

## HYDROLOGY 101

The dictionary defines hydrology as the science dealing with the occurrence, circulation, distribution, and properties of water on earth and its atmosphere. Humanity can't do much about how much rain falls from the clouds each year, but people have certainly tinkered endlessly with how and where water goes once it hits the ground. More tinkering with hydrology -- and what experts call the "hydrograph" (the level and rate of flow of a body of water over time) -- is promised in CALFED's three alternatives for fixing the Delta.

"They all involve new storage, so the main difference is in conveyance -- in the way water moves through the Delta," says the Contra Costa Water District's David Briggs.

While water historically flowed straight down from Sierra snowmelt into streams and rivers and through the Delta and Bay to the ocean, it has long been impeded by big dams, stored for later release in large reservoirs, and pumped out of waterways for export to cities and farms near and far. CALFED's Alternative 1 would do little to change the Delta's water movement system as it exists today. Alternative 2 enlarges the Old River channel feeding the state and federal water project pumps -- decreasing the high flow velocities toward the pumps that have long plagued fish and reducing big variations in water levels that often leave local farmers with high and dry irrigation intakes.

Alternative 2 also creates a brand new mini-canal between the town of Hood on the Sacramento River and the Mokelumne River. "It lifts a lot of fresh water from the Sacramento by brute force and dumps it into the Mokelumne," says Briggs. The main impact is more on water quality than hydrology. The canal will "freshen up" the Central Delta water supply, which is compromised by salt water intrusion. In times of drought and low Delta outflow, however, it may also help reduce reverse flows, when so much water is being sucked out by the big export pumps that the San Joaquin River near Antioch actually changes direction and flows east.

Neither Alternative 1 or 2 significantly changes how and where water is removed from the system for export -- 100% is still being taken from the South Delta at the big pumps.

Alternative 3, however, removes the majority of the water much farther upstream by creating a new conveyance canal between Hood in the North and the pumps in the South, thereby circumventing the Delta. "The amount of water leaving

*continued on back page*



## The Vague Promise of Water Markets

It isn't often that environmentalists and the heads of corporations such as Chevron and Catellus agree, but expanding California's voluntary water transfers market seems to be one issue that brings many of them together, at least in principle.

In April, 28 executives, including the heads of Wells Fargo Bank, Bank of America, Chevron, and PG&E, signed a letter to President Clinton and Governor Wilson, urging legislation to facilitate a "fully functioning" water market, which they say is "essential to any long-term solution for the Bay-Delta ecosystem and responsible management of California's water resources." That sentiment is echoed by environmentalists such as the Natural Resources Defense Council's Ronnie Cohen who argue that such a market would encourage the efficient use of developed water supplies. "The way the system is right now, farmers and others don't get the right signals about the economic value of water and that causes a lot of waste," she says.

The market would also reduce or eliminate the need for expensive new infrastructure projects, say advocates. "Money for new dams and canals is not going to fall from the heavens," says the Environmental Defense Fund's David Yargas. "When you look at the cost of alternative investments, it becomes clear that transfers are one of the most cost-effective options." If new projects are needed, business interests say a market would also help to ensure that they are located appropriately, and that those who would benefit from them bear the cost.

Markets are a common element of the CALFED alternative solutions, but advocates say that current statutes and regulatory requirements impede transfers from one user to another. "The system sort of works, but it's very cumbersome," says Donn Wilson of

the Yuba County Water Agency, which has made approximately 15 short-term water sales out of stored water over the past decade. "It's hard to move water south of the Delta because of constraints on pumping [to protect fish], and it usually takes at least 90 days to get all of the necessary permits." For each transfer, the agency must apply to the State Board for a temporary amendment to their water rights, perform an environmental assessment and coordinate with wildlife agencies to ensure that the transfer does no environmental harm, among other regulatory requirements. One problem, says Wilson, is that the statutes governing water transfers have evolved piecemeal over many decades. "The water code is a kind of patchwork quilt."

Regulatory uncertainty also limits the number of willing water-marketers, according to Byron Buck of the California Urban Water Agencies. "Areas that have water are reluctant to enter into voluntary transfers because they think it might erode their long-term water rights, he says. "We need legislation to more clearly define rights and improve their security."

Not everyone is so sanguine about the possible effects of an open water market, which most observers agree would tend to move water away from rural and agricultural areas to cities and suburbs. "To claim that water is used most efficiently when it most expensive is ludicrous," says John Mills, a consultant to the Regional Council of Rural Counties. "It just means that those who have money—in this case urban California, with 25 million people—will be able to take all the water and those who don't won't be able to get any. The urban areas are treating rural counties the way Britain treated the American colonies—and we all know how that ended."

