



THE GOVERNOR'S DROUGHT ADVISORY PANEL, which includes water officials, lawmakers and environmentalists, is scheduled to release its strategy for reducing the impacts of critical water shortages during the next dry period in December. DWR's Jeanine Jones says recommendations are likely to focus on the establishment of a water purchasing program, similar to the state water banks that operated during the last two droughts. The big question is how such a program would be coordinated with other water purchasing programs, such as the one established by CALFED to provide water for ecosystem restoration. Contact: www.dwr.water.ca.gov/DroughtPanel.

THE OWNERS OF IRON MOUNTAIN MINE will pay for its cleanup under an agreement with the state and federal governments announced in October. Acid discharges from the mine have long damaged miles of creeks and killed fish in the Sacramento River. The agreement provides permanent funding for clean-up and remediation activities to prevent the mine from further polluting the river, and will result in removal of approximately 95 percent of the metals that would otherwise flow into the river. It ends nearly nine years of litigation and three years of settlement negotiations.

LOCAL ESTUARY RESTORATION

PROJECTS will benefit under the national Estuaries and Clean Waters Act of 2000, passed by Congress in late October. The bill establishes a program to leverage federal, state and private funding to support restoration projects and will provide up to \$880 million in federal funds over the next five years to restore one million new acres of estuaries.

THE SACRAMENTO SUCKER AND TULE PERCH are among the native resident fish species still commonly found in streams of the Sacramento River Basin, according to a recent U.S. Geological Survey report (see *Now in Print*). The report attributes the abundance of native resident fish species in the basin at least partially to water management activities that favor the delivery of water through natural streams rather than diversions into canal systems. Native fish species are least often found in waters affected by agricultural drainage, where introduced species such as bass, sunfish and catfish tend to dominate—as they do in the streams of the San Joaquin River Basin.

HIGH-SPEED WATER TRANSIT on S.F. Bay got a boost from Governor Davis recently when he signed legislation appropriating \$12 million for the Bay Water Transit Authority. The appropriation will allow the Authority to initiate the environmental planning, technical analysis and public outreach that ferry advocates hope will lead to dramatically expanded ferry service. The Authority was created in 1999 with a mandate to "design, build and operate" a regional ferry system to alleviate Bay Area traffic woes.

War on Purple Plague

Cameras and eyeballs discovered the magenta spikes of one of California's prettiest pests in the Delta this year, confirming the spread of purple loosestrife (*Lythrum salicaria*) from the upper to the lower watershed. The surveys by airplane, boat and foot, and education efforts aimed at revealing the ugly side of this pretty aquatic plant, represent the first year of a three-year project aimed at extinguishing the European invader before it's too late.

Too late, that is, for the native flora and fauna at the edges of Bay-Delta waterways. In many states, this 'purple plague' is the top nuisance plant and makes up more than 50% of the biomass of emergent vegetation, closing the canopy and leaving a virtual biological desert underneath. Scientists say that other common wetland plants can't compete, that loosestrife can impede waterflow and storage, and that its leaves decay so much more rapidly than those of the resident vegetation that they only supply detritus important to the food web of juvenile salmon in the autumn, rather than throughout the winter and spring.

Luckily for California, the new survey indicates an invasion that is still very controllable. But it also revealed previously unreported infestations in the Delta's Middle and Old Rivers, and along the Calaveras and Tuolumne Rivers, according to Carri Benefield, who heads up the CALFED funded control project for the Calif. Dept. of Food and Agriculture. Upstream areas have had the purple plague much longer, with documentation in Shasta and Butte counties dating back to the 1950s.

Though killing pretty plants is a "tough sell," that's exactly what Benefield's program is trying to do. Armed with the survey data, the project will now work with local groups to develop action plans mobilizing three types of possible control methods: hand removal for infestations of less than 100

plants; spraying with herbicides for bigger jobs; and various combinations of the two, with the possible addition of some European beetles known to munch loosestrife to the ground.

"The fact that these plants are aquatic limits our control options right off the bat," says Benefield. "Access is a big problem, you can't dig from a boat as easily as from the ground. And using chemicals in waterways can be a water quality worry."

One thing plant removers have to be careful of is the loosestrife's copious production of seeds the size of ground pepper. Pulled plants have to be bagged and destroyed, and mature plants removed with care because disturbance often creates a new flush of seedlings. "You don't want to dig at the wrong time, otherwise all the seeds could float downstream," warns Benefield. "You have to commit yourself to a multi-year process." The long maintenance commitment may buy some time to mobilize the beetles, however, whose use in California is still in the testing phase.

In the meantime, Benefield has been spreading word of the plague — giving over 50 talks so far — to garden clubs, government staff, ecologists, and weed management groups. "I tell people that on the East Coast, there are places where purple loosestrife stretches as far as the eye can see. I tell them purple loosestrife could be the next yellow star thistle" (a familiar yellow prickler now displacing California grasslands).

The plague is still at an early enough stage that it can be stopped, says aquatic weed researcher Lars Anderson of the U.S. Department of Agriculture. "But we have to remember that once it gets into the Delta, with tides moving seeds in every direction every six hours, it could spread very rapidly." Contact: Carri Benefield (916)654-0768 or see www.cdfa.ca.gov/purpleloosestrife

ARO



PATROL

CLOSE CALL FOR TROUBLED TANKER

To a casual observer, the *Neptune-Dorado* resembled any other tanker. But to the Coast Guard, the Greek-owned, Singapore flag-flying ship, which sailed into the Bay this September, raised a series of red flags that may have averted an environmental disaster.

