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A FIRST LOOK BACK AT THE SAN FRANCISCO ESTUARY PROJECT

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I. INTRODUCTION

This paper presents an initial retrospective look at the San Francisco Estuary Project (SFEP) from the standpoint of the senior author, who was involved in the project as a consulting environmental analyst, facilitator of land use policies and goals for wetlands monitoring, and in an ongoing role in a project to strengthen watershed-based planning in the Estuary region.[2] While much of the paper is descriptive, we offer several observation and pose questions which we believe merit further examination in a full-fledged review of the SFEP.

The San Francisco Bay area is regarded by many analysts as the birthplace of coastal zone management. The Bay Conservation and Development Commission (BCDC), given its start by a coalition of active citizens and committed legislators, was created in 1969 to "stop Bay fill" and increase public access to the shoreline. But BCDC had neither the geographic jurisdiction or the management authority to capture the full range of issues confroint the Estuary. Thus, the San Francisco Estuary Project, to a large extent, represents a "second cycle" of coastal zone management that take into account not only management of the Bay edge, but also the full range of issues associated with both the Bay and Delta.

Section II of this short paper describes the Setting; Section III presents Program Initiation, and Section VI addresses Program Adoption. Then, Section V describes prospects for Program Implementation and Section VI presents Conclusions and Questions for Further Investigation.

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[2] In addition to the research findings and observations of the authors, we have relied heavily on two documents in preparation of this article: the *Public Draft of the Comprehensive Conservation and Management Plan* (August, 1992) and *The State of the Estuary: A Report on Conditions and Problems in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* (June 1992).

II. THE SETTING

One of the most ecologically productive, most stressed, and most politically active regions in North America, the San Francisco Bay/Delta estuary region embraces San Francisco Bay (including Suisun Marsh) and the Sacramento-San Joaquin Delta. It covers approximately 1631 square miles and is surrounded by twelve counties.

In many ways, the estuary supports the seven-and-a-half million people who live in these counties. It provides enough water to maintain 600,000 manufacturing jobs, 45,000 shipping jobs, and 51,000 agriculture jobs. Through its great beauty and recreational opportunities, the estuary allows the $3.9 billion/year tourism industry to thrive. And it sustains the commercial and sport fishing industries as well as the more than two hundred hunting clubs in the Bay and Delta. However, the estuary's importance is not specific to the twelve surrounding counties alone: it also provides fresh drinking water for twenty million Californians, two-thirds of the state's population.

The estuary is a habitat for a great deal of wildlife. Draining over forty percent of California's land, it is a wintering place for half of the birds migrating through the Pacific Flyway. More than one-hundred-and-thirty species of fish inhabit portions of the estuarine ecosystem.

Although BCDC has been very effective in controlling bay fill and ensuring that water-dependent uses have sufficient shoreline land, there are five other major classes of issues that are, to a large extent, still unresolved.

- Intensified land use
- Decline of Biological Resources
- Freshwater Diversion and Altered Flow Regime
- Increased Pollutants
- Dredging and Waterway Modification

Each of these issues helped motivate Program Initiation, and is described in more detail in the following section.

III. PROGRAM INITIATION

The San Francisco Estuary Project (SFEP) was created in 1987 as part of the National Estuary Program (NEP). The NEP, in turn, was modeled after a sort of template created by the Chesapeake Bay Program, an ambitious (and well-funded) initiative spearheaded by EPA to reverse decline of a national estuarine treasure.

As mandated by Section 320 of the Clean Water Act, the SFEP must create a Comprehensive Conservation and Management Plan (CCMP) which must contain recommended actions to restore and maintain water quality, maintain a balanced indigenous population of shellfish, fish, and wildlife, allow recreational activities in the Estuary, and protect the beneficial uses of the Estuary.

Sponsorship of the Project has been shared by the US EPA and the State of California, represented by the State Water Resources Control Board, the San Francisco Bay Regional Water Quality Control Board, and the Central Valley Regional Water Quality Control Board.

three bird species, and five mammal species have become extinct in the Estuary region. . . . As a result of these declines, federal and state governments have designated over 130 species of fish, insects, amphibians, reptiles, birds, mammals, and plants in the Estuary as deserving of special protection or monitoring."[5]

Wetlands

In addition to providing wildlife habitat, wetlands also "improve overall water quality in the Estuary, recharge groundwater, help control flooding, offer open space, provide recreational opportunities, and contribute many other benefits to people living in the region."