Mills' concerns are echoed in a recent report by the Pacific Institute (see Now in Print), which found that the areas most likely to transfer water, including the Imperial, San Joaquin and Sacramento Valleys, would be the most likely to suffer adverse secondary

*continued page 7*

## BULLETIN BOARD

**PEACE THROUGH WATERSHED ART? —** Eight Alameda County artists are working with teachers and students in four K-6 schools to combat youth drug involvement and gang activity through a new Watershed Arts-in-Education Program. Students are painting watershed murals, making creek critter puppets, keeping earth journals and playing movement games to help them understand ecosystem concepts. Program backers — Alameda County's Public Works Agency and Art Commission — hope the program will not only enhance self-esteem and deter bad behavior but also increase art skills and environmental awareness. Contact: Constance Moore (510)208-9646



**LEG-HOLD TRAP BAN —** Friends and foes of foxes and other furry predators will battle it out at the ballot box this fall over an initiative that would ban the use of leg-hold traps, including padded jaw traps, on wildlife, cats and dogs. Animal rights activists claim the traps are inhumane, but wildlife managers and others are worried that such a ban would cripple efforts to protect clapper rails and other endangered birds from predation. "Non-native red foxes have wiped out entire bird colonies," says wetland activist Florence LaRiviere. "The padded traps are not inhumane and they are the only effective way to control the foxes. These animals have to be removed or all of our work [to protect endangered birds] in the South Bay will be for naught."

**NEW LIFE FOR TOXICS CLEAN UP? —** The Bay Protection and Toxic Cleanup Program, established in 1990 to identify, evaluate and monitor toxics in California's bays and estuaries, may get a new lease on life if a bill now moving through the state legislature becomes law. The bill, AB 2339, introduced by Assemblymember Mike Sweeney, would require the State Board and regional boards to complete studies of toxic hot spots that were cut short last fall when Governor Wilson vetoed continued funding for the program and ordered the regional boards to complete their clean-up plans by the end of the year. In particular, the bill would require the boards to determine the areal extent of

each hot spot; it would also require the State Board to implement clean-up plans for sites where responsible parties are known. The bill also expresses the legislative intent that funding for the program come out of waste permit fees paid by dischargers.

**SLOW THE FLOW —** El Niño's relentless rains not only pushed some Bay Area residents to the brink of despair, they also pushed some Bay Area sewage systems well beyond their discharge permit limits, prompting a new effort to encourage conservation by a coalition of South Bay organizations. "We can't control El Niño but we can do something about wastewater from households," says Chris Elias of the Silicon Valley Manufacturing Group, which is sponsoring the "Slow the Flow—Save the Bay" program together with the City of San Jose, the San Jose/Silicon Valley Chamber of Commerce, the Santa Clara Valley Audubon Society and the Silicon Valley Toxics Coalition. By working with area



employers to encourage their employees to take advantage of rebates for ultra-low-flow toilets and shower heads, the program hopes to reduce flows to the San Jose/Santa Clara Water Pollution Control Plant. Elias says the winter and spring rains caused so much infiltration and inflow to the areas sewage lines that the plant has exceeded its 120 million gallon per day discharge permit limit by as much as 24 million gallons per day. Contact Chris Elias (408)501-7852

**BASIN PLAN CHANGES —** How to define beneficial uses for groundwater; combat mercury pollution on a watershed scale, improve dredged material testing guidelines and permit review, and develop a stream protection strategy are among amendment topics being considered this year for the S.F. Bay Basin Water Quality Control Plan. Also on the table is the triennial basin plan review required under the Clean Water Act —

key topics for public review include local implementation of federal PCB, PAH and dioxin standards, as well as NPDES permitting issues. Various opportunities for public comment may occur throughout the year as the S.F. Regional Board holds hearings on amendments and review issues. Contact: Ron Gervason (510)286-1325



# RESTORATION

## WETLANDS NOT WAREHOUSES

Suffice it to say, relations between the Port of Oakland and environmentalists haven't always been smooth. But on June 10, there were smiles all around as the water began flowing into a newly restored patch of wetlands at the Martin Luther King, Jr. Regional Shoreline.

The levee breaching ceremony ended years of legal wrangling over the 70 acres bordering the Arrowhead Marsh. In the 1970s, the Port had begun filling what had once been part of a vast tidal marsh, planning to build a distribution center for the nearby Oakland Airport. In 1987 a coalition of environmental groups filed suit, charging the Port's actions violated the Clean Water Act.

After battling it out on the legal front, the two sides agreed on a settlement — rather than warehouses, there'll be a mix of tidal and seasonal wetlands on the site. Instead of trucks hauling freight, clapper rails will build nests deep in the freshly planted cordgrass and shorebirds will stop for a rest on the way to and from breeding grounds.

