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ESTUARY

YOUR BAY - DELTA NEWS CLEARINGHOUSE

The Selenium Squeeze

Selenium evokes unpleasant specters: still-born ducklings, fallow farmland, lost livelihoods, toxic water. But for those who have looked beyond these front page images of Kesterson and witnessed a decade of costly research and few solutions to the problem of selenium build-up in our soils and waters, there are new specters: a regulatory crack-down all around, perhaps even the resurrection of the San Luis Drain, once called an "arrow aimed at the heart of the Delta."

Deep down, everyone knows that BurRec Commissioner Dan Beard was right when he said there was no silver bullet. And everyone's facing up to fact that what it's going to take is an all-out, inch-by-inch, penny-by-penny attack on every level of the problem, whether it's overgrazing in the upper reaches of watershed or contaminated crop drainage in the alluvial fans of San Joaquin Valley or North Bay oil refinery discharges and South Bay stormwater runoff. The squeeze is on.

"It's taken ten years to get from oh-my-gosh-it's-a-problem, through here's how might solve it, to now it's time to get serious," says Terry Young of the Environmental Defense Fund.

Farmers and drainers in San Joaquin Valley felt the squeeze first, with closure of the San Luis Drain and the Kesterson ponds. Westlands water district, for example, still has no place to discharge its drainage water. Meanwhile those in the adjacent Grasslands basin are championing a plan to reopen the San Luis Drain. For years, they've been running drainwater into Mud and Salt Sloughs, waterways that also serve local wildlife refuges. But the discovery of selenium made the drainwater unpalatable to the refuges. Grasslands new plan would reopen the San Luis Drain to shunt drainage water directly into Mud Slough, thus freeing Salt Slough for wetland-bound waters.

EPA isn't too enthusiastic. "Moving contamination from one discharge point to another isn't a solution," says the EPA's Palma Risler. "We believe in capping loadings."

According to Joe Karkoski of the Central Valley Regional Board, Grasslands has been trying to do just that. In voluntary compliance with a 1988 10 part per billion (ppb) site specific objective set in the region's basin plan, the Grassland basin drainers cut their selenium discharges by 50 percent between 1988 and 1992 (though some water conservation came about because of the drought). Just as the drainers were writing to tell the Board they couldn't do much better, the Board wrote back saying a tougher statewide objective of 5 ppb would be kicking in.

To meet the tougher standard, other and much more costly options may be necessary, including extending the San Luis Drain down to the Merced River, where there's more water for dilution, or forcing retirement of more farmland. The Board may also consider setting a total maximum daily load (TMDL) for the whole basin next spring, to offer more flexibility and a fairer shake all around. "Selenium in groundwater doesn't respect district and political boundaries," says Karkoski.

"The Central Valley Board's been pretty gentle, they haven't taken these water districts to task yet," says Young. "So we're recommending they formalize the TMDL and develop a mechanism for making sure it gets met." Young plans to complete a major technical paper on this option soon.

While farmers with croplands have been the target of source reduction to date, "It's just beginning to hit home that downstream irrigation efficiency isn't enough," says Tim Hatten of the Soil Conservation Service and EPA. "We need a broader, more holistic, watershed approach," says Hatten, who recently launched a new project targeted at selenium sources farther upstream around Panoche and Silver Creeks. In these upper

- continued on back page

NEWS ROUND-UP

EBMUD BALKS AT CLEAN UP TAB

The East Bay Municipal Utility District has rejected a federal order to clean up the abandoned Penn Mine in the Sierra foothills.

EBMUD owns a portion of the former copper mine, which closed in 1954. Acidic water from the mine, containing cadmium and other metals, has sometimes spilled over containment barriers into nearby Comanche Reservoir. EPA says that EBMUD is liable for the clean up costs, but the utility district, fearing that the bill could run between \$20 and \$50 million, is refusing to sign a consent order.

"It's a matter of who's going to be responsible. We're not willing to sign a consent order that locks in our rate payers for the full cost," says EBMUD board member Stuart Flashman. The mine's original owners long ago went bankrupt. The district contends that the U.S. Commerce Department, which ran the mine during World War II, should at least share the liability.

Flashman says that EBMUD has already spent \$700,000 to construct a continuous in-line treatment system and diversion trenches around the mine. But a full clean up would involve much more, including hauling contaminated debris to a safe disposal site and capping the mine.

