

**BEL MARIN KEYS UNIT V  
CONCEPTUAL WETLAND RESTORATION PROCESS  
ISSUE AUDIT MEMORANDUM**

September 28, 2001

From: Jones & Stokes

RE: Findings from Stakeholder Interviews

**I. INTRODUCTION**

In early 2001, the California Coastal Conservancy (Conservancy) purchased the nearly 1,600-acre Bel Marin Keys Unit V (BMK-V) property, located in southeast Marin County, with the intent of restoring the site as a wetland. Since the Hamilton Army Airfield wetland restoration project is in final design, the Conservancy is seeking to integrate the two projects into one large wetland restoration project. The Conservancy, in collaboration with the U.S. Army Corps of Engineers (Corps) and the San Francisco Bay Conservation Development Commission, retained a consultant team led by Jones & Stokes to assist in identifying habitat restoration goals and objectives, key constraints and opportunities, and three project alternatives, including a preferred alternative. Upon completion of this process and appropriate environmental documentation, the Conservancy will coordinate with the Corps to seek a post-authorization change to include the BMK-V parcel as part of the Hamilton Wetlands Restoration project.

To initiate this process, the consultant team conducted interviews with public agency staff and technical consultants who have actively participated in San Pablo Bay wetland restoration efforts or have knowledge of the BMK-V site. The interviews were structured to 1) help clarify overarching goals and objectives for the restoration of the site; 2) identify specific technical site-specific issues requiring resolution; and 3) create an effective public outreach process for the project. The results of these interviews have been synthesized into this Issue Audit Memorandum (Memo).

The Memo is divided into four sections, with the first section being this *Introduction*. The second section, *Scope of Assessment*, details how the interviews were conducted. In the third section, *Analysis of Findings*, we present central design questions that were identified during the interviews and summarize interview responses related to overall goals for the project, site-specific technical questions, and recommendations for an effective planning process.

**II. SCOPE OF ASSESSMENT**

As described above, Jones and Stokes interviewed the staff of government organizations and technical consultants that have specific experience and expertise relevant to the proposed project. Table 1 identifies the names and corresponding organizations of individuals who were able to participate in the interview process. Unfortunately, the invited representative from the California Department of Fish and Game was unable to participate due to time constraints.

**Table 1: Stakeholders Interviewed for the Situation Assessment**

<b>Name</b>	<b>Organization</b>
Jennifer Barrett	City of Novato
Bob Forsyth	Bel Marin Keys Planning Advisory Board
Tom Gandesbery	Coastal Conservancy
Steve Goldbeck	SF Bay Conservation & Development Commission
Mark Helvey	National Marine Fisheries Service
Ron Keith/Chuck Krause	Marin/Sonoma Mosquito Abatement District
Marge Kolar/Bryan Winton	U.S. Fish and Wildlife Service - SF Bay Refuge
Al Petrie	Las Gallinas Sanitation District
Dave Plummer	State Lands Commission
Tom Selfridge	Novato Sanitation District
Craig Tackaberry	Marin County Flood Control District
Carmen Thomas/David Wooten	U.S. Fish and Wildlife Service – ESA/BRAC

In addition, the Conservancy retained a number of technical consultants to share their expertise in this process (Table 2). These consultants possess intimate knowledge of the BMK-V site and/or specific biological/hydraulic processes that are critical to successful wetland restoration.

**Table 2: Consultants Interviewed for the Situation Assessment**

<b>Name</b>	<b>Company</b>
Al Cornwell	CSW/Stuber-Stroeh Engineering Group
Steve Granholm	LSA Associates, Inc.
Rachel Kamman	Kamman Hydrology & Engineering, Inc.
Michelle Orr	Philip Williams & Associates
Eric Polson	Consulting Civil Engineer to Corps of Engineers
Stuart Siegel	Independent Hydrologist
Dilip Trivedi	Moffet & Nichol
Philip Williams	Philip Williams & Associates

Jones & Stokes conducted interviews by telephone over a three-week period between late August and mid September. A few interviewees provided their responses by e-mail. Jones & Stokes spent between 45 minutes and two hours interviewing each respondent. The interviewer explained that specific viewpoints or perceptions would not be attributed to anyone by name, position, or organization, and we have followed that protocol. The list of questions used to structure the interviews was provided to participants prior to the interviews (see Attachment A). The questions cover a range of topics under four broad categories: 1) general restoration plan goals and objectives, 2) BMK-V site specific questions, 3) specific BMK-V restoration plan issues, and 4) public participation in the planning process. Some questions were open-ended while others required respondents to provide a direct answer.

