2.0 ALTERNATIVES

2.1 INTRODUCTION

This chapter describes and compares the alternatives considered by DFG for tidal wetland restoration of the Bahia Site. Section 2.2 briefly describes those alternatives that were initially considered, but were eliminated from detailed study because they did not meet the project objectives, were infeasible, or did not avoid significant impacts. Alternatives to the Proposed Project that are considered in detail in this EIR include the No Project Alternative, the Limited Restoration at East Bahia Alternative (Alternative 1) and the No Fill Removal from East Bahia Alternative (Alternative 2). Section 2.3 describes these in detail and compares their major characteristics and effects in relation to significant project issues.

CEQA requires that an EIR "…describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives" (CEQA Guidelines Section 15126.6(a), Consideration and Discussion of Alternatives to the Proposed Project). According to this section of the CEQA Guidelines, "…an EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation." Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can reasonably acquire, control, or otherwise have access to an alternative.

As stated in Chapter 1, the overall project goal is to permanently protect a significant area of historic tidal wetlands and adjacent uplands and to restore approximately half of the site, consisting of diked wetlands, to tidal marsh. The project site was purchased primarily with public funds for the explicit purpose of habitat protection and restoration. Consistent with this purpose, the Project Team seeks to maximize the restoration of tidal marsh habitat. This project is also part of and consistent with the objective of the San Francisco Bay Goals Project to restore tidal marshes, which have been reduced to 15 percent of their historic extent in the North Bay Region. The overall project goal was translated into specific objectives that were used to guide project planning and design (see Section 1.3) and to develop a reasonable range of alternatives to analyze in this EIR and as a basis for eliminating some alternatives from further study.

2.2 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

CEQA Guidelines (Section 15126.6(c)) specify that an EIR should identify alternatives that were considered by the lead agency, but were rejected during the scoping process and should identify the reasons for eliminating the alternative from further consideration. Among the reasons that may be used to eliminate an alternative from detailed

consideration in an EIR, CEQA Guidelines include the alternative's 1) failure to meet the basic project objectives, 2) infeasibility, and 3) inability to avoid significant environmental impacts.

During the project design phase that led to the Bahia Wetlands Restoration Project Preliminary Design Report (Phillip Williams & Associates, Ltd., 2004), a number of operational alternatives were considered. These alternatives are described briefly below, along with a statement of why they were eliminated from further analysis in this EIR. Note that the purpose of this project is restoration of tidal wetlands at the Bahia site recently acquired by DFG and MAS. DFG and MAS must determine how to best manage these specific lands in the future. Therefore, no alternative locations are offered for this project.

The following alternatives have been eliminated from further study in this EIR:

- Remove East Bahia Peninsulas Alternative
- No East Bahia Restoration Alternative
- Un-phased West Bahia Tidal Restoration Alternative
- Mechanically Enlarge (Dredge) Black John Slough

A brief description of each of these alternatives and explanation of why they are not further evaluated in this EIR follows.

2.2.1 Remove East Bahia Peninsulas Alternative

The Proposed Project would remove 23,000 cubic yards (cy) of fill material from the Western and Eastern Peninsulas in East Bahia and would transport this fill material to Central Bahia and the Central Peninsula of East Bahia, respectively, for use in habitat restoration. This is approximately one-half of the available fill material at East Bahia. One alternative considered early on in the project design process was to excavate and transport all the fill material (approximately 43,000 cy) available at East Bahia to West Bahia.

Consistent with the overall project goal, this alternative would optimize tidal restoration at East Bahia and would provide additional transitional habitat between tidal marsh and seasonal wetlands of the former dredge disposal site at the southern edge of the Central Bahia area. However, the three East Bahia peninsulas function as levees for the Bahia Home Owners Association's (HOA) West Lagoon. Removing the peninsulas entirely would remove the structural support for the lagoon, thereby destroying the lagoon. This would result in significant impacts to plants and wildlife, as well as future recreational use of the project site. In addition, this alternative would cause construction-related impacts (additional traffic, air quality, and noise impacts) related to transporting more fill from one part of the project site, through a residential neighborhood, to another part of the site. Finally, the costs of this alternative are prohibitive. Since the impacts of this alternative are significant and since it also appears to be infeasible, it was eliminated from further study in this EIR.