EPA contends that EBMUD became responsible when it bought the site and constructed Comanche Reservoir in the 1960s. "They had full knowledge of the problems and chose to proceed," says EPA's Alexis Strauss.

Both sides agree that Penn Mine must be cleaned up. While they negotiate, EBMUD is suing the Commerce Dept. to force the federal agency to pay its share of current and future clean up costs. Contact: (510)287-0141 O'B

TERNS FUTURE UNCERTAIN

The Navy might change its flight schedule to avoid disturbing a nine-inch-long endangered bird, but would a developer or private landowner be as environ-

mentally responsible? With closure of the Alameda Naval Air Station imminent, the secluded, off-limits and therefore undisturbed runway habitat of 115 pairs of California least terns is up for grabs. How to grandfather costly protection of the tern colony into any development plan, and make sure Alameda's future waterfront complements restoration goals for the Estuary, are two big questions that should be considered by the new East Bay Conversion and Reinvestment Commission, according to director Bill Tuohy. Though the commission's environmental committee is preoccupied with base clean up issues at the moment, Tuohy hopes activists will bring broader issues to the table at upcoming meetings. Contact: (510)834-6928 AR

BAY FISH A HEALTH HAZARD?

Some folks fish in the Bay for fun; others for their daily food supply. No one, however, really knows what contaminants might be in the fish they pull out of the water. But a new \$150,000 pilot study designed to test fish samples from locations around the Bay promises to provide this information.

State health and environmental specialists, along with members of region's fishing and environmental communities, are working together to design the study. Previous studies found high mercury levels in the Bay's striped bass, and led to public warnings not to eat the fish more than four times a month. But there has never been a comprehensive survey of contaminants in different species.

The study is badly needed, says Wendall Chin of Citizens for a Better Environment. Bay fish have become an increasingly important food source for many people, including those hit by hard economic times and immigrants from Southeast Asia and the Pacific Islands, where fish is a traditional dietary staple, says Chin. Even those who don't fish the Bay may be at risk, as reports show illegal catch are being sold to local restaurants and grocery stores. The S.F. Regional Board's Karen Taberski says researchers will gather fish from toxic "hot spots" in the Bay this winter, then analyze tissues for PCBs, PAHs, DDT and other contaminants. If the pilot program is successful, it

HOW I SEE IT



ANDY COHEN
EAST BAY MUD

ENOUGH WATER FOR GROWTH?

"We're never going to have a healthy estuary unless we have healthy cities and healthy development processes as well. That means taking into account all the factors involved in approving a development, including the need for a reliable water supply.

"I don't think it's a water agency like EBMUD's place to be making land use decisions. Our role is to assess what kind of water supply we have, whether we have the ability to meet our existing customers' needs, and whether we can fulfill our environmental responsibilities and future demand. We did a two year study and found that given increasing demands, both upstream and within our existing service district and for fish, we don't have excess water for new developments, and we let the county know.

"The resource limitations are real. If county land use agencies refuse to take them into account, there'll be conflict like we're having over the Dougherty Valley development. But we don't need a new intermediate agency to deal with this. What we need is more cooperation and more exchange of information.

"We also need some kind of independent resolution process where there are disputes about the facts, and Dougherty Valley is a good test case for new forums for resolution. First we tried the courts, which Senator Boatwright tried to prevent with his bill. Then we decided the state water board would be an appropriate arbiter, and recommended that the bill, with some kind of reasonable arbitration amendment in it, be made effective statewide. If we're able to come up with a good solution, then we should be able to apply it to all such situations, and not have other water agencies go through the mugging we had to..." O'B

Andy Cohen is on EBMUD's Board of Directors.

could lead to a more extensive study on whether consuming Bay fish is a health risk, and to the posting of warning signs in popular fishing spots. Contact: Christine Arneson (510)540-3273 O'B

INSIDE THE AGENCIES

CLUB FED TANGOS OUT OF COURT

Two newly settled lawsuits brought by environmental groups against federal agencies promise major changes in who gets how much of California's scarce fresh water and what they pay for it.

