



FINAL
STAFF REPORT

NORTH BAY LAND USE AND PUBLIC OWNERSHIP

January, 1997

Prepared for the
North Bay Steering Committee

SAN FRANCISCO BAY
CONSERVATION AND
DEVELOPMENT
COMMISSION

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PUBLIC OWNERSHIP

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Prepared for:
The North Bay Steering Committee

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FORWARD

The North Bay Wetlands Protection Program is a voluntary partnership between the San Francisco Bay Conservation and Development Commission (BCDC) and the eight local governments in the San Pablo Bay subregion of the San Francisco Bay area—Napa, Marin, Solano, and Sonoma Counties, and the Cities of American Canyon, Novato, San Rafael, and Vallejo. The purpose of the North Bay Wetlands Protection Program is to: (1) provide local governments with the tools and information needed to ensure the protection, enhancement and restoration of the North Bay wetlands while allowing compatible uses to continue, such as agriculture, recreation and public education, which are consistent with wetland values and functions; and (2) guide incompatible uses to other appropriate locations. In this way, not only are wetlands and their ecological values protected and the opportunity for enhancement and restoration increased, but uses consistent with wetland ecological values are identified and differentiated from those uses that are more appropriately located elsewhere.

Local government has the primary responsibility to plan and control land use. However, in our federal system of government, state and federal agencies also have authority over activities in wetlands. This layered responsibility can lead to confusion, conflict, and unnecessary duplication of controls regarding what kinds of uses can be permitted in wetlands, and under what circumstances and conditions. Consequently, a primary focus of the North Bay Wetlands Protection Program is to develop a North Bay Wetlands Protection Plan that will recommend policies for improving local wetlands protection programs and local program coordination with state and federal agencies.

The North Bay Wetlands Protection Plan will include policies that can be adopted by local governments to strengthen their existing protection and/or enhancement programs for North Bay wetlands and riparian environments; policies to minimize polluted runoff from upland areas reaching the wetlands; and policies to site and design public access, recreation and public education facilities consistent with wetland protection and adjacent uses, such as agriculture. Moreover, the plan will propose mechanisms for improving coordination between local, state and federal agencies in their various wetland regulations and enhancement programs.

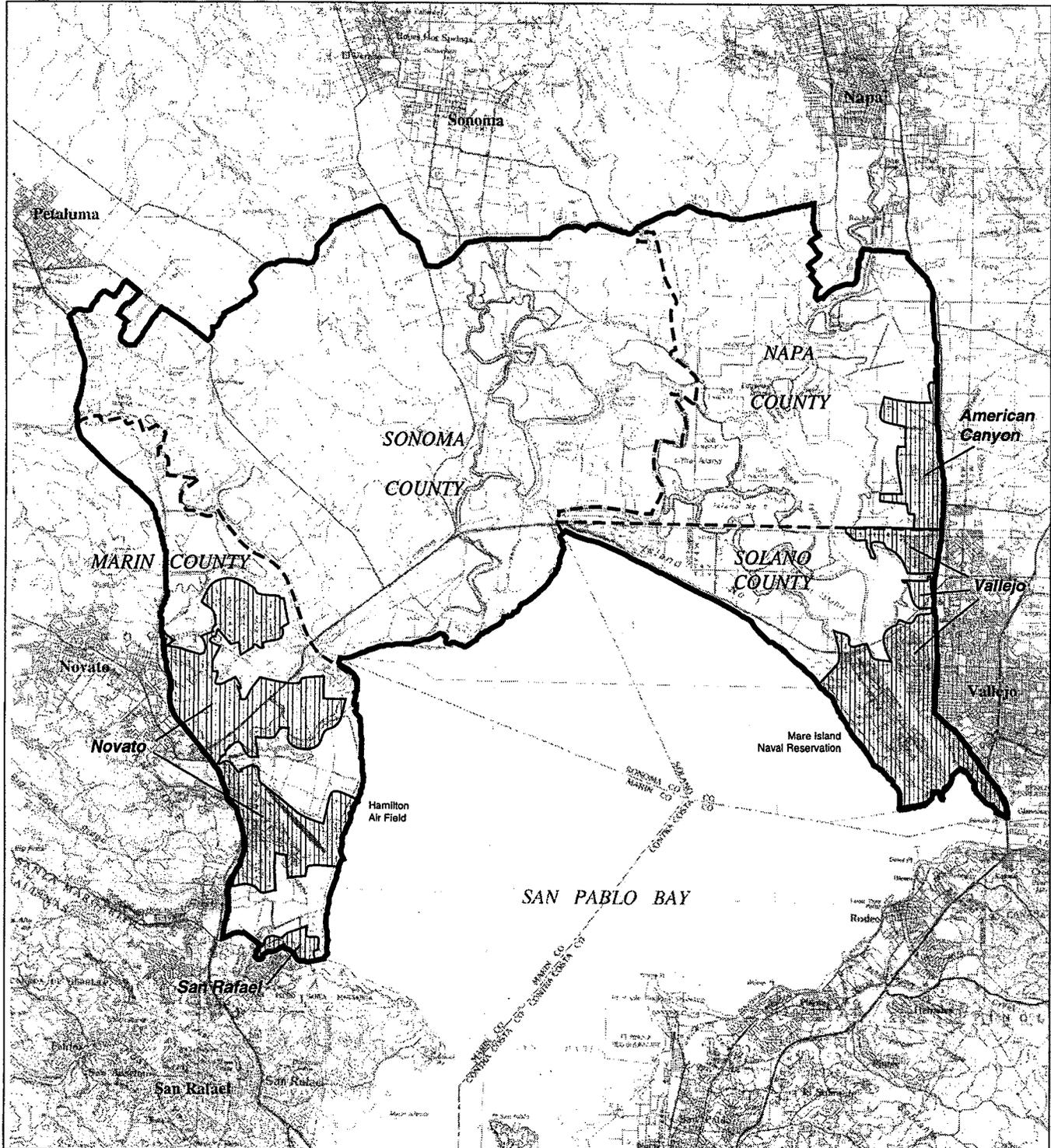
This report on land use, local government land use policies, proposed projects, and public ownership in the North Bay planning area was prepared by the BCDC staff as the first in a series of planning background reports prepared for the North Bay Wetlands Protection Plan Steering Committee, composed of representatives of each of the local governments and BCDC. This report was accepted by the Steering Committee in September 1996. A second report on Wetlands in the North Bay Planning Area was received by the Committee in November 1996. The reports will

provide information for the Steering Committee to help it prepare a North Bay Wetlands Protection Plan. Other planning background reports in the series will include an analysis of local government wetlands protection policies, polluted runoff and riparian corridors and their relationship to wetlands, and public access and recreation.

After completion of its work, the Steering Committee will submit its recommended North Bay Wetlands Protection Plan to the participating local governments and BCDC for consideration and adoption of the applicable elements of the plan.

North Bay Wetlands Protection Plan Study Area

-  Study Area Boundary
-  County Boundary
-  Portion of City within Study Area



SUMMARY AND CONCLUSIONS

The picture that emerges of land use in the 174 square-mile North Bay planning area is largely positive. Most of the historical wetlands in the North Bay are either wildlife areas or compatible uses such as extensive agriculture. General plan designations, which guide future use of the area, are generally protective of wetlands, designating them largely for extensive agriculture and open space and recreation uses. Moreover, the upland area that surrounds the wetlands is generally in agricultural use, except for urbanized areas along the Highway 101 and Highway 29 corridors. Correspondingly, the local government general plans designate these upland areas fairly consistently with their present use. That is, outside the two highway corridors, the upland areas are designated for agricultural uses. However, within the highway corridors additional urban development is proposed in the upland areas and in some cases, in historic wetlands.

Significantly, over 50 percent of the historic wetlands are currently owned by public agencies and non-profit land trusts—agencies that now manage or which have the potential to manage their lands to protect, enhance and restore wetlands. Together, the existing land uses, future land use designations in local government general plans, and public ownership patterns provide a workable foundation for protecting, enhancing and restoring the North Bay's wetlands while allowing compatible economic uses to continue.

However, not all the historic wetlands of the North Bay are designated for uses that would allow their protection, enhancement, or restoration. For example, some local government general plans designate future urban uses, primarily residential, within the Highway 101 and Highway 29 transportation corridors, adjacent to current urbanized areas. Furthermore, approximately 25 specific projects, occupying over 1,600 acres, are proposed for the historic wetlands. Some of these uses and projects could adversely affect wetlands.

The conclusions of the analysis in this report can be summarized as follows:

Land Use

1. Historically, approximately 52,800 acres, or about 50 percent of the North Bay planning area was marshland, and about 13,800 acres, or about 10 percent tidal water. Today, about 11,800 acres, or close to ten percent of the area is tidal marshland and 5,400 acres, or five percent, tidal waters.

2. The North Bay planning area remains predominantly rural, dominated by two land uses—extensive agriculture and rural lands (51 percent of the 174 square mile planning area), and wildlife areas (20 percent of the planning area). The remaining uses each comprise less than ten percent of the planning area: nine percent intensive agriculture, five percent residential, three percent commercial and light industry, three percent public facilities, three percent open space and recreation, and two percent heavy industry. The remaining six percent is open water. Thirty-three percent of these lands are

publicly owned. These patterns suggest that protection measures might benefit from focusing on the two largest land uses, which together comprise over 70 percent of the planning area (wildlife and extensive agriculture).

3. Within the historic wetlands, an even more rural pattern emerges. Of the former wetlands, approximately 44 percent are in extensive agriculture and rural use, 33 percent in wildlife use, and the remaining area consists of one percent residential, less than one percent intensive agriculture, two percent commercial and light industry, three percent public facilities, three percent open space and recreation, and three percent heavy industrial. About nine percent is open water. A full 58 percent of diked historic baylands is in extensive agricultural use.

4. Region-wide land use trends in the North Bay include conversion of range and pasture lands in the Carneros region of Napa and Sonoma Counties to more intensive vineyard agricultural use, and the development of urban uses in upland areas within existing urban areas along the Highway 101 and Highway 29 corridors. Another major trend is the acquisition of large rural and extensive agricultural areas by federal and state wildlife agencies for wildlife habitat in existing tidal areas and in historic wetlands. The closing of military bases, and the consequent decrease in industrial use, is also an important trend in the North Bay.

General Plans

1. The local government general plan designations for the historic wetlands areas are generally compatible with wetlands values. These designations consist largely of extensive agriculture, open space and recreation, and public facilities. However, the public designation may not be entirely compatible with wetlands, depending on the specific use. Some extensive agricultural uses—such as large processing plants, intensive residential uses, or surface mining—may also not be compatible. Overall, however, the underlying general plan use designations provide a firm foundation of protection for the North Bay wetlands and opportunity for wetland enhancement and restoration.

2. Table 1 shows potential urban growth allowed by general plans in historic wetlands--essentially, the area of designation in the historic wetlands, minus existing built areas and undevelopable lands (see Chapter 3 for a more detailed explanation).

In areas designated for residential, commercial, or industrial development, urban development could occur in over 500 acres of the historic wetlands under the composite North Bay area general plans. For example, Marin County, Novato, and Vallejo have portions of the historic wetlands designated as urban uses, and nearly every jurisdiction has some urban use designations, particularly along the highways and the borders of the former wetlands. The 30 acres of potential heavy industrial growth in Solano County can be discounted, as current plans indicate that the land, in the vicinity of White Slough, will be annexed to the City of Vallejo and rezoned to a use more compatible with wetlands.

Table 1 does not examine potential growth in agriculturally designated areas. However, some lands designated for extensive agriculture could support large-lot residential growth, particularly in Marin County. Because an analysis of growth in agriculturally designated lands requires an analysis of applicable zoning districts in addition to general plan designations, potential growth for agriculturally designated lands will be examined in a future report on powers and authorities.

Table 1
Potential Growth Allowed by General Plans in Historic Wetlands

General Plan Designation*	Jurisdiction	Potential Urban Growth Allowed by General Plans in Historic Wetlands (approximate acreage)
Residential	Unincorporated Marin County	120
	City of Novato	110
Commercial/Light Industrial	Unincorporated Marin County	80
	City of Novato	30
	Unincorporated Sonoma County	40
Heavy Industrial	Unincorporated Solano County**	30
	City of Vallejo (Mare Island)	140
TOTAL		550
* Does not include lands designated as agriculture or public facilities.		
* * These lands, located in White Slough, will be annexed to the City of Vallejo and rezoned.		

3. As Table 2 illustrates, over 3,000 acres of land could be converted to public facilities use. The acreage shown for Sonoma County consists entirely of Skaggs Island. Although this land has the potential to be used for additional public facilities, the purpose of Sonoma's public facilities designation is to recognize existing public uses and ownership.

Table 2
Potential Public Facilities Growth Allowed By General Plans in Historic Wetlands

General Plan Designation	Jurisdiction	Public Facilities Growth Allowed by General Plans in Historic Wetlands (approximate acreage)
Public Facilities	City of American Canyon	30
	Unincorporated Napa County	150
	City of Novato	10
	Unincorporated Sonoma County (Skaggs Island)	3,290
TOTAL		3,480

4. The upland area designations include intensive agriculture and a variety of urban uses, such as residential and commercial facilities. These uses should be carefully designed and managed in order to minimize their impact on adjacent wetlands. Examples include clustering uses in order to preserve wetlands, creating buffers between wetlands and adjacent uses, and requiring construction practices which minimize erosion, pesticides, herbicides and nutrients from being carried into the wetlands by wet weather runoff.

5. Whether applied to historic wetlands or uplands, land use designations in general plans are not static. Lands in transition between county and city jurisdiction can be redesignated to different uses (for example, in San Rafael and American Canyon). Furthermore, general plans can be amended to change the designations, thus allowing projects to occur. Finally, other land use controls, such as development agreements and zoning designations, which will be analyzed in a subsequent report, can modify general plan designations.

Proposed Projects

1. Urban development in the North Bay is generally confined to periphery of the planning area along Highway 101 on the west and Highway 29 on the east. The vast area between the two transportation corridors is principally agricultural, rural and wildlife habitat. As with the current distribution of land use in the North Bay, proposed projects in the area generally follow the existing pattern of use and intensity.

2. Approximately 25 projects are proposed for the planning area— seven residential projects, one heavy industrial project, eight commercial/light industrial projects and nine public facility projects (primarily municipal sewage wastewater and sludge treatment and disposal facilities, and flood control projects). Nearly all of the commercial projects proposed are located in uplands within the north-south highway urban corridors. Residential projects proposed in the City of American Canyon are also in the uplands, however, some residential developments are proposed to be developed in historic wetlands in the jurisdiction of Marin County and Novato. The flood control projects are all proposed in the historic wetlands, as are many of the municipal sewage treatment and disposal facilities.

3. Of the 4,400 acres currently proposed for urban uses (residential, commercial, and industrial), over 1,500 acres are in the historic wetlands. Public facilities projects could also occupy several thousand acres of additional land. In many cases, approval of these projects could cause adverse impacts to the North Bay wetlands to North Bay wetlands and agriculture. Additionally, some of these projects, such as residential and certain public facilities developments, can sometimes induce additional urban growth, with possible further impacts to the North Bay wetlands and agriculture.

Public Ownership

1. Over one-third of the North Bay planning area (37,156 acres), and approximately 50 percent of the historic wetlands (34,267 acres), are publicly-owned, principally by wildlife and military agencies and special purpose districts such as flood control districts. Approximately 92 percent of the publicly-owned land lies within the historic wetlands. This ownership provides an important foundation for protecting, enhancing and restoring North Bay wetlands—not only because of ownership by agencies whose mission is to protect, enhance and restore these lands, but because the other agencies can manage their lands in a manner that will enhance wetlands as well as carry out their primary mission of flood protection and sewage treatment and disposal. Moreover, reallocation of the use of closing military facilities offers a particularly significant opportunity to enhance and restore wetlands.

2. Public agencies and non-profit land trusts own approximately 50 percent of the North Bay historic wetlands. The land owners hold and manage these lands primarily for wildlife habitat, flood control, and treated municipal sewage wastewater and sludge disposal.

3. Wildlife agencies—the Department of Fish and Game (16,144 acres) and the U.S. Fish and Wildlife Service (3,218 acres)—are the principal public landowners. The Department of Fish and Game has generally focused its acquisition program on lands on the periphery of the historic wetlands, while the U.S. Fish and Wildlife Service has acquired land in the core of the historic wetlands, creating large, contiguous wildlife management units.

4. Open space and recreation agencies acquire and manage land primarily for passive recreation purposes and to provide a natural landscape relief in urbanized areas. Approximately 2,350 acres of land in the North Bay are owned and managed by open space and recreation agencies, primarily in upland areas adjacent to the historic wetlands. Because of their location and passive use, these areas are as important habitat for wetland-related wildlife and as promontories from which to view the expanse of the flat North Bay wetlands.

5. The military owns almost seven percent of the land in the North Bay planning area (7,300 acres), of which approximately 6,200 acres are within the historic wetlands—about ten percent of the historic wetlands. All of the military installations in the North Bay—Hamilton Air Field, Skaggs Island Naval Reservation, and Mare Island Naval Shipyard—are in some phase of closure and reuse planning and have considerable potential for wetland enhancement and restoration.

6. Special purpose districts (sanitary and flood control) own about seven percent (6,300 acres) of the land in the planning area, all within the historic wetlands and comprising around ten percent of the historic wetlands. The land is used primarily for the treatment and application of municipal sewage wastewater and sludge for irrigation and for soil enrichment of agricultural land.

Sanitary districts can manage their historic wetlands in a manner that provides public benefits in addition to the treatment and disposal of sewage by providing wildlife habitat, passive recreation opportunities and increased agriculture productivity. Flood control districts acquire land in the historic wetlands to accommodate high amounts of wet weather runoff that historically flooded the historic wetlands during flood conditions. These lands can, and in many cases are, managed for public benefits in addition to flood control, such as wildlife habitat, passive recreation, and agricultural use.

7. Much of the land within the planing area are tide and submerged lands owned by the State of California and held in trust for the benefit of the people of the entire State. These lands are referred to as “public trust lands.” In certain cases, the State, by legislative grant, has transferred public trust lands to local agencies to administer pursuant to the trust and the terms of the grant.

CHAPTER 1

INTRODUCTION

As part of the San Francisco Bay Area, the North Bay contains the largest undeveloped assemblage of wetlands, diked historic baylands, and associated uplands remaining in the San Francisco Bay Area. Because of its size, location, unique and varied geography, and generally undeveloped character, the North Bay supports a diversity of wetland, upland and transitional plant communities for a variety of resident and migratory fish and wildlife, including several rare and endangered species. The North Bay provides an attractive place for people to live, work and play, in the midst of this important wildlife habitat. In addition, the North Bay wetlands provide a number of other functions, including flood control, water purification, and open space, which are valuable assets of the region. Central to the North Bay are lands that were once extensive wetlands that have been diked off from the Bay and currently used for agriculture, wildlife habitat, and solar salt production.

Protecting, enhancing and restoring the North Bay's diked historic baylands, while enabling appropriate economic development to occur in a more predictable and efficient manner will require substantial and innovative efforts from local residents, landowners and resource agencies. This will require extensive public involvement and education programs, voluntary land stewardship programs, and predictable and consistent local, state and federal regulatory programs that provide positive incentives to use land in ways that are compatible with wetland values and functions.

Study Area

The approximately 110,000-acre North Bay planning area includes portions of northern Marin County¹, southern Sonoma County, southern Napa County, eastern Solano County and portions of the Cities of San Rafael, Novato, American Canyon and Vallejo. Beginning in Marin County, the planning area is bounded generally by the north bank of the north fork of Gallinas Creek and the San Pablo Bay shoreline to the south, Highway 101 to the west, Highways 116, 121 and 12 to the North, and Highway 29 to the east, terminating at the Carquinez Strait (see Figure 1).

Importantly, the planning area includes the lower portion of the San Pablo Bay hydrologic unit, or watershed, that receives runoff from several major tributaries including Gallinas Creek, Novato Creek, the Petaluma River, Tolay Creek, Sonoma Creek, the Napa River and American Canyon Creek. Further, the lower portion of the San Pablo Bay watershed contains the majority of the undeveloped tidal wetlands and diked historic baylands that remain along the perimeter of San Pablo Bay. In the late 1800s, prior to extensive diking, approximately 60 percent of the planning area—about 66,000 acres—was tidal marshland. These areas are referred to as historic wetlands.

¹ Throughout the report, the reference to a county should be taken to mean the portion of the unincorporated county within the planning area.

Many of these former marshes are now diked (referred to as diked historic baylands). However, unlike many other areas diked off from the Bay, the majority of the North Bay diked historic baylands have not been filled and are largely in agricultural or other non-urban uses.

Report Purpose and Structure

The North Bay planning area can be compared to a donut—the hole in the center consists primarily of agricultural and wildlife habitat land while on the periphery, along the Highway 101 and 29 corridors, urban uses occur and are expanding. The purpose of this report is to assess and characterize (1) how land in the planning area is used today; (2) how the land in the area would be used in the future if current local government general plans were carried out; (3) the likely effects of development projects proposed for the area; and (4) the type and distribution of the extensive public ownership in the area. This information is an important step in characterizing the land use dynamics in the North Bay planning area and provides essential data to assist in developing a plan and implementation strategy for the protection, restoration, and enhancement of the North Bay wetlands.

In Chapter 2, the existing land uses in the planning area are classified in a generic system consistent with each of the local government planning jurisdictions land use classification schemes, and are described, quantified and mapped. This information is supplemented by Appendix A, which explains in detail the system of classification and the methodology followed in developing the system and the use of the geographic information system (GIS) to map, manipulate and quantify the data.

To determine how land in the North Bay would be used in the future under existing local government land use policy, a scenario of future land use based on the adopted general plans of the eight local governments is developed, mapped and quantified in Chapter 3. This data is applied to the North Bay historic wetlands² to characterize the effect of the future land use scenario on wetlands and the consistency of the future use with potential for wetland protection, restoration and enhancement.

Proposed development projects in the planning area is discussed and mapped in Chapter 4. This information assists in developing a picture of the types of development pressures in the planning area, the potential for land use change, and the likely impact that development may have on historic wetlands.

Because of the extensive amount of public ownership in the North Bay planning area, particularly in the historic wetlands, the type and distribution of the publicly-owned lands are described and mapped in particular regard to the historic wetlands in Chapter 5.

² As used in this report, historic wetlands denotes all lands within the Nichols and Wright historic wetlands line.