### III. ANALYSIS OF FINDINGS

#### A. Central Design Questions

This section summarizes eight key design issues that were repeatedly identified by interviewees.

1. Integration of the BMK-V property into the Hamilton Wetlands Project presents an incredible opportunity to restore significant and much-needed wetland habitat in the San Pablo Bay. A majority of the respondents agreed that the most suitable habitat mix for the site should consist of approximately 80 percent tidal marsh and 20 percent seasonal wetland mix; the same as proposed in the design of the Hamilton Restoration Project. However, with the larger combined site, it is possible to include an even greater acreage of tidal panne, upland, and freshwater habitats as well. A few respondents stressed the need to determine the habitat mix for this site based on a larger San Francisco estuary-wide perspective.
2. Providing adequate flood protection to the existing Bel Marin Keys property owners will be a significant challenge. All respondents emphatically stressed that the existing inner levees surrounding the Bel Marin Keys south lagoon will have to be reinforced (i.e., strengthened and raised) in order to provide adequate flood protection. In addition, the issue of how the existing Marin County flood control easements on the BMK-V site are affected by the proposed wetland must be resolved.
3. The hydrologic relationship and interaction of both Novato Creek and Pacheco Pond on the proposed wetland site needs to be extensively studied as part of this restoration process. A majority of respondents stressed that these interactions are the *most critical element* of the design process and, thus, warrant extensive analysis. Some participants stressed that providing a breach along Novato Creek might help scour the creek and reduce sedimentation. It was also stressed that, to reduce the possibility of mosquito production, the channels within the site must be engineered and constructed in a manner that enhances flushing.
4. Protection and/or satisfactory relocation of various existing infrastructure on the site must be guaranteed. In particular, the Novato Sanitary District owns and operates an outfall pipeline that runs between the Hamilton and BMK-V/State Lands Commission parcel out into the bay and a dechlorination facility that is located approximately 1,300 feet west of the outboard levee. The outfall pipeline and associated facilities must be protected from construction impacts, settling, and offshore activities as the site elevation is raised to wetland design criteria. In addition, two electrical transmission lines exist on the site. The smaller line provides power to the small pump station located along the outboard levee. PG&E operates and maintains a high voltage power transmission line across the northern section of the site that includes approximately four tower bases that will require continued maintenance easements. The tower bases are not designed to withstand daily tidal inundation and the height of the overhead lines might present navigation problems along Novato Creek.

5. The restoration project must be designed in a manner that minimizes long-term operation and maintenance costs. Acknowledging that the project will be designed and constructed by different entities than those that will be charged with the long-term management of the site, respondents stressed the need for the creating a system that mimics natural processes and, thus, minimizes long term operational costs and future maintenance requirements.

6. Cutting channels through the outboard marshes and removing the outboard levees to restore tidal action to the site will directly impact some salt marsh habitat. Two endangered wildlife species, the California clapper rail and the salt marsh harvest mouse, may be present in the marsh. In addition, winter-run chinook salmon, Central California coast steelhead, and delta smelt could be present in the marsh channels. While creating a significantly larger tidal salt marsh would provide major new habitats for these species, the resulting interim loss of habitat must be addressed.

7. The extent of public access to the site and the range of recreational activities permitted on the site needs to be publicly discussed and resolved during the design process. Respondents agreed that public access to a site this large along the San Pablo Bay is a necessary public right. Respondents expressed differing opinions, however, as to the exact location and ideal extent of public access to the site. For example, some individuals thought the public should be allowed to run with their dogs along paths passing through the site, while others suggested that access be limited to the site's periphery and that no dogs be allowed.

8. The source and quality of dredged materials to be used as fill on the project site requires further discussion. While nearly all respondents believe that dredged materials can be used to help accelerate wetland creation, many emphatically stressed the need for these materials to be "clean." The exact volume of dredged materials to be used on the site, as well as whether to use dredged materials from Novato Creek and the Bel Marin Keys' lagoons, needs to be decided. Proper placement of materials is also of great concern to ensure creation of supertidal habitats and to allow natural sedimentation to form the final tidal marsh features.