According to the June 1992 *State of the Estuary* Report, "Human development of the estuary basin has resulted in the loss or conversion of more than 500,000 acres of tidal wetlands. In the Delta, 97 percent of the 345,000 acres of historic freshwater wetlands have been converted to other uses, mostly farms. In the Bay area, 83 percent of the approximately 200,000 acres of historic tidal salt and brackish wetlands have been converted to other wetland types, particularly salt ponds, and to non-wetland uses." Although the rate of wetlands loss has decreased sharply since 1970, losses continue.[6]

Water Use

Freshwater inflow is a major determinant of environmental conditions in the Estuary. The volume and timing of freshwater inflow affect the Estuary's circulation and water quality; conditions for wildlife; production and survival of phytoplankton, and all life stages; and survival of aquatic species such as salmon, striped bass, longfin smelt, California bay shrimp, and starry flounder. The difficulties that the SFEP encountered in addressing freshwater diversion and altered flow regimes highlight the pressing need to reform California's labyrinthine water policy. Because the distribution and allocation of water affect every Californian, this issue has been the most difficult and controversial for the SFEP.

The rivers and streams of the Sacramento and San Joaquin watersheds carry about 40% of the state's freshwater, making the Sacramento-San Joaquin Delta the vital link between most of the state's supply and its demand for irrigation and municipal and industrial water. A vast network water projects controls water flows throughout the State. The two largest systems are the Central Valley Project and the State Water Project, but there are more than 7000 diversions. They cumulatively reduce the annual volume of fresh water entering the Bay by more that half during dry and critically dry years.

With the state's population expected to increase to close to 40 million people, still more demands will be placed on the Estuary. Currently planned water diversions by both local authorities and the State Water project will increase diversions in the Estuary by 1.1 million acre feet.

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5 Ibid., p.xi-xii.

6 *State of the Estuary*, p.110.

Studies undertaken by the Corps of Engineers and others forecast that between 1995 and 2005, an annual average of 8 million cubic yards of sediments is expected to be dredged in the Estuary. In an effort parallel to the SFEP (and involving many of the same players), a Long Term Management Strategy (LTMS) for dredging and dredged material disposal is being developed. The strategy will feature a mix of disposal, reuse, and may include beneficial reuse as well as ocean disposal and in-bay disposal at nondisbursive sites.

Land Use

The Bay/Delta estuary was not significantly impacted by human beings until the gold rush of 1848. Since then, however, environmental degradation has continued at a ruthless pace, increasing from decade to decade by the demands of an ever-growing population. Today more than one-half of the estuary basin's historical uplands have been converted to towns and cities.

The *State of the Estuary* report describes this conversion:

> Human development of the estuary basin has resulted in the loss or conversion of more than 500,000 acres of tidal wetlands. In the Delta, 97 percent of the 345,000 acres of historic freshwater wetlands have been converted to other uses, mostly farms. In the Bay area, 83 percent of the approximately 200,000 acres of historic tidal salt and brackish wetlands have been converted to other wetland types, particularly salt ponds, and to non-wetland uses. Development also has adversely affected non-tidal wetlands, particularly riparian forest and seasonal wetlands. Although wetlands loss has slowed substantially since the early 1970s, it continues.[7]

Forecasts prepared by the Association of Bay Area Governments (ABAG) suggest that by 2005, there will be an additional one million people living in the twelve counties surrounding the estuary, urbanizing about 725 additional square miles of agricultural, range, and forest land. Two classes of direct impacts associated with this intensified land use are loss or modification of wetland habitats and stream environment zones. An important class of indirect impacts is increased runoff of nonpoint sources of pollution.

IV. PROGRAM DESIGN AND PREPARATION

The institutions responsible for identifying and responding to these seven broad problem areas have the following management structure: at the top is the Sponsoring Agency Committee (SAC), which directs the Project's overall policy. Below the SAC is the main decision-making entity, the Management Committee (MC), which "approves Project activities and budgets and oversees development of the CCMP. Advising the Management Committee are the Technical Advisory Committee (TAC) and the Public Advisory Committee (PAC).

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7 Ibid.

