Long-Term Restoration Planning for Baylands in Alameda, Santa Clara, and San Mateo Counties, California

South Bay Salt Pond Restoration Project[1]
National Science Panel Meeting
April 20–21, 2004

Summary of Recommendations

1.0 INTRODUCTION

This report summarizes recommendations made by the National Science Panel (NSP) resulting from the second NSP meeting held on April 20-21, 2004. All six members of the NSP (see Appendix A) were present. In addition, members of the Project Management Team (PMT), the Science Team, the consultant team, and other stakeholders were present. A complete list of attendees is provided in Appendix A.

The NSP is pleased that many of the recommendations made after the first NSP meeting (July 10-11, 2003) have been carried out. A detailed response to the NSP recommendations from that meeting was prepared by the PMT and approved by the Executive Leadership Group (ELG). Implemented recommendations include:

a) A Lead Scientist was appointed who will act as the spokesperson for science and will be responsible for focusing the major scientific questions for the consulting team.
b) The science team prepared a draft science strategy document.
c) The various roles of all project components and the associated participants have been clearly articulated.

The primary purpose of this second NSP meeting was to review the draft Science Strategy prepared by the Science Team. In addition, the meeting included presentations on the Habitat Conversion Model being developed by Point Reyes Bird Observatory, as well as updates on various components on the South Bay Salt Ponds restoration project and other related projects. A list of materials provided to the NSP in advance of the meeting is included in Appendix B.

The following sections present the current recommendations of the NSP. These have been developed in response to the actions taken by the PMT and the Science Team that were presented both as documents prior to the meeting and during discussions during the two day meeting.

[1] The South Bay Salt Pond Restoration Project is that described in the Memorandum of Understanding of May 27, 2003 among the U.S. Fish and Wildlife Service, the California Department of Fish and Game, and the State Coastal Conservancy.

2.0 RECOMMENDATIONS

A. Approach

The NSP clearly views this project as RESTORATION rather than as a science project. Science is a tool to help understand what end results are achievable and a tool to help achieve the goals and objectives of the restoration project once they have been set (we offer suggestions on doing this later in the report). Accordingly, the NSP believes that it is essential to:

(1) identify the scientific basis for the restoration approach, design, monitoring and assessment within an adaptive management framework;

(2) develop and refine the fundamental questions of what science is needed to meet the needs of (1), such as the physical processes that control water movement through the pond landscape, existing levels of chemical contamination, and probable ecological outcome of different restoration approaches; and,

(3) guide a scientific approach to restoration considering all scales, from the comprehensive landscape mosaic of interconnected wetlands, intertidal mudflats and open bay down to the individual pond

B. Role of Lead Scientist

The NSP was pleased to see the appointment of the Lead Scientist, but would like to clarify and promote a more definitive role for this position as envisioned by the NSP. The NSP believes the Lead Scientist should take a proactive role in the planning process, rather than merely an advisory role. This is essential to ensure that appropriate planning of science tasks, integration of results from existing and future restoration, monitoring of restoration actions, and establishment of performance indices are carried out in a timely manner and contribute to successful restoration.

It is exceedingly important that the Lead Scientist take charge of the science done to support restoration, and be forceful in helping the PMT and the Executive Project Manager understand where and when useful scientific information can be applied. This applies across all functions of the project, including flood management and public access as well as habitats. The NSP recommends that the following steps be taken to empower the role of the Lead Scientist:

- The Lead Scientist should be a voting member of the PMT, and the Lead Scientist should have clear authority to determine priorities for the scientific objectives and process of the project.

- The NSP should work closely with the Lead Scientist, and the Lead Scientist should be the liason to the NSP, principally through the NSP Chair, and should feel free to contact any NSP member to obtain assistance with technical questions.

- The Executive Project Manager should rely on the Lead Scientist for advice with regard to science needs and the scientific process. They will need to form an effective partnership, supported by the NSP.

- The Lead Scientist needs to set the goals for science, work actively to lead the science team in working toward those goals, and represent the outcomes of their work in a broad sense. The Lead Scientist should facilitate presentation of the details from each Science Team member, but must be clearly in charge of where the Science Team is going and what it is doing.

- The Lead Scientist should be the senior author of the Science Plan, and responsible for integrating the diverse disciplines represented in the Science Team. Although various Science Team members may be responsible for formulating specific Science Plan components, the Lead Scientist is responsible for providing the broader scientific framework and balance for the overall Plan.

- The Lead Scientist should be recognized as responsible for the integration of science into the planning process. Others, including the Executive Project Manager and other PMT members, must support her in this role. Resources and staff support must be provided to ensure this role is effective.

