

ESTUARY PROJECT RELEASES BAY-DELTA REPORT CARD

"Achieve world peace, cure aids and pick up a six pack on the way home," is the way the S.F. Regional Board's Tom Gandesbery describes the wildly varying scope of actions recommended in a 1993 plan to protect and restore the San Francisco Estuary ecosystem while maintaining its use by cities, farms, industry, boaters and fishermen.

Despite both the ambition and minutiae in this *Comprehensive Conservation and Management Plan* for the Bay and Delta, despite the fact that all the hopes, fears and pet projects of the over 100 stakeholders that created it are reflected in its 145 action items, despite a devastating cut in wherewithal and political will to implement the plan since its completion, clear progress has been made in implementing 59 of the CCMP's actions and not all of them as easy as buying a few beers.

In a review completed this October, the S.F. Estuary Project evaluated progress on each of the CCMP's 145 recommended actions—from hunting closures to protect Aleutian geese and pump screens to save salmon (six-pack style actions) to wetland protection planning and runoff pollution control for the entire Bay-Delta system (world peace through watershed management). A report card on the final review, which was called the *CCMP Workbook* and presented at the recent State of the Estuary Conference, can be found on page 6. According to the report card, only two actions have been fully implemented. For the rest, 19 reached a substantive level of implementation (50-75% complete) and 38 a moderate level (25-50%) while 45 actions only saw some minimal progress (up to 25%). Progress on the remaining 41 was negligible or unknown.

This brief article can only highlight a few of the areas of major progress in a plan that covers fish, wildlife, wetlands, water use, pollution, dredging, land use, public education and research and monitoring on an estuarywide basis. Since 1993, new state water quality and flow standards have been created to protect fish and estuary biota, recovery plans have been drafted for many endangered species, and municipal stormwater management, urban runoff

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ESTUARY



YOUR BAY-DELTA NEWS CLEARINGHOUSE

Noble Charge or Lost Cause?

Rescuing Oiled Birds

When a dry-docked tanker spilled at least 8,000 gallons of black petroleum in the Bay this October, bird rescue crews mobilized—preparing to flush toxins from seabird innards and cleanse oil-slicked feathers. But a new study tracking oiled pelicans after rescue and release has found that surprisingly few survived, raising questions about whether all the painstaking effort and resources devoted to rescue might be better spent on other wildlife projects.

So what exactly does all this painstaking effort involve? According to Jay Holcomb of Berkeley's International Bird Rescue and Research Center, the first thing rescuers do is try to flush a victim's system with fluids. Center staff may then give birds activated charcoal to help leach out any toxins they have ingested from preening oil-coated feathers. "We only wash the birds right away if they are stable, if they are too depressed, they can't take the stress," says Holcomb. "This past spill we had three gulls so heavily coated they were literally stuck to the bottoms of their cages, and obviously we had to wash them immediately."

In addition, staff perform a thorough examination of each bird, and document its condition with photos and notes. They also take blood tests to see whether birds have become anemic from chemicals in the oil, treat injuries related to being trapped in the

oil, and sample feathers to help trace the oil back to its source.

The actual washing of the birds is not as simple as it might sound either. "We have a long table set up with 5-15 pans of hot water mixed with three percent detergent," explains the Center's Sharla Ansoorge. "We start with the head and neck and then move to the belly and wings, with one person holding—pelicans take two—and one washing. We keep on going from one pan to another until the water comes out completely clear. Then we rinse the birds in the sink for 10-15 minutes, using a special high-pressure nozzle and sometimes a Water Pik. We use toothbrushes on the head feathers. We have to make sure there is no soap residue left since it destroys the water-proofing quality of their feathers just like oil does."

After being rinsed, staff check the birds for lingering wet spots (a sign that their feathers may not yet be oil-free) and put them under pet dryers. Drying a bird takes between 45 minutes and three hours, with constant checking to make sure birds aren't overheating. The work is stressful not only to the birds but to the staff and volunteers as well. "We work 13-hour days without stopping during a spill," says Ansoorge.

Despite these kinds of extraordinary efforts, recently-published studies by U.C. Davis biologist Dan Anderson bring into question the survival rate of rehabilitated birds. In 1990-91, Anderson radio-tagged pelicans rehabbed after two oil spills. After following the birds for six months, he concluded that only about half were still alive. The rest had disappeared.

Anderson, who has studied pelicans for over 25 years and knows "every inch" of their range, was unable to find the remaining tagged birds anywhere between northern California and southwestern

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BIG PLANS

NEW BOUNDARIES FOR FAST-GROWING CITIES

The Bay and Delta were the indirect winners on November 5th when voters in four Bay Area communities approved long-term urban growth boundaries. The boundaries, which passed in Healdsburg, Santa Rosa, Sebastopol and Pleasanton, require that all new development take place within prescribed areas. Sonoma County voters also approved a measure to protect greenbelt buffers around that county's growth boundary, and on November 14, the City of San Jose formally adopted a growth boundary endorsed last spring. Farther upstream, however, two slow-growth measures explicitly linked to water supply were defeated. El Dorado County's Measure K and a similar measure in Placer County would have tied new development to traffic capacity and water supply.

Boundary approvals overlap with counties where sprawl has been taking the biggest toll on open space and watershed lands. According to a new ABAG report (see *Now in Print*), urban land areas increased by 14% in Sonoma County, 20% in Solano County, and 11% in Contra Costa County between 1985 and 1995. In the same time period, 50,000 acres of open land were developed for commercial or residential purposes in the Bay Area as a whole.