The Port's Jody Zaitlin says that it cost \$2.5 million to create the 37 acres of tidal marsh, and 27.5 acres of seasonal wetlands. Bulldozers carved out three seasonal wetland ponds on the higher ground, and cut channels to let the waters of the Bay into tidal marsh. Crews "seeded" some areas with native cordgrass, and dug tunnels into several small hillocks for burrowing owls. They also built a pathway for birdwatchers along the edge of the site and two "loafing islands" for the avians themselves.

The project was designed by Levine-Fricke-Recon. The company's Rob Levanthal says designers faced technical challenges,

such as creating suitable habitat for the endangered clapper rails, and at the same time had to satisfy the sometimes diverse interests of various stakeholders. Everything from the height of the fences surrounding the site to the configuration of slopes near the seasonal ponds had to be negotiated between the S.F. Bay Commission, the East Bay Regional Park District, environmentalists and the Port before the actual work could begin.

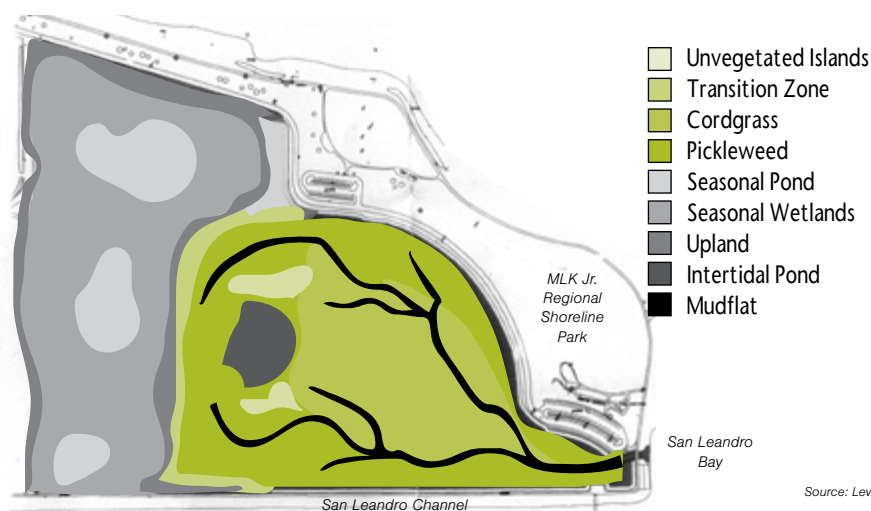


It's up to nature to put the finishing touches on the project. The cordgrass will take a decade or more to fill in, and the tides will reconfigure at least some channels over the years. At some point the property will be turned over to the park district and added to the Shoreline.

Right now, everyone is excited about the results. "This is going to bring back important habitat to San Leandro Bay," says the Audubon Society's Arthur Feinstein, who notes that tidal marsh once occupied 1,800 acres, stretching from the Airport to the Oakland Coliseum and beyond. Feinstein praises the Port staff for working cooperatively with environmentalists once the legal issues were resolved. Zaitlin adds that the results show that when the Port and environmentalists work together, "Something good can come out of it."

The Port plans to develop 33 acres next door for commercial uses, and the project makes the site more attractive, Zaitlin says. "This is going to be a great amenity for people working over there." Contact: Jody Zaitlin (510)272-1100 *o'b*

## RESTORATION AND VEGETATION PLAN



Source: Levine-Fricke-Recon

## STEWARDSHIP

### PUMPED UP FOR CLEAN BOATING

When a twig or a piece of paper got sucked into John Cruger-Hansen's old diaphragm pump, it had a "tendency to explode," says the Antioch Marina harbormaster. Cruger-Hansen replaced the "awful unit" — used to pump sewage out of small boat holding tanks and into shoreline treatment systems— with a "fantastic" vacuum-style Waubaushene. Since the replacement in 1995, he's seen a large increase in clientele and a visible improvement in local water quality — not to mention a lot more fish and fishing.

"People come here from all over the river to pump out," he says, explaining that not only does his new machine clean out a 25-gallon tank in 23 seconds (versus its predecessor's half hour) but it's also free, self-service and open 24 hours. Many marinas charge a fee or shut down the pump when the harbormaster goes home for the day. "I just wanted to make it as convenient as possible, so boaters have no excuse," he says. "I even leave the hook-up fittings and tools out all night."

Getting more boaters to, as one slogan says, "pump-don't-dump" is one aim of National Clean Boating Week, to be held July 11-19 along rivers, coasts and bays across the country. Other aims of the week — sponsored by the Marine Environmental Education Foundation — are to tell boaters about how to prevent fuel spills and leaks, keep trash out of the water, and maintain their paint jobs without compromising water quality.

