engineering and technical acrobatics to ensure the site’s seismic integrity and prevent contaminant migration into surrounding waters. The S.F. Regional Board’s Tom Gandesbery is optimistic, however, particularly about the availability of promising candidate sites, which may include old Treasure Island and Hunter’s Point borrow areas (where sediments were once “borrowed” for fill), several defunct drydocks and the navigation channels and berths of closing military bases.

“We’d be taking some ugly, abandoned industrial backwaters and making something nice or useful out of them,” says Gandesbery. Borrow areas brought back up to sea level could become wetlands; Richmond’s old graving docks a new container port facility.

Another option is to reuse the material as cover and lining for landfills. A new draft LTMS report (see *Now in Print*) screens 127 Bay and Delta landfills based on site capacity, disposal costs and distance from major dredging sources. Indeed the cost of trucking or railroading the material to a landfill can be much more expensive than dumping it at the Alcatraz aquatic disposal site (\$4 versus \$18-\$22 per cy). Another obstacle is the need to prepare material for landfill use at a rehandling facility, of which there’s now a dearth. Despite the obstacles, the screening turned up 16 highly feasible landfill sites with a combined capacity of over 5 million cy.

“Landfills are a good match for most of the material that comes out of the Bay,” says the Commission’s Steve Goldbeck. He sees landfills as a more stable option than CADs, and questions the region’s ability to maintain a CAD over decades. “The Bay’s not an easy environment to deal with if something goes wrong,” he says.

Gandesbery points out that the chemically challenged material is already out there “uncontrolled” in the Bay system. “When you look at that, the benefits of containment may outweigh the drawbacks,” he says. Contact: Tom Gandesbery (510)286-0841 & Steve Goldbeck (415)557-3686 11/92, 6/93 & 12/93 ARO

TOUGH CHOICES

BIRDS OR BULLDOZERS OR BOTH?

Mare Island base closure planners are struggling to strike a land use balance between two means — wetland restoration and dredged material disposal — to the same end — a healthier Bay and Delta. U.S. Fish & Wildlife, hoping to expand its adjacent San Pablo Bay National Wildlife Refuge, has asked the Navy for 670 acres of wetlands on the island, including three active dredged material disposal ponds, as well as nearby surplus Building #505, where the Service hopes to open an interpretive center. But the S.F. Bay Commission, on behalf LTMS (see opposite), wants the Navy to retain the ponds for disposal. “If we don’t look at all the alternatives, the dredged material just gets dumped in the Bay or the ocean,” says the Commission’s Steve Goldbeck. Studies have identified the site as one of few with both a large capacity and an appropriate setting for a drying and rehandling facility. “We just want to reserve the area now so that use for disposal is not precluded,” says the Commission’s Jeff Jensen.

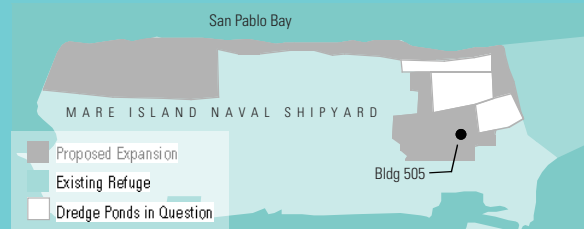
But an interpretive center marooned in the midst of active disposal ponds won’t work, says the Refuge’s Marge Kolar. “There are few habitat values while the ponds are being used,” she says. “Besides normally in front of an educational center, we would be trying to show wildlife values instead of dredge values.” Jensen agrees. “Dirt, dust and heavy machinery are not really conducive to bringing out the public,” he says, adding that his agency is already looking at how to screen the facilities from view.

At the same time, the City of Vallejo — seeing a potential cash cow — wants to take over the ponds itself, with revenues from disposal fees flowing to a Mare Island conversion fund. Federal base closure policy requires concurrence from the local reuse group, in this case Vallejo, before property can be transferred. Although the city concurred with Fish & Wildlife’s request, it was with a caveat that the city retain use of the ponds. Though this proviso could possibly halt the transfer altogether, the Vallejo’s

Al Da Silva thinks it’s just a timing issue. “The ponds should be available for current regional dredging needs but after that they could be used for wetlands,” he says.

