

-----Original Message-----

From: Michael Rozengurt [mailto:rozengurt@earthlink.net]
Sent: Tuesday, March 13, 2012 12:43 PM
To: secretary@resources.ca.gov; Vinton, Joanne@DeltaCouncil;
rnorgraard@deltacouncil.ca.gov
Subject: Scan SF Univercity to Board Hearing

Dear Colleagues,

If in the recent past, I sent the attached revelations, please forgive me.

Cordially,

Michael Rozengurt, P.H.,Ph.D



San Francisco State University News Bureau

1600 Holloway Avenue • San Francisco 94132 • 415/338-1665 • New Adm. 467

#56

Contact: Rol Risska

November 19, 1987

FOR IMMEDIATE RELEASE

SAN FRANCISCO STATE SCIENTISTS TO TESTIFY AT WATER HEARINGS: HEALTH OF BAY FISHERIES SERIOUSLY THREATENED BY WATER DIVERSION

Excessive water withdrawals during the past decade have significantly reduced annual river and delta discharges into San Francisco Bay resulting in economic losses of \$2.6 billion due to declines in catch of striped bass, salmon and steelhead trout between 1965-86.

These water withdrawals—coupled with very low natural flows during extreme drought years such as 1976-77—have contributed greatly to the serious deterioration of the Bay's resources—especially its fish life.

"The Role of Water Diversions in the Decline of Fisheries of the Delta-San Francisco Bay and Other Estuaries," a technical report based on the previous work of San Francisco State scientists Michael Rozengurt, Michael Herz and Sergio Feld of the University's Paul F. Romborg Tiburon Center for Environmental Studies, will be the basis for testimony to be given during the fresh water inflow portion of the State Water Control Board Bay-Delta Water Rights Hearings beginning Nov. 23 and continuing through Dec. 1 at the Contra Costa Water District Offices in Concord. Rozengurt and Herz will testify.

Their work investigates the modification of fresh water inflow to the Delta and Bay which has occurred since the completion of the Central Valley and State Water Projects. It compares annual commercial and recreational catches of salmon, striped bass and shad, primarily during the pre-project period, with flows several years earlier. A key premise of the research is that flow has the greatest impact during the first seasons of an organism's life.

Results of the study reveal very high correlations between catch and annual and especially spring flows during the previous three to five years, and indicate the quantities of flow required to support optimal fish catches.

Despite the more than \$2 billion spent over the past 25 years on the evaluation and management of the Delta-San Francisco Bay ecosystem, the basic understanding necessary to preserve its health has not been achieved, the report states. Without a clear picture of the complex factors that influence the Delta and Bay living resources and water quality, management decisions have been unable to reverse the decline of resources.

SF State Scientists to Testify at Water Hearings 2-2-2

The Romberg Center research has focused on (1) providing in-depth evaluation of fresh water inflow to the Delta and Bay, (2) assessing the manner in which flow has been modified since the early part of this century (especially during the period following the completion of the major components of the Central Valley Project (CVP) and State Water Project (SWP), and (3) assessing the impacts of flow modification on the fishery resources of the system.

The focus of their most recent research is to use the results of the previous investigation on the modification of fresh water flow to the Delta and Bay to analyze the relationship between flow and commercial and recreational fish catches, especially striped bass.

The 304-page report includes sections on the relationship between fish catch and fresh water flow in estuaries and coastal zones, factors affecting salmon, striped bass and shad populations, and the relationship between flow fluctuations and the commercial and recreational catch of salmon, striped bass and shad.

The research emphasizes that the losses in water supply sustained by the river-Delta-Bay ecosystem results in losses, in millions of tons, of the organic and inorganic matter required to provide adequate ecological conditions for fish life.

Based on their findings, the scientists' report makes recommendations for water standards and criteria to safeguard fisheries' resources. The report also suggests a new type of water classification system which addresses not only water withdrawal needs but also the needs of the entire San Francisco Bay. Such a new system would better safeguard the river-Delta-Bay ecosystem, the scientists maintain.

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Editors: Michael Rozengurt and Michael Herz, co-editors of the report, are available for further comment. Copies of the report are available from the Romberg Tiburon Center: 415/435-1717, or contact the San Francisco State University Office of Public Affairs for assistance.