Joining in on the education bandwagon at the state level is the California Department of Boating and Waterways (which paid 75% of the costs of Cruger-Hansen's new pump and has funded 125 new and replacement pumps statewide since 1994 through federal Clean Vessel Act programs. The Department has also helped the S.F. Estuary Project distribute over 300,000 pumpout maps and other educational materials to Bay-Delta boaters. During Clean Boating Week, the Estuary Project will be broadcasting radio PSAs and promoting media coverage in magazines and newspapers. For his part, Cruger-Hansen continues to distribute many of the good boatkeeping materials developed by the Estuary Project. "Boaters here now understand the necessity and the result of clean boating, they can see with their own eyes that their effort really counts," he says. To get a copy of the 1998 Guide to Bay or Delta pumpouts or other materials call (510)286-0775. *ARO*

## ENVIROCLIP

## SOWING CLEAN WATER

An apricot grower who reduced his water use by 50% and a pear grower who cut his pesticide use in half are among more than a dozen farmers profiled in a recent Natural Resources Defense Council report examining the use of water conservation and pesticide reduction techniques to improve water quality. The report, entitled *Agricultural Solutions* (see *Now in Print*), examines techniques such as drip and sprinkler irrigation, soil building, crop rotation, and cover crops to prevent selenium and pesticide runoff to rivers and streams.

"People think conservation is antagonistic to farming, which isn't true," says Ronnie Cohen, co-author of the report. "This proves that these practices are perfectly consistent with profitable farming operations, and can often improve yields and crop quality."

Although unplanned, Cohen says the timing of the report's release to coincide with the comment period on CALFED's draft EIS/EIR was fortuitous. "We'd like to see mechanisms that promote these practices in the final CALFED plan," she says. Cohen cites as an example the Panoche Drainage District, which requires farmers to use efficient irrigation practices as a precondition for receiving water deliveries.

Mike McElhiney of the U.S. Department of Agriculture's Natural Resources Conservation Service says the report "accurately reflects growers' ability to do good things with their land." The Service operates a program to help growers in Stanislaus County implement best management practices (BMPs) to reduce runoff to the San Joaquin River. Farmers must compete to participate in the program, which includes cost-sharing and technical assistance.

"We've got a lot of willing growers out here who want to do the right thing," says McElhiney, "We get many more applications than there is money." Although the practices can save farmers money in the long run, some of them have significant initial costs.

McElhiney says water price increases have spurred growing interest in using the BMPs, particularly among family farmers. Nevertheless, "we've still got some folks out here that need to get on board. We need to reach all the farmers with the message that these practices make sense." Contact: Ronnie Cohen (415)777-0220 **CH**

## PEOPLE

DELTA QUEEN  
MARGIT ARAMBURU

Certainly heading up the Delta Protection Commission is no walk in the park, what with having to work diplomatically with dozens of stakeholders with diverse ideas about the Delta's future. But according to Margit Aramburu, who has been Executive Director since the Commission's inception in 1993, those challenges pale next to the interview for the job itself.

"There was a public interview at a public meeting, and a public vote on my appointment," she recalls. "It was awful." Her performance in that interview got her the job, says Commission Chair Pat McCarty. "I thought that her confident, positive attitude and the way she conducts herself were very appropriate for working with the kinds of interests we were trying to bring together. I've certainly never regretted the decision to hire her."

Increasing development pressures on Delta farmland led to the creation of the Commission. The new agency was charged with developing a regional land use and resource management plan to balance the key land uses of agriculture, wildlife habitat and recreation in the "heart" of the Delta, which encompasses parts of Solano, Yolo, Sacramento, San Joaquin and Contra Costa counties. To carry out its mission, the Commission has appeal authority over local government actions.

Aramburu joined the Commission after 15 years at the S.F. Bay Conservation and Development Commission, where she worked on several land and water use planning efforts, including the Suisun Marsh Plan and the Richardson Bay Special Area Plan. "She always had good insight on how to do projects well," remembers the Bay Commission's Jeff Blanchfield, who also enjoyed her "infectious sense of fun."

A Bay Area native, Aramburu "had never even been to the Delta" when she took the job, so initially she spent "a lot of time just talking to people" and getting to know the area and the issues. Today she loves the

Delta Commission's Walnut Grove location. "Working in a small, rural community is wonderful, like a step back in time," she says, adding that she particularly enjoys watching the Sacramento River roll by. "There's always agricultural equipment and other interesting things floating past on barges. It's better than that Dr. Seuss book, *To Think It Could Happen on Mulberry Street*."

Aramburu says she was somewhat daunted by the task facing her at the Commission. "How do you put together a land use plan for a 450,000-acre region with a commission of 19 individuals with different backgrounds, ideas and visions for the Delta? At first I didn't think it was ever going to work," she says. Aramburu based her approach to the Delta plan on the Suisun Marsh Plan, which included developing background reports on nine key issues, with input from state and local experts and a citizens advisory committee. "All of the commissioners really care about the health of the Delta, and by going through the process step by step together they developed a consensus approach to identifying and solving problems," she recalls.