Although primarily designed to protect open space and farmland, the new urban growth boundaries will benefit both water quality and supply as well. According to the Greenbelt Alliance's Jim Sayer, preventing urban sprawl can also reduce erosion, sediment loading and heavy metals in stormwater runoff. At the same time, compact development can improve water use efficiency, as it tends to mean less landscaping requiring irrigation. Recognizing this relationship, a 1993 Bay-Delta plan for Estuary protection (see CCMP cover) calls explicitly for adopting plans and policies to promote compact, contiguous development. And the new *Blueprint for a Sustainable Bay Area*, released this month by Urban Ecology, ties infill (versus peripheral) development to environmental and economic health and quality of life (see *Now in Print*). Contact: Jim Sayer (415)543-4291 CH

BULLETIN BOARD

A 50% INCREASE IN THE BAY'S TIDAL WETLAND ACREAGE could be something we celebrate in the dawn of the next century. According to the last survey in 1987, the Bay had 25,466 acres of tidal wetlands. Adding up the largest completed, in-progress and planned restoration projects since that time, the Bay could soon realize a gain of at least 19% (4,790 acres) according to a recent accounting by the S.F. Estuary Project. Top that off with restoration of 9,300 acres of former salt ponds in the North Bay — now protected by public ownership but yet to be endowed with restoration funds — and the Bay's gain jumps to 56% (a 14,270-acre increase). This accounting omits projects with a mitigation component (where wetlands may have been lost) but at least seven such large scale projects currently in progress could add to the Bay's gains. In all the revelry over restoration, two caveats may be important to remember. First, restored wetlands take decades to reach the ecological richness of natural ones, and their "equivalence" has yet to be proven. Second, the 39,736 acres of tidal wetlands we may achieve in the early 2000s represents only 32% of the Bay's historic 1850 stock of 123,180 acres. However, we certainly seem close to achieving the CCMP's (see cover) goal of increasing Estuary wetlands by 50% by the year 2000. (415)989-2441

FISH PASSING THROUGH SUISUN BAY WILL HAVE MORE FOOD, SPAWNING AND NURSERY HABITAT once a Fishery Foundation of California project is complete. The Foundation recently acquired 420 acres on Chipps Island in Suisun Marsh and plans to develop and manage the property as a tidal marsh for the benefit of splittail, smelt, salmon, sturgeon, bass and waterfowl. According to initial estimates, the new "Suisun Marsh Fisheries Management Area" could produce 90% more splittail larvae, 30% more Delta smelt larvae, and 200% more fish feed organisms than the contiguous Bay and sloughs. The Foundation is currently working to raise money for project design and habitat development. (510)944-9115

CLIMATE CHANGE CAUSED BY GREENHOUSE GAS BUILD-UP COULD REDUCE THE STATE'S WATER SUPPLY warned scientists at an October public meeting at the California Academy of Sciences. According to U.C. Berkeley physicist John Harte, warming caused by greenhouse gas emissions will intensify in the winter, when California gets 80% of its snow and rainfall. A *Sacramento Bee* article cited Harte as saying the snowpack may melt sooner, and much of what falls as snow may fall as midwinter rain instead — taxing the ability of reservoirs to protect downstream regions from flooding and leaving them unable to meet agricultural demands later in the season. Downstream, lower summer runoff could increase pesticide and heavy metal concentrations. Meanwhile, models predict a sea level rise of 2-3 feet in the next 100 years, which would cause seawater to move farther upstream into freshwater marshes and city water supplies.

THE STATE WILL SOON BEGIN SPENDING THE NEARLY \$1 BILLION THAT VOTERS GAVE THE STATE WATER SYSTEM when they approved Proposition 204. The item in the Prop 204 stew creating the most excitement is the \$120 million for the so called "Category III" projects — established under the 1994 Bay-Delta Accord and limited to non-flow related improvements. Proposition 204 delegated \$60 million to the Category III projects, while Congress authorized an additional \$60 million match. Passage of 204 also allowed the appropriation of \$10 million of stakeholder money at the final meeting of the Category III Steering Committee in November. That \$10 million will get 23 programs started, including fish screens on the Sacramento, Yuba and San Joaquin rivers and in the Delta, land acquisition along Clear Creek, and several Delta restoration projects, according to CALFED's Cindy Darling. She says the newly-formed CALFED Ecosystem Roundtable, now taking over from the Category III Steering Committee, will set up a public input process to pick more projects to fund, meaning none of the \$60 million from Prop. 204 will be spent until at least March. Because Congress did not appropriate any of the money they authorized, the federal match could be even further off. The rest of the \$935 million of Proposition 204 funds that voters approved won't be released until February at the earliest. (916)657-2666

ENVIRO-CLIP

NOT JUST ANY PORT IN A STORM?

The Port of Stockton continues to be accused of water quality violations, most recently by DeltaKeeper. On October 2, the watchdog group notified the facility that it intends to sue the port and two of its tenants for over 21,700 violations of the federal Clean Water Act. DeltaKeeper charges that the Port continually discharges highly contaminated stormwater into the San Joaquin River. With penalties of up to \$25,000 per day per violation, the suit could cost the Port and its tenants more than \$542 million.

DeltaKeeper cites stormwater samples collected by Cal Fish & Game as part of a year-long investigation. The samples contained toxic levels of copper, chromium, nickel and zinc, as well as lethal pH levels. The stockpiles of petroleum coke, sulfur and fertilizer handled at the port are prime suspects, although DeltaKeeper's Bill Jennings says the Port's monitoring has been "so bad that we have no idea where the metals are coming from."

According to the Port's attorney Steven McDonald, the Fish and Game samples were taken on Port property, and were not discharges to the river at all. "The Port is unaware of any data showing that stormwater discharges from the facility are causing harm to the river," he says.