All ships flying under foreign flags are required to give the port 24 hours advance notice of arrival, according to Coast Guard Commander Steve Boyle, Chief of Inspections in the SF Bay Area. The ship is run through the agency's Port State Control Matrix, which rates each ship's risk level, taking into account the flag the ship is flown under, the type of ship, its prior safety history, and the length of time that has passed since it last entered U.S. waters. The Coast Guard wants to identify all substandard vessels, says Boyle, as well as ships flying under "flags of convenience."

According to UC Berkeley ship safety expert Alaa Mansour, less-than-scrupulous private companies often operate under flags of developing countries, where crews can be hired cheaply and safety standards may not be as high as they should be.

The Coast Guard automatically boards ships that have not been in the U.S. in four years or more — such as the *Neptune-Dorado*. During the inspection, officers discovered over 30 problems—non-functioning fire-fighting pumps, failed bonding cables, and oil leaking into the engine room and bilges, among others. Although the Coast Guard planned to escort the *Neptune-Dorado* back out of the Bay, the Tosco refinery in Rodeo was desperate for the crude oil it carried and requested that the ship be allowed to continue its journey. To do so, says Boyle, the Coast Guard required the ship to be flanked by two tugboats (tankers ordinarily have one) and several oil spill response vessels, and to sail with Coast Guard inspectors on board.

But the *Neptune-Dorado's* troubles multiplied while the ship was docked at the refinery. Tosco inspectors found discrepancies between the amount of oil shown as received and the amount the ship was unloading. This led to the discovery of oil in the ballast tanks, says Boyle, which could have caused an explosion or contaminated the Bay. To prevent these disasters, inert gas was injected into the ballast tanks to displace the oxygen, and the remaining oil was carefully offloaded. The ship's captain was arrested and the tanker was escorted to the San Francisco Dry Dock by the tugs and oil spill response vessels.

Although disaster was averted, the Coast Guard is investigating who certified the vessel as safe and what efforts the captain made to communicate his knowledge of the ship's problems to its owners (which he is required to do). A more immediate concern is cleanup of the *Neptune-Dorado's* ballast tanks, which must be done before the cause of the leaking oil can be ascertained. Because the tank-cleaning process releases hydrocarbons, which could violate local air quality standards, the ship has been sent out to sea to clean its ballast and cargo tanks. It will then return to San Francisco for further inspection.

The fact that the ship was a tanker raised the risks of an environmental disaster in the Bay exponentially, according to Boyle. Like many other tankers, the *Neptune-Dorado* only has a single hull protecting the Bay from its dangerous cargo. Single-hulled tankers are being phased out slowly, and the *Neptune-Dorado* has until 2008 to upgrade to a double-hull. So just how many leaky or unsafe ships (tankers and others) are entering the Bay? In 1999, a total of 3,192 ships came into Bay waters, according to Boyle. Of those, 470 were boarded by the Coast Guard, and only three were detained because of safety problems.

The handling of the *Neptune-Dorado* shows just how shipping safety has improved over the past several years, says James Card, retired Rear Admiral with the Coast Guard, now with the American Bureau of Shipping. "The Coast Guard's standards are very high," says Card. "The issue then becomes how well these standards are enforced. I think the Coast Guard has been very effective at isolating these 'flags of convenience.' Folks are getting the word. Really bad actors won't want to come to U.S. waters because they know they'll be detained or turned away." Contacts: Commander Steve Boyle (510) 437-3119; Rear Admiral James Card (Ret.) (281) 877-6440

LOV

TECHNOFIX

MONSTER VS. MITTEN CRAB

For the past several years federal and state fish facilities have been besieged by an armored army: hundreds of thousands of Chinese mitten crabs, clogging screens and pumps, injuring or killing sensitive fish, and even bringing operations at the federal facility to a halt at one point. But the ubiquitous crustacean may have finally met its match.

Crabzilla, a monstrous 8-foot-wide by 18-foot-high traveling fish screen, now straddles the conveyance channel at the Tracy facility, scooping up crabs on a giant revolving wheel while allowing fish to slip through tiny mesh openings. Although the wheel usually spins at speeds of about 2 feet per minute, it can be sped up to around 20 feet per minute if lots of crabs are entering the channel. While the salvaged fish are trucked back to the Delta far from the pumps, the crabs are brushed and pressure-hosed off the screen onto a conveyor belt that dumps them into a container. From there they are hauled to Modesto and ground into fertilizer.

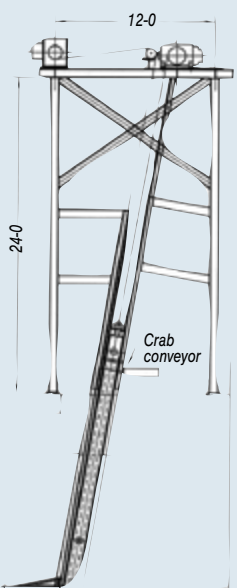
Crabzilla is actually a modification of a fish screen created by Visalia's Farm Pump and Irrigation Company, according to