McCarty credits much of the Commission's success to Aramburu's personal style. "She's very supportive, very inclusive, almost like a coach or a teacher. She never leaves anybody behind or writes anybody off. As a result, most of our votes have been unanimous," he says. The Commission adopted its plan in early 1995, and forwarded it to local governments for incorporation into their General Plans.

The Commission is currently scheduled to sunset at the end of this year, although pending legislation would extend its life for another decade. "The Commission is concerned about not continuing past the time when there is a need for it," says Aramburu, "but at this point the Delta is still under a lot of pressure and there is a continuing need for the Commission to have land use oversight." Contact: Margit Aramburu (916)776-2290 **CH**



**"She never leaves anybody behind or writes anybody off."**

## HARD SCIENCE

### GOALS FOR FUTURE BAYLANDS RELEASED

Sustaining a healthy ecosystem will require "extensive" tidal marsh restoration throughout the Bay region, say 100 top scientists in recommendations to be released for public review in late June. In their draft San Francisco Estuary Baylands Ecosystem Goals report, the region's best and brightest describe their collaborative answer to the question: what kind and size of wetlands are needed, and where, to keep the Bay and its fish and wildlife in fine fettle.

"It's the first time we've really looked at restoration from a regional perspective, rather than on a piecemeal, project-by-project basis," says Steve Granholm, an LSA Associates wildlife biologist and member of the Goals team.

"Putting such a huge number of biologists to work on a long-term wetlands vision, and then seeking public input on that vision has never been done before," says fellow goals team member Mike Monroe of the U.S. EPA. "We can't go back to what we had historically, but these new goals go a long way towards it."

Among the goals are extensive restoration of tidal marsh in the North, Central, South and Suisun Bays; enhancement of seasonal wetlands, particularly in the North Bay; restoration of riparian habitat wherever possible; and management of large areas of shallow, saline ponds to benefit fish and fowl. Balancing the need to replace long-lost tidal wetlands with the desire to preserve and improve habitat on seasonal and saline ponds — key candidate sites for tidal marsh creation — was one tough issue before the goals team, says Granholm. To strike this balance the team recommended working harder to "optimize" habitat values as salt ponds go out of production, he says.

While environmentalists and scientists are likely to embrace the goals for their effort to decide what's best for the Bay biologically, shore-zone landowners are sure to have concerns. Monroe emphasizes that the purpose of the goals is for regional planning not regulation. Any resulting restoration action would have to go through "a physical, financial and local reality check," he says.

"It's not a hard and fast management plan showing what has to happen on every square inch of the Bay," says Granholm. But the goals do include site- and acreage-specific recommendations for each of four

sub-regions of the Bay (as well as information on how to design and manage these new habitats).

Public workshops this July (see calendar) will zero in on specific recommendations for the subregion where each workshop is being held. Comments on the draft goals will likely be due this August, with a final document scheduled to come out later this fall.

What's unclear is whether resource protection agencies will step up to the plate to take the next step, as recommended in the S.F. Estuary Project's 1993 Comprehensive Conservation and Management Plan for the Bay and Delta, namely developing a regional wetlands management plan based on the goals. Contact: Peggy Olofson (510)286-0427 [ARO](#)

## BOOKREVIEW

### RESTORING STREAMS IN CITIES BY ANNE RILEY

"Creek Restoration From A to Z" could be the subtitle of Ann Riley's new book, *Restoring Streams in Cities/A Guide for Planners, Policymakers, and Citizens* (Island Press, May 1998). The most comprehensive and possibly the only book on urban stream restoration to date, *Restoring Streams* is timelier than ever, as an increasing number of cities dig up long buried creeks in an attempt to reclaim these "historic, aesthetic, and environmental assets" while agencies traditionally engaged in bulldozing, ripping, and straightening streams have begun talking about environmental restoration.

Riley describes herself as a fluvial geomorphologist ("it comes in handy at cocktail parties"). She founded the Waterways Restoration Institute in Berkeley and writes from two decades of experience as a private citizen active in creek preservation and as the founder of the State Department of Water Resource's Urban Stream Restoration Program.

The book offers something for everyone, from a highly technical chapter for hydraulic engineers to simple restoration techniques for the layperson and advice on community organizing for those interested in saving local streams. Illustrated with instructive line drawings and photographs of restoration projects, *Restoring Streams* also covers the history and politics of flood control and floodplain management, the basics of hydrology, the scope of planning efforts at state, federal and local levels, and citizen involvement in stream restoration.