In April, the Central Valley Regional Board issued the Port a notice for numerous violations of its stormwater discharge permit, including failure to implement best management practices, eliminate non-stormwater discharges, revise its stormwater pollution prevention plan to address all Port activities, and adopt an adequate monitoring and sampling program.

McDonald attributes the problems to gaps in the City of Stockton's stormwater permit, rather than to violations of the state general industrial permit under which the port and its tenants are covered.

The Regional Board disputes the Port's position and is preparing a stringent, new municipal stormwater permit for the entire facility. A hearing on the new draft permit is planned for January, and the proposed schedule calls for

implementation of the new pollution prevention measures within one year." The most important thing is to get the Port fully covered by a permit," says the Board's Pamela Barksdale, "but we are also going ahead with enforcement actions for prior violations." Such actions could include a cease-and-desist order, a cleanup and abatement order, and civil or administrative fines.

Meanwhile, the Port has sixty days to discuss remedies to DeltaKeeper's allegations. "At this point all indications are that we will be proceeding with the suit," says Jennings. Contact: Pamela Barksdale (916)255-3024; Bill Jennings (209)464-5090; or Steven McDonald (619)699-2576 CH

INVASION ALERT

COMING SOON TO A CREEK NEAR YOU?

"Team Arundo" is the action-oriented name of a new group of government managers, scientists and environmentalists now hatching a game plan to thwart the "the plant from hell." Also known as the giant reed and *Arundo donax*, this plant is an introduced, prolific pest threatening to destroy the Estuary's native riparian ecosystems.

The reed was originally introduced into California by the Spanish in the late 1800s for erosion control along drainage canals. But the reed escaped from the canals into nearby waterways, where it began to wreak the havoc that has earned it the nickname "plant from hell." Today the reed is sometimes planted by unknowing gardeners and sold by nurseries unaware of the damage it causes. Although southern California waterways like the Santa Ana River were the first to be invaded by Arundo, the giant reed can now be found almost everywhere in the state, according to U.S. EPA's Paul Jones. Locally it has invaded the Russian River, Napa River, Sonoma Creek, and San Pedro Creek in Pacifica, to name just a few worry spots.

The reed spreads as pieces of the plant break off and wash downstream. The pieces—from either the stalk or roots—establish themselves wherever they are deposited. Their towering stalks and large tenacious root systems then proceed

to take over, outcompeting native riparian plants. The reed loves water and can grow up to three inches in one day, quickly reaching heights of 25 feet. It guzzles three times the water of the native plants and in effect "steals" water that could help recharge groundwater.

Unlike native plants, Arundo does not offer habitat or food for wildlife — a serious problem since so many of California's endangered and threatened species (particularly birds) rely on our few remaining riparian zones for survival. Arundo also affects aquatic critters by failing to offer any shade—as native willows and other plants do—which keeps water temperatures cool and water quality healthy.

To plan its counter-attack against the invader, Team Arundo del Norte (the northern arm of a statewide effort) has begun holding regular meetings. One big challenge is to decide exactly how to eradicate it, as the reed is difficult to remove by hand or machine. Currently, the most successful weapon seems to be an herbicide that, despite being the only product approved by the EPA for use in aquatic habitats, has some potentially negative environmental impacts.

Team Arundo is now working with scientists at U.C. Berkeley and the S.F. Estuary Institute to come up with better eradication methods and plans to contact local watershed groups for help in educating the public, elected officials, and nurseries about the "plant from hell."

Contact: Paul Jones (415)744-1976 or e-mail team_arundo@ceres.ca.gov



TECHNO-FIXES

BAY SENSORS GUIDE CLEANUP

The recent Bay oil spill gave the National Oceanographic and Atmospheric Administration's experimental Physical Oceanographic Real-Time System (PORTS) demonstration project its first real-world test. Although the demonstration project is a year from completion, PORTS got high marks for its role in aiding the cleanup.

Designed primarily as a navigational tool, PORTS uses a system of sensors placed throughout the Bay to measure currents, water levels, winds and other physical conditions that helped cleanup teams respond to the oil spill. According to NOAA's Captain Tom Richards, the information PORTS provided on wind conditions during and after the spill was particularly critical. "There was a frontal passage forecast, which would have put oil on East Bay beaches but the winds didn't occur as forecast," he says. "The PORTS sensors told us which way the wind was really blowing." The information helped pinpoint "convergence zones" — areas where oil would collect and be easy to pick up.

PORTS provides more reliable information on winds, tides and other conditions than was available previously. For example, National Weather Service forecasts for winds are based on radar that is focused too high to provide accurate information about the marine layer. Tides are traditionally predicted in tide books based on astronomy, and do not take into account meteorological conditions.

Aiding in spill response is only one of PORTS' potential roles. Warner Chabot of the Center for Marine Conservation points out that spills are often caused by ships becoming grounded or impaled on submerged rocks — a particular hazard in the Bay. "PORTS gives accurate data on both depth and currents," he says. "It could be a critical factor in preventing future spills." In addition, PORTS provides important data to scientists studying Estuary circulation and captains guiding container ships into Bay ports.

THE MONITOR

RESTORING GASOLINE-TAINTED MARSHES

On January 6, 1994, unleaded gasoline seeped from an underground pipe into a tidal channel on Chevron property in the East Bay city of Richmond. The gasoline, which daylighted in Gertrude Ditch near Wildcat Creek, was successfully contained, but a small area of Pacific cordgrass was injured. Clean-up and repair operations further altered the landscape when excess clean fill was accidentally placed on an adjacent seasonal marsh.

A typical response to an accident such as this includes containment of the spilled material, clean-up, and restoration, but then, as ENTRIX's Ted Winfield comments, "After you get sign-off, everyone walks away." But a Chevron restoration team chose instead to find ways to increase the survival of the wetland species. Chevron researchers Lucinda Jackson and Gary Rausina worked with Winfield and Cal Fish & Game's John Tarpley to develop a long-term restoration and monitoring plan that would do more than just fix the immediate problem.