Data Development and Method of Analysis

In Appendix A, a detailed discussion of the methodology used in data development and use of GIS in this report is given. The North Bay Wetlands Protection Program applies an innovative on-line GIS as a land use planning tool for mapping and analyzing the regional distribution of land use data. This on-line computer internet system uses a custom-designed software program, GRASSLinks. GRASSLinks is a new and highly versatile regional planning tool developed at the Center for Environmental Design and Research at the University of California, Berkeley and operated by the Center's Research Program in Environmental Planning and Geographic Information Systems (REGIS). The GIS data developed for this study, including existing land use, general plan designations and city and county boundaries, can be accessed over the Internet through REGIS and GRASSLinks.³ Most of the acreage figures found in this report were derived from the GIS analysis using GRASSLinks.

Staff has worked to make the maps and analysis in this report as accurate as possible; however the data is intended to be used a regional scale, to provide an overview of the 174-square mile planning area. Thus, the maps and calculations are not intended to be precise at a site-specific level. Additionally, because of the aggregation process, land use and general plan categories used in this report may not always reflect those used by individual jurisdictions. Appendix A provides a detailed explanation of how the categories were aggregated for analysis at a regional scale and provides a comparison between the categories used in this report and categories used by others.

Terminology

This report uses two terms to describe wetlands: historic wetlands and diked historic baylands. As used in this report, "historic wetlands" refers to all of the former tidal marshlands, specifically, all of the lands within the Nichols and Wright line (these areas are also sometimes called historical marshlands). The term "diked historic baylands" refers to former tidelands that have been isolated from tidal action through the construction of levees or dikes (these areas are also sometimes referred to as diked wetlands or diked baylands). The primary difference between the two terms is that historic wetlands include lands that are still tidally influenced, whereas diked historic baylands includes only those lands behind the dikes.

³ To visit the data created for the North Bay, simply connect to the Internet and type <http://www.regis.berkeley.edu/grasslinks>.

CHAPTER 2

LAND USE PATTERNS IN THE NORTH BAY

In order to appreciate the level of protection and potential for restoration and enhancement of wetlands in the North Bay, it is important to develop an understanding of the former extent of wetlands in the area and how the land is currently used. This chapter first looks at the former limit of the Bay and its marshlands in the North Bay and then focuses on existing land uses in the planning area, and how these land use patterns can affect protection and potential restoration and enhancement of the former and existing wetlands.

After providing an overview of the extent of historic wetlands in the North Bay, this chapter reviews the current land use patterns and asks five critical questions about each current land use (summarized in Table 1):

- What is the land use, and where is it located?
- What wetland **benefits** are associated with the land use?
- What **impact** on wetlands can the land use have?
- What **trends** are affecting land use patterns in the North Bay?
- What are the **implications** of these patterns for wetlands?

In Appendix B, the land uses and their distribution in the planning area are itemized for each local government.

The Historic Extent of Wetlands in the North Bay

Several physical factors, including topography, hydrology, and the roadway system influence and shape the past and current land forms and use in the North Bay. The North Bay planning area covers approximately 174 square miles, with about 60 percent of the area, or roughly 104 square miles, consisting of historic wetlands. Nearly 38 percent of the planning area, or 66 square miles, consists of diked historic baylands.¹ The remaining 40 percent of the planning area, or approximately 70 square miles, consists of gently rising to moderately steep mountainous uplands.

Prior to the California gold rush, the diked historic baylands were a vast mosaic of marshlands and waterways with grassy uplands separating the wetlands from oak-covered hills. This area consisted primarily of tidal marshes interlaced with miles of tidal sloughs, rivers and creeks. Fresh water streams and rivers drained relatively small watersheds and flowed into the marshes, the Napa or Petaluma Rivers, or into the many sloughs or creeks. During the wet season, stream flows often dominated the hydrologic regime of the North Bay, conveying sediments from the watershed to the downstream marshes. During the dry months, the daily tidal fluctuation in San

¹ "Diked historic baylands" are areas that were historically part of San Francisco Bay and its tidal marshlands, but have been diked off from the Bay and are not now subject to the Bay's tides.

Table 3
Land Use Benefits and Impacts

Land Use	Includes	% of Planning Area*	Examples of Actions	Examples of Impacts	Benefit to Wetlands	Trends	Compatibility with Wetlands
<i>RURAL LANDS</i>							
Extensive Agriculture	Range and pasture lands, undeveloped lands	51%	Grazing, planting; levee maintenance, chemical use	Habitat impacts, erosion, contamination	Creates seasonal wetlands, provides refuge and feeding areas, serves as buffer	Threatened by urbanization and intensive agriculture	Generally compatible
Wildlife Areas	Protected tidal and seasonal wetlands, transitional upland habitats	20%	Restoration, habitat protection, fishing, education	Some impacts from public access	Protects wetlands	Expanding via restoration projects	Compatible
Intensive Agriculture	Vineyards, dairies, horse stables	9%	Grading, chemical discharges, manure discharges	Water pollution, excess sediment, changed water patterns	Can provide habitat, control stormwater runoff	Vineyard expansion	Can be compatible
Open Space and Recreation	Parks, duck clubs	3%	Public access; active recreation; resource management	Access can disturb wildlife	Protects wetland habitat		Generally compatible
<i>URBAN LANDS</i>							
	Residential, commercial, industrial uses	10%	New development and infrastructure, changes to water patterns, chemical discharges	Physical destruction of wetlands, water pollution		Several urban projects proposed for the planning area	Generally incompatible
<i>PUBLIC FACILITIES</i>							
	Schools, airports, wastewater treatment facilities, flood control lands, etc.	3%	New development and infrastructure, changes to water patterns, chemical discharges	Physical destruction of wetlands, water pollution	In some cases, can provide wetland habitat and/or agricultural lands	Several public facilities projects proposed for the planning area	Can be compatible
* 6% is undesignated							

Francisco Bay provided a continuing scouring action and redistribution of the sediments to help establish an equilibrium, with a gradually rising Bay enabling a vast system of marshlands to establish and flourish. The close interrelationship of tidal and fresh waters, marshlands and uplands, provided particularly valuable habitat for a host of varied wildlife and aquatic species.

With increased human settlement came diking of much of the marshland and meandering sloughs and waterways for new uses, primarily agriculture. Figure 2 shows the approximate extent of the tidal marshlands in the North Bay as developed by Nichols and Wright of the U.S. Geological Survey (Nichols and Wright, 1971). Although promising new research is being conducted by the San Francisco Bay Estuary Institute to identify the former extent, types, and distribution of the historic marshlands around San Francisco Bay, until that work is complete, the Nichols and Wright line provides a defensible basis for delineating the extent of the historic marshlands of the North Bay for regional planning purposes.

Figure 2 delineates the historic tidal marshlands and the former open tidal waters of the North Bay. From this information, it can be concluded that historically, approximately 52,800 acres, or about 50 percent of the North Bay planning area was marshland, and 13,850 acres, or about 10 percent tidal or waters. Today, about 11,860 acres, or close to 10 percent is tidal marshland and 5,470 acres, or five percent tidal waters.

Existing Regional Land Use Patterns

Figure 3, Existing Land Use, maps the current land use array in the North Bay. Approximately 40 distinct land use categories in the area have been combined into nine generic classes of land uses to simplify the mapping and analysis of the data and to establish land use classifications that cut across the range of individual general plan land use designations. The various North Bay land use classifications have been combined into nine generic land use types: (1) extensive agriculture² and rural lands,³ (2) intensive agriculture,⁴ (3) residential, (4) commercial and light industrial, (5) heavy industry, (6) public facilities,⁵ (7) open space and recreation, (8) wildlife areas,⁶ and (9) open water. The method for aggregating the range of land uses in the North Bay into the nine land use categories is explained in Appendix A.

As can be seen in Chart 1, the North Bay planning area remains predominantly rural, dominated by two land uses—extensive agriculture and rural lands (51 percent of the 174 square mile planning area), and wildlife areas (20 percent of the planning area). The remaining uses each comprise less than ten percent of the planning area: nine percent intensive agriculture, five percent

² Extensive agriculture uses include grazed rangeland and pasture and cropland.

³ Rural lands include woodlands and rangeland and very large lot rural residential areas.

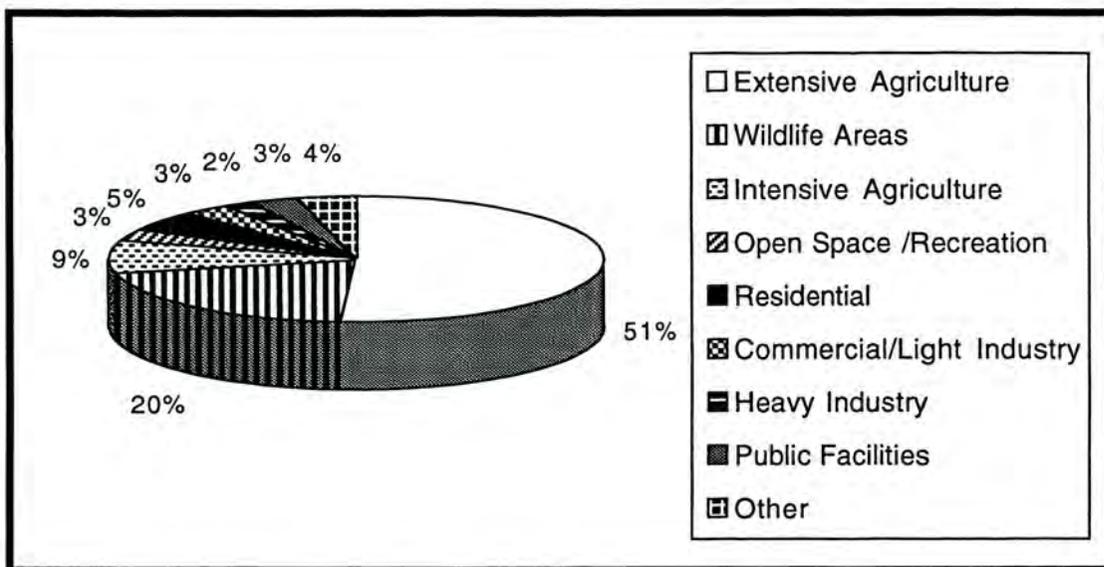
⁴ Intensive agriculture includes cultivated, intensely farmed lands such as vineyards and orchards.

⁵ Public facilities include airports and sewage treatment facilities.

⁶ Wildlife areas include wetland and rangeland areas owned and managed by public wildlife agencies.

residential, three percent commercial and light industry, three percent public facilities, three percent open space and recreation, and two percent heavy industry. Four percent is either open water or unclassified (e.g. roadway right-of-ways).

Chart 1
Existing Land Use: Total Planning Area



Within the North Bay’s historic wetlands, an even more rural pattern emerges (Chart 2). Forty-six percent of the former marshlands are in extensive agriculture and rural use, 33 percent in wildlife use, and the remaining area consists of one percent residential, less than one percent intensive agriculture, two percent commercial and light industry, three percent public facilities, three percent open space and recreation, and three percent heavy industrial. Nine percent is either open water or unclassified. In the diked historic baylands, a full 58 percent of the land is in extensive agriculture.

Historic Wetlands and Uplands

-  Historic Marshland
-  Upland
-  Existing and Historic Waters
-  Study Area Boundary

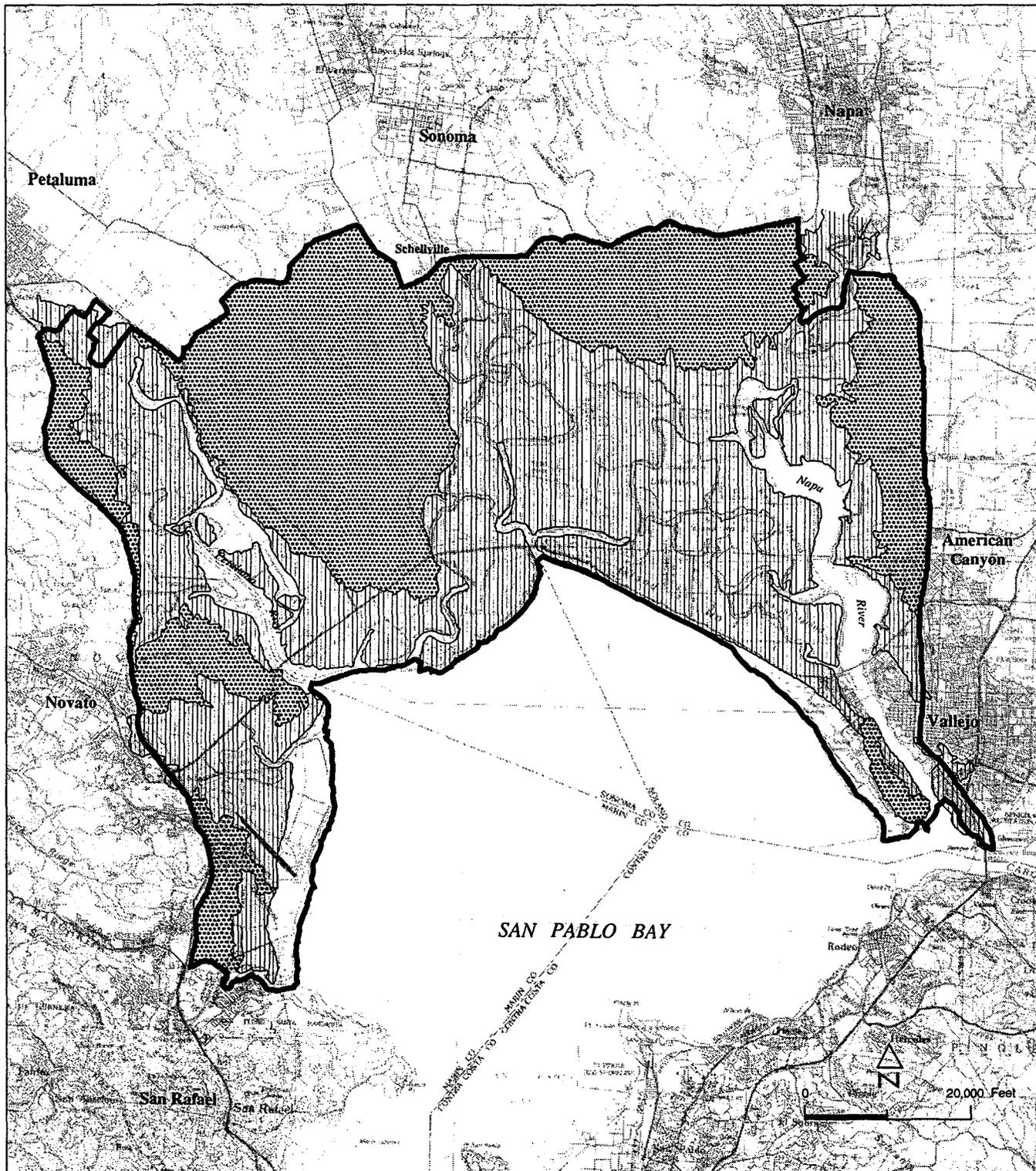
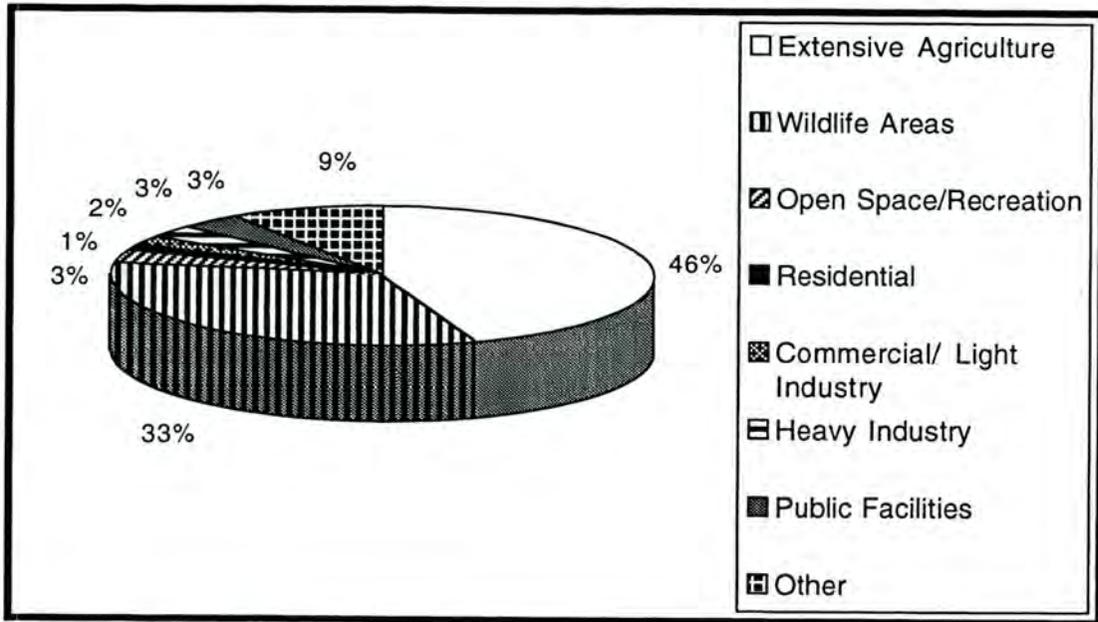


Chart 2
Existing Land Use: Historic Wetlands



As can be seen in Figure 3, the central portion of the planning area, including northern Marin County, southern Sonoma County, and southern Napa County, consists primarily of agricultural and undeveloped rural lands. Most of the urban uses occur along the perimeter of the planning area next to the major transportation corridors of Highways 101 and 29, and, to a much lesser extent, Highways 116/12 and Highway 37 on both the east and west ends of the planning area.

The principal recent change in land use in the North Bay has been the conversion of extensive agricultural uses in the upland Carneros district in Napa and Sonoma Counties to more intensive agricultural use, primarily as vineyards. Other trends include a movement toward wetlands restoration, and the conversion of former military lands, such as Mare Island and Hamilton Air Field, into other uses. Approximately 25 projects are currently proposed for the planning area (see North Bay Projects chapter).

Following is a general description of the current use of land in the North Bay and a preliminary evaluation of the effects of each category of use on wetlands. To see how these categories were developed, please refer to Appendix A.

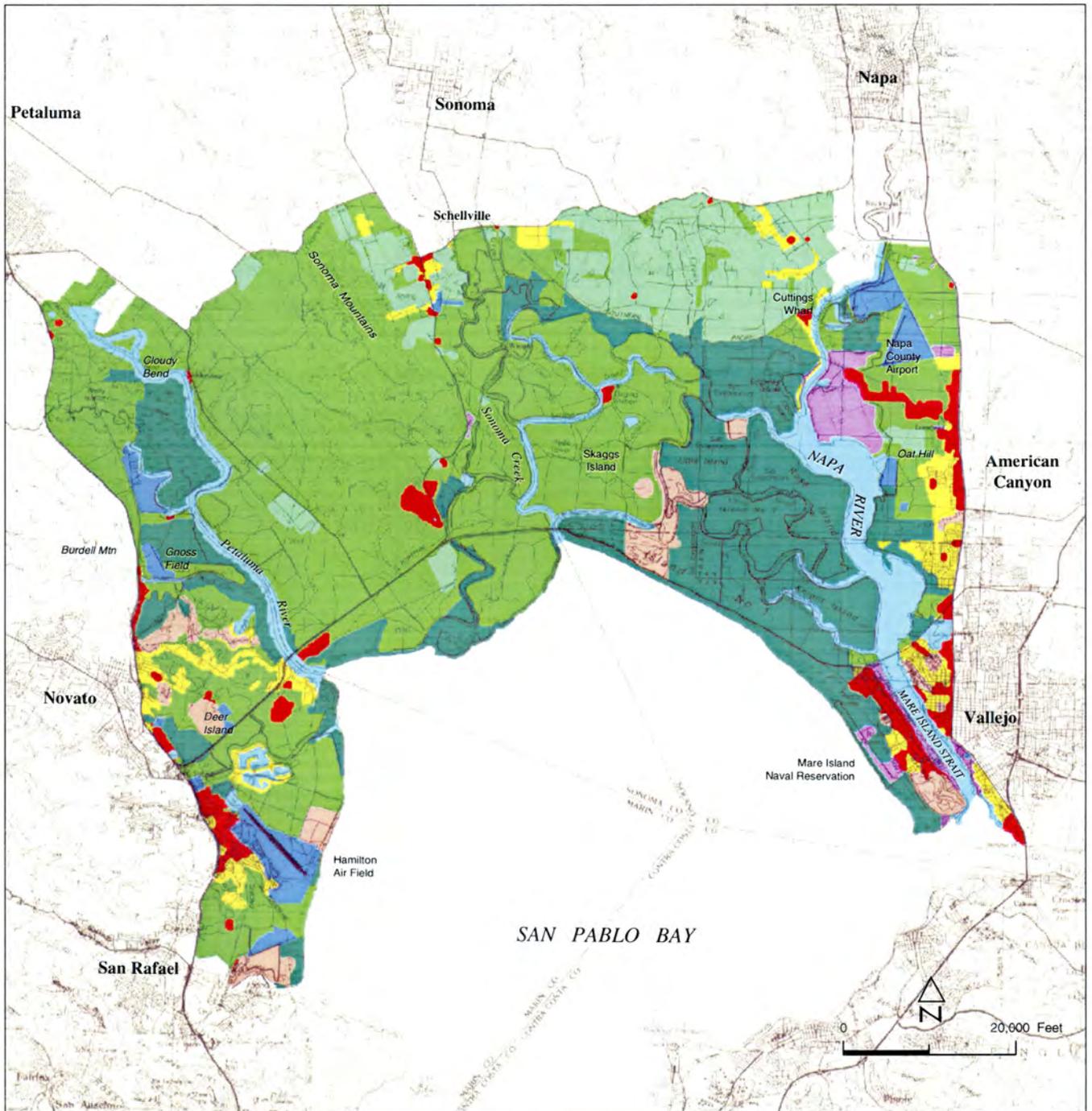
Extensive Agriculture and Rural Lands

Extensive agriculture and rural lands include range and pasture lands, and other undeveloped rural lands. These lands make up approximately 51 percent or about 56,080 acres of the planning area, 46 percent of the historic wetlands, and a full 58 percent of the diked historic baylands. Clearly extensive agriculture and rural lands are the most prominent land use in the North Bay.

SOURCE: REGIS, 1995; BCDC

Existing North Bay Land Use

- | | | | |
|---|---------------------------------------|---|-----------------------------------|
|  | Extensive Agriculture and Rural Lands |  | Public Facilities |
|  | Intensive Agriculture |  | Open Space and Recreation |
|  | Residential |  | Wildlife Areas |
|  | Commercial and Light Industry |  | Open Water |
|  | Heavy Industry |  | Areas Outside Study Area Boundary |



This land consists primarily of the range lands⁷ of the Sonoma Mountains and Mount Burdell, and to a lesser extent, the pasture⁸ and croplands of the diked historic baylands. These privately-held lands often support substantial wildlife habitat (for more information about how the categories were developed, refer to Appendix A).

