

## MEMORANDUM

### Dan Cloak Environmental Consulting

To: **Andria Ventura, Clean Water Action**  
**Sejal Choksi, Baykeeper**

From: Dan Cloak  
Environmental Technical Representative  
to the Clean Estuary Partnership

Subject: **Update on Environmental Technical Representative Activities**

Date: 28 November 2005

#### **Background: Stop and Think**

The Clean Estuary Partnership's Technical Work Group meets the first Wednesday of each month. Lately the agendas have become rather thin. The group didn't even bother to meet in October. Now the December meeting has been cancelled, too.

Meanwhile, Regional Water Quality Control Board staff promises to complete half a dozen TMDLs in the next year—not counting revisions to the mercury TMDL, which the State Board remanded September 7<sup>th</sup>.

The Clean Estuary Partnership seems, for the moment, stuck. Participants have openly questioned whether the Partnership is fulfilling its objectives. Changes in organization and priorities are being discussed.

Here are two reasons why:

First, many of the CEP's ongoing technical projects—and certainly the greater portion of its expenditures—aren't related to preparation of TMDLs. For example, the multi-box model won't produce results until after the TMDLs are due to be completed.

Second, the State Board's remand of the mercury TMDL has cast doubt on the CEP's overall technical approach.

Some CEP participants were harshly critical of the State Board's remand decision. They suggested the State Board's decision—which clearly cited the TMDL's technical and regulatory inadequacies—was politically motivated.

Political or not, the State Board's decision reflects differing assumptions about the appropriate response to “legacy” pollutant problems. Wastewater dischargers and Regional Board staff argued that lower discharge limits and more aggressive cleanup actions would not significantly change the rate of recovery or shorten the time needed to attain water-quality standards. In doing so, they relied on an oversimplified analysis, and they overstated the certainty of their calculations.

State Board staff, and then the State Board itself, in effect applied a different standard: Is the implementation plan as protective as it can reasonably be?

By applying this standard, the State Board rejected the Regional Board's argument that, because the Bay's beneficial uses are severely impaired—and because corrective measures are difficult and will take a long time—pollutant-reduction requirements should be less stringent.

Environmental and environmental justice advocates' victory before the State Board may or may not speed the Bay's recovery from mercury pollution. That recovery is subject to many unknowns and many uncertainties about mercury sources; rates of erosion, suspension, and export of Bay sediments; the relative rates at which mercury from various sources enters the food chain; effectiveness of control measures, etc.

However, the standard the State Board applied—which is a close corollary to the precautionary principle—could and should prompt profound changes to the CEP's technical agenda.

To date, most of the CEP's technical program has aimed toward obtaining a general knowledge of pollutant sources, transport, and environmental fate. CEP partners assumed this knowledge would be used to select clean up and control actions and to prioritize expenditures.

This is the conventional way of planning environmental compliance projects. The conventional approach assumes available resources are limited. In addition, it assumes most of the needed technical investigation will be completed before control measures begin to be implemented. The conventional approach uses models to predict how well and how quickly control measures will work.

By contrast, a precautionary approach assumes resources—while not infinite—are available from a number of public agencies and private parties who might be recruited as participants. Rather than prioritizing a limited number of control actions, a precautionary approach seeks to invent and refine pollution-control options which, rather than competing with existing options for limited funds, instead expand the effectiveness and reach of the overall program.

Importantly, under a precautionary approach, feasible control measures are implemented continuously, and their results are evaluated continuously. The whole ecological system is a real-world laboratory. Planning decisions are based mostly on the results of pilot or full-scale implementation in the field, rather than on modeling. This application of the scientific method is called “adaptive management”—or rather, it is what “adaptive management” should be.

Will the CEP now pursue TMDL implementation plans that show, with regard to controlling pollutants and reducing or mitigating pollutant impacts, that we have identified available options and are doing everything we can?

The current lull in technical activity may presage a shift in that direction. Stay tuned.