## B. Detailed Synthesis of Interviews

For each of the topical areas addressed in the interviews, we summarize the responses received. While we have not attributed direct quotes, we have attempted to reflect the opinions, interests, and desires of respondents in their own words.

1. General Restoration Plan Goals and Objectives A large number of respondents identified habitat enhancement as the most critical goal for the project. Providing flood protection, public access, beneficial use of dredged materials, and enhanced water quality were mentioned as secondary goals. When consultants were asked which project goal would be the most challenging, flood protection and habitat enhancement were mentioned most frequently. Specifically, respondents stated that providing adequate flood protection to the existing Bel Marin Keys residences and providing tidal marsh habitat at

the same time would be a design challenge. When flood protection was identified as a challenge, respondents stated that Novato Creek, Pacheco Pond, and the existing Marin County flood control easements would require particular attention. In particular, the question of how the creek and pond would pass existing storm event water flows through the proposed wetland site must be resolved. In addition, the County’s flood control easement must either be maintained or mitigated.

In addition to the goals identified in the questionnaire, respondents were asked to list other recommended goals. Answers to this question included:

- determining the quality of the acceptable dredge material;
- establishing an estuary-wide approach to wetland restoration;
- defining project “success” and the timeframe for achieving it;
- minimizing operation and maintenance costs;
- accommodating both waterfowl and shorebird habitats;
- minimizing mosquito production on the site;
- minimizing engineering controls to create a self sustaining project; and
- providing protection of private property when considering removal of levees.

2. BMK-V Site Specific Questions Most of the respondents are familiar with the site, yet only a few have recently toured the area. Respondents unanimously characterized the site as a subsided historic wetland that is currently being used for agricultural purposes. At least four people indicated that they would like to participate in a site visit.

Respondents were asked to list specific information related to infrastructure, easements, and other uses that will be important considerations in the restoration design. The table below provides a brief summary of the respondents’ answers.

**Table 3: Specific Infrastructure, Easements, and Uses on BMK-V Site**

Infrastructure	<ul style="list-style-type: none"> <li>• Novato Sanitary District outfall pipe/dechlorination facility</li> <li>• Sewerline under Hamilton runway</li> <li>• Proposed waterline from Ammo Hill</li> <li>• PG&amp;E transmission line</li> </ul>
Easements	<ul style="list-style-type: none"> <li>• County flood control easements</li> <li>• Easements for PG&amp;E transmission line</li> <li>• Maintenance of public access routes and sites</li> <li>• Easement for Community Service District’s lock and water conveyance structure</li> </ul>
Other Uses	<ul style="list-style-type: none"> <li>• Bel Marin Keys levees near homes</li> <li>• Reservoir construction by North Marin Water District</li> <li>• Loss of agricultural lands</li> </ul>

Respondents were then asked to identify existing habitats on the site or adjacent to the area that need to be considered in the restoration process. Pacheco Pond, existing

wetlands, and areas along the existing levees were repeatedly listed. Specifically, California clapper rail and salt marsh harvest mouse habitats exist along Novato Creek and the outboard levee. Split tail and smelt habitats were also identified as important considerations. Conducting grey fox, red legged frog, and burrowing owl surveys were also recommended for the project area. It was noted that the water level of Pacheco Pond in February and March causes mosquito problems.

In response to a question concerning what past concerns Bel Marin Keys residents have expressed over possible development of the BMK-V site, respondents indicated that residents have been most concerned with flood protection, increased traffic, public access, water quality, and dredging of Novato Creek and the lagoons. Residents have also repeatedly asked for a buffer between the restoration site and their homes. Homeowners have apparently also sought recreational vehicle and boat storage near the Headquarters Hill area.

3. Specific BMK-V Restoration Plan Issues Respondents were asked to list issues and challenges related to seven specific site design issues, below is a summary of the issues identified in the interviews.

a. Circulation and sedimentation on the Novato Creek outlet and San Pablo Bay  
This question had many different answers: breaching Novato Creek could reduce sedimentation; restoration design should ensure tidal flushing to reduce sedimentation; breaching could cause sedimentation in project area; mud flats in San Pablo Bay could erode; and channels will need to be created in salt marshes to increase tidal exchange.

b. Concerns related to Pacheco Pond  
The answers to this question were more consistent than to the previous question. Most respondents were concerned with flood control related to Pacheco Pond. Maintaining and enhancing existing habitat within Pacheco Pond were also considered important.