Contact: Al Da Silva (707)648-4444; Jeff Jensen (415)557-3686; Marge Kolar (510)792-0222 4/94 KA

PROPOSED REFUGE EXPANSION AT MARE ISLAND



ON PAPER

BDOC WRAPS UP TECHNICAL WORK

The Bay Delta Oversight Council's technical experts got their shopping list of ideas for making the Bay-Delta more habitable for salmon, smelt, rails, mice and pickleweed on paper this November, when the last two of five advisory committees reported in.

"The reports define a wide range of actions that could be implemented in terms of both what's feasible and what's beneficial," says BDOC's John Amodio.

For the Aquatic Resources Committee techies, the development of an options list began with some wrangling over what should be the thrust of restoration. "The issue was when you're trying to determine what to do for a fix, do you focus on continued human intervention or on making the system more self-sustaining?" says Cal Fish & Game's Wernette. Should you build more salmon hatcheries or make Delta waterways more fish-friendly, he explained by way of example. The committee decided to emphasize the latter, and suggested 37 options, some as broad as restoring shaded riverine habitat, some as controversial as building a peripheral canal, some as specific as installing a fish screen at the Clifton Court Forebay and prohibiting discharge of ship ballast water in the Estuary.

The Plant and Wildlife Committee, meanwhile, worked to bring a hodge-podge of disjointed ideas together under a single, strategic plan, says Wernette. Its 27 action options ranged from protecting riverine flood plains to controlling urban growth to establishing habitat corridors between inner Delta marshes and upland communities of the Delta rim. Wernette says many of the options borrow from or build on the recommendations of the S.F. Estuary Project's CCMP.

Wernette thinks both reports can serve



as "useful stepping stones" for the next phase. What that next phase will be for BDOC, given state-federal plans to launch a new public-private advisory committee that may supersede the council this spring, isn't clear. But BDOC's John Amodio says the goal of his council's technical reports and last few months of work isn't to prejudice the new process but to give it a jumpstart on the tough task for finding long-term solutions to the problems facing the Estuary. Contact: Frank Wernette (209)948-7800 2/94 & 6/94 ARO

TECH REPORTS IN ON STATE NONPOINT THRUST

Though the toxic barnacle-battling boat paint additive TBT is now banned in America, Mexico still allows its use and pleasure boats continue to ply the waters between the two countries. To reduce this transport of toxic materials to California waters and marinas, a new technical report suggests the state should ask the EPA to flex its international muscles.

The report, which recommends measures to stem nonpoint source pollution from state marinas, is one of 10 draft reports the State Water Board will present to the public at a Sacramento workshop this January (see calendar). The reports, prepared by expert committees of agency officials and stakeholders, examine what the state should do to improve its plans and policies on nonpoint source pollution and to comply with a 1990 amendment to the Coastal Zone Management Act.

Each report targets a specific pollution source — such as marinas, urban runoff, abandoned mines, on-site disposal systems, irrigated agriculture and grazing — reviews the EPA's recommended measures for their control, and develops its own recommendations list. The list for tackling the state's abandoned mines, for example, recognizes the "embryonic" stage of control programs and aims at providing: a method for prioritizing clean up efforts; stable funding sources for clean up; a mechanism for limiting liability exposure for those private and public entities that chose to clean up abandoned mines voluntarily; clean up objectives that realistically reflect the technical and financial difficulties of mine clean up; and scientific documentation of the regional

effects of metal loading from mines.