BurRec's Brent Mefford, one of several engineers who worked on design. How effective is it at fending off the furry-clawed invaders? The first of its kind, the giant screen underwent extensive testing during the fall of '99 and has been used at the Tracy facility ever since. So far, it has been removing approximately 90 percent of the crabs that enter the channel, says BurRec's Charles Liston although Mefford believes that number is closer to 99 percent. It may be a few years before Crabzilla is put to its truest test though: crab numbers were down this year, particularly in Suisun Marsh and the Delta (they were still high in the South Bay), according to Cal Fish & Game's Kathy Hieb. That doesn't mean we won't see large numbers of crabs again. "This could be part of the typical 'boom and bust cycle' of some introduced species," says Hieb. "More likely there will be some cycle of high and low numbers over time. In Europe, the mitten crab population has a 15-20-year cycle, but of course, we have no idea of what it is here." Contacts:

Charles Liston (crlist@aol.com); Kathy Hieb (khieb@delta.dfg.ca.gov); Brent Mefford: (303) 445-2149

LOV

CRABZILLA





RESTORATION

SKAGGS IN LIMBO

Jim Haire has dark circles under his eyes these days. Among the worries troubling this third generation North Bay farmer is how to pass a viable business on to his 19-year-old son at a time when the glassy-winged sharpshooter threatens to wipe out his, and all of Northern California's, vineyards and when the government wants to make wetlands out of his oat fields.

"For the numbers they're talking about giving me for my land, I'm better off farming," says Haire, of recent government overtures concerning the purchase of his property. "If the sharpshooter moves into my vineyards, and then the enviros fight us so we can't spray, I can still put beans on the dinner table from my oat hay and grain."

But Haire's in a better position to bargain than some. One of his ranches is on Skaggs Island, next to a defunct 3,300-acre Naval spook station that U.S. Fish & Wildlife would like transform into a giant tidal and seasonal wetland. The property lies in a critical position — adjacent to two other major restoration projects, the former Cargill salt ponds and Cullinan Ranch. Put together with these neighbors, it would constitute a superstar wetland complex of the size that begins to feel like real habitat to the flora and fauna of the Bay's endangered tidal marshes.

"It's a linchpin for North Bay restoration," says Marge Kolar of Fish & Wildlife, which has been negotiating with the Navy for several years to do an intra-federal transfer of the property. There are three main bugaboos in the deal right now: 65 acres of abandoned buildings, Jim Haire and base cleanup.

For Fish & Wildlife, the buildings are the main hold up. Kolar's agency wants no part of them. Demolition could cost \$3-12 million, a bill Fish & Wildlife thinks the Navy should foot. But the Navy says it's only responsible for sealing up the buildings so they're safe.

Fish & Wildlife's ears pricked up this fall, when local interests suggested taking over the 65 acres and turning them into housing for the region's vineyard and winery workers, many of whom now live in cars and tents. Skaggs's location right at the base of the Sonoma and Napa Valleys, and its 80 duplexes, three-storey dormitory and many amenities, make it a "ready-made opportunity to establish a village for the seasonal workers so vital to our economy," says neighbor Patricia Westerbech.

Developer Ron Swim also has a vision for seasonal worker housing, but neither he nor Westerbech are committed enough yet to make Fish & Wildlife comfortable that it won't

NETWORK

SAN PABLO BAY SWITCHBOARD

Keeping tabs on all the restoration work steaming ahead in the North Bay got easier on December 8, when a new Web site went on line. The site is a "switchboard for programs and contacts" for the San Pablo Bay Watershed Restoration Program, a planning and coordinating program for North Bay restoration efforts organized by the Army Corps, the Coastal Conservancy and The Bay Institute. The site documents existing ecological resources on San Pablo Bay, describes restoration opportunities, lists resources for funding and technical support, provides links to other activities and programs, and offers over 300 references. "Doing this project is a sea change for the Corps," says Marc Holmes

of The Bay Institute, referring to new acknowledgement at the Corps' S.F. District that flood control can be achieved not only with dams and culverts, but also through environmental restoration. The new Web site will also offer technical support with permits, for example. "If someone doesn't know a section 404 from a 911, we can help," he says "Finally there's going to be one place to go to find out what's going on in restoration." Contact: www.spn.usace.army.mil/sanpablobay or www.bay.org.

be saddled with managing and maintaining the 65 acres.

The other bugaboo could be Jim Haire. His 1,000 acres next to the base are the only other private property on the island. Though there's nothing standing in the way of Fish & Wildlife just taking over the base, it would also inherit commitments between former owners to maintain levees and protect Haire's property that date back to 1941. Those commitments specify that water levels on these subsided lands need to be kept as near to zero on the tide gage as possible, except for irrigation purposes, according to Haire. Fish & Wildlife's rough plans for restoration call for adding some levees, breaching others, and creating tidal wetlands on about two thirds of the acreage while leaving the rest in seasonal wetlands.

"We have to protect neighboring farms from water seepage," says Kolar. Though Haire has nothing against creating wetlands, he doesn't trust Fish & Wildlife to do a good job, pointing to seepage problems at the nearby Tolay Creek project. "The minute they breach a levee on Skaggs or put one gallon of water behind it, I'll have them in court," he says.

An easier route would be for Haire to sell his Skaggs property to the government at a good price. Kolar says the government would like to buy it, but is limited in what it can offer by a rigid official appraisal process that makes his property values pretty low (an independent appraiser, looking at the Haire property, determined that its "highest and best use" was as an oatfield, and that given market and regulatory forces its value was around \$2,000 - \$2,500 per acre).

Environmentalist Marc Holmes, of The Bay Institute, thinks Haire's property is worth more

than the average oatfield. "This land should command more of a premium because it's so integral to so many restoration projects. Fish & Wildlife should partner with a non-profit to come up with the difference between asking price and appraised value," he says.