**Collaborative Planning for TMDL Implementation**

While discussing the mercury Basin Plan Amendment, representatives from BACWA, Baykeeper, and Clean Water Action agreed: We had all read the same language, and we had arrived at different interpretations of that language. There had been no “meeting of the minds” regarding the descriptions of certain actions and how those actions would be implemented following adoption of the BPA.

We need a process by which dischargers, advocates, and Water Board staff can reach a common understanding on how implementation will work.

In July, CEP staff compiled “policies and guidelines” for the CEP. The CEP’s goals were listed as:

- Establish a transparent public process to promote constructive collaboration.
- Assist the State of California to identify and adopt long-term, science-based strategies (including TMDLs/WQASs) that provide a reasonable assurance of attaining water quality standards.
- Reduce uncertainties and verify assumptions as part of implementing the strategies.
- Identify funding partners for strategy implementation.
- Prepare publicly-accessible explanations of impairments and strategies.

I suggested the following goal be added:

- Promote technical and policy consensus regarding the content of TMDLs and implementation plans.

Last April, Dave Tucker (BACWA’s representative and chair of the CEP Technical Committee) and I proposed to the EMB a process for “enhancing CEP participation in crafting Basin Plan Amendments and TMDL Implementation Plans.” The idea was to convene a small group including representatives of wastewater and stormwater dischargers, the Water Board, and environmental advocates to develop and review lists of implementation actions for each forthcoming TMDL. I proposed the initial discussions could be organized to prepare a table with the following format:

<b>Description of Action</b>	<b>How and when to be implemented</b>	<b>BACWA’s view of this action</b>	<b>BASMAA’s view of this action</b>	<b>Water Board staff’s view of this action</b>	<b>Environmental advocates’ view of this action</b>

Dave’s and my idea was to help Water Board staff prepare TMDL implementation plans that would be accepted by the various interested parties, thereby reducing the potential for challenges at the State Board or in the courts.

At a conference some months later I saw Ken Susilo, of Geosyntec Consultants, present a report on implementation of a TMDL for pathogens in Santa Monica Bay. There, stakeholders developed a list of potential control actions; then developed consensus ratings for the effectiveness (high, medium, or low) and for the implementation requirements (difficult, moderate, or easy) of each control action.

This “commit-pilot-consider” model used the following matrix to determine next steps for each control action:

**Implementation Requirements Rating**

	<b>Difficult</b>	<b>Moderate</b>	<b>Easy</b>
<b>High</b>	Pilot	Commit	Commit
<b>Medium</b>	Consider	Commit	Commit
<b>Low</b>	Consider	Consider	Consider

I summarized this decision-making methodology in an email to CEP participants.

See the update on the PCB TMDL, below, for examples of control actions to which either or both of these tables might be applied.

**Reducing Risks and Mitigating Impacts Due to Pollutants in Fish**

In August 2004, I proposed the CEP fund a project to investigate ways to address risks to human health associated with consumption of Bay fish. I recommended the CEP convene a project team including medical and public health experts and practitioners with experience providing health care in low-income and disadvantaged communities.

With BACWA’s leadership and the assistance of CEP staff, a Risk Reduction Work Group was formed at the beginning of 2005. CEP staff recruited participants from BASMAA, the California Department of Health Bureau of Environmental Health Services, from the California Office of Environmental Health Hazard Assessment, and from community-based nonprofit organizations with experience in public health outreach.

Initially, Work Group discussions tended to get bogged down in whether it was appropriate to consider actions beyond simply advising people to limit their consumption of Bay fish. OEHHA, in particular, noted that it would be difficult, if not impossible, to reliably identify individuals or groups who had been harmed by mercury in Bay fish. (Mercury exposure

can also come from commercial ocean fish, and health effects such as neurodevelopmental impairment can be caused by a variety of factors.)