The land use scenario developed from the General Plans of the Bay-Delta Region's twelve counties shows that the total area planned as urban use outside existing incorporated cities is 331,530 acres, an increase of 37 percent. Results are expressed according to 14 receiving water segments and the associated 34 watersheds. The study showed that direct impacts on wetlands and stream environment zones occur in every watershed containing these resources. Over 39,500 acres of wetlands may be potentially impacted. Moreover, of the 377,000 acres of stream environment in the 12-county study area, 28,000 acres are also subject to impacts of urbanization.

The construction of land-use scenarios for the Estuary region has presented, for the first time, an opportunity to examine the cumulative contribution of nonpoint source urban runoff to the levels of pollutants in the Bay and Delta. (For a complete discussion of the methods, findings, and policy implication of this study, see McCreary et al., 1992.)

To illuminate the technical aspects of the flows issues, the SFEP staff retained the services of Professor Jerry Schubel, Dean of Marine Sciences at New York University at Stony Brook. He convened a series of four Technical Workshops on Salinity, Flows, and Living Resources involving approximately thirty scientists and policy makers. The Workshops were designed to delineate areas of scientific agreement and disagreement, and to evaluate the response of estuarine biota to various conditions of salinity and flow. The meetings produced near-agreement on 10 management principals.

Some of the STRs (such as wetlands) went quite a distance in suggesting policy options, as did the study on Land Use Change. Others, such as Pollutants, were more narrowly confined to the technical issues.

Policy Development and Consensus Building

When the Characterization phase was winding down, an inter-agency team worked intensively between June and November 1991 to prepare a working draft CCMP, which it presented to the Management Committee in November 1991. Subcommittee input at this stage was fairly minimal.

The CCMP presents programs to address each of the seven management issues. Each element of the CCMP uses the following format:

Table 1: Structure of the Substantive Elements of the CCMP for the San Francisco Estuary Project

Plan Section	Scope
Problem Statement	Summary of findings based on STR; 2-3 paragraphs
Existing Management Structure	
Recommended Approach	
Actions	Who (which agency or group)? What? When (which year)?

In theory at least, the STRs and associated technical reports enabled all 100 participants in the SFEP to work from the same body of facts. The STRs summarized existing information and also identified gaps in knowledge (known as "giks") which are

Table 2: A Detailed Excerpt from the SFEP Comprehensive Conservation and Management Program[11]

ACTION: Prepare and implement watershed management plans that include the following complementary elements: 1) wetlands protection, 2) stream environments protection, and 3) reduction of pollutants in runoff.

Who: Local governments, Resource Conservation Districts, Regional Water Quality Control Boards, San Francisco Bay Conservation and Development Commission, landowners, and non-governmental organizations.

What: Incorporate in local General Plans watershed management plans which include the following complementary elements:

1. wetlands protection
2. stream environment protection, and
3. reduction of pollutants in runoff for each of the major watersheds that comprise the nine-county Bay Area and three-county Delta region.

. . .

When: 1993-1995

Ultimately, while the Land Use, Dredging, and Pollutants sections were adopted in full, there were two minority reports. The first, prepared on the subject of *Aquatic Resources,* was submitted by the Sierra Club, the Save San Francisco Bay Association, the Marin Audubon Society, and the Citizens Committee to Complete the Refuge/Golden Gate Audubon Society. The green coalition sought to insert strong language to convey the urgency of implementing flow standards to ensure that adequate freshwater coursed through the ecosystem in the spring and early summer months.

The second minority report was the *Wetlands Minority Report*, submitted by the Bay Planning Coalition, the Building Industry Association of Northern California, the California Farm Bureau Federation, and the Sacramento Metropolitan Chamber of Commerce. This coalition of farm and development interests, which was joined by local government in voting on the Wetlands Element, supported many of the specific wetland policies but felt that the CCMP did not do enough to recognize the interests (and imputed rights) of landowners. Both minority reports are included as appendices to the CCMP.

The CCMP was also transmitted to the Governor's representatives and the US EPA administrator's representatives. Concurrently, the CCMP went public. There were several initiatives to inform the public of the CCMP's contents. First, nine public meetings were held throughout the Bay area. Two or three members of the Management Committee presided over each hearing, introducing the CCMP and fielding questions from people in attendance. The meetings were recorded and the comments were compiled into a list of recommendations.