The restoration team tackled two project sites: the banks of Gertrude Ditch, where the initial spill occurred, and a predominantly pickleweed marsh where the unused fill material had been dumped. To restore the pickleweed marsh, workers removed fill dirt in September of 1994 and recontoured the area. The following spring, the team established plots for two restoration strategies, and depended on the natural seed bank in the soil to supply the wetland plants. Assisted restoration plots received periodic irrigation with bay water and

removal of weedy upland species. Natural restoration sites were left alone, and reference plots were defined in unaffected areas.

After one year, the team found wetland plants thriving in the assisted restoration area, achieving 94% of total cover, as compared to 60% for the reference sites and 23% for the natural restoration area. Irrigation with bay water favored salt-tolerant wetland species. However, after two growing seasons, the wetland plant cover in the natural restoration areas compared favorably to that of the reference sites.



At the second restoration site in Gertrude Ditch, the soil still contained relatively high levels of BTEX and TPH-gasoline when planting began in May 1995. Researchers expected that cordgrass planted in an insulating mix of sand, peat moss and gravel would out-perform plants placed directly in contaminated soil. Surprisingly, the petroleum residue didn't affect cordgrass success—all assisted plots approached 100% survival. The researchers were also pleasantly surprised with the recovery of cordgrass in the other plots. "I didn't think the natural restoration would look as good as it did," says Jackson.

Although assisted restoration efforts in each area promoted the success of wetland species, the natural restoration areas are not far behind. The damage caused by people trampling about, trucking in soil, and removing vegetation may outweigh the benefits attained in the clean-up effort. "We should look at natural restoration as a viable alternative to any invasive clean-up activity," says Winfield. Contact: Lucinda Jackson (510)242-1047 KB

The big question facing PORTS is how it will be funded after the demonstration project ends in October 1997. NOAA plans to turn the system over to a local manager such as the Marine Exchange, but the \$300,000-\$400,000 a year required to continue it has yet to be secured. Cal Fish & Game's Pete Bontadelli has proposed a system by which approximately half the funds would come from the oil industry's oil spill administrative fund, which also supports the day to day activities of his Oil Spill Prevention and

Response office, with the remainder paid by a coalition of funders including other members of the maritime industry and the state. "The tricky part is determining who benefits from the system and how much it's fair to ask them to pay," he says. The Harbor Safety Committee, Maritime Exchange, the Pilot's Association and the Western States Petroleum Association support Bontadelli's proposal, which will require approval by the state legislature in 1997. Contact: Tom Richards (415) 556-0858 CH

NATURAL VENTURES



THE LIVING MACHINE

As you approach the recycled truck trailer, your ears are filled with the soft gurgling sounds of water. When you reach the top of its platform, your eyes are filled with river birch, water hyacinth and willows. And you wonder, as you detect the faint aroma of wild mint, if you really are in a sewage treatment plant.

Parked outside San Francisco's Oceanside Sewage Treatment Plant, the Living Machine runs secondary effluent through a series of ecosystems to remove contaminants including excess nitrogen, phosphate and coliform bacteria. Twenty thousand gallons a day receive tertiary treatment. The machine can be also adapted to provide both primary and secondary treatment.

Developed by John Todd of Ocean Arks International, the Living Machine consists of a 28-foot-long steel tank divided into two purifying trains of seven cells which serve as ecosystems. The first five cells maintain aerobic, or oxygenated, conditions to promote growth of nitrifying bacteria, which convert ammonia (NH_3) to nitrate (NO_3^-). The last two cells provide anaerobic conditions in which other bacteria reduce nitrate (NO_3^-) into nitrogen gas (N_2), which returns to the atmosphere. Although ammonia and nitrate occur naturally in the water system, too much of these chemicals can be lethal to aquatic organisms.

In the aerobic cells, plants with extensive root structures provide habitat for a variety of zooplankton, beetles and other freshwater invertebrates. In the anaerobic cells, surface covering plants such as water hyacinth prevent the growth of algae which would add unwanted oxygen back into the system. Microbiologist Michele Hallahan, who operates the facility, chose plants that have a preference for wet conditions and are adaptable San Francisco's climate.

Ten percent of the final effluent is returned to the beginning of each train to recycle bacteria into the system. (Hallahan has not needed to add commercial bacteria in over a year.) In addition, the purified effluent from one of the trains runs into a fish tank filled with ornamental and bait fish. According to Hallahan, aquaculture is part of the Living Machine's design. Proceeds from the sale of plants and fish grown in the machine help cover operating costs. The fish tank also tests the final water quality.

Little is left to chance—state of the art technology is employed to monitor and maintain these ecosystems. Every 15 seconds water quality measurements such as pH, dissolved oxygen, and turbidity are taken by a computer, which subsequently adjusts flow rates, carbon-dosing levels and other biological procedures. Weekly, effluent is tested in a certified lab for the EPA (see chart).

According to Hallahan, effluent from the Living Machine is clean enough for swimming, and ideally, can be released into a large body of water. However, to meet California title 22 requirements (standards for water reuse), the effluent is treated with

UV to remove remaining coliform bacteria. Currently, the effluent is returned to the Oceanside facility as raw sewage.