In the resolution remanding the mercury TMDL, the State Board clarified:

...the San Francisco Bay and Central Valley Water Boards should investigate ways, consistent with their regulatory authority, to address public health impacts of mercury in San Francisco Bay/Delta fish, including activities that reduce actual and potential exposure of and mitigate health impacts to those people and communities most likely to be affected by mercury in San Francisco Bay-Delta caught fish, such as subsistence fishers and their families (emphasis added).

Subsequently, CEP staff led the group to consensus that:

...there are studies and/or health-protecting actions that can be taken now in the face of this scientific uncertainty to support the implementing of prudent and reasonable actions designed to reduce risk and address individual health and community health effects, rather than waiting until greater certainty is achieved before taking action.

CEP staff also identified a potential facilitator for a multidisciplinary panel (project team) to investigate and recommend actions dischargers and the Water Board could undertake.

At their October meeting, the EMB approved \$59,400 to facilitate the interdisciplinary panel. Work is expected to begin in early 2006. In addition, BACWA Executive Director Michele Pla reports that BACWA will be proposing that risk-reduction activities be incorporated in a region-wide Proposition 50 grant proposal.

The inclusion of risk-reduction language in the TMDL, the strengthening of that language in the State Board resolution to specify mitigation of health impacts—in addition to reduction of exposure—and the CEP's progress implementing this project are important first steps toward establishing a long-term discharger commitment to address the impacts of Bay pollutants on public health.

### **More on Mercury**

With the remand, the mercury TMDL is back in the hands of the Regional Board, creating an opportunity for the Regional Board to address two issues which, while not directly addressed in the State Board's remand resolution, could use additional work.

The first issue is the TMDL requirement for refineries to study the fate of mercury imported in crude oil. The specifics of this study were identified in a letter to refinery dischargers pursuant to Section 13267 of the Water Code. As defined, the study would examine air discharges from refineries, but lacks a specific requirement to compare estimated mercury outputs to the estimated inputs in crude oil ("mass balance").

The second issue is air deposition. At their October meeting, Regional Board members requested a review of staff's conclusions regarding air deposition. In preparing the TMDL, staff had decided not to pursue reductions in local air sources. Instead, the TMDL says that BAAQMD "should" conduct a local mercury emissions inventory and evaluate the effectiveness of control measures. However, there are potential Regional Board actions that could reduce air deposition and urban runoff loads that originate in local atmospheric emissions and wind-blown dust.

At Baykeeper's request, I also reviewed Regional Board staff's approach to revising the proposed target for mercury in bird eggs and the existing water quality objective for mercury in the Bay.

### **Diazinon and Pesticide-Related Toxicity in Urban Creeks**

Except for some discharges of treated groundwater, there are no NPDES-permitted point discharges to the Bay Area's urban creeks. (Some of the Bay Region's 39 municipal wastewater treatment plants discharge to tidal sloughs.) Pollution of the creeks is almost entirely due to discharges from storm drain outfalls.

Stormwater is also the principal source of mercury, PCBs, selenium, and other pollutants impairing the Bay.

Because controlling stormwater pollution is the only way to address these impairments, the TMDL and Basin Plan Amendment for diazinon and pesticide-related toxicity in urban creeks—which the Regional Board adopted November 16—provides an early gauge of how, and to what extent, the Regional Board will modify municipal stormwater NPDES permits to achieve TMDL goals.

As with those other pollutants, effective control of pesticide discharges would require substantial increases in the scope and intensity of municipal stormwater pollution prevention programs. For example, recent data show pyrethroids in creek sediments cause severe and widespread impairment of urban creeks. This new pesticide-related toxicity began despite the municipal stormwater dischargers' substantial expenditures on public education programs—including excellent brochures and handouts, gardening classes, and point-of-sale outreach materials.

Pyrethroids are typically applied by licensed pest control operators (although they are also available to consumers) and are often sprayed on building exteriors and sidewalks for control of ants. Municipalities have the power and authority to limit these uses, but so far the Regional Board has not required them to do so.