In the first suit, EPA agreed to propose water quality standards by December 15 to protect the Delta environment. A decade of state and federal efforts — stalled by ongoing battles between thirsty farms, cities, wetlands and fish — has not yet produced these long-awaited standards. Since Governor Wilson shelved interim state standards this spring, citing federal endangered species actions as his reason, EPA has been at the wheel. But the governor's plea for coordinated federal action has been heard. This September, EPA, BurRec, U.S. Fish & Wildlife and the National Marine Fisheries Service — collectively nicknamed *Club Fed* — signed a coordinating agreement to make sure that what Fish & Wildlife wants for Delta smelt doesn't conflict with what NMFS wants for salmon, what EPA wants for water quality and what BurRec needs to operate the Central Valley Project.

Perhaps more momentous is a September 17 lawsuit settlement under which the Department of Interior will rewrite rules and more strictly enforce a 960-acre cap on the size of farms eligible for taxpayer-subsidized water. This could more than double the cost of water to larger corporate farms and make it harder for them to slip through loopholes in farm size limit rules. Contact: Patrick Wright, EPA (415)744-1993 AR

WILDLIFE AGENCY SEEKS RESOURCE RESULTS

S.F. State scientists will be delving into California clapper rail genetics this fall with a grant from the U.S. Fish & Wildlife Service's San Francisco Bay/Estuary Program. By examining the genetic relationships among Bay Area populations of this endangered bird, and thus the gene flow between fragmented habitats, the study will provide much needed preliminary data on rail movement from

ENVIRO-CLIP

OPENING A WETLAND SAVINGS ACCOUNT

In Farnum Alston's dream of the future, developers and scientists would team up to create wildlife refuges and give them away to government agencies.

Alston's dream revolves around mitigation banking, a practice endorsed in wetland policy statements this summer by both Bill Clinton and Pete Wilson.

In concept, a mitigation bank allows development of sensitive land in one place in exchange for an equal deposit of land into a refuge-bank. California's first mitigation bank that can take outside deposits is about to be opened by a company that Alston heads, say Cal Fish & Game officials. At this 96-acre site called Springtown near Livermore, scientists would use developer dollars to create a full-service wetland refuge.

Past mitigation banks operated by counties and public entities have been limited in scope and scale, and often tailored to a local purpose such as a specific type of wetland or endangered species so as to avoid a regulatory and technical mountain of requirements. The result has been a mixture of solutions around the state that can create as many

problems for wildlife as developers, says Hal Thomas of Cal Fish & Game.

"Land use planning is fragmented right now," says Thomas, "but an ecosystem doesn't recognize political boundaries."

Private banks like Springtown may be better equipped than public banks to help

Fish & Game implement the kind of regional ecosystem planning mapped out in its 1991 Natural Communities Conservation Planning program, says Thomas. Current public mitigation banks in Humboldt County, Placer County and other areas have become snagged in new layers of bureaucracy and the confusing regulatory environment. But a private

bank like Springtown would remain outside the bureaucratic fray and simply offer a sound technical solution to developers who can get state and federal permission to use it to meet their mitigation requirements, says Alston.

The cost at Springtown varies between \$45,000-\$70,000 per acre, according to Alston, who hopes his refuge-bank, now limited to a small geographical area, can be franchised later.

"I think each county should have one of these," he says. FH

A PRIVATE WETLAND BANK



one patch of wetland habitat to another and what the bird's future habitat needs might be.

Fish & Wildlife's Rick Morat says this is just what he needs to make better management decisions about where to restore habitat for both rails and other estuarine species. In fact, Morat is now looking for other projects that promise "immediate resource results" and address

his program's current top priorities: to ensure adequate freshwater flows, restore wetlands and reduce contaminants in the Estuary. With the Estuary Project's CCMP awaiting implementation, Morat wishes he had more money. "Since we only have \$200,000 to spend, we want our dollars to go to the best possible demonstration projects," he says (proposals welcome). Contact: Rick Morat (916)978-4618 AR

BUSINESS WISE

GAS STATIONS TO CURB RUNOFF

That steaming, sputtering, smoking vehicular dinosaur pulling up at the gas station's water hose is a major source of pollutants in runoff, according to a new study conducted by the Sacramento County Public Works Department and released September 30. The study, funded in part by the S.F. Estuary Project, examined pollutant sources at three self-serve gas stations in the Sacramento area and found more metals than hydrocarbons in the station runoff. According to Sacramento's project manager Fred Garcia, the lower level of hydrocarbons shows that spills from fueling activities may be vaporizing or volatilizing rather than ending up in storm drains. Leaks from dumpsters and boilovers in the air and water supply zones proved more substantial sources.