1. **Potential Benefits.** Extensive agriculture and rural lands can offer significant wetlands and economic benefits.

In general, extensive agriculture supports a higher habitat value for wetland species than any other land use (with the possible exception of dedicated wildlife areas). Song birds, small mammals, reptiles, and amphibians are found in pasture land, and raptors find ample prey in these areas. Diked agricultural lands are also used by water-dependent birds for feeding and resting (San Francisco Bay Conservation and Development Commission, 1983). Where farmed and grazed historical baylands are adjacent to tidal marsh, they can provide important refuge and feeding areas for wildlife during high tides. Farmed and grazed baylands also serve as buffer areas between the more intensely used urban areas and tidal wetlands. These buffers can increase the value of wetlands by reducing the impacts of noise, pollutants, and direct intrusion.

These lands can also support diked seasonal marshes, which are seasonal marshes that include former tidal and brackish marshes. Fresh water input comes from winter rainwater, stormwater runoff, groundwater, and flood flows. Many of these wetlands are used as storm retention basins, thus improving water quality by assimilating pollutants from runoff. These wetlands can provide essential feeding and roosting habitat to migratory birds during the migratory season (mid-October to mid-April) (San Francisco Estuary Project, 1992).

Extensive agriculture lands also provide important regional economic benefits. For example, the market revenue for oat hay in the four North Bay counties was over \$3 million in 1994. Valued at over \$2.5 million in Sonoma County, oat hay was the fourteenth most valuable crop in 1994 in that county (Marin, Napa, Solano, and Sonoma County Annual Crop Reports, 1994).

Dairy industries in the North Bay, considered intensive agriculture in this report, rely heavily on the forage produced on these extensive agriculture lands for feed for their cows. In turn, the dairies provide half the fresh milk and milk products in the Bay Area (for more information about the economic benefits of the dairy industry, refer to the intensive agriculture section).

Feed costs represent nearly 65 percent of the operating costs of a dairy farm; therefore, continued availability of attractively priced forage for cows is essential to the North Bay dairy industry. Roughly 10 percent of the North Bay counties' forage crops for dairies are produced on

⁷ Range lands are those lands on which the native vegetation is predominately grasses, plants, forbs or shrubs suitable for grazing or browsing use.

⁸ Pasture lands are those lands are primarily those lands that are used to produce adapted, domesticated forage plants for livestock.

diked historic baylands (Sally Pozzi, personal communication).⁹ Local availability of forage is particularly important because it minimizes transportation costs. Diked historic baylands in agricultural use, therefore, help the regional economy by contributing to local agricultural income, by supplying inexpensive milk products, and by providing local jobs. If existing land uses were to change to housing, intensive agriculture or wildlife areas, these jobs and the industry could be lost (San Francisco Bay Conservation and Development Commission, 1983).

In addition to providing wetland habitat and regional economic benefits, these extensive agriculture lands offer other benefits. For example, these open lands contribute to the pastoral, scenic beauty of the North Bay, helping to make the wine counties a prime tourist attraction. Another benefit is flexibility—unlike urbanized lands, extensive agriculture can generally be converted back to wetlands if desired.

2. Potential Impacts on Wetlands. Extensive agricultural use is generally compatible with wetland habitat. However, like any other land use, it can have adverse impacts on wetlands via planting, grazing, and levee maintenance, as well as through practices that pollute water.

Farmed wetlands used as oat hay cropland are periodically disturbed by planting, cultivation and mowing activities; thus, these lands generally provide less habitat stability, cover, and insect and plant food than permanent pasturelands which are not cultivated or mowed. In general, the value of a farmed wetland as a habitat area is inversely related to the intensity of the agricultural activity (San Francisco Estuary Project, 1992).

Certain grazing practices can also impact wetlands directly and indirectly, by destroying streamside vegetation (which increases erosion and polluted runoff to the wetlands), contaminating waters through manure, lowering the water tables, shearing stream banks, and other effects (U.S. EPA, 1993).

Farmers in the diked historic baylands also must construct and maintain levees in order to prevent flooding and destruction of their crops.¹⁰ Levee maintenance typically requires adding material to the levee to offset settlement or erosion, reduce seepage, or increase stability (Gahagan and Bryant Associates, Inc., 1994). Most land owners, particularly in the Sonoma and Napa Slough systems, dredge materials from adjacent sloughs or creeks and place the materials directly on the top and inner banks of the levees. Other flood control practices include dredging and clearing flood control channels of accumulated debris to facilitate the efficient transport of heavy winter runoff through flood-prone areas.

While levee maintenance can impact tidal wetland areas that are dredged and fill habitat on and adjacent to levees, levee failure can also harm wetlands. Levee failure can cause flooding, erosion and intrusion of salt water, thus degrading water quality and altering wetland habitat.

⁹ This figure may be as high as 35%, by some accounts (Dayna Wilson, personal communication).

¹⁰ Levees are generally raised earth structures which protect lands from flooding.

Agricultural practices that fill or excavate land, drain or clear land, or alter water and sediment levels can also adversely affect wetlands, as well as habitat value provided by agricultural lands.

Finally, the application of pesticides, herbicides and nutrients can pollute runoff and harm wetlands.¹¹ Polluted runoff decreases the quality of the water which flows into the wetlands, thus damaging the wetlands and contaminating fish and wildlife.

3. **Trends.** Land in extensive agriculture in the Carneros region of Napa and Sonoma Counties are being converted to higher cash yielding vineyards, an intensive agriculture use. In addition, there are pressures on extensive agriculture lands in the Highway 101 and 29 corridors for conversion to urban uses. Several public facilities projects (primarily flood control and sewage wastewater and sludge treatment projects) are proposed for the planning area. These projects are located along the Petaluma River and Sonoma Creek.

4. **Implications.** Extensive agricultural lands consist largely of range and pasture lands, which contribute to the local and Bay Area economy. In general, extensive agriculture is the land use most compatible with wetlands (except for wildlife areas), providing seasonal wetlands and buffers from urban uses. Certain management practices can, however, adversely impact wetlands protection and may be undesirable. These practices include processes which can directly affect wetlands, by altering the wetland's water cycle and vegetation. Other processes, such as fertilization and pest control, can also cause indirect impacts via polluted runoff. Best management practices that include grazing strategies and runoff controls offer viable alternatives to agriculture practices that may harm wetlands. Resource Conservation Districts in all four counties help farmers implement these management practices by providing sound technical assistance. The Districts should be supported in their continuing work to help protect agricultural and natural resources.

Wildlife Areas

Wildlife areas make up approximately 20 percent or 22,390 acres of the planning area and all but 330 acres are within the historic diked baylands. Although many other types of land uses, such as extensive agriculture, provide wildlife habitat, only publicly owned areas dedicated largely to wildlife use are included in this category (for more information about how the categories were developed, please refer to Appendix A). Wildlife areas are the second largest land use after extensive agriculture. This use is generally confined to the publicly-owned areas that contain significant tidal wetlands, seasonal wetlands, and transitional upland habitats (see Chapter 4, Land Ownership Patterns). The majority of wildlife areas are located in and around the mosaic of tidal wetlands, diked historic baylands and tributary streams of San Pablo Bay. The diked historic baylands support a variety of wetland habitats including seasonal fresh water, brackish water and

¹¹ Interestingly, home gardeners can use up to 10 times more toxic chemicals than farmers per acre (Lindsay Museum, 1995).

salt water ponds, ditches and marshes (San Francisco Bay Conservation and Development Commission, 1982).

Uses of these lands vary, and are determined by their owners. The California Department of Fish and Game and the U.S. Fish and Wildlife Service use the larger wildlife areas in the North Bay principally for wildlife habitat, and may allow limited or regulated public access for wildlife observation, education, research, hunting, and fishing (U.S. Fish and Wildlife Service, 1995a). The smaller wildlife areas, which are usually located closer to the urban areas, also function as open space or community separators and may provide limited public access (see Figure 6, Major Public and Non-Profit Ownership).

1. **Benefits/Impacts on Wetlands.** Management activities in wildlife areas tend to focus on habitat enhancement or restoration, such as re-establishing native plant species, removing exotic plant species and noxious weeds, and flooding to enhance a desired habitat. Other management activities include the maintenance of flood control structures such as levees. (San Francisco Bay Conservation and Development Commission, 1994). As in other uses, these activities generate some impacts; but overall these areas and management practices benefit wetlands by protecting and improving wetland habitat.

2. **Trends.** Federal and state fish and wildlife agencies are pursuing a program of acquiring and restoring key diked historic wetland sites in the planning area for wildlife, including the Cargill salt ponds, Cullinan Ranch, land on lower Tolay Creek, Sonoma Baylands, and near Ringstrom Bay.

3. **Implications.** Wildlife areas generally serve to protect wetlands. Passive recreation uses on these lands can generate some impacts, so restoration sites should be sensitively designed and managed to reduce adverse impacts to wetlands. Because of the benefits for wetlands, wetlands restoration and acquisition should be encouraged when not incompatible with other uses.

Intensive Agriculture

Intensive agriculture makes up approximately nine percent or 9,580 acres of the planning area, and less than one percent or 280 acres of the diked historic baylands. While vineyards represent the majority of intensive agricultural uses in the North Bay, other uses include scattered farmsteads, dairies, and horse stables.

The vineyards are concentrated largely in the Carneros region of Sonoma and Napa Counties, which extends from the Napa River to the foothills of the Sonoma Mountain Range, near Big Bend. The planning area also contains several smaller vineyards scattered throughout the region with one vineyard located as far south as Highway 37. The vast majority of the vineyards within the planning area are located at upland sites (formerly rangelands), outside the diked historic baylands. However, intensively agricultural use in upland areas can, unless appropriate

management practices are followed, have downstream effects which can adversely impact wetlands.

1. **Potential Benefits.** Intensive agriculture can offer both wetlands and economic benefits. Although often not as beneficial to wetlands as extensive agriculture, intensive agriculture can benefit wetlands by employing environmentally friendly management practices. For example, by using cover crops, vineyard managers can control soil erosion and stormwater runoff, maximize water infiltration, suppress dust, minimize soil compaction, and provide habitat for beneficial insects and wildlife (Southern Sonoma County Resource Conservation District, 1993). With effort, some vineyards can be particularly compatible with wetlands as adjacent upland uses. For example, the Viansa winery takes an aggressive posture towards creating wildlife habitat by planting trees, providing bird nesting boxes, and even leaving a portion of the fields fallow in order to create pheasant habitat. Furthermore, the Viansa winery, in conjunction with Ducks Unlimited, restored over 90 acres of wetlands on the property. These wetlands serve an important function as settling ponds (Sam Sebastiani, personal communication).¹²

Economic benefits are derived both from the grape and dairy industries. In 1994, grape and wine crops were valued at nearly \$306 million in the four counties (Marin, Napa, Solano and Sonoma Crop Reports, 1994). North Bay dairies provide half the fresh milk and milk products in the Bay Area. Jobs are provided both on the farms and in the milk products industry. The dairy industry is important to the economy of the North Bay and the entire Bay area, producing \$107 million in milk market revenue in the four North Bay counties alone in 1994 (not including milk manufacturing, beef products, or associated jobs) (Marin, Napa, Solano and Sonoma County Crop Reports, 1994).

2. **Potential Impacts on Wetlands.** Depending upon the slopes, vineyard development can include grading; land form alterations; and removal of native vegetation to establish access roads, provide appropriate slope terracing and benches,¹³ and create diversions to intercept stormwater runoff (Southern Sonoma County Resource Conservation District, 1993). These activities can change water patterns (also called *hydromodification*), and, unless appropriate measures are taken, contribute to erosion, the build-up of sediment in wetlands, and increased pollution in stormwater runoff and wetlands, thereby degrading the quality of wetland habitat. Further plant maintenance can involve applying irrigated water and nutrients, which can add pollutants to storm runoff if not properly controlled. Certain dairy farming practices can also add excess nutrients to the runoff and ultimately to the wetlands (U.S. Environmental Protection Agency, 1993).

¹² However, practices at Viansa may not represent the current norm for vineyard industries.

¹³ Benches are used to form the land surface to improve formability, retain moisture, reduce soil erosion, and manage stormwater runoff (Southern Sonoma County Resource Conservation District, 1993).

Finally, some of the same farming practices found in extensive agriculture are also found in intensive agriculture, such as fertilization. For impacts of these activities, refer to the extensive agriculture section.

3. **Trends.** Because the supply of flat, farmable lands in Sonoma and Napa Valley is limited, and the cost of prime vineyard lands continues to rise, viticulturists have acquired range lands in southern Sonoma and Napa Counties to cultivate vine crops and meet the growing demand for premium wine grapes (Paul Sheffer, Personal Communication). This trend, particularly in the Carneros region, is likely to continue.

4. **Implications.** In short, intensive agricultural lands consist largely of upland vineyards and dairies, which are valuable to the local and Bay area economy. In general, intensive agriculture is not as compatible with wetlands as extensive agriculture. Incompatible activities can include land alteration, fertilization, and other processes which impacts wetlands, such as changes to the wetland's water quality, water cycle and vegetation. However, careful design and management of vineyards and dairy farms can provide habitat and water quality benefits for the wetlands. Additionally, best management practices, such as those discussed in the Southern Sonoma County Resource Conservation District's *Vineyard Management Practices* manual, can help farmers manage their lands to minimize impacts and maximize benefits to wetlands. Resource Conservation Districts and the Natural Resources Conservation Service provide sound technical assistance regarding these matters.

Open Space and Recreation

Open space and recreational areas make up approximately three percent or 2,870 acres of the planning area, 2,020 acres of which are within the historic marsh and bay. The principal functions of open space and recreation areas are to provide relief from urban areas, to protect the public from natural hazards such as fire, floods, seismic faults or landslides, to provide active and passive recreation areas, and to preserve land in its natural state. The majority of publicly owned open space and recreation areas are located next to urban areas in the City of Novato, Marin County, and the City of Vallejo. Several large privately-owned duck clubs are located in Solano and Napa Counties.

1. **Potential Benefits.** Areas which promote passive recreation, such as nature study, hiking, biking, and bird watching on designated trails, are generally compatible with wetlands. For example, land managers may implement plans to actively benefit wetlands, such as plans to control flooding, soil erosion and exotic plant species, and to facilitate the re-establishment of riparian and wetland habitats.

Recreational use of wetlands provides opportunities to cultivate appreciation for wetland resources, and build a greater constituency that will advocate for the preservation, restoration and enhancement of wetlands. For example, hunting organizations, such as Ducks Unlimited and the

California Waterfowl Association, have proven to be a very effective lobby for wetland preservation.

While more active recreational areas, meet important community recreational needs, these uses are generally not as compatible with wetlands as passive recreation areas.

2. **Potential Impacts on Wetlands.** Public access in wetlands can have adverse impacts such as destroying vegetation, disturbing feeding, nesting and resting behaviors of wildlife, fragmenting habitat, and generating trash and litter. A recent study evaluating the impacts of public access on wildlife use of wetlands identified short-term impacts such as the initiation of movement or flight; the study did not find evidence, however, of longer-term impacts such as a reduction in wildlife population. The study further observed that birds which remained in these observed wetlands became acclimated to human disturbances, but that areas of high human usage had substantially lower overall bird use than areas subject to infrequent human use (Josselyn et al., 1988). This issue clearly merits further attention to ensure that future public access and recreational opportunities proposed in the North Bay will not adversely impact sensitive wetland habitats by inadvertently discouraging or disrupting wildlife activity.

Active recreational uses can include tennis courts, basketball courts, golf courses, and other types of relatively high intensity uses. Active recreation management practices can damage wetlands. Typical management practices include irrigating and fertilizing playing fields and golf courses, and controlling noxious weeds and pests through the application of herbicides and pesticides. These activities can pollute wetlands via stormwater.

3. **Trends.** No trends affecting open space and recreational uses in the North Bay have been identified.

4. **Implications.** Open space and recreation lands range from tightly managed lands such as a tennis court, to open spaces areas intended to preserve habitat. Open space is compatible with wetlands habitat. However, active and passive recreation uses can negatively impact wetlands via public access and increased pollution. Active recreation may not be compatible with wetlands, and thus non water-dependent active recreation should be guided to more appropriate upland locations. Passive recreation uses are often more compatible with wetlands, and should be sensitively designed and managed to reduce impacts to wetlands.

Urban Uses and Public Facilities

Because urban uses have similar impacts on wetlands, primarily displacing wetlands, the land use categories of residential, commercial and light industry, heavy industry, and public facilities are discussed together.¹⁴ Together, these uses comprise 13 percent of the planning area.

¹⁴ However, some types of public facilities are more rural in nature (such as constructed wetlands and wastewater fields).

Residential uses, the largest urban use, make up approximately five percent or 5,250 acres of the planning area, and include homes and rural ranchettes. Of this amount, 16 percent, or 860 acres are within the diked historic baylands. Residential areas are concentrated in the uplands of Novato, American Canyon, and Vallejo, adjacent to major transportation corridors such as Highways 101, 37, 29, and 116. A few prominent exceptions include Bel Marin Keys in Marin County, primarily located in diked historic baylands, and Bahia in Novato which is partially located in the historic marshlands.

Commercial uses and light industry comprise approximately three percent or 3,400 acres of the planning area. Of this amount, 39 percent, or 1,330 acres are within the diked historic baylands. They consist mainly of commercial, retail and office facilities, small manufacturing, storage and warehouses, service facilities, marinas, and private commercial recreation areas. Except for recreational marinas, the majority of commercial and light industrial uses are located in upland areas, next to the major transportation corridors.

Heavy industry makes up only two percent or 2,490 acres of the planning area. Of this amount, 86 percent, or 2,150 acres are within the diked historic marshlands. Heavy industrial uses in the North Bay include manufacturing and processing plants, ports, dredged material disposal and reuse facilities, gravel and mining operations, and remnant salt production facilities. For the most part, heavy industry is concentrated in Vallejo along Mare Island Strait and at the Mare Island Naval Shipyard. Also shown as industrial use, the former Cargill Salt Company plant in southern Napa County has now been closed.

Public facilities make up approximately three percent or 2,850 acres of the planning area. Of this amount, 81 percent, or 2,320 acres are located within the historic marshlands. This category includes waste water treatment facilities,¹⁵ airports, and landfill operations. The majority of public facilities are located in diked historic baylands, adjacent to urbanized areas in and around the Cities of Novato and American Canyon, and Marin and Napa Counties. Historically, North Bay communities have sited waste water treatment facilities and airports in diked historic baylands because they provide relatively inexpensive and large expanses of flat, undeveloped lands away from urban areas.

1. **Potential Benefits.** According to a recent study, Napa, Solano, Sonoma and Contra Costa Counties are projected to have the top four rates of growth in the Bay Area in population, households, employed residents, and new jobs (Association of Bay Area Governments, 1996). Residential, commercial, and industrial areas meet an important need by providing jobs and housing for this growing population; and public facilities provide the infrastructure to support the growth. These urban uses hold no inherent benefits for wetlands, although careful project design can provide or protect wetlands habitat through clustering, buffers, and other techniques. For

¹⁵ Only treatment facilities, support structures and wastewater ponds are included in the "Public Facilities" category. Irrigated pasture lands are included in the "Extensive Agriculture and Rural Lands" land use category.

example, clustering homes on the upland portion of a site can help preserve the remainder of the site for wetlands or other types of open spaces. Adequate buffers can reduce the impacts of noise, pollution, and direct intrusion.

Marinas and certain kinds of heavy industry and public facilities can provide additional benefits. Marinas serve recreational needs and provide access to the Bay, while certain industrial uses, such as salt ponds, can provide wetlands habitat. Additionally, treatment ponds associated with sewage treatment plants, such as those at the Las Gallinas Valley Sanitary District, can provide wildlife habitat, irrigate pasture lands, and provide recreational opportunities.¹⁶

2. **Potential Impacts on Wetlands.** Urban uses can harm wetlands simply through the development process itself. Urbanization can also impact wetlands by changing water patterns, developing roads and other infrastructure, and by polluting the water. Specific uses, such as marinas and gravel mining operations, may have additional impacts.

a. **New Development/Urbanization.** Urban development can displace wetlands by physically converting large acreages of wetlands into other uses. Development can also fragment, isolate, or encroach on wetlands, which can trigger the loss of species diversity. For wildlife species that use wetlands as corridors for movement—such as from resting areas to feeding areas or during seasonal migration—this habitat fragmentation can be devastating, potentially disrupting life cycles and increasing exposure to predators. Fragmentation can also make wildlife communities more vulnerable to natural events such as droughts or floods (San Francisco Estuary Project, 1991a). Urbanization can also introduce new predators (such as household pets) and non-native plant species, which can displace native wetland species (San Francisco Estuary Project, 1992b).

Another primary consequence of residential, commercial and industrial development is increased pollution from urban runoff, which can impact the water quality of wetlands and adjacent water bodies. A future background report on polluted runoff will discuss the impacts of polluted runoff on the wetland resources in the North Bay in greater detail.

b. **Infrastructure/Public Facilities.** Industrial, commercial and residential development is accompanied by the expansion of infrastructure and support services such as sewage treatment facilities, landfills, roadways, and airports.

Sewage treatment plants, landfills, and airports can all adversely impact wetlands. Discharges from sewage treatment facilities can be a source of toxins which can be detrimental to aquatic life; discharges can also be a source of fresh water that may dilute the saline conditions in salt marshes and cause the conversion to brackish marshes, thereby altering the type of fish and wildlife habitat the area provides. Further, waste water pond maintenance usually involves repairs

¹⁶ However, constructed wetlands of this sort must be carefully designed to minimize the exposure of fish and wildlife to accumulated toxics.

to the pump stations and associated plumbing, and levee maintenance, activities which can directly disturb wetlands (see discussion of extensive agriculture).

Solid waste landfills were frequently located in wetland areas, resulting in the direct displacement of wetland habitat. In addition, leachate from landfills can adversely impact adjacent wetlands, groundwater and surrounding area. In addition, the extensive levee and stormwater collection systems constructed at landfills to manage leachate can disrupt the hydrology and water circulation in surrounding wetland areas.

While most of the roadways in the planning area are in upland areas, many highways and roads adjacent to the Bay were built in reclaimed wetland areas. Highway construction has filled hundreds of acres of wetlands along the edge of the Bay. In general, road construction has physically destroyed aquatic and wetland habitats and degraded downstream areas due to increased erosion, sedimentation and polluted runoff. Roadway operation and maintenance also indirectly impact adjacent wetland habitat through increased automobile emissions and airborne particles that may interfere with plant physiological processes, or through the introduction of pollutants from runoff or weed control activities (San Francisco Estuary Project, 1991a). Roadway construction can also stimulate urbanization in adjacent areas.

