South Bay Salt Pond Restoration Project
Long-Term Restoration Planning

State Coastal Conservancy, California Department of Fish and Game, and U.S. Fish and Wildlife Service

Response to Summary of Recommendations from National Science Panel Meeting: April 20-21, 2004

Introduction

This report provides a response to the written summary of recommendations developed by the National Science Panel (NSP) after their meeting of April 20-21, 2004. The response was prepared by the Lead Scientist and the Executive Project Manager and accepted by the Executive Leadership Group and the Project Management Team.

Summary of NSP Recommendations

Briefly, the NSP made the following recommendations:

- Approach – identify the scientific approach for restoration and adaptive management.
- Role of Lead Scientist – ensure that the Lead Scientist is fully empowered and supported.
- Funding for Science – provide adequate funding for science (an estimate of 10% of the implementation budget [possibly $2.5 million per year] was suggested).
- Development of Science Plan – prepare a Science Plan that translates the project mission, goals, guiding principles and objectives into a scientific-based vision, a detailed research plan with a timeline and specific indices of performance.
- Adaptive Management – develop an adaptive management approach that is integral to the restoration plan and in which all stakeholders are invested.
- Other – ensure that the restoration plan is realistic and scientifically based; ensure that a broad array of disciplines is represented on the Science Team; ensure that the scientific context for the restoration plan is on an ecosystem scale; clarify the role of the Science Team; and increase the visibility of the Project.

Response to Recommendations

Approach

The response to the NSP recommendations can be summarized in the following tasks:

1. Develop specific goals for the scientific direction of the Project.
2. Develop scientifically-based formulations of the Project objectives.
3. Develop a Science Plan that will lead to meeting the science goals and ultimately the objectives of the Project.
4. Develop an Adaptive Management Plan for the Project.
5. Develop a budget for the science component of the Project and increase funding.
6. Increase the visibility of the Project, integrate science into the process, and inform the public of the science goals and findings.

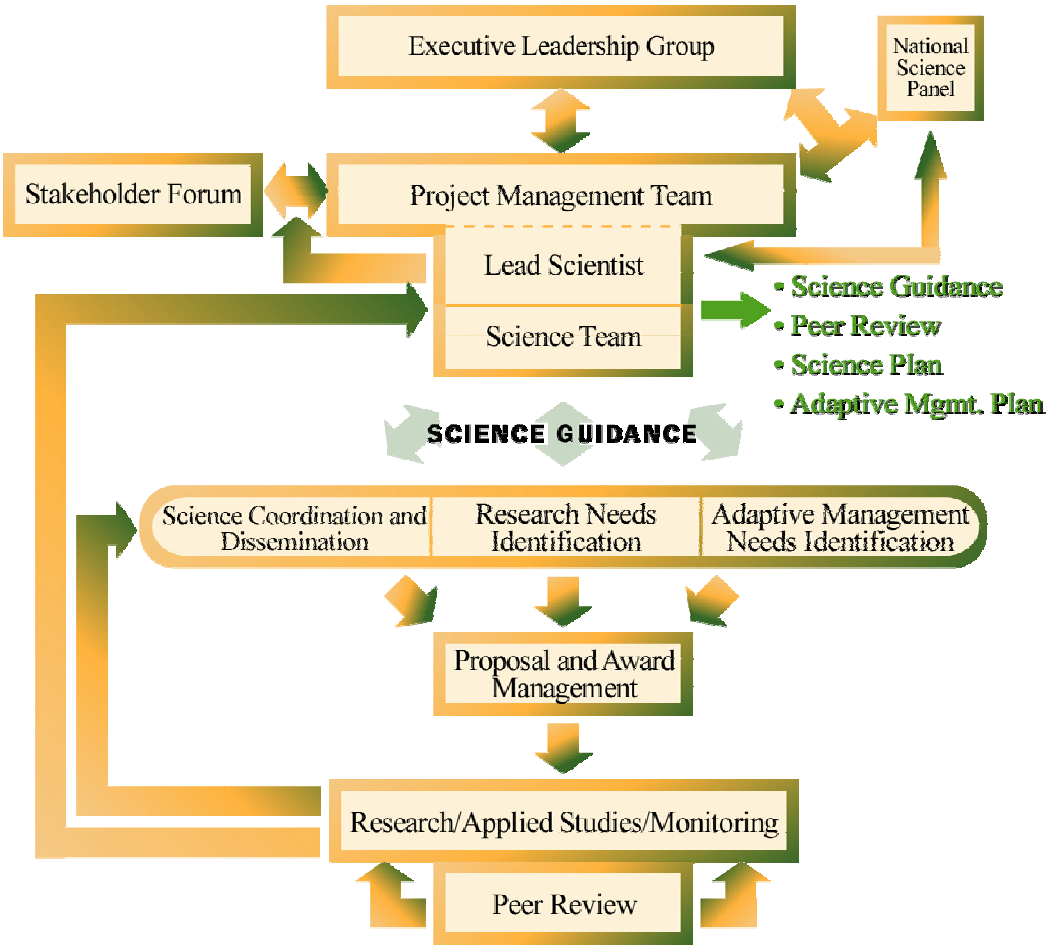
The issues that these tasks address are central to all large ecosystem restoration projects. All such projects have a Science Structure and Science Plan for addressing these questions. In reviewing the science structures for a number of other ecosystem restoration projects, it is clear that the science component of this Project—and indeed the Project itself—can succeed only if the science structure of the Project is tailored to address them. Figure 1 is the Proposed Science Support Structure for this Project.