Cowan, Dillon@DeltaCouncil

From: Michael Rozengurt [rozengurt@earthlink.net]
Sent: Monday, February 27, 2012 1:39 AM
To: Vinton, Joanne@DeltaCouncil
Subject: reviews
Attachments: Review on President.doc

Review on the letter to President

rather diluted, and then can step in with you clear-cut proposal. Go for it.
Good luck.

D.Tolmazin Ph.D

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t o: Michael Rozengurt <mrozengurt@juno.com>

From: URL: http://www.ovi.ca E-mail: mcall@superaje.com

Dear Michael,

That is an immensely powerful yet compact statement of implications of the massive construction of artificial reservoirs in this century. The runoff lock-up have a series of implications for riverine and coastal ecosystems . The only comparable statement I had seen was for Hudson Bay where it was said that accumulative effects of hydroelectric dam construction in its drainage basin had lead to a 50% increase in winter runoff. The concomitant reduction in spring runoff, I hazarded in a popular paper, would influence ice breakup times, nutrient surfacing due to reduced entrainment, coastal water warming (ice reflects solar radiation), etc.

The implications of reservoir lock-up of runoff are complicated by deforestation (presumably speeding up runoff) and especially agriculture (presumably speeding up runoff and adding nutrients from fertilizers and pesticides). How do these daming, deforestation and agriculture interact? Would you be willin to publish these observations in Sea Wind, bulletin of Ocean Voice International?

Don McAllister

Don E. McAllister /& Canadian Centre for Biodiversity
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From: Don McAllister mcall@superaje.com
To: Michael Rozengurt mrozengurt@juno.com
Date: Mon, 28 Feb 2000 08:48:21 -0500

Subject: **Running on entropy: Some preliminary thoughts inspired by Rozengurt's 1999 Running on entropy.**

Thank you for sending your stimulating paper. I have read your paper with deep interest. It raises, as your earlier papers have, profound questions about the impacts of impoundment of rivers. Especially valuable is the calculation of truncation levels beyond which ecosystems will be severely impaired. Thanks for writing such as stimulating paper. It is a major contribution. I do hope that you continue in this line of research.

.Cordially, Don McAllister

Cowan, Dillon@DeltaCouncil

From: Michael Rozengurt [rozengurt@earthlink.net]
Sent: Monday, February 27, 2012 2:04 AM
To: secretary@resources.ca.gov; Vinton, Joanne@DeltaCouncil
Subject: letter to PRESIDENT
Attachments: letter.President.doc

Subject: Letter to the President
Date: Wed, 10 Jun 1998 14:42:09 EDT

May 23, 1998

The Honorable William J. Clinton
President of the United States
The White House
Washington, D.C. 20050

Dear Mr. President:

We thank you for the giant environmental step your administration has taken in sponsoring the National Ocean Conference (NOC) in Monterey CA on June 11-12. This crucial forum will have lasting impact if you use the opportunity to make clear that there is a vital connection between a naturally functioning watershed and the sustainable riches of its coastal zone. Over 500 billion dollars has been spent since 1970 to rid this nation of water pollution; at least as much will now be expended to improve the health and management of our watershed-coastal zone complex. It is still not well understood that watersheds and their coastal zones form a single complex ecosystem; damage to one reach is eventually seen in the other. We wish we could be at the June NOC to make this point. But as you gaze over Monterey Bay, where a huge river once cut a channel deeper than the Grand Canyon, be aware that all the natural aquatic ecosystems of California are in danger of disappearing along with their adjacent coastal zone resources. The MBNMS is not the only system in danger.

Northern California is presently struggling to save the "broken delta" of the Sacramento-San Joaquin rivers, while planning to withdraw even more water to satisfy the contracted "needs" of agriculture, industry and a burgeoning population. In the Southern California Bight, 26 major and some 150 minor waterways have been damned and depleted, leading to major declines in coastal resources. Massive efforts to severely reduce pollution coming from 15 million inhabitants and their industries have not brought concomitant resource recovery in this area. Similar water development schemes elsewhere have presented us with severe resource problems in the Colorado and Columbia river systems, Gulf of Mexico, and East Coast and Florida bays and estuaries.