Now that sources have been identified and measured, officials can explore and recommend Best Management Practices (BMPs) to stem them. Take the good old-fashioned daily hose-down of the station pad, for example. This September, Garcia and station owners watched as one entrepreneur demonstrated a less-polluting alternative: a high pressure spray backed up by a spongy vacuum boom to collect the water. "The kink now is to work out some kind of reasonable way of regulating disposal of the water collected," says Garcia.

But the oil companies, who've already begun their own BMP and runoff research program, think this move to regulate gas stations may be going "a bit too far," according to Arco's Jim White, "especially when we're finding the same types of pollution from parking lots and roads."

In the meantime, the Arco, Shell and Chevron stations in the Sacramento study will be trying out the county's recommended BMPs this rainy season, including the new high-tech hose-down method, employee education, dry clean up for spills, and protection of dumpsters and air/water supply areas from rainfall. Garcia will then compare pre-BMP with post-BMP runoff contamination levels and

evaluate effectiveness. "There's a desperate need for these types of studies," he says "so people aren't blindly going out and doing things they think make a difference." Contact: Fred Garcia (916)440-6851 *AR*

AUDITS SHOW POLLUTION CONTROL PAYS

In a blow for jobs versus environment naysayers, recent audits of three Silicon Valley industries suggest that if they take steps to reduce metal runoff, they'll save money. The audits, conducted

as pilots for a 50-company audit program launched by the City of San Jose and spawned by a CLEAN South Bay Coalition lawsuit, showed that metal recovery, rinsewater recycling and other improvements could reduce copper and nickel discharges by 60-99 percent, and pay for themselves in savings on water and raw materials within three years (see chart). Contact: Greg Karras (415)243-8373 *AR*

AUDIT RESULTS

Business	Metal Finishing	Disk Manufacturing	Circuit Boards
Costs	\$39,000	\$1.1 Million	\$445,000
Annual Savings	\$15,600	\$477,000	\$245,000
Payback Time	2.5 years	2.2 years	1.9 years
Copper saved	91%	N.A.	96%
Nickel saved	94%	99%	N.A.

RESOURCE REVIEW

VINEYARD MANAGEMENT PRACTICES: AN ENVIRONMENTAL APPROACH TO DEVELOPMENT AND MAINTENANCE

Growing grapes using environmentally considerate techniques is the subject of a new planning manual produced, in part, with an Estuary Project grant. Compiled by the Southern Sonoma County Resource Conservation District, the manual addresses all aspects of vineyard planning, installation and maintenance from the perspective of reducing impacts on the environment. Soil conservation in particular is thoroughly addressed (a co-sponsoring agency is the U.S. Soil Conservation Service), which translates to cleaner creeks and, downstream, a healthier Estuary.

The manual is a direct response to neighboring Napa County's erosion troubles. Waterways throughout the wine country have experienced increasing siltation as vineyards move into ever-steepier terrain. The problem was so acute in Napa that in 1991, the county enacted an ordinance requiring erosion control plans of all new vineyards on slopes greater than 5 percent. Sonoma County growers requested an erosion control manual to "help

circumvent an ordinance," says the Soil Conservation Service's Linda Woo Shanks.

The report's reliance on the Service's technical specifications makes it somewhat user-hostile. But the authors are up-front about the material's dryness, and introductions to each section by local experts go a long way toward rescuing the reader from bureaucratic overload.

"It's a reference manual geared to those who know what they're doing," says Shanks. But even an agricultural old hand would wonder at the inclusion of highly technical descriptions of friction losses and depth of application formulas — information more relevant to an irrigation designer than a farmer. And all but the most jargon-hardened readers will shudder at the use of the term "water impoundment structure" to describe a pond.

The information is all there, however, and the manual deserves high praise for so thoroughly addressing soil erosion. Whether or not it can keep the regulators at bay will depend on how well it is used. Copies from (707)794-1242 *Reviewed by LP*

DREDGE SCOOP

CLINTON QUARTERBACKS FOR PORT

Ever since President Clinton emerged as the quarterback in the huddle over how to get the Port of Oakland's 42-foot deepening project out of the muddy mid-field and down to the end zone, everyone's been riveted on the ensuing play. "The President said accelerate, and we're trying to accelerate, but we've yet to reach agreement with the port on how much we can accelerate," says Arijs Rakstins of the Army Corps — one of multiple agencies now scrambling to catch the President's passes.