This structure addresses a number of points raised by the NSP. Specifically:

1. Goals for the scientific direction will be developed by the Lead Scientist and Science Team and will be reviewed annually or more often based on input from researchers, the public, the PMT, and the ELG.
2. The Lead Scientist and other science managers will consistently refine the questions and data needed to answer questions through a competitive proposal-based applied studies process.
3. Adaptive Management will be implemented as an element of the science program. Applied studies needed for effective adaptive management of current and future phases of the restoration plan will be identified within this framework.
4. Peer review of applied studies will be a separate function of the structure.
5. The structure produces a continual feedback loop from Key Issues and Questions regarding what we know and what we don't know that are essential to achieving restoration objectives, to applied research proposal development, to data collection, and then back to reevaluation of the Key Issues and Questions.
6. Science coordination and dissemination are integrated into the structure. This function includes developing workshops and conferences for information collection, collation and outreach.

This structure will be implemented immediately. The scope of the effort will begin with available funding and will be increased appropriately over time as the Project develops (see discussion of Funding for Science, below). The remainder of the responses should be taken in the context of this Science Support Structure.

FIGURE 1
SOUTH BAY SALT POND RESTORATION PROJECT
SCIENCE SUPPORT STRUCTURE



Role of Lead Scientist

It is important to clarify the role of the Lead Scientist relative to the Project Management team. The Lead Scientist is an integral member of the SBSP Project Management Team. Decisions of the PMT are by consensus. In the event that consensus cannot be reached in the PMT, the Executive Leadership Group will make decisions, however, their decisions will be informed by input from both the Science Team and the National Science Panel.

The ELG and the PMT expect that the Executive Project Manager and the Lead Scientist will be effective partners throughout the life of the Project and that all necessary support will be provided to the Lead Scientist.

The Lead Scientist is working with the Science Team to develop specific goals for the scientific direction of the Project. The draft mission of the Science Team is "to develop

and implement a Science Plan that will result in the collection, synthesis and dissemination of the best available science and support the adaptive management necessary for achieving the objectives of the South Bay salt Pond Restoration Project." This mission will be achieved through successful development and implementation of the Science Plan and the Adaptive Management Plan.

Funding for Science

The Project is currently set up to fund the National Science Panel and the Science Team at an average of $200,000 per year during the planning process. In addition, from 2003 to 2005, the Project funded monitoring of the salt ponds and adjacent sloughs by USGS in the amount of $1.3 million. USGS is matching that funding with $840,000 of its own funds. This monitoring includes pond bathymetry, pond ecology, pond water quality and bird surveys, slough hydrology and morphology, slough ecology, and development of a landscape surface elevation map.