In approving the TMDL, the Regional Board opted for exceedingly modest changes to stormwater permits. Instead, the TMDL focuses on ongoing, voluntary collaboration with the state Department of Pesticide Regulation (DPR) and county agriculture officials to improve statewide registration and labeling of pesticides.

This collaboration is certainly necessary. As each new pesticide is found to damage the environment and human health and is then banned or restricted, the industry has the next generation ready to market.

The Regional Board is correct that DPR should do more to protect beneficial uses of our region's water bodies. However, the Regional Board's appeals would carry more weight if they fully exercised their own powers.

The ABAG-sponsored Urban Pesticide Committee and the CEP's Diazinon/Toxicity Work Group were the venues for discussions leading up to the Regional Board decision. In the Work Group, discussion focused on monitoring, and how the results of monitoring might trigger additional control actions.

As I advocated in that group, urban runoff pollution control actions should not be dependent on the results of monitoring. To do so undermines the basis of Section 402(p) of the Clean Water Act, which requires municipalities to implement pollution-prevention Best Management Practices to the "maximum extent practicable." Creating monitoring-based "triggers" for control actions effectively reverses the burden of proof and makes urban runoff pollution control corrective rather than preventative.

Because of the inherent difficulty in accurately sampling and characterizing urban runoff pollution, this burden of proof is likely to be met only after beneficial uses are widely and severely impaired—as is the current situation caused by pyrethroids.

In the end, Regional Board staff incorporated some of Baykeeper's, Pesticide Action Network's, and Clean Water Action's comments into a final draft of the pesticides BPA. At the November 16 hearing, the Regional Board further improved the BPA by removing staff's proposed language shielding stormwater dischargers from noncompliance if Bay area urban creeks continue to be toxic to aquatic life.

However, the question remains: Will the Regional Board use its considerable regulatory powers to aggressively reduce urban runoff pollutants which are impairing beneficial uses of creeks and the Bay?

Regional Board staff cited state law prohibiting municipalities from regulating pesticides, and they rejected our side's arguments that state law is trumped by the Federal Clean Water Act and USEPA stormwater regulations.

However, there is reason to be concerned that the Regional Board's status-quo approach to controlling pesticides will also extend to other stormwater pollutants in future TMDLs.

Since the creation of the National Pollutant Discharge Elimination System (NPDES) in 1972, the Regional Board has, for the most part, set numerical limits for end-of-pipe discharges and enforced those limits by reviewing the dischargers' monthly reports. The reports summarize concentrations of pollutants found via laboratory analysis of plant effluent.

Stormwater discharges were added to the NPDES in 1987. The stormwater permits are quite different from wastewater permits. The measure of compliance is not based on monitoring of discharges. Instead, permittees are required to reduce pollutant sources “to the maximum extent practicable.”

Validating that “maximum extent practicable” is being achieved would require evaluating each of the actions municipalities are mandated to perform, the level of implementation of each action, and the potential to improve. That is a considerably more complex task than simply comparing laboratory analyses of treatment plant effluent to the applicable numeric criteria.

Currently, Regional Board staff’s enforcement of the municipal stormwater permits is limited to spotty and belated review of dischargers’ annual reports.

### **The Storm on the Horizon: PCBs**

Under a Prop. 13-funded grant to the City of Oakland, Kleinfelder, Inc. sampled sediments in the public right of way in front of or adjacent to sites profiled as potential sources of PCBs. The sites were in the watershed of the Ettie Street Pump Station, which discharges to the Emeryville Crescent and was previously identified as having relatively high concentrations of PCBs in pump station sediments.

Of 59 samples, 48 exceeded California Department of Toxic Substances Control screening levels for human health. Investigators also stumbled upon a 55-gallon drum marked “PCBs” sitting outdoors, without secondary containment. CEP Program Manager Andy Gunther has emphasized that just one full drum of PCBs, if discharged to a nearby storm drain, could delay the Bay’s recovery for years.