As a result, the Corps is now negotiating hard with Oakland to try and trim some time from a project review and environmental impact documentation process currently slated to take 19 months. The port thinks August 1995 is just too long to wait to start dredging.

A second result may have been the Corps' and EPA's quick turnaround last month of a preliminary data review on the quality of sediments to be dredged. What would normally take a month took a matter of days, and the news was good for the port. EPA now estimates that the total amount of dredged material too contaminated for disposal at a soon-to-be designated ocean site is less than everyone thought: down from 2.2 to 1.6 million cubic yards (mcy).

The data, based on recent acoustic probing, gave "a definitive three-dimensional picture of where the soft holes are," says the port's Jim McGrath. Soft spots — where muds from old shipbuilding areas may have accumulated in channels dredged long ago — are more likely to be contaminated than hard spots. McGrath says their new data show more hard spots than he anticipated, which may reduce the disposal need even further.

Where to dispose of both the clean and the contaminated dredged sediments is still a ball very much up in the air, and so is whether and how the Administration may intercept. In the meantime, the President's new California task force — launched in part to take the sting out of

Oakland base closures by supporting economic growth in areas like the port — is now in the midst of high level discussions "to find ways to both solve near-term problems and to reinforce LTMS," according to local rep Melinda Yee. (LTMS is an existing regional effort to develop a Long Term Management Strategy on dredging.) Yee says the Bay Area team will be getting an earful on their quarterback's next play around December 1. Contact: Arijs Rakstins, Corps (415)744-3258; Brian Ross, EPA (415)744-1979; or Melinda Yee (415)705-1298 AR

THE DISPOSAL LANDSCAPE

The search is on for upland disposal sites for dredged sediments, as the Port of Oakland gears up to deepen its waterways. Sites in the running for the most contaminated sediments include the Ninth Street Terminal (100,000 cy) and the Galbraith golf course area (one million cubic yards) in Oakland, and the proposed Leonard Ranch facility (500,000 cy) on the North Bay shore. Yet another alternative is Alameda's Bay Farm Borrow Pit — a big hole in the Bay from which developers "borrowed" fill material.

Obstacles abound. The S.F. Regional Board isn't sure it likes the Galbraith scenario. "It's an old landfill, and we don't know what's buried in it," says the Board's Tom Gandesbery, who worries that adding new dredged material could destabilize old and unknown toxic substances. Gandesbery's more enthusiastic, but also more cautious, about the borrow pit. "Bay Farm shouldn't be a quick fix solution for the port, but a carefully studied long-term, multi-project solution for the region," says Gandesbery. Further complicating pit disposal prospects is interest on the part of fisheries agencies in restoring eel grass beds at the site.

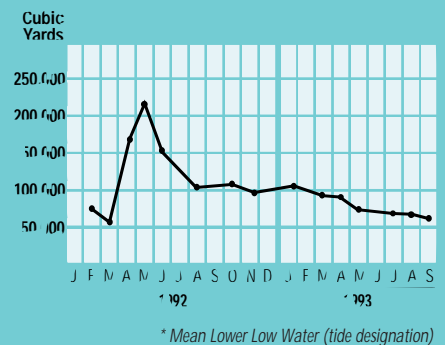
Moving on to future homes for cleaner sediments, the popular Sonoma Baylands site — which would demonstrate beneficial reuse of dredged material for wetland restoration — has hit a new snag. U.S. Fish & Wildlife is now recommending mitigation for seasonal wetlands lost when tidal wetlands are restored — rekindling debates over the

THE MONITOR

ALCATRAZ MOUND DOWNSIZES

A bay bottom bulge off Alcatraz that posed a navigational hazard has diminished in size, according to monitoring done by the Army Corps between March and August 1993. Officials attribute the reduction to tighter management procedures aimed at increasing dispersion of dredged materials dumped at the site. Procedures included a limit on total disposal to 400,000 cubic yards per month, of which only 150,000 could be from