Highway 37 and portions of Highway 101 run along diked historic baylands, thus making roadway expansion problematic. For example, widening of Highway 37 would result in fill either in tidal wetlands on the south side or diked wetlands on the north side of the road. Expansion of the roadway in the vicinity of the Napa River would likely result in the loss of tidal wetlands that support rare or endangered species such as the salt marsh harvest mouse and the California clapper rail (San Francisco Estuary Project, 1991a). The Metropolitan Transportation Commission has formed the North Bay Corridor Study to evaluate east-west highway improvement options and will analyze how to possibly improve wetland habitat as part of any future improvement project.

Finally, impacts can also result from aircraft activity which disturbs wildlife (noise, flight patterns, etc.).

c. Changes to Water Patterns (*Hydromodification*) and Flood Control Improvements. Urban growth and agriculture have increased demand for water supply development, flood control and dredging of navigation channels, which have all contributed to wetland losses around San Francisco Bay.

Water supply development can dramatically affect the quantity and timing of fresh water flows to wetlands. For example, water diversions decrease winter flows that would otherwise flush and circulate water in tidal marshes. These diversions also reduce sediment loads, and reduce summer fresh water flows which can prevent or minimize the impacts of salt intrusion into brackish and fresh water marshes (San Francisco Estuary Project, 1991a). Continued or increased

diversion of freshwater can cause the conversion of freshwater or brackish marshes into salt marshes, thereby changing the types of species these wetlands support.

Flood control projects also change the volume and timing of fresh water flows into wetlands, as well as impacting the transport of sediments and nutrients that maintain and restore downstream wetlands. Flood control projects in the Bay Area, which have generally been designed to convey runoff water downstream as quickly as possible, typically entail removing riparian vegetation, concentrating the stream flow in channels, and using concrete or rip-rap to prevent streambank erosion. Consequently, flood control projects can greatly modified and degraded aquatic and riparian habitat, adversely impacting their ability to support fish and wildlife populations. Furthermore, scientists now claim that traditional flood controls methods often increase, instead of decrease, the impacts of floods (*New York Times*, 1995).

The Petaluma and Napa rivers are regularly dredged to maintain adequate channel depths to enable safe navigation for waterborne commerce and recreational boaters. Salt ponds and marinas are also dredged¹⁷. Dredged material disposed in the Bay increases sediment levels and may resuspend pollutants; disposal activities can also be disruptive to fish and wildlife resources and wetland processes. The need for alternative disposal sites for dredged material may result in additional pressures on wetland areas, as well as create opportunities for wetland creation or enhancement using dredged material.

Finally, urbanization adjacent to wetland areas also often stimulates the demand for mosquito abatement activities which can alter water patterns.

d. **Water Pollution.** Urban uses impact wetlands by polluting the water which runs into our creeks, groundwater basins, and wetlands. Residential areas can pollute runoff via septic systems, cleaning and gardening products, and pet manure. Maintaining commercial and light industrial areas generally involves using assorted solvents, paints, oil based products, fertilizers, pesticides and herbicides. Heavy industrial uses can involve a wide range of hazardous materials including oil-based products, radiological materials, industrial solvents, and heavy metals (City of Vallejo and the Mare Island Futures Work Group, 1994). Public facilities, such as airports and landfills, can contribute a variety of pollutants, such as fuel, oil, grease, and ground rubber. These products degrade water quality in the wetlands, threatening their ability to sustain healthy ecosystems. Polluted runoff and its impacts will be discussed further in the upcoming background report on polluted runoff.

e. **Other Impacts.** Certain other types of urban-related uses that occur in the planning area, such as marinas and gravel mining operations, can have unique impacts.

The construction of marinas and associated recreational and commercial facilities often involves placing fill in wetlands along shoreline areas, and placing pilings and boat moorings in

¹⁷Salt ponds also require levee maintenance. The impacts of levee maintenance are discussed in the extensive agriculture section.

open or tidal areas. These actions can directly cover wetlands and increase sedimentation. Boat traffic associated with marinas can cause shoreline erosion through increased wave action created by boat wakes. Marinas and related recreational facilities can also produce indirect impacts, such as increased litter, the discharge of sewage from boats, and the potential for accidental release of marine fuels and oils (San Francisco Estuary Project, 1991a). Additionally, most recreational boats require ongoing maintenance such as pressure washing, painting, engine repair, refueling, and disposing of oily wastes and bilge water. These actions can harm wetlands by adding pollutants to wetlands directly and via runoff unless properly managed.

Marinas constructed at shallow locations that naturally accrete can also create a demand for dredging in order to maintain access (for example, along the Petaluma River). Dredging can directly disrupt wetland habitat. Dredging also requires disposal of the dredged materials, which can further alter wetland and other habitats (U.S. Environmental Protection Agency, 1993).

Gravel and mining operations can impact wetlands habitat by affecting river systems. This use disturbs habitat in the immediate mining area and removes gravel material necessary for fish spawning. Additionally, the gravel pits can "capture" the river, causing the entire portion of the river to shift, isolating former habitats and in some cases, increasing the risk of flooding. Further, these pits can induce erosion downstream, as the river dumps its sediment load and becomes available to carry new sediment (Dunne and Leopold, 1978). These changes in river systems often adversely affect wetlands by increasing erosion and pollution,¹⁸ and by destroying habitat for migrating fish.

3. **Trends.** As will be seen later in this report, there are a number of urban projects proposed in the diked historic baylands, including nine residential projects, nine commercial and industrial projects, and eleven public facilities projects. Another trend involves phasing out or idling heavy industrial uses, as a result of the closure of Mare Island Naval Shipyard and Cargill's transfer of former salt ponds to the California Department of Fish and Game. To facilitate reuse, the Navy is identifying and cleaning up sites on Mare Island that are contaminated with hazardous wastes or unexploded ordnance. The shipyard will be converted to a mixture of uses, including commercial, residential, and wildlife use. A third trend involves the closure and transfer of former military bases, including Mare Island Naval Shipyard, Hamilton Air Force Base, and Skaggs Island.

Conclusions

1. Historically, approximately 52,800 acres, or about 50 percent of the North Bay planning area was marshland, and about 13,800 acres, or about 10 percent tidal water. Today, about 11,800 acres, or close to ten percent of the area is tidal marshland and 5,400 acres, or five percent, tidal waters.

¹⁸ For more information about how rivers relate to wetlands, refer to the future report on polluted runoff.

2. The North Bay planning area remains predominantly rural, dominated by two land uses—extensive agriculture and rural lands (51 percent of the 174 square mile planning area), and wildlife areas (20 percent of the planning area). The remaining uses each comprise less than ten percent of the planning area: nine percent intensive agriculture, five percent residential, three percent commercial and light industry, three percent public facilities, three percent open space and recreation, and two percent heavy industry. The remaining six percent is open water. Thirty-three percent of these lands are publicly owned. These patterns suggest that protection measures might benefit from focusing on the two largest land uses, which together comprise over 70 percent of the planning area (wildlife and extensive agriculture).

3. Within the historic wetlands, an even more rural pattern emerges. Of the former marshlands, approximately 44 percent are in extensive agriculture and rural use, 33 percent in wildlife use, and the remaining area consists of one percent residential, less than one percent intensive agriculture, two percent commercial and light industry, three percent public facilities, three percent open space and recreation, and three percent heavy industrial. About nine percent is open water.

4. Region-wide land use trends in the North Bay include conversion of range and pasture lands in the Carneros region of Napa and Sonoma Counties to more intensive vineyard agricultural use, and the development of urban uses in upland areas within existing urban areas along the Highway 101 and Highway 29 corridors. Another major trend is the acquisition of large rural and extensive agricultural areas by federal and state wildlife agencies for wildlife habitat in existing tidal areas and in diked historic baylands.

CHAPTER 3

GENERAL PLAN DESIGNATIONS

Local governments use general plans to guide land use decisions about the future of their communities. This chapter describes the general plan designations for the eight communities within the North Bay planning area. General plans are important because they determine how land will be used in the future, and whether that future will support, or conflict with, wetlands values.

This chapter first explains general plans and provides a brief overview of general plan designations in the planning area. After analyzing the general plan designations for each jurisdiction, the chapter discusses lands in flux, or lands whose designations may change in the near future. The final section summarizes the chapter and presents conclusions.

Purpose of the General Plan

General plans can be thought of as the genetic code which determines how cities grow. They apply to all lands within a city or county boundary, and serve as the constitution for guiding future development in the community (Curtin, 1995). All subordinate land use decisions, such as subdivision approvals, zoning changes or development agreements, must be consistent with the general plan (Office of Planning and Research, 1990). General plans may also address planning issues outside a local government's boundary (for example, lands within its sphere of influence).¹

General plans designate lands for specific uses, such as residential. However, to better understand how that land will be used, one must examine the general plan policies concerning residential uses, which may limit residential development on sensitive lands such as wetlands. One also must look at the zoning code—which, in this case, might limit development to one residential unit per 20 acres. Thus, general plan designations and policies are implemented through land use control mechanisms such as zoning.² Zoning and other land use tools to protect wetlands will be discussed in a future background report concerning land use regulatory powers.

Under the California Government Code, cities and counties must adopt comprehensive long-term general plans that include seven mandatory elements: (1) land use, (2) circulation, (3) housing, (4) conservation, (5) open space, (6) noise, and (7) safety. Of those elements, land use, conservation, open space, and safety elements contain the policies which most affect the land use decisions in the North Bay, and, in turn, the future of the North Bay wetlands.

¹ The sphere of influence usually indicates the future boundaries of the city. This sphere must be approved by a Local Agency Formation Commission, or LAFCO. LAFCOs have the authority to approve or deny new urban service boundaries and city annexations, thereby discouraging the expansion of urban service boundaries or city annexations that could result in the loss of agricultural lands, open space, or wetlands. LAFCOs are a potentially important tool in guiding incompatible land use activities away from important resources (Deerings California Codes, Government Code §56000).

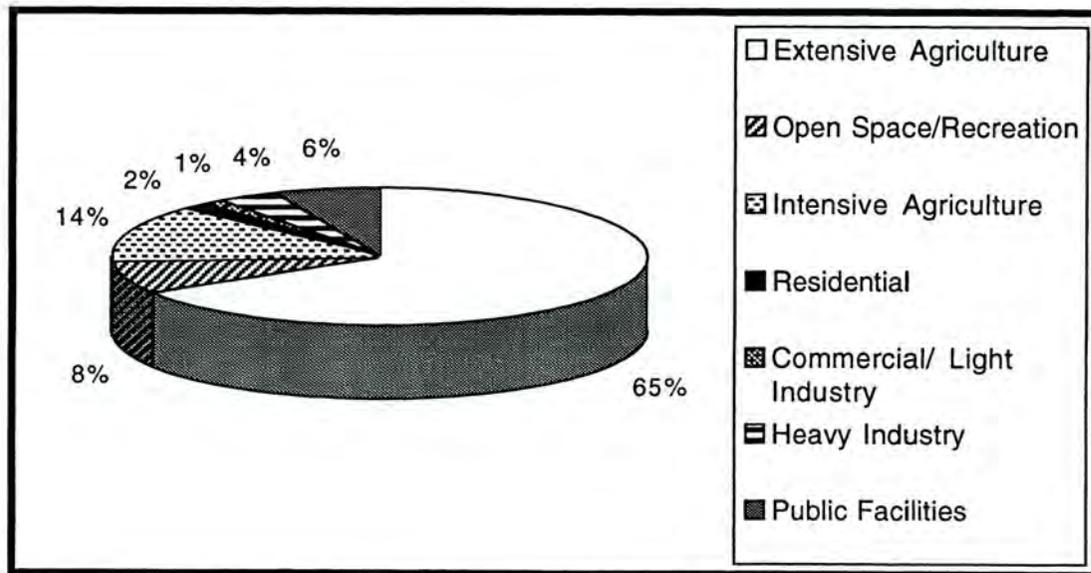
² For example, some jurisdictions have resource overlay zones, which require that sensitive resources like wetlands be protected from urbanization.

Overview of General Plan Designations in the North Bay Planning Area

A preliminary view reveals that the composite current general plan land use designations in the North Bay planning area appear generally compatible with wetland resource values and functions.³

Chart 3 shows general plan designations in the historic wetlands. The majority of the historic wetlands are designated extensive agriculture (65 percent), which can be compatible with wetlands if corresponding management practices are employed.⁴ A full 80 percent of diked historic baylands are designated as extensive agriculture. Other portions of the historic wetlands are designated as public facilities (six percent), which can be compatible depending on the specific use. However, certain portions of historic wetlands in Marin County and in Vallejo are designated for urban uses, which may conflict with wetland functions and values. Much of this land, particularly in Vallejo, is existing urban development. Further, limited areas in nearly every local jurisdiction are designated for some urban uses, particularly near existing highways, and many of these lands are in existing urban use. Overall, urban use designations, not including public facilities, comprise seven percent of the historic wetlands.

Chart 3
General Plan Designations: Historic Wetlands



³ Wetland values and functions will be discussed in detail in a subsequent planning background report.

⁴ Compatibility of various land uses is discussed in the previous chapter.

Approximately 1,100 acres in the historic wetlands are currently designated for residential uses, of which 230 acres could actually be converted from agriculture, open space, or wildlife areas to residential use.⁵ 870 acres are currently designated for commercial and light industrial use; allowing a future potential growth of 150 acres of commercial use. 2,610 acres are currently designated as heavy industry, allowing a future potential growth of 170 acres for heavy industrial uses. Taken together, these figures suggest that the current general plan urban designations could allow 550 acres of new urbanization in the historic wetlands. To see how numbers for potential growth were arrived at, refer to p. 32, "Behind the Numbers."

However, in some jurisdictions, lands designated as intensive or extensive agriculture could also allow residential growth, due to their underlying zoning district designations (as high as one dwelling unit on two acres). This type of growth could be highly significant, and is important to understanding potential change in the region. However, because an analysis of potential growth in these lands requires an analysis of zoning district designations in addition to general plan designations, potential growth in agriculturally zoned areas will be examined in a future report on powers and authorities. The analyses in this chapter only examines lands designated for urban and public facilities uses in the general plans. Thus, the growth analyses in this chapter does not reflect the potential change in agriculturally designated lands.

Nearly 4,700 acres are currently designated as public facilities, allowing potential conversion of 3,720 acres to public facilities. However, depending on the actual use of these lands, (for example, as flood control or wastewater wetlands), many of these conversions may not be urban in nature and would be consistent with wetland values.

Surrounding the historic wetlands, the uplands in Sonoma and Napa Counties are also largely designated as either intensive or extensive agriculture, uses generally compatible with adjacent wetlands (Chart 4, North Bay General Plan Designations: Total Planning Area). However, much of the uplands in Marin County and the cities of Novato, American Canyon, and Vallejo, are designated largely for urban uses,⁶ which can be compatible with adjacent wetlands if developed with protection of adjacent wetlands as a design and development criterion. With some exceptions, the lands designated for urban uses are generally along the highway corridors.

⁵ Potential conversion acreages are derived by subtracting existing urban uses (residential, commercial, and industrial), public facilities, protected wildlife areas, undesignated areas (such as highways) and open water areas from general plan designations. Of course, ultimate acreages and uses would depend on zoning designations, site conditions, and the configuration of the approved projects. See p. 32 for more details.

⁶ Defined in this report as residential, commercial, industrial, and public facilities uses.

BEHIND THE NUMBERS

POTENTIAL GROWTH IN HISTORIC WETLANDS

This page provides an example of the techniques used to develop the potential growth table. For this example, we will determine the potential growth in historic wetlands, within the areas designated as residential in Marin's general plan (for unincorporated areas only). In other words, looking at historic wetlands which are currently agriculture or open space, and designated for residential uses in Marin's general plan, how many acres can be converted to residential uses? The proposed projects discussed in Chapter 4 are *not* used to obtain these numbers. Rather, we use a Geographic Information System (GIS) to calculate the numbers as we take the following steps:

STEP 1:

Q: How much land is designated as residential in Marin's general plan (more specifically, the unincorporated part of Marin within the planning area)?

A: 1,780 acres

STEP 2:

Q: Of the 1,780 acres, how many acres can be considered historic wetlands (i.e., inside the Nichols and Wright line)?

A: 630 acres

STEP 3:

Q: How many of these 630 acres can be developed?

Step 3-a: Subtract already built lands (residential, commercial, industrial, and public facilities—270 acres)

Step 3-b: Subtract undevelopable lands (open water, undesignated lands such as highways, and designated wildlife areas owned by public agencies such as the CA Dept. of Fish and Game—240 acres).

A: $630 - (270+240) = 120$ acres.

STEP 4:

Verify with planning staff from each jurisdiction.

Thus, roughly 120 acres of historic wetlands, within the residentially designated lands in unincorporated Marin, can actually be converted into residential uses.

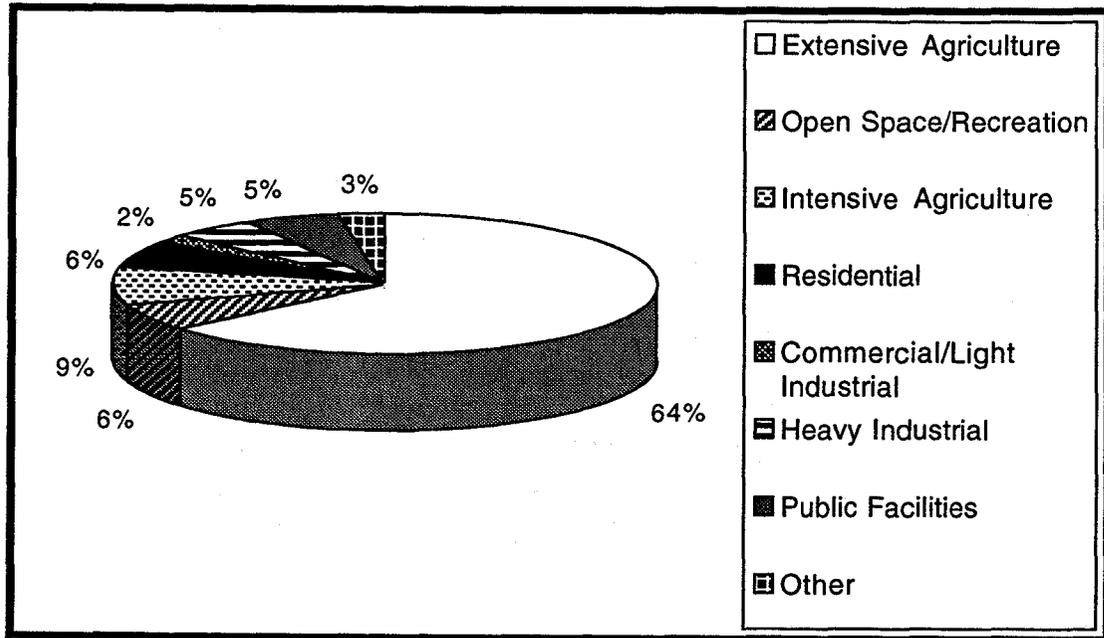
Because we subtracted built lands, these 120 acres are currently either in open space or agricultural uses. Other types of growth may occur—for example, converting a public facility to a high density residential use. However, because this type of growth involves developed lands, rather than a conversion of open space or agriculture, it is not included in the table.

Furthermore, this method does not take into account individual site constraints, such as undevelopable topography, zoning, or specific project configurations that would change the development potential of the site. Thus, it is only a rough approximation of potential growth within each designation.

The report used this approach for every general plan designation except agriculture. Because of the tremendous differences in agricultural designations, an analysis of potential growth in agriculturally designated areas requires an analysis of zoning in addition to general plan designations. This analysis will be completed for a future report on powers and authorities.

Chart 4

General Plan Designations: Total Planning Area



Summary of Local Jurisdiction General Plan Designations

Following is a brief discussion of the general plan designations for each of the eight local governments within the North Bay planning area.⁷ Figure 4, North Bay General Plan Designations, shows a composite of the general plans, based on the land use classification scheme discussed in the preceding chapter, and in greater detail in Appendix A. Each section responds to the following four questions for each jurisdiction:

- What are the general plan designations for the historic wetlands?
- What are the general plan designations for the uplands?⁸
- What are the general plan policies for each of those designations? What other policies in the general plan are relevant to wetlands?
- What are the implications for the future of North Bay wetlands?

Over 100 general plan land use designations exist in the North Bay. As previously described in Chapter 2, these designations were aggregated into seven categories: (1) extensive agriculture; (2) intensive agriculture; (3) open space and recreation; (4) residential; (5) commercial and light industry; (6) heavy industry; and (7) public facilities. Other lands can be considered either open water or undesignated. Because of the aggregation process, the North Bay Wetlands Protection Plan general plan land use categories often will not match the actual titles of each city and county's designation. For example, lands designated for Business/Professional Office in Novato, or Recreational Commercial in Marin, would both be included in the commercial/light industry

⁷ This section relies heavily on information from the city and county general plans.

⁸ Uplands are the adjacent upland areas surrounding the historic wetlands.

designation in this report. To see precisely how the categories were aggregated and how they relate to land use designations used by other agencies, see Appendix A.

Following is a brief description of the general plan designations of each local government for the planning area based on the above land use classification scheme. The discussion below only includes lands within the unincorporated county boundaries or incorporated city limits—in other words, the discussion does not include lands within the jurisdictions' spheres of influence. However, those areas are discussed in the "Lands in Transition" section.

Marin County⁹

1. **General Plan Designations for Historic Wetlands.** The majority of 8,000-acre historic wetlands in the North Bay planning area portion of Marin County are designated as extensive agriculture (5,130 acres) and open space/recreation (1,220 acres). However, a sizable portion is designated as residential (640 acres, largely in the Black Point and Bel Marin keys areas); smaller sections are designated as commercial/light industrial (280 acres) and public facilities (490 acres) along Highway 101. In addition, 240 acres can be considered open water or undesignated lands. Subtracting existing built uses and undevelopable lands,¹⁰ 120 acres of residentially designated historic wetlands could be converted to residential uses, and 80 acres of commercially designated historic wetlands to commercial uses.

2. **General Plan Designations for Uplands.** The uplands (3,200 acres) in Marin County are designated for a variety of uses. Although dominated by residential designations, other uses include extensive agriculture, public facilities, and commercial/light industrial uses.

3. **General Plan Policies.** The majority of Marin County within the planning area is classified as extensive agriculture and open space and recreation. Permitted uses depend on the particular zoning district in which the land is located. For example, within the AG-3 general plan designation, land could be zoned for agriculture and residential development at a density of one dwelling unit per acre to 9 dwelling units per acre.