This wasn’t a CEP project, but the results may, and should, have a profound effect on the Regional Board’s forthcoming TMDL for PCBs in San Francisco Bay.

Concurrent with the Ettie Street project, the CEP commissioned a “PCB Implementation Plan Development” project. Regional Board staff’s intended the project should examine the roles and responsibilities of municipalities (and potential responsible parties) for clean up of contaminated on-land and runoff conveyance systems and identify how municipal and state regulatory oversight and responsibilities could be merged into a coordinated implementation strategy.

The “PCB Implementation Plan Development” draft project report didn’t accomplish that. The draft report did make clear, however, that existing state and Federal programs cannot contribute much to identifying and cleaning up most sources of PCBs. Those sources include caulks and paints used on many industrial and commercial buildings constructed between the 1950s and the 1980s.

To reduce PCB loads to the Bay from urban watersheds, the Regional Board will need to make significant changes to municipal stormwater permits.

Regional Board staff's Project Report for PCBs was circulated for public review nearly two years ago. Since then, the CEP has pursued a number of projects related to fate and transport of PCBs: development of a multi-box model of the Bay, refinement and initial calibration of a food web model, sampling and analysis of near-shore Bay sediments, and preparation of a conceptual model/impairment assessment (CM/IA) report for PCBs in the Bay.

The results of these fate and transport studies may or may not be incorporated into the Board's final Staff Report and Basin Plan Amendment. Regardless, the predicted 100-year timeframe to achieve attainment of water-quality standards, and the 90-plus percent reductions in urban runoff discharges required to achieve that timeframe, are unlikely to be changed much.

The Regional Board's January 2004 Project Report outlines control actions aimed at achieving the specified reductions:

"We expect PCBs management and control actions within a three-tiered strategy that includes:

1. Cleanup of hotspots on land, in storm drains, and in the vicinity of storm drain outfalls;
2. Capture, detention, and treatment of highly contaminated runoff; and
3. Implementation of urban runoff management practices and controls that have PCBs removal benefit."

The Project Report continues:

"More specifically, tier one includes:

- On-land removal or control of PCBs sources that would otherwise discharge into the runoff drainage system;
- Removal of PCBs contaminated materials already within the urban runoff drainage system; and
- Removal or reduction of bioavailability of PCBs contaminated materials at localized discharge points of urban runoff drainage systems."

What actions could municipal stormwater dischargers take that would actually control discharges to the drainage system?

In July, after reviewing a report by the Santa Clara Valley Urban Runoff Pollution Prevention Program and comments by Fred Hetzel of Regional Board staff, I suggested the CEP pursue several projects to investigate and plan PCB cleanup actions, such as:

- Expanding stormwater industrial source control programs to incorporate the types of sites where PCBs are likely to be found and to expand inspections to include sources such as building paints and caulks.
- Developing methods to remove and remediate contaminated soils in public right-of-ways.

- Identifying industrial streets that could be narrowed and using the area removed from traffic lanes to build bioretention areas that could treat runoff from the remaining paved area.
- Accelerating the retrofit of existing paved areas by reducing or eliminating exemptions to the stormwater “C.3” requirements for new development and redevelopment.
- Establishing a program to control PCBs during building demolition.
- Establishing a program to remove or seal in place PCBs in buildings.

These are the types of actions that could have been assessed using the commit/pilot/consider model discussed above. Dischargers and other interested parties could have weighed in on their acceptability, and then Regional Board staff could have decided whether to incorporate them into a Basin Plan Amendment and eventually into stormwater permits.

However, the dischargers and Regional Board staff have apparently decided to move discussion of PCB TMDL implementation to a new venue outside the CEP—a series of meetings to plan a “municipal regional permit” (MRP) which would replace existing stormwater permits.

The baseline for the MRP will be the status-quo municipal stormwater permits.

### **Selenium in San Francisco Bay**

Prior to an August 10 roundtable discussion on the problem of selenium impairment of San Francisco Bay, the CEP circulated Regional Board staff’s *Project Definition for the San Francisco Bay Selenium Listing (Preliminary Review Draft)*.