C. Funding for Science

The NSP is very concerned that the amount of funding that has currently been allocated for science (about $500,000 a year) is inadequate to support the development of a 'scientifically sound' Plan. Given that this includes funding the Lead Scientist, the Science Team, and the NSP, few funds remain for actually conducting the studies and gathering essential information that provide critical scientific input to development of the restoration alternatives.

Based on the size of the project and the uncertainties associated with the system, the NSP recommends a substantial increase in the funds allocated to science. The NSP estimates that over the long-term ~10% of the total project budget, or about $2.5 million per year would be necessary. The NSP recommends that the Science Team should evaluate the level of funding adequate to support science needs in the near term and long term related to the Science Plan (see below). These specific recommendations should be provided to the NSP, the PMT and the Executive Leadership Group. If necessary, additional funding should be requested from the project sponsors, but any proposal for additional funding should be well thought out, including an analysis of how it would be allocated and the anticipated benefits of the increased investments.

D. Development of Science Plan

The original intent of the NSP was that the Science Strategy 'establish a scientific framework and guide development of information that feeds into the restoration planning and execution process'. The current draft of the Science Strategy (4/4/04) does not serve this purpose largely because it: (1) largely addresses the constraints on restoration processes rather than the scientific rationale underlying predictions and expectations of restoration; (2) is not linked to milestones in the restoration planning and execution process; and, (3) is not directly based on the project objectives. The project objectives were determined by a stakeholder process and it is now necessary for the Science Team to draw up a supporting science plan that will ensure a successful restoration. This might be seen as a scientific "road map" between the objectives and the restoration

Rather than work to finalize the current Science Strategy document, the NSP recommends the development of a Science Plan that translates the project mission, goals, guiding principles, and objectives established for the project into a scientific-based vision, a detailed research plan with a timeline and specific indices of performance. This will set the stage for the relationship between science and restoration actions over several decades that will be essential for this restoration to succeed. The Science Plan should address both the near-term and long-term relationship between science and restoration planning and execution. The Plan should articulate and justify the primary scientific questions that arise from the goals. Most questions in the existing draft are very detailed in nature: instead, we recommend taking a hierarchical approach, with broad questions listed in priority order, followed by examples of detailed questions nested within the broad ones.

Development of the Science Plan should be guided directly by the Lead Scientist. The NSP anticipates that it should be completed approximately two months after receipt of these recommendations. The Science Plan vision should not be constrained by the amount of money currently allocated for science (see 2.C). The Science Plan should provide justification for and promote additional funding for science in a broad sense, perhaps using illustrations such as the cost of a few high priority specific-question studies, and it should include budget estimates for long-term science needs as a separate section.

The NSP envisions that the Science Plan would be a concise document supported by scientific references and citations. The following elements should be included in the Science Plan:

1. Clear scientific objectives
   Specify and briefly justify a few broad questions that will drive the science for years ahead. These must be set in the context of the restoration goals and objectives.

2. Summary of the state of knowledge surrounding the project objectives, identification of key scientific uncertainties, and potential constraints on project performance
   This section should consider the scientific basis for the desired outcomes of the restoration using knowledge from existing projects, from other studies, and from similar efforts in other areas. In addition, those issues that may place constraints on planning to meet the objectives, and the identification of key scientific uncertainties associated with them, need to be clearly identified. This section supports the identification of science objectives and broad questions in #1.

3. List of performance criteria that can be used to assess progress towards restoration objectives
   These may be used to guide the selection of potential restoration scenarios, to assess tradeoffs among project objectives, and as performance measures during project execution.