This month, the EPA-funded two-year-long project in alternative, wastewater treatment comes to a close. Whether the Living Machine will remain at the Oceanside plant as an educational facility is still to be determined. Contact: Ocean Arks International (508)540-6801 RF

COMPARATIVE WATER QUALITY 1995-1996

	Oceanside Discharge (mg/L)	Living Machine Effluent (mg/L)
BOD	14	6
TSS	13	3
Turbidity	4	<2
Ammonium	31	3
Nitrate	2	17
Total Coliform	648,281	642

RESOURCE REVIEW

THE SCIENCE BEHIND THE HEADLINES

A new book explores the science behind the drought, pollution, and water wars headlines of the 1980s. "Although eye-catching, these headlines provided a very shallow perspective of the news of the Bay during the period," says oceanographer and book editor James Hollibaugh. "The deeper story concerns dramatic advances in our understanding of the Bay as an ecosystem—an understanding both driven by and underscored by these headlines."

In "*San Francisco Bay: The Ecosystem*" Hollibaugh gathers studies presented at the 75th annual meeting of the Pacific Division of the American Association for the Advancement of Science in 1994, as well as a few written since. One goal of the book was to update the well-known 1979 bible of Bay science "*San Francisco Bay: The Urban Estuary*," edited by T.J. Conomos.

The new book is divided into four sections: Physical Processes, Water Properties and Quality, Ecosystem Function, and The Ecosystem. Within these sections, sample topics include the effectiveness of wildlife management programs; differences in the size and distribution of plankton populations within the Bay; metal contamination; and how currents actually circulate Bay waters. Contributors come from a broad range of scientific disciplines and a variety of academic institutions and government agencies. Much of the data presented has not been published before.

What underscores each report, whether its primary focus is on salinity stratification or on the organic matter that fuels the ecosystem's productivity, is how interrelated the information is: how no process, life-form or activity that takes place the Bay-Delta occurs in isolation. With this in mind, the greater is "the need," as Conomos writes in the foreword, "for credible, unbiased, scientific information" regarding the impact of human activity on the ecosystem.

Just as Hollibaugh describes the earlier work "*The Estuary*" as an essential "bible", so too will "*The Ecosystem*" come to be viewed as another "good" book. To order a copy, see *Now in Print*. RF

BAY-DELTA MANAGEMENT CONT'D

pollution education efforts, and monitoring of estuarine and creek conditions have all increased tenfold. Clapper rails are being protected from the jaws of red foxes, salmon from the suck of water pumps, and creek and levee banks from overzealous vegetation control. Farms are using fewer chemicals; industries are recycling more wastes and water; and "Estuary" is no longer a word schoolkids and pump engineers can't say or spell.

Last but not least, watershed management and wetland restoration have become the hottest thing since the hell of the water wars. Private owners, government agencies and environmental groups have together pulled off big gains in the region's tidal wetland acreage (see page 2).

Of course the CCMP implementation picture isn't all roses and lily pads. Truly comprehensive wetland planning, habitat planning and estuarywide monitoring are yet to materialize. Toxic hot spots haven't been cleaned up. Selenium and heavy metals and pesticides are still flowing into some Estuary waterways in amounts toxic to aquatic organisms; exotic species are still arriving in the Estuary from foreign ports at a rate of at least four a year; and most local governments have yet to weave wetland and watershed protection into their land use plans and growth policies.

Reasons onlookers give for why more of the CCMP hasn't been accomplished range from lack of money (a 1994 implementation budget of \$6 million per year was cut to \$300,000), lack of political will, CALFED stealing the show, and the sheer enormity of a 145-action plan with no priority-setting and commensurate allocation of resources. As a result of these setbacks, many say that what has been accomplished can't really be directly credited to the CCMP.

"Sometimes I think I wasted five years of my life on that thing and all we got was a little more support for what we were all going to do anyway," says Steve McAdam of the S.F. Bay Commission. "Other days I think it did help by creating dialogues between people who weren't on speaking terms

CCMP REPORT CARD

Numbers in this chart refer to CCMP action numbers.

	FULL	SUBSTANTIVE	MODERATE	SOME	NEGLIGIBLE	UNKNOWN
AQUATIC RESOURCES		2.5 Poaching program 2.6 Harvest regs for species of concern 3.1 Recovery plans/ listed species 3.2 Monitoring listed species 4.1 Interim water quality and flow standards 4.7 Protect existing SRA 5.1 Long-term Bay-Delta standards/solution	1.1 Ecosystem-level monitoring 3.3 Listed species consultations 3.4 Non-federal proposal review 4.2 Fish entrainment by industry 4.3 Fish gates at channel openings 4.4 Fish screens at diversions 4.10 Dredge control for fish 4.11 Stream habitat protection 4.12 Protect fishery value marshes	2.3 Control problem exotics 3.5 Bay-Delta habitat conservation plan 4.5 Water project screen improvements 4.9 Tule islands and offshore berms 6.3 San Joaquin River Mgmt Plan 6.4 Screen upstream diversions	2.1 Stringent ballast water control 2.2 Intentional exotic introduction 2.4 Public education on exotic species 2.7 Control contaminant sinks 3.6 Listed species recovery policy 4.8 1000% SRA increase	2.8 Incidental take non-target species 4.6 Clifton Court predation 5.2 EIS/EIR long-term Bay-Delta solution 5.3 Implement long-term Bay-Delta solution
WILDLIFE	4.4 Hunting closures Aleutian goose		1.2 Expand refuges 1.5 Restore non-wetland areas 2.2 Enhance biodiversity 4.2 Secure least tern colony sites	1.1 Protect large tracts tidal salt marsh 1.3 Acquire degraded wetlands 1.4 Restore tidal marsh 2.3 Estuary habitat plan 3.1 Predator control 4.1 Listed species recovery plans	2.1 S.F. Bay refuge management plan 4.3 Candidate species monitoring	4.5 Clapper rail captive breeding
WETLANDS		1.2 Geographically focused cooperative efforts	3.1 Expand acquisition programs 4.1 Restore non-wetlands	1.1 Regional wetland mgmt plan 2.1 Comprehensive state wetland program 2.2 Increased enforcement 2.3 Uniform mitigation policies 3.2 Expand landowner assistance	3.3 Wetland protection by-laws	2.4 Strengthen CWA wetland protection
WATER USE			1.1 Water reclamation studies 1.4 State reclamation standards 1.5 Reclaimed water delivery 2.1 Ag water efficiency 2.2 Ag water conservation studies 2.3 Urban water conservation studies 2.5 Water storage on Delta islands	1.3 Public education on reclamation 2.4 Conjunctive use groundwater		1.2 Water reclamation ordinances 1.6 Water softeners 2.6 Groundwater protection 3.1 Water-marketing 3.2 CVP transfer to state
<p>RATINGS UNKNOWN - Unknown (research incomplete) or no longer applicable. NEGLIGIBLE - No or negligible or peripheral progress. SOME - Minimal progress (up to 25%). MODERATE - Fair level of progress, clear strides ahead (25-50%). SUBSTANTIVE - Major progress (50-75%). FULL - Full implementation completed or on the horizon (75-100%).</p>						