Restoration can be defined by what it is not, writes Riley, and that includes landscaping installed with little thought given to environmental function or values. Her purpose in restoring streams, she explains, is to restore the physical attributes of degraded streams so that the streams can again function as habitat for fish and other wildlife. While erosion and

deposition are normal functions of streams, years of efforts to "control" them—by straightjacketing them in culverts or channels—combined with other effects of urbanization, can cause streams to excessively erode and deposit sediment. Some streams can regain their balance if left alone, and restoration can mean knowing when not to act, writes Riley.

For streams badly out of balance, Riley recommends various restoration techniques. But before any projects are undertaken, would-be restorers should understand which of three phases of urbanization their watershed is in and how that phase has contributed to the stream's current condition. "Urban stream restoration is not for the fainthearted," warns Riley, describing how she is constantly confronted with creek-impacting changes in land use—neighborhood shopping districts becoming shopping malls, trees being cut down, new stormwater systems going in...

Riley also shows that urban stream restoration can offer benefits beyond physical restoration, including creating jobs for youth and community stewardship. She reminds us that many young people in cities grow up with little experience of nature or sense of "geographic place," and suggests that urban streams can help residents connect with the natural world. By offering such environmentally sustainable and socially beneficial alternatives to traditional engineering "flood-control" projects, *Restoring Streams* refutes the traditional assumption that the best option for urban streams is to put them underground or in concrete.

Contact: Island Press (202)232-7933 [LOV](#)

### A TYPICAL CYCLE OF STREAM CHANNEL ADJUSTMENTS TO URBANIZATION

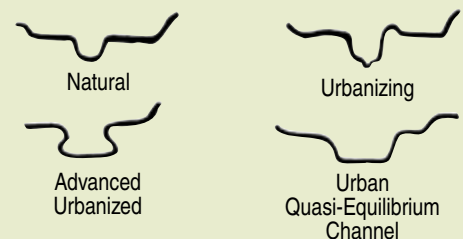


Illustration: Anne Riley

## DREDGESCOOP

REUSING LAND AND MUD  
AT HAMILTON

A combination of tidal and non-tidal wetlands and uplands is the preferred alternative identified for restoring habitat on 900 acres of diked baylands at the former Hamilton Army Airfield. It is one of several alternatives described in a conceptual plan recently released by the staff of the Coastal Conservancy and the S.F. Bay Conservation and Development Commission.

The "Natural Gradient" alternative would use dredged material to restore seasonal wetlands habitat above the tidal plain and accelerate the formation of tidal wetlands in areas subject to tidal action. A back-up alternative consists of breaching the outboard levee and allowing natural sedimentation to restore tidal wetlands.

"The preferred alternative accomplishes so many objectives," says the Conservancy's Terri Nevins. "It implements the Long Term Management Strategy for dredged material disposal in the Bay, it gives the Port of Oakland an upland beneficial reuse disposal site, it completes base closure and reuse, and it is consistent with the San Francisco Estuary Project's Comprehensive Conservation and Management Plan, the Regional Habitat Goals program, and CALFED."

Public comments on the plan were due on May 29. "It's an incredible opportunity," says the Audubon Society's Barbara Salzman, who though "very excited" about the project has some concerns about whether the dredged material to be used contains an appropriate biological base to sustain wetland plants.

A draft EIS/EIR is due for the project on August 1, as is a feasibility study by the Corps of Engineers. Nevins says the Conservancy is negotiating with the Army to acquire the property at no cost through a public benefit discount conveyance, and is seeking Congressional authorization to begin construction in the year 2000. In addition, she says the Conservancy is working with U.S. Fish & Wildlife and the Audubon Society to obtain 1,600 acres adjacent to the site currently scheduled for development. Contact Terri Nevins (510)286-1015 CH

## EDUCATION

WATERING THE GARDENS  
OF YOUNG MINDS

What do worm boxes and butterflies have to do with water quality? A lot, if you ask any teacher or student participating in Aquatic Outreach Institute's new Kids in Gardens program — the latest among half-a-dozen teacher and citizen education programs that together recently earned Institute founder Kathy Kramer a national award.

Kids in Gardens came about this spring when the Central Contra Costa Sanitary District decided to beef up public education directed at reducing the amount of diazinon and chlorpyrifos — common garden pesticides — washing into storm drains and sanitary sewers. "We thought the Institute's programs were a good way to get the message out to a lot of people," says Harriet Heibel with Central San. "Plus, gardens are more attractive to teachers and students than sewage."

In the Kids in Gardens workshops, teachers learn about natural approaches to pest management and how to create bird and butterfly gardens in their schoolyards, using mostly native plants. Teachers also build worm boxes and learn how to plan organic school gardens, all in an effort to discourage reliance on chemicals. Leslie Graham, a school gardener and teacher's aide at Danville's Montclair Elementary, who attended the workshops, holds weekly gardening sessions with second graders. She tries to get kids thinking right away about how to manage pests. "We have a zucchini seedling right now that something's eaten," she explains. "When the kids ask what happened, I try to get them thinking about options other than running down to the hardware store and buying every chemical on the shelf."