2.2.2 No East Bahia Restoration Alternative

A second alternative considered early in the planning process would implement tidal restoration at West Bahia as proposed, but would leave the East Bahia peninsulas in place. No restoration would take place at the East Bahia site.

Although this alternative would eliminate anticipated impacts from hauling excavated East Bahia fill material through a residential area (i.e., traffic, noise, fugitive dust and truck emission impacts), it would not meet the overall project goal to maximize the restoration of tidal marsh habitat. To leave areas unrestored that could be restored would be contrary to the intended purpose of public and private funds used to acquire the project site and would leave avenues open for impact on existing endangered species and habitats nearby (e.g., leaving tidal marsh areas on the East Bahia peninsulas accessible to dogs, predators, etc.). Since this alternative does not meet the project objectives, it was eliminated from further study in this EIR.

2.2.3 Un-phased West Bahia Tidal Restoration Alternative

The Proposed Project includes phased breaching of perimeter levees at selected locations. Tidal action would be re-introduced to the diked baylands in two phases. Phase 1 would restore full tidal action to Mahoney Spur and Central Bahia and limited tidal action to West Bahia. Phase 2 would restore full tidal action to West Bahia, once Black John Slough to the north has enlarged sufficiently that upstream wetlands will not be significantly impacted by tidal capture at the project site. Project phasing would facilitate an adaptive approach to restoring the project site. Adjustments to restoration plans could be made in response to observed biotic and soil changes under this approach.

One alternative to the project as proposed would be to complete the West Bahia levee breaches in a single-shot, non-phased approach. Hydrodynamic modeling shows that un-phased tidal restoration of the entire project site would reduce the tide range along Black John Slough by approximately half, with an approximately one-foot reduction in high tides and a two-foot increase in low tide water levels. The project site would grab all the tide waters from Black John Slough, robbing locations upstream of tidal exchange. Sudden changes of this magnitude could negatively impact existing wetland habitat along the margins of Black John Slough and upstream at Rush Creek and Cemetery Marshes. In addition, un-phased tidal restoration does not allow observations and adjustments to be made to proposed restoration design.

Furthermore, implementation of un-phased tidal restoration at West Bahia would not significantly reduce anticipated project construction impacts, since these are primarily related to the removal and transport of East Bahia fill material. The Un-phased West Bahia Tidal Restoration Alternative fails to avoid significant environmental impacts of the Proposed Project and, in fact, would create additional significant impacts to tidal marshes upstream of the project site. It would not meet the overall project goal to

maximize the restoration of tidal marsh habitat and it was therefore eliminated from further study in this EIR.

2.2.3 Mechanically Enlarge (Dredge) Black John Slough

Tide measurements along Black John Slough show significant reduction in tidal range (tidal damping), with water surface elevations in the slough approximately 2 feet higher than water levels in the Petaluma River at low tide. Damping effects are believed to be related to shoaling and slumping from the relocation of barges previously located near the mouth of the slough and from reduced tidal scour along the slough. Continued tidal damping in the slough may result in poor low water drainage at the project site, with impacts to vegetation and wildlife functions.

Dredging Black John Slough would provide full tidal exchange between the restored project site and the tidal source and this alternative was considered early in the project design process. However, this would be an expensive alternative with potentially significant impacts (e.g., impacts to birds and wildlife, as well as noise and air quality impacts that could directly impact nearby residents). These anticipated costs and impacts outweigh the anticipated benefits of this alternative, particularly since it is believed that full tidal range will be restored to the slough once the Bahia site restoration is completed. Under the proposed project, phasing of the perimeter breaches is intended to reduce future damping impacts, having the same effect as this alternative with significantly reduced cost and impact. Since the costs and potentially significant impacts of this alternative render it infeasible, it was eliminated from further study in this EIR.

2.3 ALTERNATIVES CONSIDERED IN DETAIL

Alternatives considered in detail include (Proposed Project description is provided in Section 1.4):

- No Project Alternative
- Alternative 1 - Reduced Fill Removal from East Bahia
- Alternative 2 – No Fill Removal from East Bahia

A brief description of each of these alternatives and summary of their potential benefits and impacts follows. A detailed comparison of impacts of the Proposed Project and these three alternatives is provided in Chapter 14.