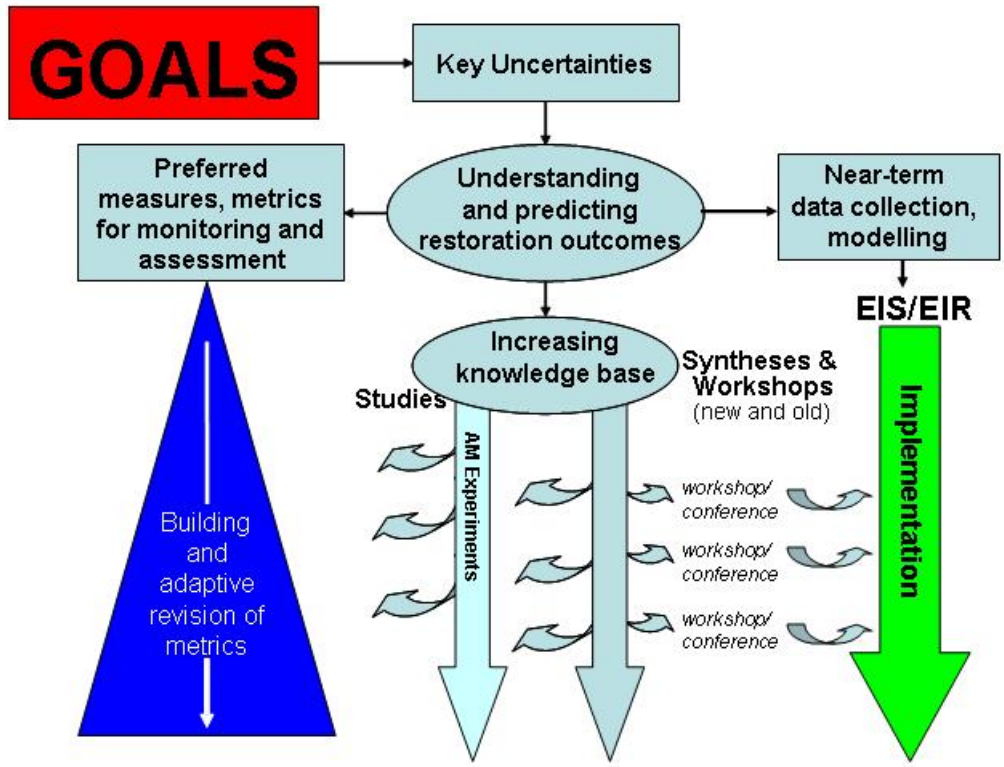
4. Proposal for the development of new information to be gained during the planning and execution phases of the restoration
   Such a proposal would be based on syntheses, data collection, experiments, monitoring, and clearly explain how it could be used to test or refine predictions. This might include concepts for adaptive management experiments, research and monitoring studies.

5. Assessment of the predictive tools currently available to support restoration planning and execution over different landscape scales
   This assessment should encompass both their individual and cumulative advantages and limitations for supporting various aspects of the restoration, and identification of major gaps in current predictive capabilities. This assessment should be broad in scope and consider, for example, conceptual, statistical quality control type models, box models, as well as three dimensional transport-reaction models. It should be equally broad in landscape terms, including all scales from site to landscape, with particular emphasis on interactions of restoration sites and among sites and the Bay under different restoration alternatives.

Figure 1 outlines the NSP's vision for how interactions among the elements of the Science Plan should shape the long-term scientific program. While it doesn't show all the necessary interactions that will be important to making restoration, it illustrates how the types of information needed might change over time. Each section of the Science Plan should identify scientific needs and uncertainties which can be addressed prior to EIS/EIR (likely a limited list) and those which will require longer term investment.

The draft Science Plan should be completed within two months of the submission of these recommendations in order to provide value to the ongoing planning process. The NSP members will review and provide comments on the Science Plan prior to their next meeting.

Figure 1. Outline for Development of a Science Program to Support Restoration Planning and Execution.



E. Adaptive Management

The adaptive management process must begin immediately in order to take full advantage of what can be learned during implementation of the Interim Stewardship Plan (ISP), as well as to help shape the planning process. All stakeholders should be invested in the adaptive management approach, and the PMT should ensure that adaptive management is fully integrated into all aspects of restoration planning and execution. Additional new knowledge is critical for successful restoration, but that knowledge will not be utilized effectively without an explicit feedback loop to those involved in executing the restoration itself. The adaptive management plan must consider mechanisms for communicating new science results, on a frequent basis, to restoration managers and practitioners.

The NSP recommends that the Lead Scientist develop an outline for an adaptive management approach. The approach should take into account the results of other restoration efforts, and should utilize existing opportunities for learning within the system.

The adaptive management element of the Plan should have a South San Francisco Bay **system** level focus, which could be bounded in terms of elevation, for example, by the MLLW and the 100 year floodplain across the broader South Bay landscape. The Plan should examine multiple scales, where some ecosystem elements must be considered in a larger context as necessary, and other important processes operate at much smaller scales.

The NSP would like to review the adaptive management outline at the next NSP meeting.

F. Other Recommendations

The NSP also has the following recommendations:

- The NSP is concerned that the project goals and objectives do not appear to have an ecological, anthropological or historical basis. The current restoration objectives seem to be a summary of stakeholders wishes to have a system which provides all the benefits they desire and absolute control over constraints and trade-offs on restoration performance. Scientifically this is simply not achievable and as such the goals and objectives provide little guidance to the restoration effort. The PMT must revisit these objectives and give them a more realistic focus, with boundaries of acceptable conditions, if the restoration is to succeed.