Knowing that Cullinan Ranch sold for \$4,300 per acre makes Haire mad. "They want to offer us, small American farming families who have built this country, less for our land than they gave the Japanese offshore owners of Cullinan. All we're asking for is a fair shake."

Kolar says Cullinan got a higher price because it had what the appraiser deemed "development potential." She notes that other people are very concerned that government may be overpaying for properties (referring to a recent suit against the State of California and Cargill over the value of the North Bay salt pond complex).

Price wars aside, Holmes is impatient with the whole Skaggs Island ordeal. "This is the restoration project that should be but isn't. First, I'm incredibly frustrated with the Navy for not proceeding with a minor clean up costing a few hundred thousand in pocket change out of what appears to be stinginess. Second, I'm equally frustrated with the Department of Interior and Fish & Wildlife for not moving this forward. Third, I'm frustrated with them for not going after neighboring properties aggressively, and finding a way to pay their actual value. When you really look at it, there are no significant logistical obstacles to this deal." Contact: Jim Haire (707) 224-9379; Marc Holmes (415) 721-7680 or Marge Kolar

UNDERGROUND

TWO BOOSTS FOR CONJUNCTIVE USE

Acres of shallow ponds that let water percolate into the earth and wells that force water back underground instead of pumping it out may eventually be common features of the California landscape if new efforts to make better use of the state's underground water and storage space succeed. In September, Governor Davis signed new legislation aimed at helping local agencies better understand and manage their groundwater resources. A few weeks later, CALFED awarded more than \$2 million in grant funds to five pilot projects designed to better coordinate the use of surface and groundwater — so-called conjunctive use — to help slake the state's relentless thirst.

The Local Groundwater Management Assistance Act will initially provide up to \$5 million in grant funding to help local agencies undertake costly scientific studies of their

aquifers. "Getting resources to the local area to help them develop a good understanding of geological and hydrological conditions is the first step towards successful conjunctive management," says David Guy of the Northern California Water Association, which sponsored the bill. "Ultimately this could benefit the entire state as well as the local areas." Guy says that a thorough assessment of such issues as the recharge rate — the rate at which the underground supply replenishes itself — and groundwater flow direction are critical. "You really have to understand the resource before you can figure out how much you can take out."

Meanwhile, several of the CALFED-funded projects will explore ways to "encourage folks to implement projects that make more use of underground storage capacity to improve supplies throughout the state," says CALFED's Mark Cowin. The CALFED framework for solving California's water woes calls for the state to increase its groundwater storage capacity by 500,000 to 1 million acre-feet.



CALFED funds will pay for a variety of projects, including studies of the economic, institutional and environmental impacts of

developing a conjunctive use program and the impact of certain pesticides; several kinds of groundwater recharge projects; and monitoring wells. For example, the City of Tracy plans to construct wells and pipelines that will let it bank 2,000 af/yr of treated Delta Mendota Canal contract water in the local aquifer, while the North San Joaquin Water Conservation District will spread surplus wet-year water from the Mokelumne River on four acres of recharge ponds for extraction and discharge into the river during dry years.

The feasibility of recharging depleted local aquifers — a cornerstone of conjunctive use — depends on a number of factors, say experts. A reasonably efficient injection well can recharge about 500 af/year, says CALFED consultant Anthony Saracino, but it's expensive and water quality must be very high. On the other hand, the percolation rate for recharge ponds varies depending on the soil type — the sandier the better — with about one-third foot a day considered decent. At that rate, a one-acre pond would recharge a little over 120 af/year.

Technical issues aside, the real difficulties of widespread conjunctive use are political, say Saracino and others. "People are very hesitant to give other entities access to their groundwater," says Cowin. "Particularly for farmers, there is a general anxiety that cities will just suck local aquifers dry. The Owens Valley is the monster in the closet." Indeed, many rural counties have approved local laws preventing the export of groundwater, and the Regional Council of Rural Counties has filed suit against CALFED, charging that the Record of Decision represents an effort to grab control of northern groundwater and send it south.

Because of these concerns, "local management" are the watchwords of conjunctive use efforts; in fact the CALFED grant program application package required applicants to satisfy certain criteria addressing the potential negative impacts of proposed conjunctive use operations, including groundwater depletion, third-party impacts and water rights issues. Guy says he thinks that as a result of CALFED, the state legislature will soon revisit groundwater issues, with some interests advocating a statewide system of regulation and others forcefully opposed. "I hope we can address everyone's concerns with a bill whereby districts can coordinate their locally controlled efforts on a larger scale to help meet the state's water needs," he says. Contact: David Guy (916) 442-8333; Mark Cowin (916) 653-2986 CH

NEXT GENERATION

LEADING THE WAY

For 15 up-and-coming Californians, January 2001 will not only be the true start of the new millennium, it will also be the start of a year-long program designed to begin preparing them for a lifetime of leadership in California's byzantine water world.

The Water Education Foundation's Water Leaders Class, now entering its fifth year, is meant to bring more representative perspectives to critically important California water policy issues. "California's population is getting younger and more diverse, but the water community is not," says Jean Auer, who created the program at the urging of the Foundation's Rita Schmidt Sudman.

Participants in the class must commit to attend several of the Water Education Foundation's briefings and attend two three-day tours of the state's water system. In addition, they spend a day shadowing a mentor — a major water figure from government, urban water interests, agriculture, an environmental organization or a public interest group (class organizers make a deliberate effort to pair students with mentors from different backgrounds). Participants also interview their mentor about an issue — such as this year's topic, water quality — selected by the class; the class as a whole then prepares a report on the topic.