For too long we have failed to understand the nature of this link, and have blamed a multitude of other sins (habitat destruction, pollution, overfishing, and, now, even global warming) for the obvious decline in our sea's resources. As those bright fellows Sir Isaac Newton and Albert Einstein taught, you can't get something from nothing! Although each new sin may compound our problems, without some remaining semblance of a naturally functioning watershed the coastal zone resources will continue to decline, costing our economy billions.

Even the now protected Monterey Bay National Marine Sanctuary (MBNMS) will not survive, and this fact will not change much by further scientific studies of pollution, overfishing, or other concerns not related to the overarching problem of fresh water depletion. We have been looking in the wrong place for the cause of the ocean's decline! It is time to focus on the critical link between watersheds and seas. It's the water that forged and strengthened this link over the past several thousand years.

Decades of careful study and experience has shown us this problem stems primarily from the cumulative effects of dam building and subsequent freshwater diversions to serve human needs.

A practical limit is diversion of more than 25-30% of the average natural freshwater runoff . Exceeding this amount has denied coastal waters of billions of tons of sediments, nutrients, oxygen, and other trace materials. These elements, along with the natural hydrological mixing and entrainment processes of Spring flushing, are essential to maintain even a small part of the formerly teeming coastal zone sustaining 90% of our most important fish and shellfish resources. Not every drop of water reaching the sea is wasted (contrary to the cries of water developers). The long-term, cumulative effects of runoff depletion on the delta-estuary-bay-coastal complex have just begun to receive wider attention. Future work deserves an integrated system approach that can only be accomplished by the wonderfully diverse talents brought together for your NOC.

Please raise the bar by challenging them to work in concert with other estuarine and freshwater stake-holders to research, develop and manage lasting solutions for all future generations.

These facts have long been apparent to us, are well documented globally and are clearly seen in ecosystems destruction in the former Soviet Union, including a shriveled Aral Sea, drastic increase salinity concentration in western Black Sea and entirely Sea of Azov, and 150 billion dollars in lost fishery catch in the Black , Azov, Caspian, and Aral Seas.

Elsewhere in Asia and the Middle East, the water supply crisis has advanced to the stage where the looming issue is "environmental security." This strategic aspect of water is now becoming more prominent in our daily news.

Mr. President, your trip west in June would be seen by us as a great success were you to call attention to the role played by runoff in maintaining the rich and abundant productivity of the nation's watershed ecosystem (river-delta-estuary-bay-coastal zone complex). Use this opportunity to announce initiatives to determine the appropriate division of this nation's fresh water, halting the cumulative effects that diversions have already had on formerly rich estuarine and coastal waters. Until watershed limits are determined in a comprehensive, integrated way we predict continued decline in renewable resources and further degradation in coastal water quality.

This fact will eventually result in even more serious consequences than just the "water wars" we are continually trying to avoid here in that continue to inhibit progress in understanding the bigger picture of the nature of water and its vital role in maintaining our priceless coastal zone.

Respectfully,

Irwin Haydock, Ph.D.; Aquatic Ecologist, Fountain Valley, CA Michael Rozengurt, Ph.D., P.H. (Oceanographer and Hydrologist). Together representing over 80 years of watershed-coastal zone science and management. Huntington Beach, CA.

cc: Honorable Vice President, Al Gore, Kathleen A. McGinty, Chair, CEQ; Senator Barbara Boxer, Senator Diane Feinstein, Congressman Sam Farr, Congressman Dana Rohrabacher

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From: Michael Rozengurt [mailto:rozengurt@earthlink.net]

Sent: Friday, February 24, 2012 3:55 PM

To: srosekrans@edf.org; Coolidge, Keith@DeltaCouncil; rrcollins@waterpowerlaw.com

Cc: secretary@resources.ca.gov; Vinton, Joanne@DeltaCouncil

Subject: Calfed. letter

average - a staggering 10 to 20% of all babies born. (Is this a future threat to the Owen's Valley population?). In general, since the 1970s the southern watersheds of the former U.S.S.R. have symbolized management's staggering ignorance of major Laws of the Universe (thermodynamics) which govern ecosystem sustainability (Rozengurt, 1993, 1994, Rozengurt and Hedgpeth, 1997). As a result, the past misguided search for short-term economic gain has not been rectified by an overhaul of the entire system.

Unfortunately, California's water management appears to follow the same path of the entire arid and semi-arid southwest "Sunbelt" where burgeoning water development is only slightly less ominous than that in the Black, Azov, and Caspian seas' watersheds (Rozengurt and Hedgpeth, 1989).