- It is clear that major opportunities for the well being of the community may be missed by neglecting to adequately anchor the restoration in either a broad historical context or a context that provides an environmental setting for the Bay Area community at large. These are difficult, yet important, questions. Thus it is important to have a broader array of disciplines involved in the science effort possibly including an anthropologist, a natural resources economist, an environmental historian, and/or a sociologist.

- The Lead Scientist is responsible for ensuring that the scientific context for restoration planning and execution is at the ecosystem scale, and considers both issues beyond the immediate project footprint and the long-term dynamics of system structure and function. The focus of the scientific approach should be in support of restoration, rather than the impediments to it.

- The role of Science Team members in development of technical work should be clarified, and this should be kept separate from their review role. In some cases, both internal and external review processes may be necessary.

- The Lead Scientist, as well as others within the Science Team, needs to increase the visibility of this project in the international scientific community by making presentations at conferences. Members of the NSP will be pleased to provide recommendations on appropriate venues.

3.0 NEXT MEETING

The next NSP meeting has been scheduled for October 12 – 13, 2004. This meeting will focus on the following items:

- Adaptive Management (review of draft outline)
- Initial Concepts for restoration alternatives
- Scientific presentations based on the key scientific gaps and uncertainties, and important tools to address science needs as identified in the Science Plan.

It will also include brief consideration of the final Science Plan (draft to be addressed by NSP between meetings) and some discussion of project goals and objectives as necessary.

The NSP Chair will be in frequent contact with the Lead Scientist prior to the next meeting, will coordinate the NSP review of the Draft Science Plan, and will work with the Lead Scientists to develop the agenda for the October meeting.

Appendix A

List of Attendees
National Science Panel Meeting
April 20-21, 2004

National Science Panel

Denise Reed (Chair)	University of New Orleans
Charles (Si) Simenstad	University of Washington
Sam Luoma	USGS and CA Bay-Delta Authority
Michael Erwin	USGS & University of Virginia
Jerry Schubel	Aquarium of the Pacific
John Teal	WHOI & Teal Ltd.
Jorg Imberger	University of Western Australia

Science Team

Lynne Trulio (Lead Scientist)	San Jose State University
John Takekawa	USGS
John Calloway	University of San Francisco
Ed Gross	Consultant
Jessie Lacy	USGS
Fred Nichols (retired)	USGS
Jim Cloern	USGS
Mark Stacey	University of California, Berkeley
Mark Marvin-DiPasquale	USGS
Dilip Trivedi	Moffatt & Nichol
Nils Warnock	Point Reyes Bird Observatory
Bruce Herbold	USEPA
Cheryl Strong	Point Reyes Bird Observatory

Project Management Team

Steve Ritchie	Executive Project Manager
Amy Hutzel	Coastal Conservancy
Carl Wilcox	California Dept. of Fish & Game
John Krause	California Dept. of Fish & Game
Clyde Morris	USFWS/Refuge
Nadine Hitchcock	Coastal Conservancy

Executive Leadership Group

Sam Schuchat	Coastal Conservancy

Consultants

Mary Selkirk	Center for Collaborative Policy
Michelle Orr	Philip Williams and Associates
Phil Williams	Philip Williams and Associates
Ron Duke	HT Harvey and Associates
Lisa Hunt	URS Corporation

Others

Nadar Nur	Point Reyes Bird Observatory
Sandy Scoggin	SFBJV
Susan DeVico	
Dan Bruinsma	City of San Jose
Arthur Feinstein	Golden Gate Citizens Committee
Chindi Peavey	SMCMAD
Briggs Nisket	Save the Bay
Kristen Strur	City of San Jose
John Brosnan	SF Bay Area WRP
Jen Jackson	Save the Bay
Caitlin Sweeney	Bay Conservation and Development Commission
Beth Dyer	Santa Clara Valley Water District

Appendix B

List of Review Materials
National Science Panel Meeting
April 20-21, 2004

Most review materials can be found on the project website at:
http://www.southbayrestoration.org/Events.html#natscipanel

1. Project Maps

2. Mission, Goals, Guiding Principles, and Objectives

3. Background on Habitat Conversion Model

4. NSP Recommendations Report from July 10-11 meeting, and PMT Responses

5. Science Strategy and Conceptual Model

6. Stakeholder Assessment Executive Summary (with Organizational Structure)

7. Annual Project Report and Future Project Schedules

8. Read-aheads for Updates

    - USGS Data Collection
    - Initial Stewardship Plan
    - Eden Landing
    - Lower Guadalupe River
    - Pond A4
    - Alameda Creek
    - Bair Island