Sticky Monkey  
Flower



Checkerspot  
Butterfly

Can programs for kids really reduce pesticide runoff when adults are usually the ones using the bad stuff? "The kids model the behavior," says the Institute's Debi Tidd, who helped develop the program. "If you have 30 kids in a class, that's 60 parents who will be impacted. The kids go home and say, 'look what we did in school today!'"

Kids in Gardens follows in the footsteps of the Institute's better-known Kids in Creeks and Kids in Marshes workshops (800 teachers in three counties have participated in the former since 1992). In all three types of workshops, teachers learn how to find remnant patches of habitat in their neighborhoods and to use these nearby areas as outdoor classrooms, in which students can conduct stream surveys, clean up creeks, or keep journals of species found in the area, among many other activities.

For these and other Institute activities — including launching and staffing two community-based creek programs in which local citizens learn the impacts of everyday activities on Bay Area watersheds, and help restore them — Kramer recently won national recognition. At a Capitol Hill ceremony this April, four federal environmental agencies and the Environmental Law Institute bestowed her with a National Wetlands Award for excellence in education and outreach. "This year's award recipients represent that great tradition of cooperative approaches to conservation," said U.S. Fish & Wildlife's Jamie Rappaport Clark at the ceremony. Contact: Kathy Kramer (510)231-9507 or Harriet Heibel (510)228-9500 LOV

## ESTUARY Is Moving!

The offices of the San Francisco Regional Water Quality Control Board and the San Francisco Estuary Project are moving in early August to:

1515 Clay Street, Suite 1400

Oakland, CA 94612

ESTUARY's new phone number will be (510) 622-2412.

# PLACES TO GO & THINGS TO DO



## WORKSHOPS & SEMINARS

**JUNE**  
WEDS - FRI  
**24**  
THRU  
**26**

**1998 NATIONAL COASTAL SUMMIT**  
**Topic:** Toward Sustainable Coastal Communities  
**Sponsor:** American Coastal Coalition  
**Location:** Washington, D.C.  
(800) 627-5693  
ACC.Summit@mail.netlobby.com

**JUNE**  
MON - THURS  
**13**  
THRU  
**16**

**WETLANDS ECOSYSTEM GOALS PROJECT WORKSHOPS**  
**Topic:** Ecosystem Goals Draft Report  
**Sponsor:** San Francisco Bay Area Wetlands Ecosystem Goals Project  
**Location:** San Carlos, Novato, Oakland, Benecia  
7:00-9:30 PM  
(510) 286-0460

**JULY**  
MON - FRI  
**20**  
THRU  
**31**

**7TH ANNUAL DESIGN/MANAGER SCHOOL OF IRRIGATION**  
**Topic:** Courses on landscape and agriculture  
**Sponsor:** U.S. Bureau of Reclamation, Irrigation Training and Research Center  
**Location:** California Polytechnic State University, San Luis Obispo  
(805) 756-2443  
www.itrc.org

**JULY**  
THURS - SUN  
**30**  
THRU  
**AUG**  
**2**

**CALIFORNIA ENVIRONMENTAL HISTORY CONFERENCE**  
**Topic:** Green and Gold: California's Environment--Memories and Visions. This four-day conference will recapture California's past environments, explore their transformation and imagine their future. Participants will explore the unique blend of nature and culture that defines California's past and its future prospects.  
**Sponsor:** University of California  
**Location:** Santa Cruz  
greengold@nature.berkeley.edu



## MEETINGS & HEARINGS

**SEPT**  
FRI  
**11**

**CCMP IMPLEMENTATION COMMITTEE**  
**Sponsor:** SF Estuary Project  
**Location:** Vacaville  
(510) 286-0460



## HANDS ON

**JUNE**  
SAT  
**20**

**BIRDWATCHING**  
**Topic:** Beginners and experienced birdwatchers welcome  
**Sponsor:** Hayward Shoreline Interpretive Center  
**Location:** Hayward  
9:30 AM-12:00 PM  
(510) 881-6751

**JUNE**  
SAT  
**20**

**SAUSAL CREEK WORKDAY**  
**Topic:** Riparian restoration  
**Sponsor:** Friends of Sausal Creek  
**Location:** Dimond Park, Oakland  
9:00 AM-12:00 PM  
(510) 231-9566

**JULY**  
SAT - SUN  
**11**  
THRU  
**19**

**NATIONAL CLEAN BOATING WEEK**  
**Topic:** Public education on clean boating practices  
**Sponsor:** Marine Environmental Education Foundation  
(510) 286-0775