For Rishi Das of the Trust for Public Land, a member of the Class of 2000, a highlight of the program was a day spent accompanying

his mentor, DWR's Chief Deputy Director Steve Macaulay, to a CALFED policy meeting. "It was fascinating to witness the process at first hand," he says. "The class was incredibly valuable," says Denise Kruger, vice president for Water Quality at Southern California Water Company, a member of the first class. "It really broadened my perspective, not just on water quality but on all water issues." This year Kruger is serving as a mentor for the class, mentoring a water supply engineer. "Mentoring is a continuation of my own education."

Program applicants must show a commitment to understanding water issues, as well as an intent to seek leadership roles, such as public office or positions on boards and commissions. Because the program requires a substantial time commitment — about two weeks total — the support of their employers is also helpful. Tuition is \$1,000, although scholarships are available thanks to grants from the S.F. Foundation and others. "We have to make sure that nobody is left out because they can't afford it," says Auer.

The program is proving almost too popular. The Class of 2000 is the largest yet, with 18 members, but the Foundation's Rita Sudman says that is slightly too big; future classes will be limited to 15. That's too bad, says Kruger. "There's a lot of good that can come out of this class — it would be great if they could expand it." Contact: Water Education Foundation (916) 444-6240 or www.watereducation.org CH

POLLUTION

DELISTING COPPER?

Environmentalists broke a tradition this October, when for the first time in regional history they did not contest regulatory approval of South Bay wastewater discharge permits. They also, after three years of study and negotiation, agreed with regulators, dischargers and scientists that the actual waters of the extreme South Bay may not be as impaired by copper and nickel pollution as they are on the books. This agreement could someday lead to the removal of copper from the federal "303(d)" list of pollutants impairing beneficial use of Bay waters, and today provides a leg up to North Bay stakeholders now launching a similar process.

"We're not wholly comfortable with what we've done, there are risks," says Michael Stanley Jones of the Silicon Valley Toxics Coalition, who represented regional environmental interests at the South Bay negotiating table and didn't make a peep at the October hearing over the discharge permits. "But we're trying it as an alternative to endless litigation and stonewalling."

"We still have to keep our nose to the grindstone in terms of copper," says discharger Phil Bobel of the Palo Alto treatment plant. "We're on the right track, but it's taken a long time and a lot of money."

The official focus of this investment of three years time and \$2 million dollars (San Jose provided the bulk of the money, science and sweat) was an effort to develop a TMDL (total maximum daily load) for copper and nickel in the extreme South Bay. Once a pollutant gets bad enough to be on the federal 303(d) list, the Clean Water Act requires a TMDL effort. The TMDL approach seeks to account for, and regulate based on, the total mass of a pollutant entering a water body from all sources, rather than permitting based on individual discharges' concentration levels.

One of the first steps taken in the South Bay's TMDL process was to put all the available scientific data through the ringer. Hot shot technical experts with good credentials finetuned this data, and also reassessed testing methods, eventually concluding that it is unlikely copper and nickel are impairing beneficial use of extreme South Bay waters.

"The data showed that ambient waters were less toxic than lab waters," says Tom Mumley of the S.F. Bay Regional Water Quality Control Board, which brokered the TMDL process and issues discharge permits. "Estuarine waters behave differently

than lab waters — they have more things called ligands, for example, that bind to copper and make it less available to organisms. We want to base our judgement of impairment on actual, rather than laboratory, conditions."

These findings led to the suggestion of what nobody wants to call a more relaxed water quality standard, although that's what it is. Stakeholders and regulators are now proposing site specific objectives for dissolved copper in the range of 5-12 parts per billion (ppb) — up from the current California Toxics Rule (CTR) of 3.1 ppb — and for dissolved nickel of 11.6 - 20.5 ppb -

up from the current CTR of 8.3 ppb. Their technical experts assure them that such standards are scientifically defensible (see graph p.6).

"This is a compromise," says Stanley-Jones, who notes that the environmental coalition's comfort level was greatly enhanced by funding providing them with their own dedicated technical expert. "We agreed to put faith in the impairment report, and not challenge Board decisions and discharge permits in exchange for the two action plans and a commitment to

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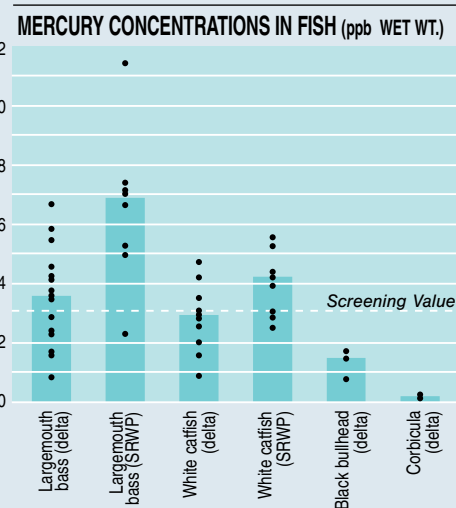
SCIENCE SPOT

DELTA FISH CARRY CONTAMINANTS

Anglers casting a line out into Delta waters may not want to eat every last fish they catch. In a study published by the S.F. Estuary Institute this September (see Now On-Line), most of the fish scientists pulled out of Delta rivers and sloughs exceeded screening values for the protection of human health for at least one contaminant — only four out of 28 locations yielded a "clean" catch. Health advisories are already in effect for Bay fish.