The urban runoff report, meanwhile, had much more to build on in terms of existing programs and recommends that local governments continue to take the lead responsibility for curbing runoff from cities, suburbs and small. The report recommends, among other things, that state and regional boards promote a watershed approach, provide technical advice to local governments, and create a model program that small municipalities can make their own. For a copy of any or all of these draft reports, contact: Sid Taylor (916)657-0432 4/93 & 10/94 ARO

LEGAL BRIEF

MINE PLAGUES STATE

State water officials entered Calaveras County's Penn Mine as regulators in 1978 and walked out as dischargers in late 1993, thanks to an environmentalist-sponsored lawsuit. The court found that under the Clean Water Act efforts to channel and contain the mine's acid water runoff by the Central Valley Regional Board and the East Bay Municipal Utility District (EBMUD), which operates a dam and reservoir on the property, made them responsible for decades-old acid discharge from the mine.

The Regional Board and EBMUD must now apply to the State Board for a NPDES discharge permit, even though neither owns the principal stake in the property nor are the cause of the mine pollution. This outcome sets an expensive precedent for California's 15,000 abandoned mines — 160 of which have been tagged as potentially significant polluters. NPDES permits can require expensive treatment before discharge. "We can't just do basic mine clean up anymore," says the State Board's Rick Humphreys. "The way it's set up now, it's all or nothing. If the state's going to end up having to meet these kinds of permit requirements, we've no incentive to go out and spend what little funds we have on mine abatement." A draft Penn Mine discharge permit is now making its unprecedented way through the State Board approval process. Contact: Rick Humphreys (916)657-0759 4/93 ARO

PLACES TO GO & THINGS TO DO



WORKSHOPS & SEMINARS

Measuring the Progress of Estuary Programs

FRI•1/20•All day

Topic: How to track the progress of estuary protection efforts undertaken by governments, businesses, households and boaters.

Sponsor: U.S. EPA
S.F. Regional Board, Oakland (202)857-8509

State Nonpoint Program Review

TUES-WEDS•1/24-25•All day

Topic: Presentations of ten technical reports recommending improvements to state nonpoint source pollution control programs. (see page 10)

Location: 901 P Street, Sacramento
(916)657-0793

Changing the Rules on Water: Is Agriculture Getting a Fair Shake?

WED-THURS•1/25-26•All day

Topics: Discussion of the future of irrigated agriculture, drainage, land retirement, costs of power and water rights.

Sponsor: California Irrigation Institute
Centre Plaza Holiday Inn, Fresno
Cost: \$95 (916)366-9376

Mare Island Base Closure Symposium

SAT•2/4•All day

Topic: Natural and cultural resources and base reuse plan for Mare Island Naval Shipyard.

Sponsor: Golden Gate Audubon Society
Mare Island Officers Club, Mare Island
(510)843-2222



HANDS ON

Estuary Expedition

SAT•2/4•All day

Activity: Teacher workshop and seminar aboard the Marine Science Institute's research vessel.

Sponsor: Marine Science Institute
Marine Science Institute, Redwood City
(415)364-2760



MEETINGS & HEARINGS

CCMP Delta Geographic Subcommittee

WED•1/18•9:30 AM

Jean Harvie Community Center, Walnut Grove
(510)286-0924

S.F. Bay Regional Board

WED•1/18•9:30 AM

Board Room—BART Headquarters Building,
800 Madison Street, Oakland
(510)286-0533

Bay Commission

THUR•1/19•1 PM

Room 455—State Building, San Francisco
(415)557-3686

Friends of the San Francisco Estuary

FRI•1/20•9:30 AM

Conference Room 5A—S.F. Regional Board,
Oakland
(510)286-0734

SFEP Watershed Demonstration Projects Quarterly Meeting

TUES•1/24•9:30 AM

Conference Room 4A—S.F. Regional Board,
Oakland
(415)744-1990

Coastal Protection Review

THURS•1/26

Topic: Public hearing on draft review of California's coastal preparedness for an oil spill, including San Francisco Bay.
San Francisco
(916)323-4724

CCMP South Bay Geographic Subcommittee

FRI•1/27•9:30 AM

S.F. Bay National Wildlife Refuge, Newark
(510)286-0924

CCMP Implementation Committee

FRI•2/3•10 AM-12:30 PM

Vacaville Cultural Center, Vacaville
(510)286-0780

NOW IN PRINT

Analysis of the Potential for Use of Dredged Materials at Landfills—October 28, 1994 Draft
S.F. Bay Commission and LTMS
Copies from (415)557-3686