c. Potential conflicts might arise between flood protection and wetland restoration  
The majority of responses indicated that current inboard levee conditions were inadequate. Respondents explained that the inner levees surrounding the Bel Marin Keys residents along the southern lagoon and Novato Creek must be strengthened to withstand a 100-year flood event. One respondent indicated that rip-rap would be necessary for levee protection, but acknowledged that this would result in habitat loss.

d. Concerns about using dredged materials on the site  
Many of the respondents were worried about the quality and proper placement of the dredged materials. Everyone wants to be sure that the “cleanest” material is used and that dust and odors are controlled after placement of materials. Many respondents suggested investigating whether materials dredged from both Novato Creek and the Bel Marin Keys lagoons could be accommodated in the project. The most significant dredge-related question respondents raised concerns the need to determine how much fill will be used in relation to natural sedimentation. Elevations are key to the success of reusing dredged

materials for habitat restoration, and many respondents expressed the need to allow natural sedimentation processes to contour the last several feet of topsoil.

e. Habitat Goals

Many respondents did not feel qualified to suggest the specific habitats that should be created; however, several did suggest that habitats that benefit threatened and/or endangered species (such as the salt marsh harvest mouse, clapper rail, coastal steelhead, ground fishes, and northern anchovies) should be created. In addition, raptors and shorebirds will generally benefit from the creation of tidally influenced habitats. The need to control exotic plant species was emphasized.

There was general consensus among respondents regarding the type of habitat mix for the project. Most respondents believed there should be an 80/20 split of tidal versus seasonal wetlands. The suggestion was made by many that we should try to emulate the historical wetland configuration for the site. A few respondents expressed a desire to also include freshwater habitat in the design and suggested looking at opportunities to bring water from both Novato Creek and Pacheco Pond into the site. One respondent asked whether red-legged frog habitat would be sought.

f. Public Access

Respondents stated that public access to the project area should consist of multi-use trail along the edges of the site or along existing levees surrounding the Bel Marin Keys homes. Respondents unanimously agreed that the project area should not be bisected by a trail, but they acknowledged that extending the San Francisco Bay Trail is worthwhile. Some respondents said that dogs and horses should be allowed on the trails, while others did not believe pets should be permitted near sensitive habitat areas.

g. Technical Issues

Respondents were asked to list technical issues that need to be addressed during the conceptual restoration planning process. Nearly every respondent discussed the importance of understanding the hydrology of the site, particularly in relation to flood control. Determining sedimentation rates in and around the site was also mentioned as being very important.

4. Future Projects Affecting the Process The following is a list of possible future projects and issues that might affect the process as identified by respondents.

- Future Las Gallinas Sanitary District reclamation fields
- Hamilton Airfield restoration, including remediation of the site
- Black Point Antenna Field Marsh Restoration Project (Audubon/Corps)
- Watershed planning along Novato Creek
- Clapper rail recovery guidance (being written by US Fish & Wildlife Service)
- St. Vincent property
- Sonoma Baylands monitoring results
- Lessons learned from the Montezuma restoration project
- Another potential SF Bay Ferry terminal in Novato

- Possible relocation of dechlorination plant
- Waterline from Ammo Hill to Bel Marin Keys homes
- Marin Wildlife Refuge Project proposed by USFWS

5. Existing Sources of Information The following is a list of existing sources of information identified by respondents.

- Research undertaken as part of the Hamilton Restoration process
- LSA Jurisdictional Wetland Delineation
- Previous red-legged frog survey undertaken by LSA
- Light Detection and Ranging (LIDAR) studies
- NOAA Tidal study
- Long range strategic plan by sanitation districts
- Marin County Conservation District's recent testing of Pacheco Pond
- Bay Institute work on San Pablo Bay
- EPA North Bay Planning Study
- Phil Williams' wetland work on and near the site (including work that is being initiated on Novato Creek)
- Clapper rail and burrowing owl survey

#### 6. Public Participation Recommendations

Meetings should consist of a round table format, include a neutral facilitator, and be located at an accessible location. Hamilton Officers Club, City of Novato Police station, and the Bel Marin Keys Community Center were all recommended as possible meeting venues. Every respondent agreed that they would use a project Web site if it were available. Other forms of media recommended by the respondents included *The Pacific Sun*, *Marin Independent Journal*, *San Francisco Chronicle*, *Bohemian*, and the *Santa Rosa Press Democrat*.