	FULL	SUBSTANTIVE	MODERATE	SOME	NEGLIGIBLE	UNKNOWN
POLLUTION		2.4 Urban runoff control	1.4 Ag chemical reduction practices 1.5 Ag drainage selenium discharges	1.1 Toxic pollution goals 1.3 Environmental audit procedures 1.6 Estuary pesticide strategy 2.1 Mass emissions strategies 2.2 Water quality objectives 2.3 Selenium and mercury control 2.6 Ag toxics control 2.7 Mine toxics reduction	1.2 Prevention focused institutional changes 2.5 Transportation control measures 2.8 Model federal facility compliance 3.1 Contaminant clean up 3.2 Toxic hot spot clean up	
DREDGING	4.1 Identify disposal options	3.2 Dredged material reuse opportunities 3.5 Sediment reference sites 3.7 Regulatory and management policies 4.3 Dredged material evaluation for disposal	1.1 Sediment dynamics studies 3.1 Dredging needs assessment 3.3 Regulatory land use procedures for reuse	2.1 Bioaccumulation studies 2.2 Sediment quality objectives 3.4 Resources affected by dredging		1.2 Nearshore sediment movement studies 1.3 Sediment disturbance policies 3.6 Derelict structure removal 4.2 Saltwater intrusion studies 5.1 Flood prone area identification 5.2 Shoreline protection from flooding 5.3 Baylands as flood buffers
LAND USE		4.2 Local government training	2.1 Regional policy integration for local government 3.1 Watershed management planning 4.1 Public education	1.1 Estuary protection in Local General Plans 1.3 Estuary protection via state land use initiatives 2.2 Compact growth policies 2.3 Land use and population data 3.2 Site planning BMPs 5.1 Economic incentives for local government 5.2 Physical improvements funding mechanisms 5.3 Market-based incentives for private sector cooperation	1.2 Amend CEQA regarding General Plans 5.4 Financial barriers identification 5.5 Forum for dispute resolution	
PUBLIC INVOLVEMENT		1.5 Estuary central clearinghouse 2.6 State of the Estuary conference 3.2 Citizen monitoring 4.3 Technical/scientific entity	2.2 Build awareness of Estuary 2.5 Long-term education 3.1 Public opportunities to protect wildlife 3.3 Opportunities for hands-on citizen restoration	1.1 Build public support for CCMP 1.2 Opportunities for citizen involvement in CCMP 1.3 CCMP follow-up and revisions 1.4 Public education resource for CCMP agencies 2.1 Multicultural understanding 4.1 Friends of the Estuary	1.6 Support community model projects 1.7 Support environmental projects 2.3 Support existing public education 2.4 Develop public education tools	3.4 Estuary conservation corps 4.2 Support CCMP projects
RESEARCH		1.1 Create S.F. Estuary Institute	2.1 Implement Regional Monitoring Strategy	1.2 Research Enhancement Program		



and helping them communicate on important issues later."

"You can trace lots of the positive work going on now, including CALFED, back to the CCMP," says Bob Potter of the Department of Water Resources. "The CCMP got us all to an acceptable place where we could go forward."

"We're still in the infancy stage of implementation," says the Estuary Project's Marcia Brockbank, "but we've built up a head of steam with this year's report card, conference and priority-setting workshop."

In August, CCMP participants gathered to review the workbook and report card and chose ten priorities for implementation over the next five years. "Setting the ten priorities gave us the direction we've always been lacking," says former Implementation Committee chair Michael Carlin of the S.F. Regional Board. Carlin had hoped the priorities would provide the bodies created to follow-through on the CCMP — namely an executive council, implementation committee and geographic subcommittees, a scientific institute and the non-profit Friends of the S.F. Estuary — with a focus. "I'd like to see task groups form around each of the priority actions," says Carlin.

What else could and should would-be implementers do with the ten priorities? (Priorities include protecting wetlands, better integrating government programs, creating economic incentives for local government, improving urban runoff control, preparing watershed management plans, controlling exotic species introductions, building public awareness about CCMP implementation and Estuary resources, implementing the Regional Monitoring Program, and working with CALFED to address S.F. Bay and CCMP considerations).

ESTUARY did an informal poll of Bay-Delta movers and shakers (most of whom participate in one or more of the implementing bodies) and received the following suggestions for

continued page 8

HIGH HONORS

BEYOND THE PALE

Who is making an outstanding effort to protect and restore the S.F. Bay-Delta Estuary, and to implement the S.F. Estuary Project's *Comprehensive Conservation and Management Plan*? These projects received awards from Friends of the S.F. Estuary and applause at the October State of the Estuary conference.