VOLUME OF DISPOSED MATERIAL ABOVE ELEVATION -40 FEET MLLW*



clamshell operations. Clamshell dredges release solid sediments, while hopper dredges dispose of a more easily dispersed slurry. New procedures also restricted disposal to areas deeper than approximately 60 feet, and away from the mound. Hydrographic surveys showed that the overall dispersion rate for the site and surroundings ranged from 85-99 percent. Contact: Al Mathiesen (415)744-3359 AR

relative habitat value of one type of wetland over another and sparking research proposals on how to deal with this in the future. There are currently a slew of restoration projects on North Bay drawing boards. "This really complicates most types of restoration," says Cal Fish & Game's Carl Wilcox. "Publicly funded efforts have a limited ability to mitigate." Contact: Tom Gandesbery, S.F. Regional Board (510)286-0841; Darren Fong, USF&W (916)978-4613 AR

ACTION POINT

CCMP SHOPS FOR SPOT IN CLEAN WATER ACT

Bay Area Congressional representatives recently requested that the San Francisco Bay-Delta Restoration Act (HR 2320) be included in reauthorization of the Clean Water Act. HR 2320 would fund implementation of the San Francisco Estuary Project's *Comprehensive Conservation and Management Plan* (CCMP). If the request from Congresswoman Nancy Pelosi and Congressmen Ron Dellums and George Miller is approved, HR 2320 could become an amendment to the Clean Water Act. Otherwise, HR 2320 would remain a freestanding bill. To express your views, write your elected officials and:

Honorable Norman Mineta, Chairman
Public Works and Transportation Committee
2165 Rayburn House Office Building
Washington, D.C. 20515-6256

Honorable Gerry E. Studds, Chairman
Merchant Marine and Fisheries Committee
1334 LHOB
Washington, D.C. 20515

CCMP SUPPORT SWELLS

Although Governor Wilson's action on the CCMP remains in question, the strong show of support coming from the Bay Area may encourage him to sign the plan by the November 20 deadline. All nine Bay Area county boards of supervisors recently passed resolutions that urge Wilson's concurrence. The East Bay Municipal Utility District also went on record in support of the CCMP, despite the Association of California Water Agencies' well-publicized opposition to some sections. Association members Marin Municipal and Contra Costa Water Districts may also diverge from their umbrella organization's position at upcoming board meetings. Contact: Marcia Brockbank (510)286-0780 KA

CCMP BRIEF

WORKSHOP INSPIRES TEACHERS

A recent teacher workshop may lead local elementary school students to some unusual activities this fall — practicing peanut butter and jelly geology, taking a fish market survey or walking around a vernal pool in their socks.

These are just some of the estuary education activities learned by the twenty-six Richmond school district teachers who attended the five-day Bay Wildlife Habitat Explorations workshop, held in July at the Richmond Marina and sponsored by U.S. Fish & Wildlife and the S.F. Estuary Project.

"We could have bought a couple of acres of wetlands with the money we used to fund the workshop," says Fish & Wildlife's Jim McKeivitt. "But we felt this was a good chance to influence the future by reaching hundreds of kids."

According to workshop facilitator Steve Cochrane of the Estuary Project, an innovative combination of field trips, classroom sessions and hands-on activities prepared teachers to teach about the aquatic ecosystem.

"Kids today are quite concerned with the environment," says teacher and workshop participant Jean Mock. Yet many children haven't learned how their general concerns relate to where they live. And a few don't even know the basics. "Some students perceive the Bay as the ocean," says another teacher, Jaye Glesener.

But when educators looked for materials to help them teach about the Estuary, they were at a loss. "It's frustrating for teachers to pick up a textbook on pollution or wetlands and find out that the estuary discussion is in another area," says Cochrane.

Cochrane has found another barrier to Estuary education. "Many elementary teachers are afraid of science. In the workshop, we let them know that they can teach it without being experts," he says.

The Bay Wildlife teacher workshop is part of the overall education program developed by the Estuary Project to help give environmental issues a local slant and practical classroom application. The workshop revolves around *Estuarine Encounters*, a new curriculum that presents eight key habitats within the Bay and Delta. By studying an organism that lives within a habitat, kids learn about current Estuary issues. A unit on the Asian clam, for example, explains the problems created by introduced species.

Overall, the guide takes an interdisciplinary approach, blending natural science with social sciences, history, geography and literature. Beyond the guide, the Project's education program also features naturalist-led field trips and the Estuary Action Challenge, a ten-week classroom and field program that focuses on a specific local enhancement or restoration project.