## **Attachment A**

### **Survey Questionnaire for Conducting Stakeholder Interviews**

**Prepared by Jones & Stokes**

#### **I. Overview of Interviewee's Organization and Professional Role in Issues Related to Wetland Restoration**

1. Please describe your role in your organization. Briefly, what are your professional responsibilities?
2. Would you please briefly describe your organization's past involvement in Bel Marin Keys planning matters.
3. What are your or your organization's fundamental underlying interests concerning wetland restoration in the North Bay and at the Bel Marin Keys site in particular?
4. How knowledgeable are you regarding the Hamilton Wetlands restoration plan? What was (is) your role in Hamilton?
5. If meeting materials are provided one week prior to a specific workshop, can you commit to attending the meeting and to providing substantive feedback on the materials?
6. If you are unable to attend these workshops, is there a method by which you may still be involved? Is there someone else at your organization who could attend in your place?

#### **II. General Restoration Plan Goals and Objectives**

In order to establish a common vision for the wetland restoration project, we would like to hear what your expectations and/or desires are for the site. Among the possible goals for wetland restoration are the following:

- Endangered species habitat
- Waterfowl habitat
- Shorebird habitat
- Wildlife habitat enhancement
- Fisheries habitat enhancement
- Flood protection
- Stormwater or nonpoint source pollution control
- Ambient water quality improvements
- Public access
- Contact Recreation (i.e., swimming, boating, etc.)
- Fishing/Hunting

7. Please rank the level of importance for each of the possible goals (1 = very important, 2 = important, 3 = not important). Of these goals, which one do you think is the most important in designing a restoration project at Bel Marin Keys BMK-V? Please elaborate.
8. If you had to choose 2-3 most critical goals for the site and its restoration, which would they be?
9. Are there any other essential goals you would like to recommend for consideration? If so, what are they?

### **III. Bel Marin Keys BMK-V Site Specific Questions**

10. How familiar are you with the Bel Marin Keys site? How would you describe the site?
11. Have you ever been on a thorough site visit? If so, when was your last visit to the site? If not, are you interested in taking a site tour at some point during this planning process?
12. Do you know of any specific infrastructure, easements or uses on the site that will need to be considered in a proposed restoration design?
13. What habitats exist on or adjacent to the site that we need to consider in this process?
14. What, if any, knowledge do you have of past concerns raised by the existing Bel Marin Keys property owners or other property owners in the near vicinity concerning development of the BMK-V site? Please elaborate on any past issues.

### **V. Specific Bel Marin Keys BMK-V Restoration Plan Issues**

15. If possible, please describe the issues and challenges concerning circulation and sedimentation on Novato Creek outlet and the San Pablo Bay (mudflats, deposition in channels, navigation, bank erosion, etc.).
16. Are there issues and challenges concerning the functioning of Pacheco Pond?
17. What conflicts, if any, do you foresee in continuing to provide flood protection to residences while creating wetland restoration?
18. What specific concerns do you have if dredged materials were to be used on the site to accelerate the establishment and development of vegetation?
19. Are there specific plant and/or animal species you would like to benefit from this wetland restoration project? Please try to differentiate between short and long-term ecological goals.

20. What type of habitat mix do you believe is most appropriate for the site (i.e., tidal versus non-tidal habitat, permanent versus seasonal, freshwater versus saline, etc.)?
21. What kind of public access do you think would be appropriate at a restored the site? If you do believe the site should be accessible, please describe what concerns you have. If you do not believe the site should be made publicly accessible, please explain your reasoning.
22. What specific technical questions do you believe need to be answered as we initiate conceptual restoration planning?
23. Do you know of any other planned projects or efforts in the area that will potentially affect this process?
24. Do you have any other issues that you believe need to be addressed in project planning?

#### **VI. Public Participation in the Planning Process**

25. We will be holding at least two meetings designed to get input from all interested parties. What advice do you have about meeting formats, scheduling, or outreach methods?
26. Do you have any strong preferences about meeting dates, times, days of the week, or locations that you would like to share with us?
27. Would you use a project webpage if it were available?
28. What media sources would you recommend be advised of project-related developments?

#### **VII. Conclusion**

29. What existing sources of information do you know of that would be helpful to this planning process? Please identify relevant data sets, models and studies.
30. Bearing in mind the goals of this interview, are there individuals and/or organizations whom you believe would be essential to interview at this stage in our work?
31. Do you have any questions for us? Do you have any other advice for us?