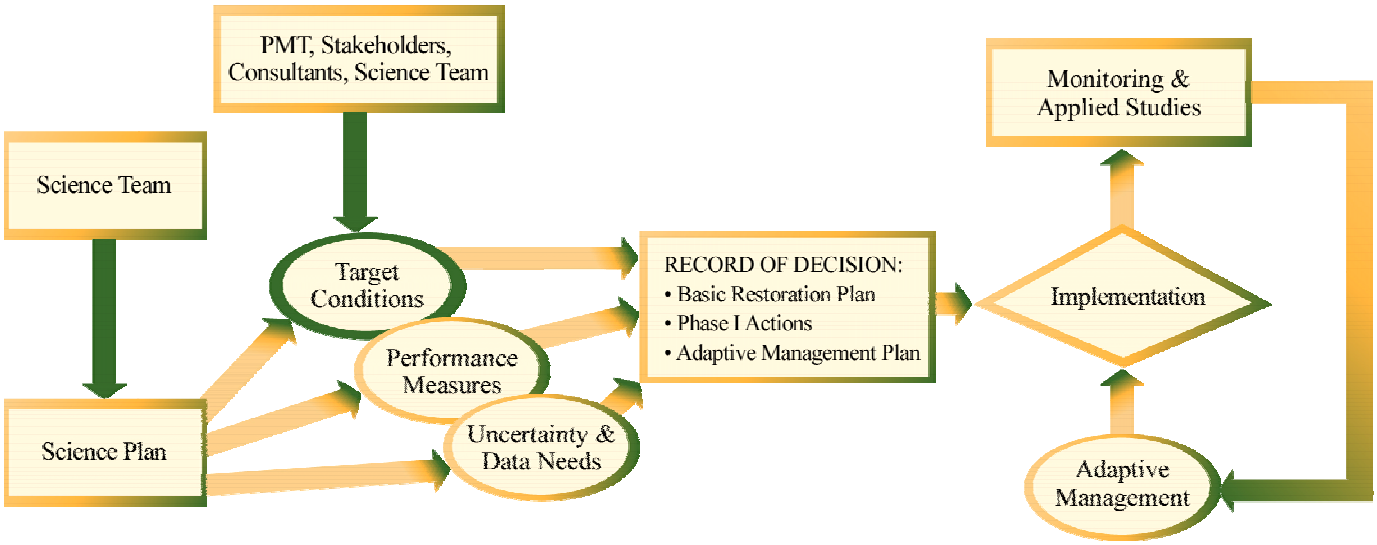
In a separate grant, the Coastal Conservancy is funding the Habitat Conversion Modeling effort by the Point Reyes Bird Observatory. The total grant is for $240,000 plus $48,000 of matching funds, between summer 2002 and March 2005. A LIDAR survey of the local topography has just been completed, and a detailed bathymetric survey of the South Bay will be completed this fall. The combined cost of these two surveys is approximately $450,000.

The Project is currently budgeted to provide funding for additional Science investigations at the level of $500,000 for the first year. That is an appropriate amount of funding to commence a proposal-based Science Program, but Project staff, including the Lead Scientist, have begun to meet with potential funders to solidify that initial level of funding and increase it annually. The ultimate level of funding will be developed over time commensurate with the scale of the Project. Regardless of the funding level, work will commence on developing a Call for Proposals that will focus on the key scientific issues that are being developed as part of the Science Plan. The Call may be released as early as October, 2004. Awards would be made in 2005 depending on the availability of funds, possibly as early as March.

Development of the Science Plan

The Science Team, led by the Lead Scientist, is preparing the Science Plan for the Project. The scientific goals for the Project and the scientifically-based objectives for the Project will be developed within the context of the Science Plan. The relationship between the Science Plan and the essential elements of the restoration process are shown in Figure 2.

FIGURE 2
RELATIONSHIP BETWEEN THE SCIENCE PLAN AND THE SOUTH BAY SALT POND RESTORATION PROCESS



The five elements of the Science Plan, recommended by the NSP, will be built around nine Key Science Issues central to achieving the Project Objectives. The Key Science Issues are those most central to the Project because they focus on these important management questions:

- How can we restore the South Bay ecosystem and habitats?
- How will the restoration impact current South Bay ecological conditions and people?
- How will human activities influence the restoration?

The Key Science Issues are:

1. Maintaining and improving functioning of the South Bay ecosystem
2. Incorporating knowledge of the sediment budget and sediment dynamics in restoration design
3. Restoring tidal salt marsh and associated habitats over the next 50 years at pond and pond-complex levels
4. Assisting the recovery of special status and other indicator species using the restoration of ecosystem function and tidal salt marsh and associated habitats
5. Managing salt ponds to protect migratory bird diversity and abundance
6. Predicting impacts of hydrological modifications from salt pond management and ecosystem restoration actions
7. Predicting pollutant effects on the biological functioning of the South Bay
8. Limiting the impact of invasive species and other nuisance species
9. Minimizing the negative ecosystem effects of human-related activities and infrastructure

These issues have been identified by the Science Team and form the first element of the Science Plan and literature syntheses for them address the second element. Information for the other three elements will be derived from the literature syntheses. The numbering of the issues is different from the Project Objectives. The two should not be confused. Their relationship is shown below.