In the nutshell, analysis of white catfish and largemouth bass caught in 1998 found that about half the fish had levels of potential concern for mercury, a third for PCBs, and a quarter for DDT. Great variations occurred among locations. While mercury concentrations averaged about 290 parts per billion in the Central Delta, the Northern Delta and lower Sacramento River soared to more like 650 ppb (screening value = 300 ppb). The biggest surprise however, turned out to be the San Joaquin River, where levels were nearly as high as in the Sacramento. "No one expected it, but no one had ever looked in the San Joaquin before," says researcher Jay Davis. Both watersheds contain historic mining debris laced with the mercury used to release gold from its ore.

The San Joaquin also proved heavy on the DDT. Two spots in the lower river had concentrations of 389 and 407 ppb in the catfish, as compared to a low of 42 ppb elsewhere (screening value = 100 ppb). Levels of PCBs in the catfish ranged from a low of 8 ppb in the Middle River at Bullfrog to a high of 102 ppb (screening value=20 ppb) in the Smith Canal, an isolated backwater where someone must have once spilled or disposed of PCBs, says Davis, adding that PCB problem areas are generally quite localized.



Davis is still scratching his head over why the Central Delta, where waters from two rivers high in mercury mix, came out so clean. "It's a good mystery," he says, "especially since the literature suggests that the transition zone between fresh and salt water is a region of enhanced mercury methylation." Methylation is a process by which mercury turns into a chemical form more available for uptake by organisms.

The Institute's findings jibe well with ongoing results from CALFED-funded studies of methylmercury distribution in clams and small fish (Slotton, UC Davis) and water (Foe, CVRWQCB). As for the differences between the Estuary's upper and lower reaches, Davis says the results confirm that mercury is high in both regions, and as high in fresh water as in salt; that PCBs are higher and more widespread in the Bay, which makes sense given its more industrial and urban history; and that DDT is more of a problem in the Valley. "The good news is that the Central Delta is cleaner than we thought," he says. Contact: Jay Davis (510)231-9539

ARO

THE MONITOR

VETTING SONOMA BAYLANDS

Peter Baye stood on the levee circling Sonoma Baylands on a bright day this fall and thought that despite the fuzz of cordgrass around its edges, the restoration project still looked more like a shallow lake than a marsh. Baye, a U.S. Fish & Wildlife biologist, is one of half a dozen wetland and wildlife experts trying to assess when — if ever — this political darling of the region's restoration projects will be a functioning wetland, flushed daily by the tides and teaming with cordgrass, pickleweed and clapper rails.

"It's not good enough to say 'well, we've got a lagoon, that's nice,'" says Baye. "I think we need to make good on what's been proposed."

What was proposed was restoring almost 300 acres of subsided hayfields near the Petaluma River to tidal marsh, with the help of 2.5 million cubic yards of dredged material. The use of dredged materials to provide an elevation lift, though controversial among enviros, was touted as a "win-win" solution to the nagging problem of what to do with the leftovers from a Port of Oakland channel deepening project. Project designers calculated that the lift would cut 30 years off the time it would take nature alone to restore the wetland to tidal levels.

Critics of the project have questioned more than just the use of dredged material, however. Phil LaRiviere, a retired physicist and environmental watchdog with the South Bay's Citizens Committee to Complete the Refuge, has had serious questions about the project since it began. "The projected timeline has been overly optimistic all along," he says. "September 2000 was supposed to be 'mudflat month,' and it's nowhere near that."

LaRiviere thinks one major hold up is the channel connecting the Bay to Sonoma Baylands (through an outboard marsh), which he doubts has ever been adequate to the job of eroding and importing sediment. "You can't feed a giant marsh through a mosquito ditch," he says.

Project designers chose not to dredge the channel in order to avoid disturbing endangered clapper rails and salt marsh harvest mice, according to Laurel Marcus, who worked on the project for the Coastal Conservancy. "Instead of bringing in all

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COPPER CONTINUED

explore the remaining uncertainties."

"Rather than arguing over how clean is clean, we're requiring a commitment to pollution prevention," says Mumley.

Discharger action plans to reduce copper and nickel, completed this summer, specify baseline activities such as controlling sources, educating copper-intensive industries, evaluating street sweeping, encouraging recycling and more. What's keeping enviros from lying awake at night worrying are the triggers built into the plans. If monitoring (to be conducted in the summer when concentrations can reach their worst) indicates a rise in copper or nickel levels, a second tier of controls on discharges kicks in. An even bigger rise triggers a third tier.

"If the promises made in these pollution prevention plans are promises kept, then we may not have to go down the road to a full TMDL," says Stanley Jones. (A full TMDL would require the regional board to allocate copper loads to each discharger).

One issue still in the ether may be recent increases in the amount of copper in brake pads, whose wear and tear contributes to copper on the road and in runoff. The timing is bad. Just when water quality interests would like to see copper in brake pads reduced, and are meeting with the industry to make it so, new national safety standards have been pushing the industry in the other direction. Copper levels in new vehicle brake pads jumped 40% between 1998 and 1999.

"We can't expect the industry to scrap all their plans, but at least they're still at the table," says Mumley. If copper levels surge, then brake pads may turn out to be the culprit. "Because of the traffic safety issue, working the brake pad industry angle could fail. In the meantime, we need to challenge South Bay municipalities and developers to stop building so much hardscape and car habitat without buffers to prevent runoff."

The proposed site specific objectives for copper and nickel still have to be codified in the region's Basin Plan, and as Bobel says, getting stakeholder agreement on an actual number (rather than the range) "will no doubt be difficult."