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[11] *Public Draft of the CCMP,* August 1992, pp.102-103.

Copies of the document were also distributed to many different individuals and groups throughout the Bay area. It was available at no cost upon request. Staff in the SFEP Public Outreach division culled suggestions from public letters and faxes and consolidated them into a list of recommendations. These recommendations and the ones recorded at the hearings were presented to various subcommittees who took them into consideration and in turn presented the best ones to the MC.[12]

V. PROGRAM ADOPTION

Program adoption is still pending. The Management Committee will have its final meeting on March 31, 1993. At that time, it is expected to adopt the Aquatic Resources portion of the CCMP.

After the Management Committee adopts the final CCMP, it will be sent to the Project's Sponsoring Agency Committee (SAC) for concurrence. The SAC will then forward the Plan to the Governor of California and the Administrator of the US Environmental Protection Agency. Formal implementation of the Plan may commence upon approval by the US EPA Administrator [the EPA has 120 days to respond] and concurrence by the Governor.

VI. PROGRAM IMPLEMENTATION

The Draft CCMP presented an array of five institutional arrangements for implementation, each with a different "Implementation Oversight Entity." Most of these options involve the interaction of the following four kinds of committees:

- Implementation Committee
- Senior Policy Committee
- Friends of the San Francisco Estuary (Friends)/Public Advisory Committee
- San Francisco Estuarine Institute/Technical Advisory Committee

Several options exist, and the MC is slated to make its final choice on March 31, 1993. SFEP staff envisions that running the implementation plan will be an Executive Council responsible for broad policy. Reporting to the Council will be an Implementation Committee which does hands-on implementation. Two subcommittees will report to the Implementation Committee: the San Francisco Estuarine Institute and the Public Review/Friends Committee.[13]

The Estuarine Institute "would be responsible for coordinating research and a comprehensive monitoring program for the Estuary. Information generated from the monitoring would be used to evaluate the success of CCMP activities. It would also be responsible for coordinating research to fill the identified data gaps. Its Board of Directors would serve as a Technical Advisory Committee to the Implementation Committee."[14]

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12 Marcia Brockbank. Interview, March 1, 1993.

13 Kathryn Ankrum. Interview, February 24, 1993.

14 *Public Draft of the CCMP*, August 1992, p.x.

groups focus on the narrower (but still important) questions that motivated the creation of BCDC--those of of preventing Bay fill and ensuring adequate public access to the Bay edge.

• The SFEP followed a logical sequence of steps from defining management issues, through technical characterization of those issues, to developing and seeking consensus on policy options.

• The SFEP helped elevate questions related to management and restoration of San Francisco Bay on the research agenda of major academic institutions in the Bay area, notably UC Berkeley, UC Davis, and Stanford.

• The Status and Trends Reports, on balance, represent a solid synthesis of available technical information. (The extent of peer review varied, however, with the reports.) The STRs and associated study of Land Use and the Regulatory Systems created a sound technical foundation for subsequent drafting of policies.

• The SFEP produced a CCMP that is in fact quite comprehensive both in the scope of solutions suggested and the diversity of agencies responsible for implementation.

Questions for Further Investigation

Several questions merit further investigation in a full-fledged review of the CCMP. They are summarized below.

How will progress towards implementation be measured?

Presumably the implementation oversight entity will handle this task. Most policies, however, lack specific thresholds or targets that can be used as yardsticks to gage the effectiveness of implementation.

Should the CCMP actions be ranked in order of priority?

Another related concern is that there has been no explicit effort to rank the priorities of the myriad actions called for in the CCMP. In times of tight budgets and staff shortages, this could undermine the efforts to implement the most important corrective actions.

Was the work of the committees structured to maximize the dual objectives of public participation and recruitment of the best possible technical information?

The roles of the TAC and the MC may have been structured more effectively than those of other subcommittees. On the one hand, the subcommittees provided a forum for interest groups with a special stake in an issue to voice their concerns. However, the subcommittees met mostly as the Status and Trends reports were being produced; they did not continue their work into the drafting of policies. Instead, staff members were largely responsible for drafting policies (with the exemption of those for Land Use and Flows). (Staff in this case were both SFEP staff housed at EPA and those based at the San Francisco Regional Water Quality Control Board.)

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