Each literature synthesis will address what we know, what we don't know , and what we need to know about achieving the Project Objectives. In addition to reviewing the literature on subtopics specific to each Issue, each synthesis will:

- Introduce the importance of the Issue to the Project,
- Evaluate the level of certainty we have in predicting changes,
- Evaluate the tools or methods used to predict changes, and
- List performance measures for assessing progress toward Project Objectives.

The Project Objectives and their relevant Key Science Issues are:

Objective 1. Create, restore, or enhance habitats of sufficient size, function, and appropriate structure to:
1A. Promote restoration of native special-status plants and animals that depend on South San Francisco Bay habitat for all or part of their life cycles.

1C. Support increased abundance and diversity of native species in various South San Francisco Bay aquatic and terrestrial ecosystem components, including plants, invertebrates, fish, mammals, birds, reptiles and amphibians.

Issue 1. *Maintaining and improving functioning of the South Bay ecosystem.*

Issue 2. *Incorporating knowledge of the sediment budget and sediment dynamics in restoration design*

Issue 3. *Restoring tidal salt marsh and associated habitats over the next 50 years at pond and pond-complex levels*

Issue 4. *Assisting the recovery of special status and other indicator species using the restoration of ecosystem function and tidal salt marsh and associated habitats*

Issue 6. *Predicting impacts of hydrological modifications from salt pond management and ecosystem restoration actions*

Objective 1. Create, restore, or enhance habitats of sufficient size, function, and appropriate structure to:
1B. Maintain current migratory bird species that utilize existing salt ponds and associated structures such as levees.

Issue 5. *Managing salt ponds to protect migratory bird diversity and abundance*

Issue 6. *Predicting impacts of hydrological modifications from salt pond management and ecosystem restoration actions*

Objective 2. Maintain or improve existing levels of flood protection in the South Bay area.

Issue 6. *Predicting impacts of hydrological modifications from salt pond management and ecosystem restoration actions*

Objective 3. Provide public access opportunities compatible with wildlife and habitat goals.

Issue 9. *Minimizing the negative ecosystem effects of human-related activities and infrastructure*

Objective 4. Protect or improve existing levels of water and sediment quality in the South Bay and take into account ecological risks caused by restoration.

Issue 6. *Predicting impacts of hydrological modifications from salt pond management and ecosystem restoration actions*

Issue 7. *Predicting pollutant effects on the biological functioning of the South Bay*

Objective 5. Implement design and management measures to maintain or improve current levels of vector management, control predation on special status species and manage the spread of non-native invasive species.

Issue 8. *Limiting the impact of invasive species and other nuisance species*

Objective 6. Protect the services provided by existing infrastructure (e.g. power lines).

Issue 9. *Minimizing the negative ecosystem effects of human-related activities and infrastructure*

Syntheses of the literature for each Issue will be accomplished by Science Team members and/or other experts in the Issues. In addition, for some topics, working groups of experts will meet 2 to 3 times to provide input on draft syntheses. The PMT used this process for developing a synthesis on the mercury issue, and it worked very well. The

Science Plan components are expected to be completed according to the following schedule:

- Identification of Key Issues — July 22, 2004
- Completion of draft synthesis reports — September 15, 2004 (approx.)
- Working group meetings (certain issues only) — Sept. to Dec., 2004 (approx.)
- Completion of Science Plan — January 1, 2005 (approx.)

The Lead Scientist will provide the NSP with an outline of the Science Plan by the end of August. A preliminary draft of the Science Plan, with the extent of work that is completed by early October, will be prepared for discussion at the NSP meeting in October, 2004.

Adaptive Management

The Adaptive Management Plan for the Project is an essential component of the restoration effort. Its development will be led by the Lead Scientist and the Science Team and supported by the Project's consultants. However, the initial priority for the Science Team is development of the Science Plan. Development of the Adaptive Management Plan will depend on it. Therefore, the Adaptive Management Plan will be developed in early 2005.

The Lead Scientist will evaluate adaptive management plans for other large ecosystem restoration projects and summarize them for the Project Management Team and the Science Team. She will be assisted by the consultant team. Based on this evaluation and comments from the Project Management Team and the Science Team, an outline for the Adaptive Management Plan will be prepared by the end of September and presented at the National Science Panel's October 2004 meeting.

Other Recommendations

The other recommendations of the NSP will be incorporated into the Project as components of the points described above.