2.3.1 No Project Alternative

Evaluation of the "No Action" or "No Project" Alternative is required under CEQA Guidelines 15126.6(e), respectively. As stated in the CEQA Guidelines, "…the purpose of describing and analyzing a no project alternative is to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving

the proposed project." Under the No Project Alternative, remaining levees at the Bahia site would not be mechanically lowered and breached.

Overall, the No Project Alternative would not aid the recovery and restoration of populations of fish and wildlife that have declined or been extirpated as a result of the emplacement of existing levees. Many of these species are listed as endangered, rare or threatened. Biotic diversity would be lower under the No Project, compared to the Proposed Project. Thus, the No Project Alternative would fail to help reverse the general decline of species diversity in the region and the Bay-Delta ecosystem. It would fail to meet the goals of the CALFED Ecosystem Restoration Program (ERP) and Implementation Plan and, more specifically, it would fail to meet the overall project goal to maximize the restoration of tidal marsh habitat. To leave areas unrestored that could be restored would be contrary to the intended purpose of public and private funds used to acquire the project.

In addition, management of site water levels would not be possible and the mosquito problem, which is already bad at the site, would continue to worsen. Lacking maintenance, existing levees would gradually deteriorate and the area would become subject to tidal influence over time.
However, it is possible that some levees could last another 100 years or more without maintenance and in the meantime, trapped stagnant water at the site would continue to pose a public health concern as a mosquito source.

The No Project Alternative would eliminate anticipated impacts from hauling excavated East Bahia fill material through a residential area (i.e., traffic, noise, fugitive dust, and truck emission impacts). This alternative would retain open water habitat, which could be used by ducks and shorebirds. However, standing water at the site gets little mixing and these increasingly stagnant waters are unlikely to provide prime duck or shorebird nesting or foraging habitat.

2.3.3 Alternative 1 - Reduced Fill Removal from East Bahia

As stated previously, the Proposed Project would remove 23,000 cy of fill material from the Western and Eastern Peninsulas in East Bahia and would transport this fill material to Central Bahia and the Central Peninsula of East Bahia, respectively, for use in habitat restoration. Alternative 1 to the Proposed Project would implement tidal restoration at West and Central Bahia and reconfigure the eastern peninsulas at East Bahia, but would reduce grading and fill removal on the Western Peninsula. This would result in the removal of approximately 11,000 cy of fill from the site (a reduction of more than 50% of the Proposed Project fill removal).

This alternative would reduce anticipated impacts from hauling excavated East Bahia fill material through a residential area (i.e., traffic, noise, fugitive dust, and truck emission impacts). By restoring tidal influence in West Bahia, Alternative 1 would at least partially meet the objectives of the project to restore habitat, improve species diversity, enhance water management, and reduce mosquito breeding habitat. However,

enhancement of habitat for specific species that have been identified or are likely to occur within the East Bahia area, would not occur or would be significantly reduced.

2.3.3 Alternative 2 – No Fill Removal from East Bahia

This alternative would excavate approximately 23,000 cy of fill material from the peninsulas at East Bahia (the same amount as the Proposed Project), but would deposit those materials within the East Bahia area, restoring tidal marsh to portions of East Bahia, creating seasonal wetlands and raising the elevation of the uplands by compacting the fill on site. Under the Proposed Project, material excavated from the Eastern Peninsula would be trucked to the Central Peninsula and used to raise up areas and construct seasonal wetlands in that portion of the site. The Proposed Project would have fill material from the Western Peninsula trucked to Central Bahia and used in restoration and construction there. Under Alternative 2, fill materials from both peninsulas would be transported to the Central Peninsula or elsewhere within East Bahia.

Like Alternative 1 and the No Project Alternative, this alternative would eliminate impacts from hauling excavated East Bahia fill material through a residential area (i.e., traffic, noise, fugitive dust, and truck emission impacts). It would also at least partially meet objectives of the project to restore habitat, improve species diversity, enhance water management, and reduce mosquito breeding habitat. There would be some creation of additional seasonal wetlands in the East Bahia area and enhancement of habitat for some species identified or likely to occur within the
East Bahia area. However, enhancement of habitat for specific species in the Central Bahia area would be greatly reduced and the restoration of wetlands in Central Bahia would be much slower due to the large reduction of imported fill from East Bahia.