The open space and recreation classification includes Rush Creek, portions of Pinheiro Ridge to the south of Rush Creek, the DFG Toy Unit and Day Island Unit located east of Green and Black Points respectively, and the western shoreline of San Pablo Bay. Petaluma River within the County's jurisdiction is also designated open space. Within Marin County, privately-owned lands are designated as open space only with the consent of the property owner. In addition, the wetland areas of the St. Vincent and Silveira properties, including Miller Creek, are included in this category. Permitted uses in this designation include parks and open spaces.

Residential use is another significant land use designation, covering nearly 20 percent of Marin County in the planning area. Specific areas classified as residential include the

⁹ Throughout the report, "Marin County" should be taken to mean "the portion of unincorporated Marin County within the North Bay Wetlands Protection Plan planning area."

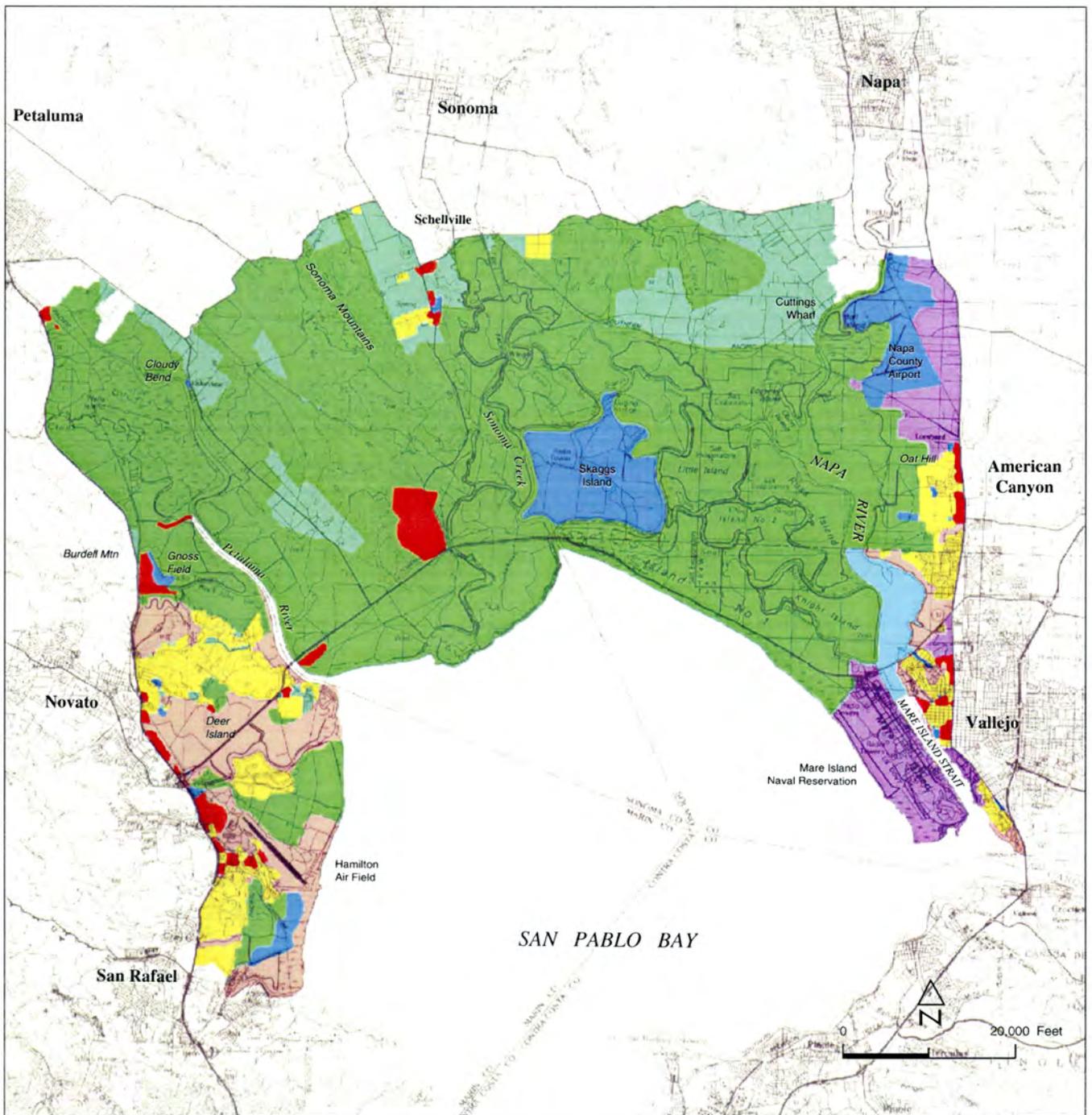
¹⁰ See p. 32 for further explanation.

SOURCE: REGIS, 1995; BCDC

North Bay General Plan Designations

- | | | | |
|---|-------------------------------|---|-----------------------------------|
|  | Extensive Agriculture |  | Public Facilities |
|  | Intensive Agriculture |  | Open Space and Recreation |
|  | Residential |  | Open Water |
|  | Commercial and Light Industry |  | Areas Outside Study Area Boundary |
|  | Heavy Industry | | |

Note: These categories are aggregations of each city and county's general plan; thus the names of the categories may not match the designations used in each jurisdiction.



unincorporated areas of the Atherton, Green Point and Black Point communities, and the developed portions of Bel Marin Keys. This designation also includes the relatively level areas of the St. Vincent and Silveira properties between the Northwestern Pacific railroad tracks and Highway 101 (excluding Miller Creek, the hillsides and identified wetland areas). Residential areas may have related uses such as parks, libraries, community centers, country clubs, and churches.

The commercial and light industrial classification includes lands just west of Gness Field, a small area adjacent to Highway 37 in the Black Point area, and the Mira Monte and Rio Marin marinas near the County airport. The County's designation for the land near Gness Field allows warehouses, storage, laboratories, retail sales, and administrative offices. The objective for the designation of the marinas is to allow resorts and privately-owned recreational facilities, such as golf courses and recreational boat marinas.

The public facilities classification includes Gness Field and the Las Gallinas Valley Sanitary District lands, which are publicly owned and in public service. This designation permits related uses consistent with the public interest such as open space, schools, hospitals, government facilities and utilities.

The County general plan contains many other policies—such as strong agricultural conservation prescriptions—that can significantly limit the use of land to protect environmental values as well as the health, safety, and welfare of the citizens of Marin County. These policies can be found in the Environmental Quality Element, Environmental Hazards Element, and Agricultural Element of the *Marin Countywide Plan*. An example of one such policy is the Bayfront Conservation Zone. This zone includes the tidelands subzone, the diked bay marshlands and agricultural subzone (which includes all historic bay marshlands), and the shoreline subzone. In tidelands subzone, only water-dependent uses are permitted. In the diked historic marshlands subzone, the county's purpose is to enhance "wildlife and aquatic habitat value of the subzone". Certain uses, such as restoration, agriculture, and wastewater reclamation are encouraged. Other uses are allowed if the uses are consistent with the zoning, and it can be demonstrated that impacts to the bayfront environment are minimized and mitigated. This and other zones will be discussed in more detail in a future background report on powers and authorities.

4. **Implications.** Although the extensive agriculture designations can generally be consistent with wetlands values and functions, other designations for the historic wetlands, such as residential, may not be. Public facilities can be compatible with wetlands depending on the particular use and land management practices. Marin's upland areas are designated for a variety of urban uses, with some extensive agriculture. These designations may be consistent with adjacent wetlands uses if designed and operated to protect adjacent wetlands.

City of San Rafael¹¹

1. **General Plan Designations for Historic Wetlands.** Nearly all of incorporated San Rafael within the North Bay planning area (320 acres) can be considered historic wetlands. The overwhelming majority (approximately 310 acres) of this area is classified as open space and recreation, with the remaining land classified as public facilities (all of which are existing uses). Thus, within the planning area, no lands in the San Rafael historic wetlands could be converted to urban uses.

2. **General Plan Policies.** San Rafael's open space designation allows dedicated parks and secured open space, as well as other areas with significant natural resources that should be protected through the development review process. This designation ensures that park design protects sensitive natural resource areas.

The public facilities designation allows schools, utility facilities, and other public or quasi-public buildings. These lands consist largely of Las Gallinas Valley Sanitary District lands and the Marin County Honor Farm.

The San Rafael General Plan also includes other goals and policies to promote the protection of wetlands, creeks, water quality, endangered species habitat and the creation of wetland buffer areas. The Natural Environment element contains goals to create and maintain open space areas, preserve baylands, waterways and wetlands and other natural areas that provide important environmental resources and aesthetic values.

Further, the *San Rafael General Plan* includes site-specific policies which are to be considered at the time of any general plan revision. These policies include the protection of the bayfront lands east of the Northern Pacific railroad tracks (including the Las Gallinas Valley Sanitary District lands), Miller Creek, and seasonal and year round wetlands.

3. **Implications.** Because of the large percentage of land designated as open space, the existing land use designations and policies in the general plan appear compatible with wetland resources. Open space and recreation designations, as discussed in the land use chapter, can offer strong protection to natural resources by providing buffer zones, preserving wetland functions, and reducing threat of impacts.

City of Novato¹²

1. **General Plan Designations for Historic Wetlands.** More than half of the 4,550-acres within the North Bay planning area portion of Novato can be considered historic wetlands. These areas are largely designated as extensive agriculture (460 acres) and open space/recreation (3,350 acres). Small portions of the area are designated as public facilities, commercial and light industrial, and

¹¹Throughout the report, "San Rafael" should be taken to mean "the portion of incorporated San Rafael within the North Bay Wetlands Protection Plan planning area".

¹²Throughout the report, "Novato" should be taken to mean "the portion of incorporated Novato within the North Bay Wetlands Protection Plan planning area."

residential (640 acres total). One hundred acres can be considered open water or undesignated. Subtracting built lands and undevelopable areas, 140 acres of historic wetlands designated for residential or commercial uses could be converted into these uses, and 10 acres of historic wetlands could be converted into public facilities uses.

2. **General Plan Designations for Uplands.** The uplands of Novato (2,520 acres) are designated mostly as residential, with some commercial and light industrial lands, and some lands designated as public facilities.

3. **General Plan Policies.** The extensive agriculture classification includes existing agricultural uses and privately-owned lands that are mainly unimproved, such as the undeveloped historic wetlands in the Bahia and Black Point areas. This designation permits related uses consistent with agriculture and natural resource protection. Minimum parcel sizes range from 10 to 60 acres.

The open space and recreation classification applies mainly to publicly-owned lands that are largely unimproved, and existing active and passive recreation areas and community play fields. This designation permits related uses consistent with recreational facilities such as restrooms, storage sheds and other structures.

The residential classification includes existing residential areas, such as in the southern portion of the City (both within and adjacent to Hamilton Army Airfield), the older Olive Street and surrounding residential community, and the Bahia community. It also includes certain upland and undeveloped portions of the Bahia area and the Black Point area. This designation permits related uses consistent with residential areas such as houses, accessory structures, recreation facilities, and other similar uses.

In the planning area, the commercial and light industrial classification includes lands primarily near the freeway with easy vehicle access, such as along Nave Drive, Hamilton Drive and within the Village Oaks Shopping Center. Permitted related uses include business and professional offices, commercial centers, and manufacturing, warehousing, and processing operations that do not generate excessive adverse environmental impacts.

The Novato Sanitary District lands just north of Highway 37 comprise most of the public facility lands in Novato. This designation allows public facilities, such as libraries and fire stations, as well as utilities, such as water services.

Examples of general plan goals that apply to the areas east of Highway 101 (the planning area westerly boundary) include conserving, and where appropriate, restoring the natural environment and striving for high quality built environments that complement the natural environment; preserving, protecting and enhancing the natural setting throughout the City, including creeks, hillsides, ridge lines, woodlands, wildlife, native plants, wetlands and open space; and preserving the bayfront lands and diked wetlands for agriculture, resource restoration, conservation and recreation. However, the baylands policy of preserving diked wetlands appears

potentially inconsistent with the urban use designations for historic wetlands in the general plan (residential and commercial/light industrial).

4. **Implications.** Novato's historic wetlands are largely designated for open space and recreation, and extensive agriculture, both of which can be compatible with wetlands, depending on the specific use and management practices. However, some historic wetlands are designated for urban uses (largely residential). With the exception of public facilities, which can be compatible, these urban uses are not generally compatible with wetlands. The uplands are designated for a variety of urban uses, which can be compatible with adjacent wetlands if designed and operated in a manner consistent with the protection of the adjacent wetlands.

Sonoma County¹³

1. **General Plan Designations for Historic Wetlands.** The vast majority of historic wetlands in Sonoma County (28,010 acres) are designated as extensive agriculture (23,280 acres), with some public facilities (3,380 acres), and a very small amount of commercial use designated at the upland edge of the former wetlands (150 acres). The historic wetlands also include some intensive agriculture (170 acres) and open water and undesignated lands (1,030 acres). Taking existing built areas and undevelopable lands into account, only 40 acres currently designated as commercial could, under the general plan, be converted to commercial use, and 3,290 acres designated as public facilities could be converted to public facility use. However, these 3,290 acres consist almost entirely of Skaggs Island. Although this land has the potential to be used for additional public facilities, the purpose of Sonoma's public facilities designation is simply to recognize existing public uses and ownership.

2. **General Plan Designations for Uplands.** The majority of uplands in Sonoma County within the planning area (26,000 acres) are designated as extensive agriculture, with some intensive agriculture. A few parcels near the highways are designated as commercial, residential, and public facilities. These urban-designated parcels are largely near the highways and the Big Bend and Schellville area.

3. **General Plan Policies.** The extensive agriculture designation permits uses consistent with agriculture, such as agricultural production, processing, and support services; visitor serving uses such as tasting rooms and small bed and breakfasts inns; agricultural employee housing; and other uses such as mining operations and community facilities. Densities in these areas range from 60 to 320 acres per unit.

The intensive agriculture designation allows uses similar to the extensive designation, but with a smaller parcel size (20 - 100 acres). The County's general plan includes additional strong policies to protect agriculture (for example, the agricultural designations can only be amended

¹³ Throughout the report, "Sonoma County" should be taken to mean "the portion of unincorporated Sonoma County within the North Bay Wetlands Protection Plan planning area".

under limited circumstances). Intensive agriculture applies to lands with quality soils and adequate water such as the fertile Tolay Creek Valley, the gently sloping lands east of Lakeville Highway, and the vineyard lands in the Big Bend and Schellville areas.

The residential designation (technically, "Rural Residential" in Sonoma County's general plan) allows homes and other residential-oriented uses, such as garages.

Commercial designations provide a mix of retail, commercial and business opportunities. Parcel-specific designations exist for Sears Point and Port Sonoma, both in the commercial and light industry classification, which subject these two parcels to additional policies aimed at controlling the existing land uses to ensure their compatibility with adjacent land uses and the natural environment.

The public facilities designations allow schools, churches, sewage treatment plants, airports, and other community facilities. Public facilities within the historic wetlands include Skaggs Island and the Lakeville Marina. Although these lands have the potential to be used for additional public facilities, the purpose of Sonoma's public facilities designation is simply to recognize existing public uses and ownership.

Although no lands are designated as open space within the planning area, some agricultural lands have an overlying open space zoning designation, which will be discussed further in a future report on powers and authorities.

The general plan also contains goals to maintain the rural character of southern Sonoma by discouraging urban development outside the cities of Petaluma and Sonoma. The County's general plan includes strong policies for protecting agriculture, and strong policies to reserve open space lands between the larger cities in the County as community separators.

4. Implications. Because the vast majority of historic wetlands are designated as extensive agriculture, and because the policies for agriculture use are protective, Sonoma County's general plan seems generally compatible with the protection of wetland uses and values. Although limited, the commercial designation may be less than compatible with healthy wetlands. Furthermore, large amounts of historic wetlands in Sonoma County (i.e., Skaggs Island) could theoretically be converted into public facilities use; this may or not may be compatible with wetlands, depending on the specific use and design. The purpose of the public facilities designation in Sonoma County, however, is not to promote public facilities usage per se, but rather to recognize existing public uses and ownership.

Napa County¹⁴

1. **General Plan Designations for Historic Wetlands.** Over half of the planning area portion of Napa County can be considered historic wetlands (13,590 acres). These lands are largely designated as extensive agriculture (12,450 acres), with some designations as intensive agriculture (320 acres) or public facilities (740 acres), and a small parcel designated as heavy industrial near the airport (20 acres). Sixty acres can be considered open water or undesignated lands. Taking existing built areas and undevelopable lands into account, 150 acres of land could be converted to public facilities.

2. **General Plan Designations for Uplands.** Outside of the historic wetlands areas, the uplands (8,770 acres) include nearly equal areas of intensive agriculture, extensive agriculture, public facilities, and heavy industry. The public facilities and heavy industry designations are located entirely near Highway 29, while most of the intensive agriculture designations are concentrated near Highways 116 and 12.

3. **General Plan Policies.** The extensive agriculture classification includes the grasslands and historic wetlands, including the Department of Fish and Game's Napa River Unit, Cargill's Napa Plant site, and the undeveloped land west of the City of American Canyon. Existing constraints policies on these grasslands make urban and residential uses unlikely and, therefore, are protective of the natural resources. Permitted uses in this designation include agriculture, processing of agricultural products, and single-family dwellings. Within the North Bay planning area, County policy calls for the retention of these lands in minimum parcel sizes of 160 acres, depending on physical constraints.

The intensive agriculture land designation allows uses consistent with agriculture, such as processing of agricultural products and single-family dwellings per parcel size of land. In both agricultural designations, the general plan allows conversions to urban uses under very limited circumstances, for example, if agriculture is no longer feasible.

The heavy industrial designation permits related uses consistent with industrial or public facility uses, but expressly prohibits residential uses. Minimum parcel sizes can range from one half acre to 40 acres depending upon their proximity to various infrastructure. In Napa County this designation is generally given to lands which have the highway, rail, or airport infrastructure necessary to provide efficient import and export of resources to and from Napa County and beyond.

The public facilities classification includes the Napa Sanitation District lands and the County airport lands.¹⁵ Uses allowed in these areas include governmental or public facilities, such as airports, hospitals, sanitation district facilities, and government equipment yards.

¹⁴Throughout the report, "Napa County" should be taken to mean "the portion of unincorporated Napa County within the North Bay Wetlands Protection Plan planning area."

¹⁵ The Napa County Airport Specific Plan contains additional policies to protect natural resources, including wetlands and creeks.

The General Plan Conservation and Open Space Element and the Safety Element include policies to protect sensitive habitat in Napa County. For example, the Conservation and Open Space Element requires that projects in or near sensitive wildlife habitat include a management plan to protect such resources. This element also has policies to protect riparian woodlands, reservoirs, sloughs, tidal mudflats, and marshland habitats. Special measures for the Napa River and its tributaries also exist, such as protection of streamside vegetation and sediment reduction. Conservation policies also prohibit urban structures and related facilities in critical ecological areas.

4. **Implications.** The designations within the historic wetlands are largely consistent with wetlands, although the public facilities designation can be less compatible, depending on the facility. The uplands designations are also mostly compatible; however, all of them, including intensive agriculture, need to be sensitively designed and managed to reduce impacts. The heavy industrial designation may be less compatible; however, design practices such as clustering, creating buffers, and managing pollutants can help minimize impacts on wetlands.¹⁶

City of American Canyon¹⁷

1. **General Plan Designations for Historic Wetlands.** Historic wetlands within American Canyon (60 acres) are designated largely for public facilities (40 acres). Public facilities can be compatible with wetlands, depending on the specific use and operation of the use. Other minor designations in the historic wetlands include extensive agriculture and rural land (20 acres). Taking existing built areas into account, 30 acres of historic wetlands could be converted into public facilities.

2. **General Plan Designations for Uplands.** The upland area of American Canyon within the planning area is designated mostly as residential, with a sizable portion of heavy industry, a small amount (1,660 acres) of open space and recreation, and a small amount of commercial and light industrial use adjacent to Highway 29. Much of the designated urban uses in American Canyon border existing and historic wetlands. It is important that these uses be carefully designed and sited to protect wetlands.

3. **General Plan Policies.** The open space and recreation classification includes lands primarily in the southwestern portion of the City, including a portion of American Canyon Creek and its banks, Kimberly Park, and the area underneath the high-tension power lines. The policies and permitted uses within this designation encourage passive recreation, hiking and equestrian activities, nature observation and education; all of which can be compatible with wetland protection.

¹⁶ Pollutants will be discussed in the upcoming background report on polluted runoff.

¹⁷ Throughout the report, "American Canyon" should be taken to mean "the portion of American Canyon within the planning area."

The American Canyon residential designation allows homes, animal and horse keeping in appropriate locations, and recreational, institutional, and service uses that support residential needs.

The commercial and light industry designation permits a variety of commercial uses, such as smaller retail uses, food stores, building supply centers, and major business establishments.

The heavy industry classification includes the lands in the northwestern portion of the City where industries can capitalize on the existing air, road and rail transportation facilities in the immediate vicinity. This designation permits industrial uses such as manufacturing, warehousing, distribution facilities, and research and development operations. Supporting uses, such as restaurants for employees, are also permitted.

The public facilities classification includes the City's wastewater treatment plant located on the western edge of the City and the school lands in the City.

American Canyon's general plan contains other wetlands-related policies. For example, the Natural and Historic/Cultural Element recognizes the importance of the biological, water and soil resources in the City. This element contains policies to protect and preserve significant flora and fauna, including American Canyon Creek, North Slough, Rio Del Mar Creek and the Napa River Marshes. For example, development and grading that alters the biological integrity of selected riparian corridors is prohibited (thus indirectly protecting wetlands by preventing erosion and polluted runoff).

4. **Implications.** Historic wetlands within American Canyon are designated largely for public facilities, which can be compatible with wetlands, depending on the specific use and operation of the use. The majority of American Canyon, however, is uplands; these uplands designations can be compatible if designed, built, and managed appropriately.

Solano County¹⁸

1. **General Plan Designations for Historic Wetlands.** All of Solano County within the planning area can be considered historic wetlands (8,300 acres). Of the nearly 8,300 acres, approximately 6,790 are designated in the general plan as extensive agriculture, 1,190 as open water, 220 acres as open space and recreation, and 100 acres as heavy industry. Taking existing built areas and undevelopable lands into account, only 30 acres of historic wetlands could be converted into heavy industry. However, according to the White Slough Specific Plan, these 30 acres, in the vicinity of White Slough, will be annexed to the City of Vallejo and rezoned.