Bay-Delta Oversight Council Technical Advisory Committee Work Product Summaries: Plant and Wildlife Resources and Aquatic Resources
Bay-Delta Oversight Council
Copies from (916)657-2666

Coastal Protection Review
Office of Oil Spill Prevention and Response
Copies from (916)323-4724

Demonstration of Gasoline Fueling Station Best Management Practices: Final Report
Sacramento Department of Public Works
Copies from (916)552-8913

Effects of the Central Valley Project and State Water Project on Delta Smelt and Sacramento Splittail
Department of Water Resources, Environmental Services Department
Copies from (916)227-7541

The Impact of Federal Programs on Wetlands: A Report to Congress from the Secretary of the Interior (Volume II includes California's Central Valley)
Department of the Interior
Copies from (703)358-1711

Sacramento Coordinated Water Quality Monitoring Program 1993 Annual Report
Prepared for Sacramento Regional County Sanitation District, Sacramento County Water Agency and City of Sacramento by Larry Walker Associates and Brown & Caldwell
Copies from (916)395-5433

Stream Care Guide for Santa Clara County
Santa Clara Valley Water District
Copies from (408)265-2600

Summary of Legislation Enacted by the California Legislature in 1994
Association of California Water Agencies; \$3
Copies from (916)441-4545

COVER CONTINUED

Orestimba Creek, a minor western tributary of the San Joaquin River, diazinon levels crested with the first flush of storm runoff and then plummeted.

"What this tells us is that if you're looking for diazinon in these western tributaries and take a sample when the flow is highest, you'd probably see very little," says the Survey's Neil Dubrovsky. What this also suggests, by extension, is that farmers and regulators facing the need to stanch contaminated runoff from this area may not need to manage the entire flow, just the first flush off the fields.

In Dubrovsky's study, that "first flush" contained 3.8 ppb of diazinon. He speculates that the reason concentrations dropped to 0.7 ppb within five hours, and to 0.14 ppb within 24 hours, was a combination of decreasing concentration in runoff from valley orchards and increasing runoff from the more pristine portion of the watershed. This first flush clue is in turn helping the agencies understand why they saw a double diazinon peak in last year's studies of San Joaquin River pesticide pulses. That first peak may have been the rapid response runoff from fine grained soils along the western tributaries, the second from sandier, more runoff-retentive areas in the eastern San Joaquin Valley.

To keep diazinon on fields long enough for it to break down into "harmless" constituents, CIBA — one of diazinon's three manufacturers — recommends containing runoff by building berms or temporarily closing off drainage ditches. CIBA's Greg Faust says his company is handing out slide kits and brochures on good home and yard stewardship practices, conducting research on ways to better remove diazinon from sewage wastewater and meeting with farmers to identify control mechanisms that will work with their cultural practices.

"Targeting diazinon, making it the culprit, could worsen our problems by encouraging use of other, more toxic products," says Faust. "We're better off educating farmers and householders." Contact: Val Connor (916)255-3000; Neil Dubrovsky (916)978-4648; Greg Faust (916)632-2685; Mike Majewski (916)978-4633 ext. 345; Mary Menconi (916)355-0290; John Sanders (916)324- 4100.

2/93 & 6/93 & 6/94 ARO

ESTUARY

YOUR BAY - DELTA NEWS CLEARINGHOUSE

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Editorial Office:
2101 Webster Street, Suite 500
Oakland, CA 94612
(510) 286-4392
(510) 286-0928 fax

Managing Editor
Ariel Rubissow Okamoto
Associate Editor
Kathryn Ankrum

Contributing Writers
Frank Hartzell
Susan Zakin
Graphic Design
Darren Campeau

S.F. Estuary Project (510)286-0460

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San Francisco Estuary Project
2101 Webster Street, Suite 500
Oakland, CA 94612

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