Before the expanded five-day workshop, over 500 teachers participated in 24 one-day workshops organized by the Estuary Project. When these teachers bring their new knowledge back to the classroom, the kids love it, according to Linda Franke. Her Seaview Elementary kindergarten class is working on the "Growing Seeds/Growing Minds" activity. "Through this botany project, we're integrating science with math and language by writing and keeping records on plant growth. The kids are also watching birds and starting to be

able to identify them, and they're developing a spiritual connection to critters in the area."

Cochrane believes it's vital to get kids out to the Estuary. "Once they get their hands in the seaweed and the mud, they come back, and they bring their parents."

Eventually, he hopes to broaden the teacher workshops to include participation from other community residents. For example, students could find a restoration project, then go out and get support for it from local businesses. "Once kids get exposure to the Estuary, it makes for a better quality of life and place to live," he says. Contact: Steve Cochrane (510)881-6751 KA

TEACHERS INVESTIGATE BARNACLES AND OTHER LIFE ON THE UNDERSIDE OF A DOCK



PLACES TO GO & THINGS TO DO



WORKSHOPS & SEMINARS

Management & Protection of Coastal & Near-Coastal Waters: Tools for Local Governments

THUR-FRI • 10/28-29 • All day
Topics: Comprehensive planning tools that will help balance quality development and coastal resource protection.

Sponsors: EPA, SFBWQCB & SFEP
Berkeley Conference Center, Berkeley
(510)286-0734

Erosion Control & Land Restoration

MON-TUES • 11/1-2 • All day
Topics: Re-establishing native plant communities, new products for erosion control and stormwater permit regulations.

Sponsor: Assoc. of Bay Area Governments
MetroCenter, Oakland
Cost: \$360-\$450 (510)464-7964

Pollution Prevention Workshop for Marina Operators

WED • 11/3 • 6 PM
Topics: How boating impacts the environment, what environmental regulations affect marinas, and ways to manage used oil and hazardous wastes.

Sponsors: Marin County Office of Waste Management & Coastal Resources Center
Bay Model, Sausalito (415)499-6647

Blueprint for the Future: ACWA Fall Conference

WED-FRI • 11/3-5 • All day
Topics: A wide range of issues critical to the water community, including key legislation and policy developments at the federal and state levels.

Sponsor: ACWA
Disneyland Hotel, Anaheim
Cost: \$255-\$560 (916)441-4545

Biotechnical Slope Protection with Woody Plants

THURS • 11/4 • All day
Topics: Woody plant selection, care and planting, site analysis, biotechnical techniques and slope de-watering by plants.

Sponsor: Assoc. of Bay Area Governments
MetroCenter, Oakland
Cost: \$160-\$195 (510)464-7964

Teaching About Creeks

SAT • 11/6 • All day
(Optional Field Trips 11/7 & 11/13-14)
Topics: Tools for educators to spark a greater interest in and effectively teach about creeks.

Sponsors: Aquatic Habitat Institute, Contra Costa County Association of Science and Math Educators, and Mills College
Mills College, Oakland
Cost: \$30 (510)231-9539

Avocet Festival

SAT-SUN • 11/6-7 • All day
Wildlife Arts and Crafts Fair with nature artists, environmental fair and nature programs.
SF Bay National Wildlife Refuge, Fremont
(510)792-4275

Federal/State Partnerships in California Water—Who, What, When, Why?

TUES • 11/9 • 7:30 PM
Topics: Roger Patterson, Bureau of Reclamation, Doug Wheeler, Cal Resources Agency, Wayne White, U.S. Fish & Wildlife, and Harry Seraydarian, U.S. EPA, discuss federal/state partnerships aimed at resolving California's water problems.

Sponsors: Commonwealth Club & SFEP
Commonwealth Club, San Francisco
(415)597-6705

Can the Legislature Help Forge an Agricultural/Environmental/Urban Alliance in Managing California's Water Supply?

TUES • 11/30 • 7:30 PM
Topics: Senator Dan McCorquodale and Assembly Member Dominic Cortese discuss current legislative approaches to resolving the state's water issues.