My colleagues and I determined for some Russian rivers over twenty years ago and, in the 1980s, for the Sacramento - San Joaquin rivers, that when annual water withdrawals exceed 30% (or 50 to 90% of normal spring runoff) then the estuary's natural functioning is largely destroyed or brought to the brink due to enormous cumulative water deficits and watershed desiccations by dams and diversions. Other examples, besides the Sacramento-San Joaquin river delta-San Francisco Bay-coastal ecosystem are: the Snake River/Columbia River and coastal zone; Florida's "Everglades," and Florida, Tampa, and Charlotte bays; the Nile River Delta; some 40 estuaries of the Gulf of Mexico, especially several in Texas; and the Chesapeake Bay (Halim, 1991; Robinson 1981; Rozengurt et al., 1987 a,b; Simenstad et al., 1992;).

This implies the following summary facts:

- (1) all these systems and the entire Central and South Atlantic and Western Pacific coastal waters have been deprived of many thousand millions of acre-feet of runoff that it is vital for their survival;
- (2) the remnants of residual or "regulated" flow often correspond to probability of occurrence an actual dry year or a chronic drought condition from the perspective of functioning of ecosystems regardless of wetness of the year; and
- (3) accumulative entropy (system agony, Second Law of Thermodynamics) is now a permanent feature of human-influenced of deltaic - estuarine- coastal ecosystems' regime.

The cumulative effect of these related processes eventually leads to the demise of the water body itself (for example, the Delta-San Francisco Bay system), the same as we would die of such a constant hemorrhage of our blood. In addition to destroying valuable fisheries, large-scale freshwater diversions have jeopardized the deltaic drinking freshwater intakes themselves due to an inexorable increase of brackish or salty water intrusion and made some formerly lush regions uninhabitable to living resources (example, **Aral seas, Owens Lake, Colorado and Nile Delta** and on and on).

In terms of relative scale, I believe that flow diversions dwarf both wetlands' losses and pollution as threats to the "health" of coastal ecosystems and their living marine resources.

This threat of continued excessive water diversions on the California water resources should be a primary focus of called. However, they have allocated no funds to address this problem and no mention is even made in their studies. [This same lack of recognition is reflected in the EPA's Environmental Monitoring and Assessment Program (MAP), and in USES water quality studies.]

I believe that CalFed should therefore be directed to provide the leadership in assessment of limitations in water development as it affects fisheries and other resources. Their immediate task

should be to review the full significance of the threat and to formulate plans based on natural sustainability and the environmental, economic, and societal compatibility of water development by different water users. This may halt trends apparent here and already realized in the despoliation of former Soviet Union's estuarine - marine ecosystems. Such work would be invaluable for alternative political, economic and ecological decision-making by California's administration.

I urge you to facilitate a more rational water policy based on the facts that:

1. California possesses only **28.5 MAF** on average of unimpaired runoff over a perennial period (60 years) in the Sacramento - San Joaquin watershed. This amount determines entirely the survival of the Delta - San Francisco Bay and the State's precious coastal resources;
2. the Sacramento - San Joaquin rivers' Spring runoff, the lifeblood of any river system, has already been reduced to **10 to 30%** of what once was around 11 MAF on average (spring unimpaired runoff as computed over 55 to 60 years)
3. Since 1955 the excessive water withdrawals have deprived the Bay over 600 MAF(million - acre- feet, or 720 cubic kilometers) of freshwater runoff or 100 and 500 times of the volumes of the Bay and Delta, respectively, and millions of tons of organic and inorganic matter, suspended sediment, oxygen, and etc.. These and other components of regime were left behind the dams and in water conveyance facilities.

According to universal physics, "**No One Can Get Something from Nothing.**" California's water management has already reached NOTHING. Any talk about "Restoration" of the Delta or Bay is a dangerous fallacy, or **reductio to absurdity** I appreciate this opportunity to comment on CalFed's ambitious but flawed report.

Sincerely,

Michael A. Rozengurt, Ph.D.,P.H. (Physical Oceanographer and Hydrologist)
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mrozengurt@juno.com

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Note: **1, 12, and 13** were added for the enclosed original text to highlight the nature of discussion.