2. **General Plan Policies.** The vast majority of land within this portion of Solano County is classified as extensive agriculture (82 percent, or 6,800 acres). This classification includes the wetland and wildlife areas west of Mare Island in the Napa and Sonoma slough and channel

¹⁸Throughout the report, "Solano County" should be taken to mean "the portion of unincorporated Solano County within the North Bay Wetlands Protection Plan planning area."

system. Under the general plan, these lands can be used for agriculturally related activities such as farm labor housing, processing facilities and service industries requiring a rural location to support agricultural uses. Other uses, including waste disposal and mineral extraction can occur under specific conditions. County policies call for the retention of agricultural lands in minimum parcel sizes of 20 to 160 acres depending upon location. Additional policies for this land include retaining parcel sizes to ensure a 'farmable unit', protecting agricultural lands from urbanization, supporting the viability and preservation of agricultural lands with applicable federal, state and local laws and tax structures, and conducting agricultural practices which minimize impacts on air and water quality, and marsh and wildlife habitat (Solano County, Planning Department, 1992).

Approximately three percent or 220 acres of the land within the planning area are classified as open space and recreation. The County's objective for these lands is to preserve and enhance the quality and diversity of marsh, aquatic waterway and wildlife habitats and enhance the water resources available to the County. This classification includes the Napa River marshes, as well as other riparian areas in the County which need to be preserved. This designation restricts uses to those consistent with preserving areas such as aquatic and wildlife habitat, marsh-oriented recreation, compatible agricultural uses, and educational and scientific research (Solano County Planning Department, 1992).

Approximately one percent or 100 acres of Solano County lands within the planning area are classified as heavy industry. This designation allows industries which are both labor and traffic intensive, such as manufacturing, processing, assembly, and storage of products and materials (Solano County Planning Department, 1992). However, the majority of these lands are subject to the White Slough Protection and Development Act; thus the existing designation may be changed to better reflect the natural resource characteristics of the site.

Approximately 14 percent or 1,170 acres of the land within the planning area can be considered open water. The general plan has no objectives for open water areas. The County instead relies on its zoning ordinance for land use decisions in its open water areas.

The Resource Conservation and Open Space Element identifies the Napa Marshes as water areas for fish and wildlife production and as a regional recreation area; it also contains policies to protect the area's natural resources, which include streams, wetlands and water quality. This element also extends the wetlands protection policies applicable to the Suisun Marsh to the Napa River and other marshlands in the North Bay.

3. Implications. Given that 99 percent of Solano County within the planning area is designated as extensive agriculture, open space, and open water, Solano County's general plan appears compatible with the protection of wetland values and functions. The current heavy industrial designations may not be entirely compatible with wetlands. However, it is anticipated that the industrially designated historic wetlands will be annexed to the City of Vallejo and rezoned.

City of Vallejo¹⁹

1. **General Plan Designations for Historic Wetlands.** Most of the City of Vallejo located within the planning area can be considered historic wetlands (4,460 acres). However, much of the historic wetland areas have long been filled and are used for urban purposes. These historic wetlands are designated largely as industrial (3,150 acres), with some open space and recreation (460 acres), and small sections of commercial, residential, and public facilities lands (totaling 340 acres). Mare Island comprises most of the industrial land designations. 510 acres can be considered open water or undesignated. Taking into account existing built areas and undevelopable lands, 140 acres of land could be converted to heavy industrial uses.

2. **General Plan Designations for Uplands.** The remainder of Vallejo (1,590 acres) within the planning area is a mixture of existing urban uses marginally dominated by residential use, with other areas designated as commercial and light industrial, open space and recreation, and public facilities.

3. **General Plan Policies.** The City applies the open space and recreation designation to areas with significant natural resources, such as the Napa River marshes, including White Slough, and areas with recreational opportunities, such as River Park. In addition, this designation applies to the bluffs on the east side of Mare Island Strait just north of the Carquinez Strait Bridge, and to the California Maritime Academy. Uses allowed under open space and recreation are those consistent with the protection of open space such as education, recreation and science.

The residential classification occurs throughout the City, from the waterfront to the hillsides of Sulfur Springs Mountain. Because the Vallejo shoreline within the planning area was developed prior to the inception of the current general plan, the plan does not identify permitted or conditional residential uses and lot sizes for those areas along the waterfront. Rather, the City relies on its zoning ordinance for this level of land use control.

The public facilities classification includes existing schools or other civic uses. Permitted uses under public facilities are those consistent with public services such as schools, government facilities, and hospitals.

The City's objective for land designated commercial and light industry is to provide for an adequate amount of commercial services, including shopping areas, neighborhood convenience centers, and a downtown commercial area that serves as a strong focal point for the City. The City has generally applied the commercial and light industry designation to lands with frontage along major roads or highways, and along the City's waterfront south of the Mare Island causeway.

The heavy industry classification (the City's "employment designation") includes all of Mare Island, the South Vallejo Industrial Park, and the North Housing and Guadalcanal Village sites west of the Napa River. Permitted uses for this mixed-use designation, as specified on the

¹⁹ Throughout the report, "Vallejo" should be taken to mean "the portion of incorporated Vallejo within the North Bay Wetlands Protection Plan planning area."

general plan map, include industrial, general commercial services, and professional office complexes.

Further, the Vallejo General Plan identifies the City's waterfront, including Carquinez Strait, the South Vallejo Industrial Area, the San Pablo Bay Area, the White Slough Area and the Napa River, as important resources that should be devoted exclusively to water-oriented uses. This includes industrial, residential, commercial and open space areas that permit public access to and along the Bay (City of Vallejo, 1994).

4. **Implications.** Within the planning area, including historic wetlands and uplands, Vallejo is largely a developed city and designated for urban uses.

Within historic wetlands that are not developed, the general plan designates all of Mare Island, Guadalcanal Village, and White Slough as "employment", a mixed-use designation which allows some heavy industry (thus grouped as heavy industrial in the North Bay classification system). The River Park, also within historic wetlands, is designated as open space and recreation. In general, the heavy industrial designation would not be compatible with wetlands and their functions.

Lands In Transition

Although many of the local jurisdictions' general plan designations appear compatible with wetlands, future plans may not be. A number of areas within the planning boundary are in flux—currently in county jurisdiction and designated for agricultural and rural uses, but proposed for annexation to a city for possible urban uses. If the city annexes the land, designations and current protections could change. Lands in question include areas within the spheres of influence of American Canyon, San Rafael, and Vallejo. These spheres of influence are lands adjacent to, but not yet within the boundaries of, the cities.²⁰

The City of American Canyon intends to extend its urban limit line, however, no specific action has been yet taken and it is unclear how the expansion of the City would effect wetlands at this time.

Most of the unincorporated 1,240-acre-area to the north of the City of San Rafael, commonly known as the St. Vincent's/Silveira site, is within the City of San Rafael's sphere of influence as adopted by the Marin County LAFCO.²¹ Adjacent Las Gallinas Valley Sanitary District Lands and the Marin County Honor Farm site are also within the sphere of influence. Both San Rafael and Marin County policies state that these lands should be annexed to the City prior to any urban development (City of San Rafael, 1994).

²⁰ Spheres of influence were not considered in mapping Figure 4; only designations by the current governing agency were mapped.

²¹ 270 acres of historic baylands adjacent to Novato (designated for agricultural/conservation use in all city and county plans) are outside a LAFCO SOI; Novato's General Plan includes it in their sphere.

The 1988 *San Rafael General Plan* proposes "mixed use" on portions of the site west of the historic baylands. Within these areas, the plan sets upper limits of 2,100 homes and 361,000 square feet of office/commercial uses. The plan further states an advisory committee should review these future land use locations and amounts, and may recommend downward revisions in development potential. The San Rafael City Council appointed the St. Vincent's/Silveira Advisory Committee (with City and County area representatives) to study the site in 1991. To avoid duplication of the Committee's efforts, the County established an interim policy which designates the area as a "temporary urban conservation reserve" in the 1994 Countywide Plan.

In June 1994, the Advisory Committee recommended that the existing General Plan designation of 2,100 homes and 361,000 square feet of commercial and office space be maintained, and stipulated that development should maintain 71 percent of the site as agriculture or open space (including policies to retain and enhance neglected and fragile creek and wetland resources, and protect wildlife habitat). In June 1995, in response to the Committee's recommendation, the City Council approved a non-binding resolution summarizing and acknowledging past and existing planning policies, recent planning efforts, and ideas which could be considered when addressing this property in a future General Plan update (City of San Rafael, 1995). No development proposal has come forward for the site.

White Slough, which is located in both the city of Vallejo and Solano County's jurisdiction, is another major area in transition. In the vicinity of White Slough, the city limit meanders in and out of the marsh, open water and urban development west of Highway 29. Vallejo's general plan designations for this area include retail commercial, employment, high-density residential, and wetlands. The City of Vallejo's general plan designates a majority of the area on the south side of Highway 37, which is currently open water, as an employment area,²² and the majority of the White Slough northwest of Highway 37 as wetlands.

The White Slough Specific Area Plan (adopted by Vallejo and Solano County) states that all City lands north of Highway 37 and west of Highway 29 to Chabot Creek should be de-annexed to the County. Solano County would then designate these areas as marsh in its general plan. The Specific Area Plan also proposes that all County lands south of Highway 37 and east of Highway 29 be annexed by the City. The City of Vallejo would then designate the existing land uses in the southerly area of the White Slough area east of Highway 37 as employment, the mobile home park as high-density residential, the strip commercial developments along Highway 29, Redwood and Sacramento Streets as waterfront commercial, and the open water area referred to as South White Slough as open water areas and wetlands. This land use designation change by Vallejo is a condition of approval of the plan by the San Francisco Bay Conservation and Development Commission.

²² Considered heavy industry in this classification system.

Although not necessarily in flux, the designations for Cullinan Ranch west of the Napa River, which is in the City of Vallejo's sphere of influence, do not reflect projected uses. The City designated the Cullinan Ranch west of the Napa River for residential uses (low-density residential). Several development proposals were considered for Cullinan Ranch, but never approved. Solano County, which has jurisdiction over the property, designates the property for extensive agriculture. The USFWS purchased the Cullinan Ranch in 1991 and now manages the site as a wildlife area. Both the City of Vallejo and Solano County acknowledge the inconsistency between their respective general plan designations for Cullinan Ranch. Furthermore, both entities recognize that neither general plan designation reflects the current and future use of the site as a wildlife area (Anne Merideth, personal communication).

Conclusions

1. The local government general plan designations for the historic wetlands areas are generally compatible with wetlands values. These designations consist largely of extensive agriculture, open space and recreation, and public facilities. However, the public designation may not be entirely compatible with wetlands, depending on the specific use. Some extensive agricultural uses—such as large processing plants, intensive residential uses, or surface mining—may also not be compatible. Overall, however, the underlying general plan use designations provide a firm foundation of protection for the North Bay wetlands and opportunity for wetland enhancement and restoration.

2. Table 4 shows potential urban growth allowed by general plans in historic wetlands—essentially, the area of designation in the historic wetlands, minus existing built areas and undevelopable lands (see p. 32 for a more detailed explanation).

In areas designated for residential, commercial, or industrial development, urban development could occur in over 500 acres of the historic wetlands pursuant to the local government plan land use designations. For example, Marin County, Novato, and Vallejo have portions of the historic wetlands designated as urban uses, and nearly every jurisdiction has some urban use designation, particularly along the highways and the borders of the former wetlands. The 30 acres of potential heavy industrial growth in Solano County can be discounted however, as current plans indicate that the land, in the vicinity of White Slough, will be annexed to the City of Vallejo and rezoned to a use more compatible with wetlands.

Table 4 does not examine potential growth in agriculturally designated areas. However, some general plan designations for extensive agriculture areas would allow large lot residential development, particularly in Marin County. Because an analysis of growth in agriculturally designated lands requires an analyzes of zoning in addition to general plan designations, potential growth for agriculturally designated lands will be examined in a future report on powers and authorities.

Table 4
Potential Growth Allowed by General Plans in Historic Wetlands

General Plan Designation*	Jurisdiction	Potential Urban Growth Allowed by General Plans in Historic Wetlands (approximate acreage)
Residential	Unincorporated Marin County	120
	City of Novato	110
Commercial/Light Industrial	Unincorporated Marin County	80
	City of Novato	30
	Unincorporated Sonoma County	40
Heavy Industrial	Unincorporated Solano County**	30
	City of Vallejo (Mare Island)	140
TOTAL		550
* Does not include lands designated as agriculture or public facilities.		
** These lands, located in White Slough, will be annexed to the City of Vallejo and rezoned.		

3. As Table 5 illustrates, over 3,000 acres of land could be converted to public facilities use. The acreage shown for Sonoma County consists entirely of Skaggs Island. Although this land has the potential to be used for additional public facilities, the purpose of Sonoma's public facilities designation is to recognize existing public uses and ownership.

Table 5
Potential Public Facilities Growth Allowed by General Plans in Historic Wetlands

General Plan Designation	Jurisdiction	Public Facilities Growth Allowed by General Plans in Historic Wetlands (approximate acreage)
Public Facilities	City of American Canyon	30
	Unincorporated Napa County	150
	City of Novato	10
	Unincorporated Sonoma County (Skaggs Island)	3,290
TOTAL		3,480

4. The upland area designations include intensive agriculture and a variety of urban uses, such as residential and commercial facilities. These uses should be carefully designed and managed in order to minimize their impact on adjacent wetlands. Examples include clustering uses in order to preserve wetlands, creating buffers between wetlands and adjacent uses, and requiring construction practices which minimize erosion, pesticides, herbicides and nutrients from being carried into the wetlands by wet weather runoff.

5. Whether applied to historic wetlands or uplands, land use designations in general plans are not static. Lands in transition between county and city jurisdiction can be redesigned to different uses (for example, in San Rafael and American Canyon). Furthermore, general plans can be amended to change the designations, thus allowing projects to occur. Finally, other land use controls, such as development agreements and zoning designations, which will be analyzed in a subsequent report, can modify general plan designations.

CHAPTER 4

PROPOSED PROJECTS IN THE NORTH BAY

As shown in Chapter 2, Land Use Patterns in the North Bay, most urban development in the North Bay is confined to the periphery of the planning area, along the two north-south transportation corridors, Highway 101 and Highway 29. The area between these two corridors is primarily agriculture and designated for agricultural use in city and county general plans. However, a number of private and public development projects are currently under construction or proposed that could impact the North Bay wetlands. These projects are shown in Figure 5, and discussed in this chapter.

A variety of future uses are proposed for the planning area. Of the approximately 25 proposed projects in the North Bay, eight are residential, eight commercial, and nine are public facilities projects. Only one could be considered heavy industry. Projects proposed for the historic wetlands are largely public facilities projects, with some residential projects in Novato and Marin County. Nearly all of the commercial projects proposed are located in the uplands near the freeways. Residential and industrial projects proposed in the City of American Canyon and in Napa County are also in the uplands.

Over 4,400 acres are currently proposed for urban uses (residential, commercial, and industrial). Over 1,500 acres of those are in the historic wetlands. Public facilities projects could also occupy several thousand acres of land (together, the public facilities alternatives total over 20,000 acres, over 12,000 of which are in historic wetlands, and over 17,000 which are currently in agricultural use. However, this number includes all the project alternatives for many public facilities projects (primarily wastewater treatment and storage facilities). Only one alternative would be selected for each of these projects; thus, the total acreage figure would be considerably less than 20,000). Approval of these projects could cause significant cumulative impacts to the North Bay wetlands and to North Bay agriculture.¹ Additionally, some of these projects, such as residential and certain public facilities developments, can sometimes induce additional urban growth, with possible further impacts to the North Bay wetlands.

This chapter contains two sections—Development Projects, and Plans and Future Potential Projects. The first section of this chapter, Development Projects, briefly summarizes each of the proposed projects in the planning area which are depicted on Figure 5. In order to qualify as a

¹ Of course, projects, particularly public facilities projects, will not always displace wetlands and agriculture. For example, wastewater treatment facilities can provide reclaimed water for irrigated pasture lands.

SOURCE: REGIS, 1996; BCDC

Current and Proposed Projects

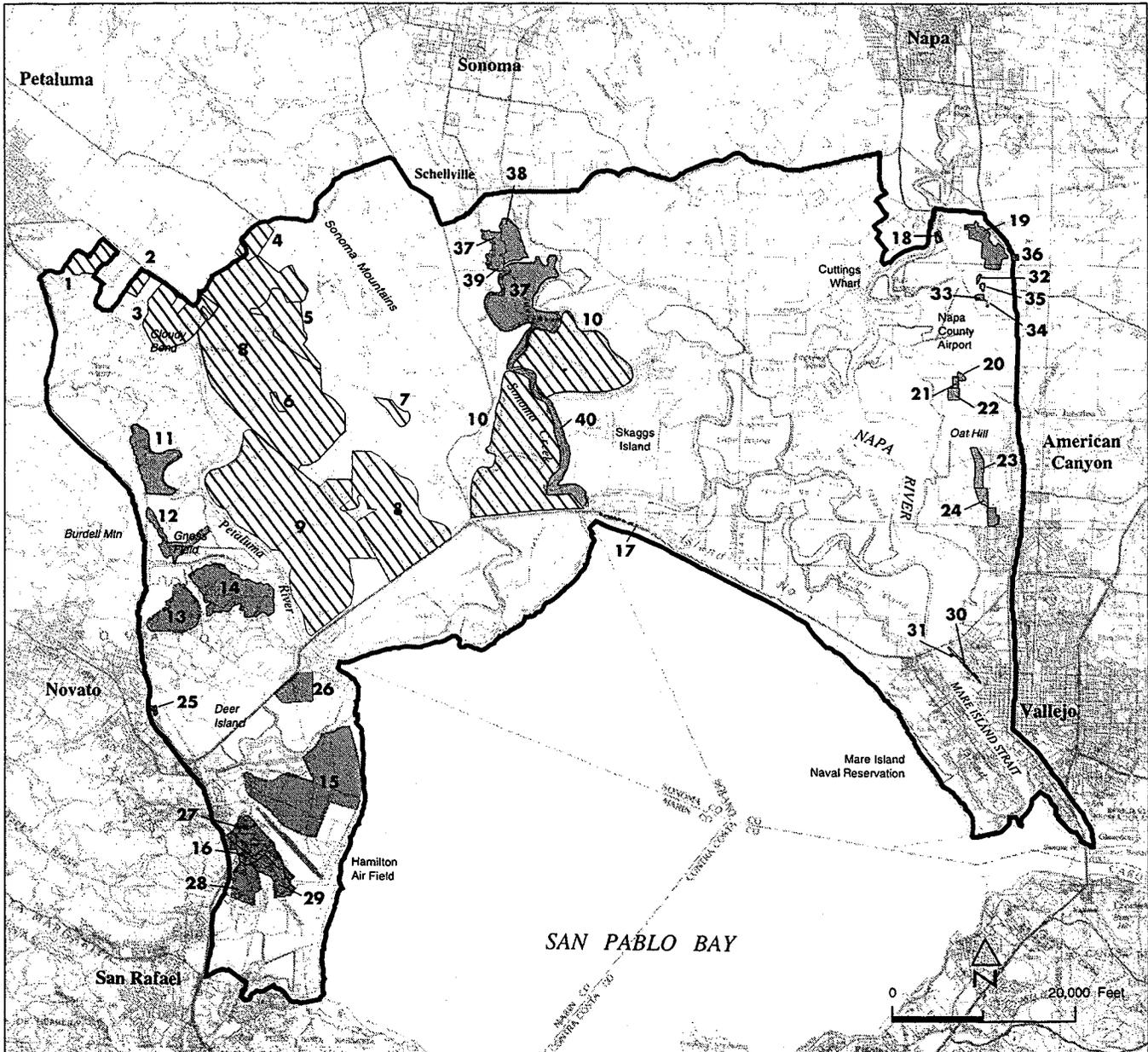
Projects
 No Project
 Wastewater Treatment Alternatives*

- Petaluma Wastewater Treatment and Storage Facilities Project, Plant Expansion**
- 1 Northwest Wetlands
- 2 Southeast Wetlands
- 3 Cloudy Bend
- 4 Stage Gulch Road
- Santa Rosa Subregional Long-Term Wastewater Project, Reservoir**
- 5 Tolay Creek
- 6 Lakeville
- 7 Sears Point
- Santa Rosa Subregional Long-Term Wastewater Project, Irrigation**
- 8 Sonoma Mountains
- 9 Petaluma River Baylands
- 10 Sonoma Creek Baylands
- 11 Redwood Landfill Facilities Improvement
- 12 GROSS Field Airport Development Program
- 13 Rush Creek Estates

- 14 Bahia Master Plan
- 15 Bel Marin Keys Unit 5
- 16 Hamilton Commissary & Exchange Triangles
- 17 Highway 37 Widening
- 18 Socol Wastewater Treatment Plant Improvements
- 19 Napa Valley Resort
- 20 Concrete Recycling Plant
- 21 CDI in American Canyon
- 22 G.L. Mezzetta Food Processing Facility
- 23 Meyer Residential Concept Plan
- 24 Napa Meadows, Units 7 and 8
- 25 Novato Community Hospital Relocation
- 26 Black Point Golf Links
- 27 New Hamilton Partnership Mixed-Use
- 28 Hamilton Capehart Housing
- 29 Hamilton Spanish Housing
- 30 Wilson Av./Mare Island Way Improvements
- 31 Boat Storage Facility

- 32 A.P. Tech. Panattoni
- 33 Lot 10
- 34 Spec 45
- 35 Santen
- 36 CDI Lot 2 and CDI Lot 1 Sonoma Creek Floodplain and Enhancement Project
- 37 Alternative A
- 38 Alternative B
- 39 Alternative C
- 40 Alternative D

*This figure maps all the alternatives for each wastewater treatment project. Only one alternative would be chosen. Thus, most of the land depicted would not ultimately be used for wastewater treatment projects.



project, the proposal had to satisfy two criteria: (1) the project is greater than 2.5 acres (1 hectare)²; and (2) the project is in the planning stage (i.e., it has a conceptual plan and/or an initial environmental review study).³

The second section, Plans and Potential Projects, discusses projects which did not meet the criteria and therefore do not appear on the map: projects under 2.5 acres (1 hectare); and projects not yet in the planning stage (i.e., without a conceptual plan and/or an initial environmental review study). Broad public planning efforts (for example, specific plans) are also discussed in this section.

Certain projects—specifically, wetlands restoration projects and conversions of pasture and rangelands to vineyards—are not discussed at all. Although the conversion of rangeland to vineyards is an important trend in agricultural land use in the upland areas of the North Bay, these projects could not be adequately mapped or discussed because limited information exists regarding them. Wetlands restoration projects will be discussed in an upcoming background report on wetlands.