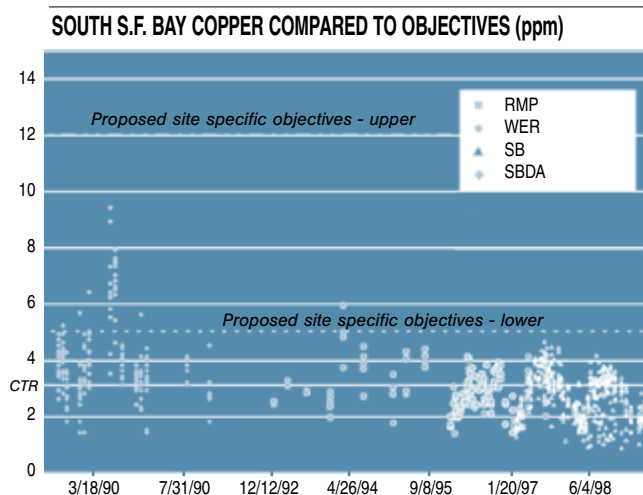
"A new site specific objective doesn't necessarily mean a delisting," adds BayKeeper's Jonathan Kaplan. Though the Regional Board recently went on record with its intent to delist, experts are still debating what then happens to the TMDL. BayKeeper is arguing, for

example, that once you list, you can't delist until you complete the TMDL. Others believe that the new finding of unlikely impairment can be used for delisting, eliminating the need to finish the TMDL. In any case, delisting can't occur until at least April 2002, when EPA's 303(d) list gets revised.

Whatever the steps, they'll certainly help blaze a trail for a reassessment of North Bay copper and nickel impairment launched this summer. North, in this case, is everything upstream of the Dumbarton Bridge. At least the hard part, the technical steps necessary to ensure the copper is not a problem, have already been mapped out for the North Bay by their southern neighbors. Research on the North Bay issues may also provide opportunities to look further into some of the uncertainties acknowledged in the South Bay work. One topic slated for study is a look at what, if any, influence the different chemical forms of copper, and the presence of other metals, may have on impairment. Another possible research topic is copper toxicity to phytoplankton. Scientists hypothesize that there's enough copper in the South Bay to shape phytoplankton species composition (by selectively inhibiting growth of sensitive forms like dinoflagellates, for example, that have higher food value).

Mumley says the way the South Bay group dealt with the uncertainties over phytoplankton impacts was to acknowledge them and suggest "keeping them on the radar screen" as part of the copper action plans. "Stopping the process because of the uncertainties goes beyond the intent of the original listing, and the baseline standard and objective-setting process," says Mumley. "It's bigger than just a South Bay issue. If evidence of a problem emerges somewhere down the line, then we could relist."

continued back page



CTR=California Toxics Rule. WER=water effects ratio. Dissolved copper measured by Regional Monitoring Program (RMP), City of San Jose (SB) and South Bay Discharge Authority (SBDA).

PLACES TO GO & THINGS TO DO



WORKSHOPS & SEMINARS

JAN
FRI
12

LAND USE PLANNING COURSE

Topic: Clean Water Act Section 404: Nationwide and Other Specialized Permits

Sponsor: UC, Davis
Location: Davis
9:00 AM - 4:30 PM
(530) 757-8825



MEETINGS & HEARINGS

JAN
TUE
16

ENFORCEMENT OF THE CLEAN WATER ACT

Topic: Urban Runoff - Legal Options at Lake Merritt

Sponsor: The Lake Merritt Institute
Location: Oakland
7:30 PM
(510) 238-2290

JAN
TUE
23

POLLUTION PREVENTION CONFERENCE

Topic: Turning the Tide: Balancing New Development and Clean Waters

Sponsor: Alameda Countywide Clean Water Program, SF Estuary Project et al
Location: Oakland
8:30 AM - 5:00 PM
(510) 832-2852

FEB
FRI
2

IMPLEMENTATION COMMITTEE MEETING

Topic: San Francisco Airport Expansion

Sponsor: SF Estuary Project
Location: Vacaville
10:00AM -12:30 PM
(510) 622-2325



HANDS ON

DEC
SAT
16

SALINITY SLEUTHS WORKSHOP

Sponsor: US Fish & Wildlife Service
Location: Alviso
10:30 AM - 12:30 PM
(510) 792-0222

JAN
SAT
6

TWILIGHT MARSH WALK

Topic: The beginning of Nature's night shift
Sponsor: US Fish & Wildlife Service
Location: Fremont
5:00 PM - 6:30 PM
(510) 792-0222

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Contaminant Concentrations in Fish from the Sacramento-San Joaquin River Delta and lower San Joaquin River, 1998

Davis & May, S.F. Estuary Institute, September 2000
www.sfei.org/deltafish_v7.pdf

Daylighting/New Life for Buried Streams

Richard Pinkham/Rocky Mountain Institute
www.rmi.org/sitepages/pid172.asp or (800)333-5903

Fish Community Structure in Relation to Environmental Variables within the Sacramento River Basin and Implications for the Greater Central Valley

US Geological Survey
<http://ca.water.usgs.gov/rep/Ofr00247/>

Maps of Lands Vulnerable to Sea Level Rise

EPA <http://www.epa.gov/globalwarming/publications/impacts/sealevel/maps/mps.html>

Protecting Drinking Water: A Workbook for Tribes

Water Education Foundation
<http://water-ed.org/workbook/workbook.zip>

SONOMA BAYLANDS -CONTINUED

kinds of equipment, we wanted to wait and see if nature could have the same effect," she says.