The Cosumnes River Project — a river ecosystem preserve that has expanded from 1,000 to over 10,000 acres. The Nature Conservancy

The Santa Clara County General Plan — recently updated to include non-point source pollution control, wetland and riparian restoration, and watershed management. Santa Clara County Planning Department

BayKeeper — a citizen and community-based watchdog of polluters.

Biologically Integrated Orchard Systems — helping farmers reduce reliance on chemicals in seven Central Valley counties. Community Alliance with Family Farmers

Richmond High School Environmental Justice Project — organizing "creekkeeping" activities for high school youth. S.F. Estuary Project, S.F. Regional Board, Friends of the Estuary

Watershed education programs — including Kids in Creeks, San Leandro and Sausal Creek community awareness programs, an annual educators conference, and more. S.F. Estuary Institute with support from Alameda County Flood Control District and Alameda Clean Water Program

Expansion of Don Edwards S.F. Bay National Wildlife Refuge — from 23,000 acres to 45,746 acres. U.S. Fish & Wildlife and local interests

Yolo Basin Wetlands and Bypass Wildlife Area — converting over 3,500 acres of farmland to wetlands in the largest public/private restoration project in the Western states. Yolo Basin Foundation

Copper Sulfate Root Killer Brochure — a brochure produced by a voluntary association of POTWs to coordinate and protect water quality. S.F. Bay Area Pollution Prevention Group

Silicon Valley Pollution Prevention Agreement — negotiated between a coalition of environmental groups and the City of San Jose to prevent toxic pollutant discharges at their source (South Bay copper and nickel levels have since declined significantly). CLEAN South Bay Coalition, co-founded by Communities for a

BAY-DELTA MANAGEMENT CONT'D

next steps.

- Have each member of the Implementation Committee (IC) report to the committee on a regular basis about what their agency or organization is doing to advance each of the priorities — i.e. "hold their feet to the fire." *Will Travis, Bay Commission*

- Have the IC develop specific quantitative goals for each of the ten priorities (such as restoring 10% of the Estuary's historic wetlands or reducing stormwater pollution by 20% by the year 2005). Such goals can help us "get the public excited and double the size of the choir for Estuary protection, which will make it easier for all of us to get political support and dollars." *Geoff Brosseau, Bay Area Stormwater Management Agencies Association*

- Develop "task-oriented" action plans for each of the ten priorities. Solicit proposals for IC endorsement. *Roger James, Consultant, formerly of Santa Clara Water District*

- Have the Executive Council mandate a truly

comprehensive, coordinated Estuary monitoring program in which scientists and resource managers are all "measuring the same thing at the same time and space scales" and in which common indicators are used to express the Estuary's health. *Bruce Thompson, S.F. Estuary Institute*

- Hold scientific briefings for state and federal legislators and staff on exotic species problems and potential solutions in the Bay-Delta — "now is a good time because there's no pending legislation so a briefing could be considered education rather than lobbying." *Andy Cohen, Biologist*

- Create a center for marine and aquatic invasions at the S.F. Estuary Institute with support and cooperation from the IC. Such a center is necessary to attract newly available national research funds. *Cohen*

- Have the IC encourage small but fast-growing urban communities in the Delta to get up to speed on runoff control. Bay Area and big valley cities such as Stockton and

Sacramento are making progress but smaller Delta cities remain a "major hole" in Estuary stormwater management planning. *Tom Mumley, S.F. Regional Board*

- Develop more linkages with air quality and transportation planning to reduce related stormwater pollution — CCMP Pollution action 2.5. Get the agencies to take cross-media pollution more seriously than "lip-service." *Brosseau*

- Develop interagency, stakeholder and scientific consensus on what are key elements of any watershed management plan in the Estuary, and on what indicators can be used to evaluate their success. *Mumley*

- Launch a program for extending the Wetland Ecosystem Goals Process (a scientific estimate of the mix and quantity of wetland types necessary to maintain a healthy Bay ecosystem) up into the Estuary's watersheds. Such a program would help watershed

planning efforts establish local priorities. *Trish Mulvey, Friends of the S.F. Estuary*

- Have the IC's Geographic Subcommittees recommend priority watersheds for planning efforts to the full IC.

Priority setting should involve screening watersheds based first on significance of aquatic resources and second on "where there are communities interested in partnering with government to do watershed management plans." Have the IC endorse priority projects and recommend them for funding to state and federal "money machines." *Tim Vendlinski, U.S. EPA*

- Prepare an appendix providing relevant technical and legal justification to accompany the recent ABAG/Estuary Project guidebook *Improving Our Bay-Delta Estuary Through Local Plans and Programs: A Guidebook for City and County Governments*. *Mulvey*

- Create incentives for local government to protect Estuary resources based on the Williamson Act model, in which local governments losing property tax revenues due to the act are partially reimbursed by the state. Under the act, landowners can get a reduction in property taxes by signing contracts to keep their land in agricultural or



PLACES TO GO & THINGS TO DO



WORKSHOPS & SEMINARS

Holiday Event, Tour

Sun-12/15-1 PM-4 PM

Topic: Local history of Sausal Creek, Cohen-Bray House.

Sponsor: Friends of Sausal Creek

Call for information, location (510) 231-9507

Start at the Source Workshop

1/28-1/29, 2/4, 2/6

Topic: Review new manual for developers, planners and others on residential site planning and design guidance for stormwater protection.

Sponsor: BASMAA

Call for times, locations
(510) 286-0615

Bay Area League Day

SAT-2/8

Topic: Land, air and water decisions affecting the Bay Area economy.

Sponsor: League of Women Voters

Call for times, location (510) 582-9568.