The key passage in that document set the tone for the discussion:

Based on our present scientific understanding of inputs and selenium uptake into the food web, it appears that additional reductions from POTWs, industrial plants, and urban runoff in the Bay Area will not have an appreciable effect on achieving water quality standards for selenium **and will not be required** (emphasis added).

The cycling of selenium in the Bay, its uptake into the food chain, and the effects it may have on biota—alone or in synergy with other pollutants—is quite complex, even in comparison with Bay pollutants. There is plenty of room for further investigation and scientific debate.

The 303(d) listing itself is based on the human health risk of consuming certain diving ducks. Based on preliminary reading, this seemed a “borderline” listing because it is said the ducks have a disagreeable taste and are rarely eaten.

An exchange of emails in the days leading up to August 10 brought to light broader evidence of potential impairment, including effects on the reproduction of sturgeon and other bottom-feeding fish. At the meeting, staff from the US Fish and Wildlife Service and USEPA explained that the water-quality criterion for selenium was being revised downward.

As the meeting ended, a group of technical experts gathered in a corner of the room and discussed the significance of selenium inputs, uptake mechanisms, and speciation. (Having read many of their reports, and being no expert myself, I listened in a bit.)

I was struck by the contrast between the lively debate and investigative enthusiasm of the experts on the one hand, and, on the other hand, Regional Board staff's already-made-and-documented decision that municipal wastewater, industrial wastewater, and stormwater dischargers would not need to reduce their selenium discharges.

The ultimate test of any regulatory strategy is not whether it “makes sense,” but rather whether it achieves compliance with the applicable laws and regulations. Regional Board staff's peremptory decision that reductions in wastewater and stormwater discharges will not be required seems out of sync with the view that there is no *de minimis* exception to the Clean Water Act, i.e. that all feasible and reasonable efforts to reduce discharges—plus offsets—are required for the Regional Board to authorize continued discharge of bioaccumulative pollutants to an impaired water body.

### **Diazinon and Pesticide-Related Toxicity in San Francisco Bay**

In many ways, the October 31 CEP-sponsored roundtable on diazinon and pesticide-related toxicity in San Francisco Bay echoed the themes of the selenium roundtable. As with selenium, following public discussion of the available evidence, the presumption that “no reductions will be required” seemed less of a sure thing.

A notable piece of information from Dr. Kelly Moran: Although suitable methods for testing effluent are still in development, permethrin in “buzz-off” brand clothing, and other sources of that pyrethroid to municipal sewers, could create a toxicity problem in wastewater discharges. Apparently permethrin is persistent beyond the biological treatment capabilities of municipal treatment plants. Since permethrin and other pyrethroids are hydrophobic, this concern might be specific to deep-water dischargers who do not filter their effluent.

### **Closing Note**

Andria Ventura recently forwarded to me an excerpt from a presentation by the environmental consultant Fletcher Driscoll:

As the environmental field has matured, the relationships among the consultants, regulators and lawyers have become more dysfunctional, not less.... ...trust among these various groups is eroding in spite of the fact so much more technical and scientific information is now available to help us reach a consensus...

**The solution is to visualize the goals sought by the other parties under the constraints you impose on them and then take action to help them achieve success.**

In comments to the CEP's EMB, I suggested each of the parties involved in the TMDL process had a "bottom line" which defines an acceptable outcome.

For dischargers, the "bottom line" is to be able to achieve compliance with the resources made available to them. For Water Board staff, the "bottom line" is to get TMDLs and Basin Plan Amendments accepted by their Board, by the State Board, and by USEPA, while avoiding court challenges. For environmental and environmental justice advocates, the "bottom line" is to ensure options have been given fair consideration and everything that can reasonably be done to address the problem is being done.

I suggested we should all work together toward solutions that meet all of these "bottom lines." In my view, that "solution space" still encompasses a lot of interesting and unexplored territory.