Development Projects

This section briefly summarizes each of the proposed projects in the planning area which are depicted on Figure 5.⁴ In order to qualify as a project for this section, the proposal had to satisfy two criteria: 1) the project size is greater than 2.5 acres (1 hectare),⁵ and 2) the project is already in the planning stage (i.e., it has a conceptual plan and/or an initial environmental review study).

In each of the descriptions below, the county descriptions discuss only the projects within the unincorporated portion of the county within the planning area. Similarly, the city descriptions discuss only the projects located within the incorporated portion of the city within the North Bay Wetlands Protection Program planning area.

1. Marin County

a. **Redwood Landfill Facilities Improvement.** Located on Redwood Highway in Novato, within the historic wetlands, this improvement project to the existing sanitary landfill involves constructing a perimeter levee system to protect the landfill from flooding. In addition, a leachate cutoff and collection system will be developed. The improvements would result in the loss of approximately 0.45 acre of wetlands. Redwood Landfill, Inc. will create approximately three acres of new brackish/salt marsh to compensate for the lost wetlands. All necessary permits have been granted and the project is currently underway.

b. **Gross Field Airport Development Program.** This project, located in the historic wetlands, would implement the master plan for Gross Field by building new hangars, extending

² One hectare is the smallest cell or pixel that can be measured on the GRASS geographic information system.

³ For the purposes of this report, land acquisitions are not considered projects.

⁴ Data for summaries comes from environmental impact reports, permit files, and city and county staff.

⁵ One hectare is the smallest cell or pixel that can be measured on the GRASS geographic information system.

an existing runway from 3,300 feet to 4,500 feet, and building a cross wind runway to improve air safety. The hangers have been built, and project managers are currently attempting to acquire land for the runway expansion. The cross wind runway, however, may not be constructed due to environmental and financial concerns.

c. **Rush Creek Estates Housing Development.** This residential project, located along Atherton Avenue, involves the construction of 89 housing units. The housing portion of the project is in upland area; the open space, which has already been turned over to the Open Space District, is located along Pineiro Ridge adjacent to the Rush Creek wildlife area. The plan was approved in 1993 by the Marin County Board of Supervisors. The developer has filed the first phase of the subdivision and is currently constructing homes.

d. **Bel Marin Keys Unit Five.** As currently proposed, this project, sponsored by Aradi, Inc. and TPG Management, Inc., would construct residential units, an extension of the existing lagoon at Bel Marin Keys, a community center, yacht club, swim and tennis club, and 18 hole golf course on the 1,600 acre site. As part of the project, TPG Management, Inc. would restore approximately 784 acres of diked baylands to tidal marsh and 210 acres of diked baylands to freshwater marsh to compensate for the loss of seasonal wetlands on which the project would be constructed, and would provide for flood control improvements. A revised development application is expected to be submitted to Marin County soon. As currently proposed, all of the housing portion of the project is located in diked historic baylands, some of which have been determined to be jurisdictional wetlands by the Corps of Engineers.

2. **City of San Rafael.** No projects are currently proposed for the incorporated portion of the City within the study area boundaries.

3. **City of Novato**

a. **Novato Community Hospital Relocation.** The City of Novato plans to relocate the Novato Community Hospital to a 12.6-acre site on Rowland Way, east of US 101 and north of Novato Creek. Most of the site is located in the historic wetlands. The environmental review is complete and the project has been approved.

b. **Black Point Golf Links (formerly Renaissance Estates).** Black Point Property Partners intends to construct a planned community consisting of 53 single-family dwellings and an 18 hole golf course. The 239 acre site is located near Atherton Avenue and Harbor Drive, south of Highway 37. Although most of the site is in uplands, nearly 100 acres are in the historic wetlands.

In October 1995, the Novato City Council approved the project. However, project opponents have sued the City concerning the approval, asserting the environmental document is inadequate. If constructed, the project would displace historic wetlands in agricultural use and convert the lands to residential and recreational uses.

c. **Bahia Master Plan.** This plan by Debra Investments, Inc. would complete the Bahia Community, a planned residential community already partially built in Novato. The project, located mostly in the historic wetlands, would provide 424 units of housing, public access, and wetlands mitigation. The project would convert historic wetlands and seasonal wetlands to residential use. The proponents have completed a new master plan and are conducting an initial environmental study.

d. **New Hamilton Partnership.** This project, currently under construction, will create 90 homes and 5,000 square feet of commercial facilities in the uplands portions of the former Hamilton Air Force Base. Although most of the project is in uplands, 150 acres are in historic wetlands.

4. **Sonoma County**

a. **Petaluma Wastewater Treatment and Storage Facilities Project.** This City of Petaluma project will replace the City's existing sewage treatment plant in order to improve treatment reliability and to expand treatment capacity to accommodate buildout under the City's general plan. The facilities would be located in Southern Sonoma County along Lakeville Highway and the Sonoma Mountain Range. Significant issues include growth inducement, the potential loss of agricultural lands and open space, potential degradation of water quality from increased urban runoff, and potential loss of wetlands and wildlife habitat. However, the environmental impact report proposes measures to reduce the impacts to less than significant levels. The City has just completed its last public hearing regarding the plan. Over half of the total acreage of the proposed project alternatives would be located in historic wetlands.

b. **Santa Rosa Subregional Long-Term Wastewater Project.** The City of Santa Rosa is developing a long-term wastewater project to dispose of treated wastewater from the Laguna Wastewater Treatment Plant and expand the plant's pumping capacity. The project encompasses a large geographic area, extending from the Geysers area north of Healdsburg to the San Pablo Bay Flats located southeast of Petaluma. Although the impacts would vary depending on which alternative is chosen, impacts could include loss of wetlands, decreased water quality, and impacts on agriculture and other resources. The draft environmental impact report is expected to be completed in mid-July 1996. Wastewater reuse also provides a variety of benefits, including reduced demand for potable water, potential means for restoring and creating wetlands, increased agricultural production in certain areas, and reduced demand for structural water improvements. More than half of the total acreage of the alternative sites proposed for the project are in the historic wetlands.

c. **Highway 37 Widening.** This traffic safety improvement project involves widening Highway 37 from the Napa River Bridge to the Sonoma Creek Bridge and installing median barriers between the two moving traffic lanes. Phases I and II of the project have been approved, and Phase I is under construction. The roadway widening will result in the loss of some wetlands

on the inland side of the highway and impacts to existing public access areas at points along the highway.

d. **Sonoma Creek Flood Plain and Wetland Enhancement Project.** This project, proposed by the Southern Sonoma Resource Conservation District, would relieve flooding in the Big Bend/Schellville area while enhancing wetlands in the Sonoma Creek vicinity. Four alternatives exist for the project. One alternative includes purchasing land to expand the flood plain, and in the process restoring wetlands, while another envisions dredging the lower portion of Sonoma Creek. A conceptual plan for the project exists, and the state Office of Emergency Services is currently reviewing the proposal.

5. Napa County

a. **Highway 37 Widening.** Refer to description in Sonoma County section above.

b. **Soscol Wastewater Treatment Plant Improvements.** The first phase of the improvements will allow the plant, owned by the Napa Sanitation District, to produce high quality reclaimed water. Phase I has been under construction since September 1995. Phase II, which will create a sludge handling facility, is still in the conceptual stage. The improvements within the planning area are located in historic wetlands.

c. **Napa Valley Resort.** This proposed resort and hotel development will include the construction of 14 buildings on a 192-acre site, with 154 acres devoted to open space and a golf course. The project, which is entirely in the uplands, is still in the conceptual stage.

d. **Concrete Recycling Plant.** The future of this proposed project is uncertain in that the potential developers have obtained a use permit for the concrete recycling plant; however, the permit is about to expire and the property is for sale. Thus at this stage it is uncertain whether the project will be carried out as permitted. This project would be entirely within the uplands.

e. **Santen.** This 8.1 acre project will create manufacturing, warehouse, and research facilities. Phase 2 of the project is currently being built. This project is entirely within the uplands.

f. **Panattoni.** A warehouse will be built on a 2.4 acre site. The warehouse has been approved by the Planning Commission. Another Panattoni project, a business/industrial facility on 10 acres, has a pending application. This project is entirely within the uplands.

g. **CDI.** This project includes Lot 1, a 1.8 acre business/industrial facility, and Lot 2, a 1.3 acre office/warehouse. Lot 2 is currently being built, and Lot 1 has an application pending. This project is entirely within the uplands.

h. **A.P. Tech.** This 10 acre project would create a manufacturing facility. An application has been submitted and will be considered in June. This project is entirely within the uplands.

i. **Highway 37 Widening.** Refer to project description under Sonoma County.

6. City of American Canyon

a. **G.L. Mezzetta Food Processing Facility.** This project, a 15-acre food processing and distribution facility, with ancillary office and retail space and three onsite wastewater pretreatment ponds, is under construction north of Oat Hill, along the western City boundary line in the Green Island Industrial Park. The ponds have a capacity of 3.5 million gallons per day. This project, a light industrial use, is entirely within the uplands.

b. **River Meadows Subdivision.** This project proposes residential development and a nine-acre school site on approximately 8 acres of a currently undeveloped 200-acre strip of residentially zoned land along the western edge of the City limit. A formal development application has been submitted to the City in late June. This project is entirely within the uplands.

c. **Napa Meadows, Units 7 and 8.** Busby Enterprises, Inc., proposes to construct two subdivisions. Unit 7 will contain 139 lots on 38 acres with approximately 6 acres of open space; Unit 8 will contain 173 lots on 43 acres, with approximately 9 acres of open space. A development application was submitted to the City in late May. A future wetlands and biological study for the project will be reviewed by City staff. This project appears to be within the upland portion of the City.

d. **CDI.** This project proposes a parcel split and two warehouses (one consisting of 20,000 square feet, and another of 39,000 square feet). Environmental documentation (a negative declaration) has been prepared for the project, and site plan approval has been granted. However, building permits have not yet been issued at the time of this writing. This project appears to be entirely within the upland areas.

7. Solano County

a. **Highway 37 Widening.** Refer to description in Sonoma County section.

8. City of Vallejo

a. **Mare Island Way/Wilson Avenue Improvement Project.** This City of Vallejo project will widen Mare Island Way and Wilson Avenue between Florida St. and Highway 37 from two to four lanes. The purpose of the project is to improve traffic flow and safety in this area of Vallejo. Approximately 0.4 acres of wetlands may be impacted by the project. The project is in the final stages of receiving required permits; and construction is scheduled to begin in the summer of 1996. This project appears to be largely in the uplands.

b. **Boat Storage Facility.** This proposed boat storage facility of less than one acre is located on Wilson Avenue and would involve minor fill in wetlands. A site development permit for the project has been granted by the City of Vallejo and the project developer is negotiating for an access road to an old dock on the site. Resource agencies have expressed concern about potential effects of increased public access to the area. This project is largely within the historic wetlands.

Plans and Potential Projects

The following projects are either too small to be mapped, or are in the formative stage with no firm proposal of development (no conceptual plan or initial environmental review). Broader public planning efforts, such as specific plans, are also discussed.

As in the preceding section, the county descriptions discuss only the projects within the unincorporated portion of the county within the planning area. Similarly, the city descriptions discuss only the projects located within the incorporated portion of the city within the North Bay Wetlands Protection Program planning area.

1. Marin County/City of San Rafael

Most of the unincorporated 1,240 acre area to the north of the City of San Rafael, commonly known as the St. Vincent's/Silveira site, is within the City of San Rafael's sphere of influence as adopted by the Marin County LAFCO.⁶ The adjacent Las Gallinas Valley Sanitary District Lands and the Marin County Honor Farm site are also within the sphere of influence. Both San Rafael and Marin County policies state that these lands should be annexed to the City prior to any urban development (City of San Rafael, 1994).

The 1988 San Rafael General Plan proposes "mixed use" on portions of the site west of the historic baylands. The plan states upper limits of development in the "mixed use" area of 2,100 homes and 361,000 square feet of office/commercial uses. The Plan further states an advisory committee should review these future land use locations and amounts, and may recommend downward revisions in development potential. The San Rafael City Council appointed the St. Vincent's/Silveira Advisory Committee (with City and County area representatives) to study the site in 1991. To avoid duplication of the Committee's efforts, the County established an interim policy which designates the area as a "temporary urban conservation reserve" in the 1994 Countywide Plan.

The Advisory Committee's draft General Plan Amendment Proposal was released in June of 1994. The draft amendment kept the General Plan maximum of 2,100 homes and 361,000 square feet of commercial and office space, and stipulated that development should maintain 71 percent of the site as agriculture or open space (including policies to retain and enhance neglected and fragile creek and wetland resources, and protect wildlife habitat). In response to the Committee's recommendation, in June, 1995, the City Council elected to approve a non-binding resolution which describes the Council's observations related to the St. Vincent's/Silveira properties. The resolution summarizes and acknowledges past and existing planning policies, recent planning efforts, and identifies ideas which could be considered when addressing this property in a future General Plan update (City of San Rafael, 1995). No development proposal has come forward for the site.

⁶ 270 acres of historic baylands adjacent to Novato (designated for agricultural/conservation use in all city and county plans) are outside a LAFCO Sphere of Influence; Novato's General Plan includes it in their sphere.

2. Sonoma County

a. **Pomo Indian Tribe Project.** Conceptual projects include the Pomo Indian Tribe project, which proposes to construct a housing community on 321 acres of farmland at the southern end of Sonoma County. The initial phase would include a subdivision of 66 homes, a grocery store and a gas station near the Lakeville Road and Highway 37 intersection. Eventually the project could include 400 homes, a golf course, a strip mall and light manufacturing facilities on as much as 2,000 acres. Concerns exist regarding the impacts on wetlands and agricultural resources. Others are concerned that a casino could eventually be included as part of the project. Project proponents are currently attempting to transfer the land into a trust for the tribe.

b. **South Petaluma Boulevard Specific Plan.** Broad public planning efforts include the South Petaluma Boulevard Specific Plan. The purpose of the specific plan, which covers 160 acres at the southernmost portion of the City, is to guide the development of the South Petaluma Boulevard area. Sponsored by the City of Petaluma, this plan envisions retaining industrial development on the east side of the freeway, and redeveloping the west side to encourage mixed uses, particularly residential and commercial use. An urban boundary revision of 30 acres is also being considered, which would restore wetlands and slightly increase the amount of land available for industrial development. The plan will be available for review in the summer of 1996.

3. Napa County

a. **Gateway Lot 12 and Gateway Commercial.** Small, unmappable projects in Napa County include the Gateway Lot 12 Project (1.4 acres, commercial and light industry). Projects still in the conceptual stage include the Gateway Commercial Project, which may propose a hotel, gas station, and restaurant on 13 acres.

b. **Napa Airport Industrial Specific Plan.** Broad planning efforts include the Napa Airport Industrial Specific Plan. The objective of the Napa County Airport Area Specific Plan is to guide and facilitate development of the designated 2,945-acre Napa County Airport Industrial area. Implementation of the plan could result in damage to riparian and marshland habitats along Suscol and Fagan Creeks, hydrological changes, and water quality impacts. The plan was adopted on July of 1986 by the Napa County Board of Supervisors, and is currently in the process of being updated.

4. City of American Canyon

a. **Wetlands Edge Road.** Potential future projects in American Canyon include Wetlands Edge Road, located, fittingly, at the edge of the wetlands. The road could potentially provide views and buffer the wetlands. However, due to funding constraints, the road proposal is not going forward at this time. Planners anticipate this road to be constructed as future private projects develop in the immediate area (Tambournini, personal communication).

5. Solano County

a. **White Slough Specific Plan.** Broad public planning efforts in Solano County and Vallejo include the White Slough Specific Plan.

Pursuant to the White Slough Development Act, the City of Vallejo and Solano County are to jointly adopt a specific plan that includes: (1) the permanent protection and enhancement of at least 336 acres of tidal wetlands within White Slough and 132 acres of tidally influenced areas in South White Slough; (2) provide for the minimum amount of fill necessary, not to exceed 13 acres, to widen Highway 37 to a four-lane highway; (3) provide flood protection for upland areas; (4) provide for suitable water quality; and (5) provide a wetland acquisition and enhancement program. The City, County and BCDC will use the approved plan as a basis for reviewing and approving development projects within the planning area.

The plan has been approved by City of Vallejo, Solano County and BCDC. The City and County will implement the plan by amending their respective General Plans and zoning ordinances related to land use and community boundaries. Caltrans, the Vallejo Sanitation District and other public entities are preparing plans for specific projects required or permitted by the White Slough Development Act.

The City and County have not identified a project proponent to acquire, manage and ensure the permanent protection of the required wetland acreage. Project-specific impacts to the wetlands are to be evaluated under subsequent environmental reviews.

White Slough is generally bounded by the Napa River/Highway 37, Highway 29, Redwood Street and Sacramento Street.

6. Vallejo

a. **Mariner's Cove.** Potential future projects in Vallejo include the Mariner's Cove Residential Project. The City's redevelopment staff may work with a private developer in the future to create a proposal. A tentative concept plan had been developed, but it is no longer being considered.

b. **Mare Island Closure and Reuse Plan.** The City of Vallejo and the U.S. Navy have prepared the Mare Island Closure and Reuse Plan to guide the conversion of the Mare Island Naval Shipyard to civilian use. The plan emphasizes job creation and economic redevelopment and residential use. The final reuse plan contains provisions to protect sensitive areas as open space, and provides opportunities for wetlands restoration. The final reuse plan has been accepted and the implementation process is beginning.

Conclusions

1. Urban development in the North Bay is generally confined to periphery of the planning area along Highway 101 on the west and Highway 29 on the east. The vast area between the two transportation corridors is principally agricultural, rural and wildlife habitat. As with the current

distribution of land use in the North Bay, proposed projects in the area generally follow the existing pattern of use and intensity.

2. Approximately 25 projects are proposed for the planning area— eight residential projects, one industrial project, eight commercial projects and nine public facility projects, primarily municipal sewage wastewater, sludge treatment, disposal facilities and flood control projects. Nearly all of the commercial projects proposed are located in uplands within the north-south highway urban corridors. Residential projects proposed in the City of American Canyon are also in the uplands; however, some residential developments are proposed to be developed in historic wetlands in the jurisdiction of Marin County and Novato. The flood control projects are all proposed in the historic baylands as are many of the municipal sewage treatment and disposal facilities.

3. Over 4,400 acres are currently proposed for urban uses (residential, commercial, and industrial). Over 1,500 acres of those are in the historic wetlands. Public facilities projects could also occupy several thousand acres of land. Approval of these projects could cause significant cumulative impacts to the North Bay wetlands and agriculture.⁷ Additionally, some of these projects, such as residential and certain public facilities developments, can sometimes induce additional urban growth, with possible further impacts to the North Bay wetlands and agriculture.

⁷ Of course, projects, particularly public facilities projects, will not always displace wetlands and agriculture. For example, wastewater treatment facilities can provide reclaimed water for irrigated pasture lands.

CHAPTER 5

PUBLIC OWNERSHIP PATTERNS

Approximately 37,160 acres—one-third of the approximately 110,000-acre North Bay planning area—is in public or non-profit land conservancy ownership. Moreover, about 34,270 acres, or approximately 92 percent of this ownership is within the historic wetlands. This chapter focuses on the public ownership in the North Bay planning area, concentrating on the major ownership within the historic wetlands. Figure 6 maps the distribution of the ownership in the historic wetlands delineated by the Nichols and Wright line. Some of these parcels extend into the adjacent uplands. Because of mapping scale, only parcels 100 acres or greater are mapped. In addition, a detailed description of the publicly-owned lands in the entire planning area, including the urban areas, is included in an appendix.

In this evaluation, publicly-owned areas are defined as those lands acquired and managed by local, state and federal government agencies, and non-profit organizations, such as land trusts and conservancies. Publicly-owned lands described in this report are lands clearly within public ownership, where public title is confirmed by a deed to a public agency. As will be discussed below, there are other kinds of public ownership, such as the State of California's sovereign title in tide¹ and submerged² lands.

A primary purpose of mapping and describing major public ownership is to identify those lands within the planning area that are relatively secure from future development or significant changes in use, such as wildlife areas, and to identify where public lands, such as those used for wastewater treatment or flood control, can be managed for multiple public benefits, including the protection and restoration of wetland habitat. Further, a review of ownership patterns helps provide information to develop strategies which will further protect, restore, and enhance wetlands in the North Bay. Those objectives could be carried out in concert with other compatible public uses, such as flood control, wastewater treatment, recreation and access, and education.

The ability of local governments to guide certain uses or encourage wetland protection or enhancement on some publicly-owned lands is limited. Due to the sovereign powers of the state and federal government, lands owned and managed by state and federal government agencies, such as the California Department of Fish and Game (DFG) and the U.S. Fish and Wildlife Service (USFWS), are generally not subject to the land use planning controls of cities and counties. Similarly, the use, improvement and management of lands owned by independent special purpose districts, such as flood control and sanitary districts, may not be subject to local land use review. While local control over some publicly-owned lands is limited, publicly-owned lands may be

¹ Tidelands are lands lying between Mean High Tide and Mean Low Tide.

² Submerged lands are lands lying below Mean Low Tide.

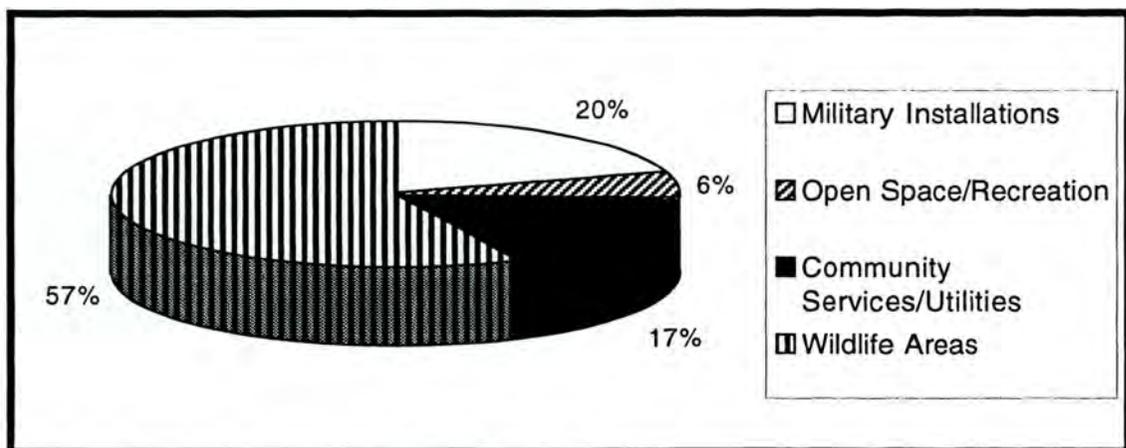
subject to other use restrictions; namely, public lands must be managed in accordance with the respective mandate of the agency that owns the land. For example, the USFWS must use and manage public lands consistent with the act under which the federal government exercised its authority to acquire the land.