HANDS ON

Hands-on Wildlife Care

SAT-1/11-9:00 AM-12:30 PM

Topic: Class on caring for injured or orphaned wild animals.

Sponsor: Lindsay Wildlife Museum

Location: 1931 First Avenue, Walnut Creek
(510) 935-1978



MEETINGS & HEARINGS

WED-1/15- 7 PM

Topic: Regular meeting

Location: Dimond Branch Library, 3565
Fruitvale Ave, Oakland

Call (510) 231-9566

Regional Monitoring Program for Trace Substances Annual Meeting

THURS-2/6

Topic: Science and Technical Issues

THURS-2/13

Topic: Policy Issues and Management
Implications

Sponsor: S.F. Estuary Institute,
S.F. Regional Board

Call for times, locations
(510) 231-9539

San Francisco Bay-Delta Baylands Atlas

<http://www.sfei.org/bayatlas/bayatlas.html>

Includes detailed information on Petaluma River area, Cuttings Wharf area, Suisun Bay area, South Bay area, and Far South Bay area.

Bay Delta Aerial Photos

http://elib.cs.berkeley.edu/air_photos

Aerial photographs of the Sacramento-San Joaquin Delta and Suisun Marsh area.

ICE MAPS: Interactive California Environmental Management, Assessment, and Planning System

http://ice.ucdavis.edu/ice_maps

This UC Davis project allows users to query the GIS system and databases. Includes maps and hyper-links to other sources of information.

North Bay Wetlands Protection Plan

<http://www.regis.berkeley.edu:80/bcdc>

SF Bay Commission's Wetlands Protection Plan is a voluntary partnership with local North Bay governments. Maps available on the website include the plan boundary, public ownership, wetlands, wetland projects, county and city limits, general plan

NOW IN PRINT

A Catalogue of Conservation Banks in California: Innovative Tools for Natural Resources Management

California Resources Agency
Copies from (916) 653-5656

Existing Land Use in 1995: Data for Bay Area Counties and Cities

Association of Bay Area Governments
Copies (\$65 plus tax) from (510)464-7900

Gateway to the Inland Coast: The Story of the Carquinez Strait

State Lands Commission
Copies from (510) 254-7214

Guide to East Bay Creeks

Oakland Museum
2nd edition features revised data on Oakland's and Hayward's shorelines and new research on Arrowhead Marsh in San Leandro.
Available at Bay Area bookstores and the Museum
(510) 238-2200

San Francisco Bay: The Ecosystem. Further Investigations into the history of San Francisco Bay and Delta with reference to the influence of man.

Pacific Division, American Association for the
Advancement of Science
Copies (\$45) from (415) 435-7115

Blueprint for a Sustainable Bay Area

Urban Ecology
Copies (\$31.50) from (510) 251-6330

WEB PICKS

ELECTRONIC TOOLS FOR LAND USE PLANNERS

How can local governments, developers, citizens and others best conduct land use planning with the Estuary in mind? At the State of the Estuary Conference this October, U.C. Berkeley's Bob Twiss described dozens of environmental planning tools and data resources now available on the World Wide Web, many of which feature state of the art Geographic Information System (GIS) technology. Twiss' paper is available on line at <http://www.regis.berkeley.edu/papers/tsoe.html> and includes links to the sites listed below as well as many others.

San Francisco Bay-Delta GIS

<http://www.regis.berkeley.edu/baydelta.html>

Over 100 digital data layers (maps and associated statistics) of the 12-county Bay-Delta region.

designations and land use.

State of California GIS Technology Center at Teale Data Center

<http://www.gislab.teale.ca.gov>

This geographic data library includes 35 types of information in four broad categories: Administrative Divisions, Infrastructure, Physical Geography and Cultural Geography.

California State Lands Commission

<http://tahoe.slc.ca.gov>

GIS information for the Bay-Delta region includes fisheries, public piers, pinniped haulout sites, species specific habitat and wetlands.

Delta Protection Commission GIS

<http://www.regis.berkeley.edu/dpcgis.html>

35 map layers, including wetlands, private lands, General Plans for Delta counties, airports and soils.

Access USGS: San Francisco Bay & Delta

<http://sfbay.wr.usgs.gov>

Includes waterflow, wetlands, water quality and land use. CH

OILED BIRDS CONT'D

Mexico. He did find some of the transmitters still attached to their harnesses, however, leading him to conclude that the birds had died and their bodies decomposed. From the pattern of retrieval of the bodies he did find, Anderson believes some rehabbed birds die soon after release while others succumb later from chronic problems caused by ingested toxins.

"We've always known that not all victims of oil spills make it," says the rescue center's Holcomb. "But we don't agree that if a bird is unaccounted for it is necessarily dead."

Dave Jessup, a veterinarian with Cal Fish & Game, agrees with Anderson that oiled birds may not survive as well as others but doesn't think the pelican study represents all spills and all rehabbed birds. He also points out that, particularly with an endangered species like the brown pelican, saving individual birds can be very important, whatever it takes.

Even if the birds aren't endangered, many such as Jessup feel we have a moral obligation — as the perpetrators of spills and other environmental problems — to help oiled wildlife. Others feel all that the rescue and rehab money would be better spent on wildlife habitat or population restoration projects. They think oiled birds should simply be euthanized, counted as "losses" from a spill, and included as part of the financial damages spillers have to pay.

"These birds are legal evidence we are required to document," says Jessup. "So it's not a question of whether we are going to pick them up, it's a question of whether we are going to pick them up and euthanized (because they probably won't make it anyway), count them or pick them up and try to help them."

Contact: Dan Anderson (916)752-2108; Jay Holcomb (510)841-9086 or Dave Jessup (916)326-0277 *LOV*



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