Sponsors: Commonwealth Club & SFEP
Commonwealth Club, San Francisco
(415)597-6705

International Healthy Cities & Communities Conference

WED-SAT • 12/8-11 • All day
Topics: Various workshops, site visits, interactive exhibits and celebrations aimed at building healthier communities.
San Francisco Hilton, San Francisco
Cost: \$325 (510)540-2412



MEETINGS & HEARINGS

Bay Commission

THUR • 10/21 • 1 PM
Topics: Votes on I-80 HOV lane, SF Yacht Club facility, etc.
Room 455—State Building, San Francisco
(415)557-3686

Delta Protection Commission

THUR • 10/28 & 11/18 • 6:30 PM
Jean Harvie Community Center, Walnut Grove
(916)776-2290

LTMS Policy Review Committee

THUR • 11/4 • 1:30 PM
Topics: Ocean EIS, Bayfarm Borrow Pit & EIS/EIR.
Admiral Nimitz Conf. Center, Treasure Island
(415)744-3263

Bay Commission

THUR • 11/18 • 1 PM
Topic: Public hearing on Galilee Harbor, Marin.
Room 455—State Building, San Francisco
(415)557-3686

Central Valley Regional Water Quality Control Board

FRI • 12/3 (916)255-3039



HANDS ON

Christmas Bird Count

SUN & TUES • 12/19 & 28 • All day
Activity: Help count the birds that live in and migrate through the Estuary (volunteers should call by 12/1; excellent birding skills not required).

Sponsor: Golden Gate Audubon Society
Oakland & San Francisco
(510)843-2222

NOW IN PRINT

Demonstration of Gas Fueling Station Best Management Practices—Phase One Report
Sacramento County Public Works Department;
Copies from (415)744-1990

Exploring the Estuary
(Macintosh-based educational display)
Aquatic Habitat Institute
Copies from (510)231-9539

Layperson's Guide to the San Francisco Bay
Water Education Foundation; Copies from
(916)444-6240 (Revised edition)

Summary of Proceedings:
State of the Estuary Conference
SFEP; Copies from (510)286-0734

Teaming Up for the Bay and Delta (videotape)
SFEP; Copies from (510)286-0734

COVER STORY

reaches of the watershed, soils are often exposed, grass scant, and selenium rich. Runoff from Panoche is dumping up to 200 ppb of selenium into creeks and the San Joaquin River at the Mendota Pool, where contaminated and sediment-aden floodwaters often clog irrigation canals.

Hatten is now working with farmers, ranchers, regulators and scientists on a consensus plan to minimize this loading. Elements of the plan — due out in 1994 — will probably attack all watershed sources and include intensified livestock and cropland management, as well as land retirement, and streambank erosion and flood control.

Since most of the San Joaquin River gets diverted south, little of the selenium from these upstream problem areas actually makes it into the Bay and Delta, according to Karkoski. More river-borne selenium could be a nasty side-effect of decreased Delta pumping southwards to protect fish in the future, however. And a group of water agencies recently proposed a new program that would coordinate drainage discharges with high lows. Though this would maximize dilution, it could also increase loads to the lower estuary.

In the meantime, Dr. Sam Luoma says the type of selenium — called selenite — discharged by the North Bay oil industry bioaccumulates in the food chain four times faster than the stuff coming downriver. So it's no surprise that the oil industry is also squirming under the watershed-wide selenium squeeze. In fact, the S.F. Regional Board has handed down a two-tiered reduction plan to half and then half again the industry's total selenium discharges by 1997. The first half is already on the books in existing discharge permits; the second is a proposed basin plan amendment slated for a Board vote this winter.

Reduction measures now being actively researched by refineries either filter the selenium out, reduce it down, recycle it, treat it or put it through a chemical or biological metamorphosis, but the technology isn't yet problem free.

"Right now, reduction comes at a very high cost economically and environmentally," says Todd Royer of Exxon, "because our lead technology produces so much sludge." Royer says that for every one pound of selenium removed by an iron co-precipitation process, he gets 10,000 pounds of hazardous waste.

"Now we have to weigh how much time it's fair to give them to address technical problems against ever increasing selenium bioaccumulation in the ecosystem," says the S.F. Board's Jessie Lacy — a balancing act regulators both up and downstream will have to pull off to make a serious stab at reducing selenium. Contact: Joe Karkoski (916)255-3097; Tim Hatten (415)744-1983; Jessie Lacy (510)286-0702 AR

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