**SEPT**  
WEDS - FRI  
**23**  
THRU  
**25**

**EASTERN SIERRA WATERSHEDS TOUR**  
**Topic:** Tour begins in Reno and travels along Lake Tahoe, the Mono Basin and the Owens Valley.  
**Sponsor:** Water Education Foundation  
(916) 444-6240

## NOW IN PRINT

*Agricultural Solutions: Improving Water Quality in California through Water Conservation and Pesticide Use Reduction*  
Natural Resources Defense Council, March 1998  
Copies from (415) 777-0220

*Draft Hamilton Wetlands Conceptual Restoration Plan*  
Coastal Conservancy  
Copies from (510) 286-4161

*San Francisco Estuary Baylands Ecosystem Goals Draft Report*  
San Francisco Bay Area Wetlands Ecosystem Goals Project  
Copies from (510) 286-0427

*Oakland Harbor Navigation Improvement (-50 ft) Project, Final EIS*  
Port of Oakland  
Copies from (510) 272-1174  
(All who provided comments on the Draft EIS will automatically receive a copy of the Final EIS)

*California Water Transfers: An Evaluation of the Economic Framework and a Spatial Analysis of the Potential Impacts*  
Pacific Institute, April 1998  
Copies from (510) 251-1600, \$15.00

*1998 Bay Area Directory*  
Association of Bay Area Governments  
Copies from (510) 464-7900

## NOW ONLINE

*A Briefing on California Water Issues*  
Water Education Foundation  
www.water-ed.org

*The Changing Nature of Environmental and Public Health Protection*  
Environmental Protection Agency  
Copies from (202) 260-4261  
www.epa.gov/reinvent

## VAGUE CONTINUED FROM P.1

economic impacts as land is taken out of agricultural production. Indeed, some local governments are reluctant to allow transfers because of such secondary impacts, according to Buck.

Among environmentalists "opinions vary widely" about the appropriate structure for a water market, says Yardas. "There are legitimate concerns about making sure we don't end up with another Owens Valley situation, but with a properly regulated market I don't believe that is likely." The market would also need to include mechanisms to allow the environment to participate, perhaps through fees on water use. "Surcharges would make water more expensive at the

margin, which would encourage efficiency, as well as create a dedicated funding source for environmental water purchases," suggests Yardas.

Yardas believes that the first step toward a more open water market is to convince Californians that the days of huge, publicly financed water projects are over. "We need leadership at the state and federal levels to make it clear that people are going to have to pay their own way as far as water is concerned," he says.

Contact: David Yardas (510) 658-8008, Byron Buck (916) 552-2929 **CH**

## HYDRO 101 CONTINUED

the Delta is more or less the same but you're removing it from a different place," explains Briggs. The canal gives exporters the much desired flexibility to pump from two different locations (and thus avoid crunching endangered fish) and to get higher quality water at the upstream location. It may also minimize reverse flows by shifting some pumping upstream.

"If we go around the Delta with a channel, then we'll establish more historical flow patterns," says CALFED's Mark Cowin. "The net result is water moving toward the ocean from both the Sacramento and San Joaquin Rivers more often, as opposed to backing up on the San Joaquin side."

Clearly, none of the three alternatives bring the system back to nature, in terms of the historic hydrograph. All continue to alter the natural pattern, timing and amount of Delta outflow. The only return to nature in the hydrologic picture has nothing to do

with channel modifications and canal construction but with increased flows released for environmental benefit, especially during drier periods when flows are more critical for fish. Both CALFED and Central Valley Water Project improvement programs call for such releases.

"The operational policies that go along with the physical changes make most of the hydrological difference," says Cowin.

The biggest effect on the shape of the Delta hydrograph could be caused by new storage. But even if CALFED built the maximum amount of storage under consideration (about 6 million acre feet), the changes to the hydrograph would be relatively minor in most years, says Cowin.

Whether it's managing flows or building new canals and reservoirs, it's clear that people will be further tinkering with an already tinkered-to-death water system (much of the tinkering has admittedly been for environmental restoration). On the

technical side, debate continues to rage over what benefits may be derived from changing how water moves through the Delta. "Not everyone agrees on how this will all work, a lot relies on competing models and interpretation of data," says Briggs.

While the experts debate data, the public must make its own choices. Much of the popular hue and cry seems to be centered on the prospect of a peripheral canal reborn, and on associated echoes of the era of big water development. "Many people think a small peripheral canal will somehow increase the physical export capacity of the water projects, and thus create higher exports," says Cowin. "But the pumps will still have a 15,000 cubic feet per second limit. This is the biggest, hydrology-related misunderstanding about CALFED."

Contact: David Briggs (510)688-8073 or Mark Cowin (916)653-2986 **ARO**

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