While some feel the Baylands is behind schedule, hydrologist and lead designer Phil Williams, who is now monitoring the project's progress for the Army Corps, feels things are pretty much on track. The channel to the project's pilot unit (29 acres were breached first as a test site) has eroded to full tidal action, says Williams, and is "right where it should be after a four year lag. Had we not used dredged material, we'd be a lot further behind."

The main unit (breached 10 months later) is evolving more slowly. While its tidal channel continues to erode, it only has muted tidal action right now, according to Williams. He expects to make new projections about when full tidal action will be established with the help of additional monitoring data ready within the next few months.

Despite its lagoon-like appearance, Sonoma Baylands is already providing some habitat. Bird expert Jules Evens, who is monitoring avian use of the site, says he's seen an increase in species diversity since the proj-

ect's inception. Although the greatest numbers of birds now using the site are waterfowl — rather than clapper rails or shorebirds — shorebird numbers (particularly avocets) are on the rise. "I think it's premature to assume that the intended results aren't occurring," says Evens. "The system is dynamic and changing rapidly. Tidal marsh is increasing in the main unit, and we're hopeful that rails will colonize the area in the future." Evens adds that one goal is for the whole area to support higher species diversity — of waterfowl, waders and shorebirds, rails, and tidal-marsh dependent species like song sparrows, as well as terns, gulls, even raptors. "As future monitoring clarifies the trends in wildlife usage, management [changes] might be needed," he says.

Other experts insist that the project needs to meet its primary goal — providing habitat for endangered tidal marsh species — sooner rather than later. "What's critically missing in San Pablo Bay right now is habitat for the rail and mouse that is free from predators," says Peter Baye. "Instead, it's pretty clear that Sonoma Baylands today is a shallow, microtidal lagoon, a giant flooded salt pan." While lagoons may provide habitat for certain birds, they do not offer the

cordgrass and pickleweed needed by rails and mice. And the project may not be a safe haven. "Our fears that the levees,[the peninsula-type barriers designed to slow wave action], would act as corridors for predators are being confirmed," says Baye. "We've seen fox and coyote scat out there, although the coyotes will limit the foxes."

While most of the concerns over Baylands center around its immediate — or 20-year — success, other scientists have raised concerns about its fate over the long term. "The million dollar question," says the U.S. Geological Survey's Bruce Jaffe, who has studied sediment movements in San Pablo Bay over the last half century, "is whether deposition nearby indicates there will be enough sediment for successful restoration or whether the fact that San Pablo Bay as a whole is losing sediment indicates that restoration will be slowed or unsuccessful." Jaffe's guess is that the generally erosional state of San Pablo Bay could mean problems in the long run. But, he adds, "Engineering the project to decrease the demand on sediment supply — i.e. filling with dredged material — improves the chances of success."

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SONOMA CONTINUED

In all fairness, restoration is a new science, and the best plans may not always pan out according to human schedules. "Sonoma Baylands is an innovative experiment, whose design underwent extensive review," says wetlands scientist Josh Collins of the S.F. Estuary Institute. "It applied a very sophisticated engineering approach, aimed at controlling the rate of sedimentation via levee breach height and channel size, to a dynamic and unpredictable environment. It's difficult to hold this kind of project to a timeframe that's nature-dependent."

But even Collins thinks nature may need a little boost. "If you look at this project's performance criteria, it's not doing what it said it was going to do. The responsible agencies are saying, 'well, not yet, but it will.' They need to make a measured policy decision about what's fast enough for them, about whether to leave it alone or do something."

That something, from Baye's perspective, should be to dredge the channel in the main unit to achieve full tidal range. Dredging would have to take place outside the rail's breeding season, and spoils would need to

be carefully disposed of inside the lagoon rather than being cast off to the side, says Baye, to avoid creating berms that could act as outposts for invasive species or cause other problems.

The decision whether to dredge or not will be made by the Army Corps some time next year, according to Williams, in consultation with other agencies. But Williams urges caution. "The costs and tradeoffs involved in speeding things up should be weighed first. If we're going to spend a half million dollars, we need to make sure it's worth it."

Baye feels the project has languished long enough. "If we're serious about getting Sonoma Baylands on track, we need to start initiating the permit process now. My concern is that there are some private landowners out there looking for reasons to cast doubt on restoration projects. We need to get rid of the political polarization and just make it go."

Contact: Peter Baye (707) 562-3003, Phil LaRiviere (650) 493-5540 or Phil Williams (415) 945-0600

LOV

COPPER CONTINUED

The South Bay may be heaving a sigh of relief at getting the bulk of the regional copper consensus behind it, but there's more work to be done. Copper is just one of more than 30 TMDL projects covering more than 70 water body impairment listings that the S.F. Bay region is slated to tangle with in the near future (one of the next in line is the PCBs TMDL; stakeholders held their first meeting this Halloween). "There's no way grassroots environmentalists can do more than appear to participate in these TMDLs unless we receive funding for technical expertise like we did for copper," says Stanley-Jones. "Otherwise, it'll all be TMDL lite, and back to the stonewalling."

The TMDL overload, and the successes at the South Bay copper bargaining table, are prodding the Bay Area Dischargers Association to take some initiative. BADA is now proposing a five-year plan and funding to the Regional Board for doing the TMDLs. "We're not the bad guys," says Chuck Weir of the Association. "In the long run, we'll all be better off if we work on the TMDLs collectively, instead of pointing fingers at each other." Contact: Tom Mumley (510) 622-2395

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