By understanding the public ownership patterns within their own communities, local governments can help ensure that the future acquisition and management of lands by independent agencies are consistent with local and regional values, such as wetland protection. This understanding will enable local agencies to develop cooperative acquisition, enhancement and restoration strategies with independent agencies to achieve local and regional objectives.

For analysis purposes, the publicly-owned lands are grouped into the eight categories based on how the land is used and managed: (1) wildlife areas; (2) land conservancies; (3) open space and recreation; (4) military installations; (5) public facilities, utilities, and transportation; (6) other major public ownership; and (7) tide and submerged lands.

Figure 6 is a map delineating the public and non-profit ownership 100 acres or greater in the North Bay, with particular attention to lands within the historic wetlands (Nichols and Wright line). Following is a description of the ownership and the distribution across the North Bay based on the six land use categories discussed above. Chart 5 also shows the distribution of public ownership.

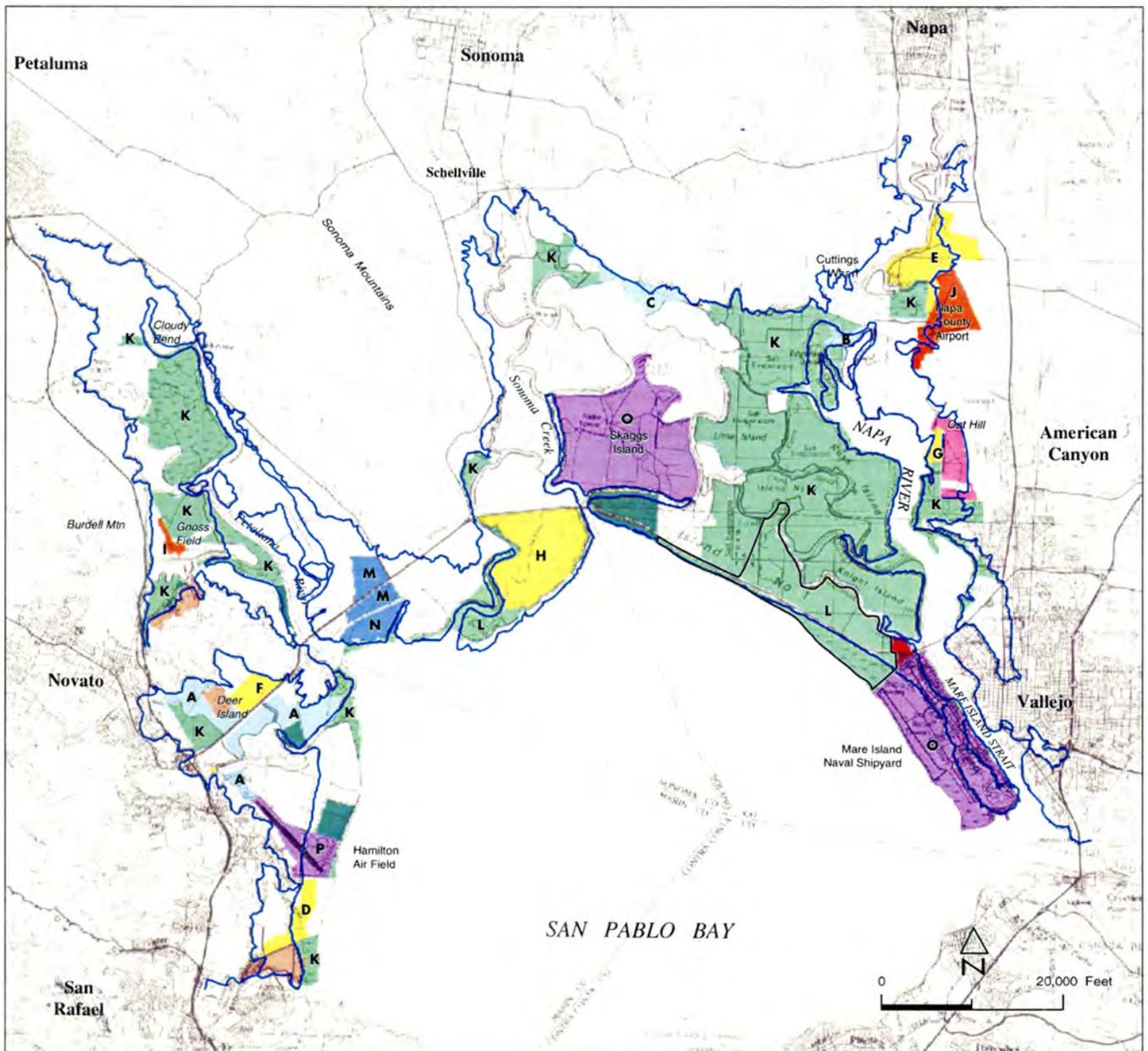
Chart 5
Public Ownership: Total Planning Area



SOURCE: REGIS, 1995; BCDC

Major Public and Non-Profit Land Ownership*

- | | | |
|--|---|--|
|  Flood Control Districts |  Airports |  Former Military Bases |
| A Marin County Flood Control District | I Marin County Airport (Gross Field) | O U.S. Navy |
| B Napa County Flood Control | J Napa County Airport | P U.S. Army |
| C Sonoma County Water Agency |  Wildlife Agencies |  State Lands Commission |
|  Sanitation Districts | K Department of Fish & Game |  City of Vallejo |
| D Las Gallinas Valley Sanitation District | L U.S. Fish & Wildlife Service |  Port of Oakland |
| E Napa Sanitation District |  Land Conservancies |  County of Marin |
| F Novato Sanitary District | M Sonoma Land Trust (Leonard Ranch) |  Nichols and Wright Line |
| G South Napa Waste Management Authority | N State Coastal Conservancy (Sonoma Baylands) | |
| H Vallejo Sanitation & Flood Control District | | |
- * Parcels 100 acres or greater



Wildlife Areas

Lands owned and managed for wildlife use are by far the largest segment of publicly-owned land in the North Bay, totaling approximately 57 percent of the area, or 21,040 acres. There are several state and federal agencies that own and manage land specifically for the protection of fish and wildlife resources, particularly wetland-dependent species. These agencies include the California Department of Fish and Game (DFG) and the U. S. Fish and Wildlife Service (USFWS). As can be seen in Figure 6, the lands owned by these agencies are principally within the boundary of the historic Bay marshlands. These lands contain significant tidal and seasonal wetlands and transitional upland habitat. The largest of these wildlife areas is the DFG's Napa River Ecological Reserve (9,120 acres) and Petaluma Marsh Wildlife Area (2,000 acres), and the USFWS' San Pablo Bay National Wildlife Refuge (1,660 acres). It is not surprising that state and federal wildlife agencies have focused their land acquisition in the historic wetlands of the North Bay, as these areas provide some of the last remaining and most significant opportunities for restoring and enhancing wetlands in the San Francisco Bay-Delta Estuary. Both the DFG and the USFWS have actively acquired lands in the North Bay. State and federal resource agencies may allow other compatible uses in wildlife areas, such as recreation and education, when they are not in conflict with the principal wildlife use. The acquisition and management of lands by state and federal resource agencies represent an important non-regulatory option for permanently protecting wildlife areas.

Of all the public agencies, the DFG owns the most land in the North Bay planning area—16,140 acres, all of which are existing or former marshlands. As can be seen in Figure 6, the DFG lands are spread across the North Bay and are in 14 separate management units: American Canyon Unit (730 acres), Fagan Marsh Ecological Reserve (310 acres), Napa River Unit (9,120 acres), Coon Island Unit (250 acres), Huichicia Creek Unit (710 acres), Wingo Unit (480 acres), Tolay Creek unit (260 acres), Petaluma Marsh Wildlife Area (2,000 acres), Petaluma Marsh Wildlife Enhancement Area (570 acres), Black John Unit (550 acres), Day Island Unit (160 acres), San Pablo Bay Wildlife Area (480 acres), Novato Creek (340 acres), and Marin County Open Space District parcel (190 acres).

The USFWS is the second largest public land owner in the North Bay, owning 3,220 acres of existing tidal marsh and historic wetlands. These lands are separated into two wildlife management areas; the 1,660-acre San Pablo Bay National Wildlife Area³ and the 1,560-acre Cullinan Ranch just west of the Napa River.

Apart from the former Cargill Company salt ponds, the DFG has generally focused its acquisitions along the perimeters of the historic wetlands in an apparent strategy to shield the diked

³ The U.S. Fish and Wildlife Service owns and manages significant portions of San Pablo Bay as part of the San Pablo Bay National Wildlife Refuge including mudflats and open water areas. Since these areas are not within the North Bay planning area, they are not included in the overall acreages.

historic wetlands from encroachments of incompatible urban uses into areas that could be restored or enhanced for wildlife use. On the other hand, the USFWS has generally focused its acquisition strategy within the core of historic wetlands as a way to establish large and contiguous wildlife management units.

The acquisition of land for wildlife areas depends on a number of limiting factors, including: (1) the availability of funds to acquire, restore and manage a site; (2) a willing seller; (3) fair market value; (4) a site's value to endangered and threatened wildlife species and migratory waterfowl; (5) the potential to restore or enhance wetlands, tributary streams or adjacent uplands; and (6) whether incompatible development threatens a site's wildlife functions. The proximity of urban uses to a potential wildlife area does not necessarily preclude land acquisition by a resource agency. Several smaller wildlife areas are located near urbanized areas of the North Bay. For example, DFG's American Canyon Unit of the Napa River Ecological Reserve, and the Novato Creek Unit of the Petaluma Marsh Wildlife Area, are located near residential and commercial areas. In fact, these sites provide important buffer areas between more intensive urban uses and the larger more pristine wildlife areas.

One of the biggest concerns for resource managers, as well as private land owners, is whether public agencies will have adequate resources to operate, manage and enhance recently acquired wildlife areas. Many historic wetlands require significant storm water management, such as the operation and/or maintenance of tide gates, pumping stations and levees to protect adjacent privately-owned properties from flooding. The cost of flood control maintenance can easily tax the operating budgets of most resource agencies.

Land Conservancies

Land conservancies acquire lands for a variety of purposes, including, in the North Bay, protection and preservation of agricultural use and fish and wildlife habitat. Many of the conservancies, or land trusts, also use their land for passive recreation purposes, such as hiking, bird watching and similar kinds of activities. For this report, the conservancies that own and have acquired land primarily for fish and wildlife habitat purposes are discussed in this section. Those agencies are the State Coastal Conservancy and Sonoma Land Trust. In addition, local conservancies that have an interest in the area and that could acquire lands include the Sonoma County Agricultural Preservation and Open Space District, Napa County Land Trust, and the Solano County Farmland and Open Space Foundation. Within the planning area, the Coastal Conservancy owns the 370-acre Sonoma Baylands site just east of the mouth of the Petaluma River. This site is being restored to tidal marsh with the use of dredged materials. In addition, the Sonoma Land Trust owns the adjacent Leonard Ranch, which is also be analyzed as a possible marsh restoration site using dredged materials. Restoration is also proposed for Antenna Field.

Open Space and Recreation

Lands managed for open space and recreation uses comprise only six percent or 2,350 acres of all publicly-owned land within the North Bay planning area. Of this amount, 310 acres of Marin County's McInnis Park, is the only parcel outside urban areas that is in historic wetlands.

The majority of open space areas, with the exception of two Marin County parcels, are too small to map. These facilities are used for active recreation and are located near the urban areas of the North Bay. For example, McInnis Park, located in San Rafael, is a regional facility that provides tennis courts, playing fields, a golf course and hiking trails. Municipal parks in Novato, American Canyon and Vallejo are typical of the smaller neighborhood recreation facilities in the planning area. Similar to active recreation areas, the majority of passive recreation areas in the North Bay are located close to urban areas. For example, Deer Island in Novato and River Park in Vallejo are among the largest open space areas where passive recreation, such as hiking and bird watching, is the main activity.

Lands that public agencies acquire for open space and recreation are generally distinct from wildlife areas in that their principal functions are to provide relief from urban areas, to protect the public from natural hazards such as fire, floods, seismic faults or landslides, and to provide active and passive recreation opportunities. However, open space areas can contain wildlife habitat such as seasonal and tidal wetlands and oak woodlands, and may serve as buffers between urban areas and more pristine wildlife areas. Because their primary functions are distinct from wildlife areas, open space areas support different and sometimes conflicting uses, and may require additional management and policing due to the more intensive use by the public. Nevertheless, open space areas do provide opportunities for the public to gain limited access to wildlife areas and learn about the functions and values of wetlands, historic wetlands and oak woodlands.

Former Military Bases

Lands formerly owned by the Department of Defense and managed as military installations comprise approximately 20 percent or 7,270 acres of the publicly-owned lands in the North Bay planning area. Of this sum, approximately 6,840 or roughly 94 percent of these lands, are located in the historic wetlands. These former military installations are distributed uniformly throughout the North Bay planning area and include Hamilton Air Field in Novato (670 acres), Skaggs Island in Sonoma County (3,400 acres), and Mare Island Naval Shipyard in Vallejo (2,760 acres). All of these military installations are located at least in part within historic baylands (see Figure 6). Skaggs Island and the runway portion of Hamilton Air Field are located entirely within historic wetlands, whereas Mare Island contains significant tidal wetlands and seasonal wetlands that support some of the highest densities of the endangered salt marsh harvest mouse (City of Vallejo, 1994b).

All of the military installations in the North Bay are in some stage of closure, disposal and reuse planning. For example, all of Mare Island Naval Shipyard has been closed. The Navy has already relocated the security functions at Skaggs Island and has put the property in Navy custodial status under the Naval Security Group Activity command (U.S. Department of the Navy, 1991). In the case of Hamilton Field, the armed forces, with the exception of the Coast Guard, have vacated the premises.

Despite the decision to close the military installations, the federal government has not yet approved the transfer of surplus military lands to other public entities. In the case of Mare Island, a portion of the site which includes tidal wetlands may revert to the State Lands Commission. The U.S. Fish and Wildlife Service has requested portions of Skaggs Island for wildlife areas, and the State Coastal Conservancy has identified the runway portion of Hamilton Air Field as a wetland restoration project site. The closure and disposal of the military installations provide an important opportunity in the North Bay to permanently protect and enhance a significant amount of wetlands and historic wetlands, and provide public access opportunities.

Public Facilities, Utilities and Transportation

Within the North Bay planning area, lands owned and managed for providing public facilities and utilities—wastewater treatment, flood control, regional transportation, and airports—comprise approximately 17 percent or 6,310 acres of the publicly-owned land in the North Bay planning area. Of that area, about 4,810 acres are within the historic baylands. These essentially urban functions are provided by special purpose districts and other government agencies that own and manage lands these lands. Most of the land ownership lies with flood control and sanitation special districts.

Special districts are formed to provide a specific community service such as wastewater treatment, solid-waste disposal, and flood control, and operate as independent local governments. These services are normally financed by taxing or charging fees to the landowners within the boundaries of the district. For the most part, special districts do not consider themselves to be instrumental in affecting land use change, but instead interpret their role as reacting to land use changes by providing essential services (San Francisco Estuary Project, 1992). In fact, some special purpose districts have a legal responsibility to provide service for planned growth. Accordingly, special districts can play a critical role in determining how much and where future urban growth in the North Bay will occur. For example, special districts control the wastewater treatment capacity in the North Bay. Major urban development is limited without the ability to connect to sewer services. Special districts can also influence the protection and enhancement of wetlands, depending upon their management practices. These agencies include the Las Gallinas Valley Sanitary District, the Marin County Flood Control District, the Novato Sanitary District, the Sonoma County Water Agency, the Napa County Flood Control and Water Conservation District,

the Napa Sanitation District, the South Napa Waste Management Authority, the American Canyon Wastewater District, and the Vallejo Sanitation and Flood Control District. In addition to providing a primary community service, special districts can manage their lands for compatible secondary uses such as wildlife habitat, recreation and agriculture.

Sanitation Districts

Sanitation districts have acquired significant amounts of historic wetlands in the North Bay to treat and dispose of municipal sewage wastewater and sludge. These agencies include the Las Gallinas Valley Sanitary District, Novato Sanitary District, Napa Sanitation District, South Napa Waste Management Authority, American Canyon Wastewater District, and Vallejo Sanitation and Flood Control District. The sanitation districts own approximately 3,210 acres of land in the historic wetlands. Wastewater facilities generally have three major components: (1) the treatment plant where solid wastes are separated and the wastewater is treated; (2) wastewater storage ponds where effluent is stored before being discharged; and (3) irrigation fields that are used when effluent cannot be discharged into San Pablo Bay or other waterways. Sanitation districts generally rely on gravity, whenever practical, to transport wastewater from urban areas to the treatment plants and ultimately to discharge points (WESCO, 1995). It is not surprising that sanitation districts have located wastewater treatment facilities in the historic wetlands. Diked historic baylands are generally flat, less expensive than upland areas, and closer to acceptable discharge points. Diked historic baylands provide extensive, undeveloped, open areas required for wastewater treatment facilities, particularly for the oxidation ponds and irrigation fields. Additionally, the expanse of diked baylands provide odor buffers to protect residential and commercial areas from unpleasant smells.

However, the construction and operation of wastewater treatment facilities can result in the filling of wetlands or the loss of historic wetlands. The discharge of freshwater effluent can also change the salinity and temperature of receiving waters, thereby altering the type and distribution of wetlands. Also, the intensive management and use of irrigated effluent on pasture lands can adversely affect existing seasonal wetland functions of historic wetlands. As the North Bay communities grow, there may be a need for additional wastewater treatment capacity, creating pressures for sanitation districts to expand existing treatment facilities and acquire additional pasture lands within the historic wetlands.

Importantly, many of the sanitary districts can and do manage their lands in ways that provide other important public benefits including wildlife habitat, recreation and enhanced agricultural productivity. For example, wastewater storage ponds can provide open water habitat and resting areas for shorebirds and migratory waterfowl. The levees and service roads surrounding irrigation fields can be used for public access and recreation. Treated effluent can be used to provide local

ranchers with a supply of low cost water to irrigate grazing lands or used to irrigate publicly-owned and managed landscaped areas. Finally, treated sludge can be used as a soil amendment or fertilizer to increase the productivity of historic wetlands used to cultivate oat hay and oat crops.

Flood Control Districts

The special districts devoted to flood protection include the Marin County Flood Control District, Napa County Flood Control and Water Conservation District, and Sonoma County Water Agency. These agencies own roughly 1,600 acres in historic wetlands. Flood control districts, particularly in Marin County and Novato, have acquired historic wetlands for flood control purposes. This is not surprising since historic wetlands were once an integral part of the San Pablo Bay hydrologic system. Despite being diked off, these areas form subsided basins that can hold excess flood waters and minimize, though not eliminate, the need for flood control structures (San Francisco Bay Conservation and Development Commission, 1982). The construction and maintenance of flood control structures including levees, concrete channels, pump stations and tide control structures can adversely affect wetlands and transitional uplands (San Francisco Bay Conservation and Development Commission, 1994). However, similar to sanitary districts, flood control districts can and do manage their lands for other public benefits such as wildlife habitat, recreation and agriculture.

Transportation

Transportation facilities discussed below are confined to the regional highway system because of its affect on wetlands, and airports which are located in historic wetlands, the expansion of which could impact the wetlands.

A mention of regional travel is important because regional travel patterns and the possible physical improvements to the regional highway system can have an affect on the North Bay's wetlands. The California Department of Transportation (Caltrans) is a major owner of land that provides regional transportation services in the North Bay planning area. Caltrans owns in fee title or controls through easements all the major highways in the North Bay including Highways 101, 121, 37, 116, and 29. In addition to the road itself, Caltrans owns the right-of way on either side of the road that it uses as a safety buffer for motorists and a maintenance area for Caltrans work crews. The right-of-way also provides opportunities for future expansions. Except for Highway 37, which is located largely within the historic wetlands, most of the highways are located on the perimeter of the North Bay planning area, and comprise less than one percent of all public facilities, utilities, and transportation lands. Accordingly, highways are generally not included as part of the analysis of the publicly-owned lands, but the importance to the wetlands of future possible improvements to the regional North Bay transportation corridor must be noted.

Marin and Napa County own and operate the only two publicly-owned general aviation airports in the North Bay planning area.⁴ Airports typically need expansive, flat land for runways, parking aprons, and hangars. Diked historic baylands and open water areas of major tributaries can provide the appropriate approaches, clear zones and buffers that general aviation facilities require.

Government Institutions

Lands in the North Bay that are used for government institutions, such as civic centers and schools comprise less than one percent, or 180 acres, of publicly-owned land in the North Bay planning area. Because the vast majority of government institutions, with the exception of the Maritime Academy in Vallejo, are located in urbanized upland areas away from wetlands and historic wetlands, and because they represent a very small fraction of all publicly-owned land, they are not included as part of the analysis of publicly-owned land.

Other Major Public Ownership

Other relatively large parcels within the historic wetlands that do not easily fit in the above categories are owned by the State Lands Commission, Port of Oakland, and the City of Vallejo.

The State Lands Commission owns 1,130 acres of historic wetlands; the Antenna Field (260 acres) adjacent to Hamilton Air Field and an 870-acre parcel at the mouth of Sonoma Creek.

The Port of Oakland owns a 420-acre parcel, of which approximately 350 acres are in historic wetlands, adjacent to the wastewater treatment facility in the City of American Canyon. The Port purchased the site for use as wetland mitigation for impacts incurred from developing the Oakland Airport Distribution Center. Because of its strategic location along the Napa River, and because the Port apparently does not need the site for mitigation, several resource agencies have expressed an interest in acquiring the site for use as a wildlife area. The site is currently being leased to a local rancher for grazing cattle (McDonald, Mark - Personal Communication).

The City of Vallejo owns a 130-acre parcel on the west side of the Napa River which is the 52-acre former Guadacanal Village housing site. This area is a possible marsh restoration site for improvements and widening of Highway 37 in the White Slough wetlands. The City also owns the 21-acre North Housing site.

Open Water Areas

Much of the land within the planning area is tide and submerged lands. These lands—owned and administered by the State of California—are referred to as public trust lands and are held for the benefit of the people of the entire State. Uses of these properties include commerce, navigation, fisheries, water-oriented recreation, and preservation of the land in a natural state. In some cases, these lands have been transferred by the Legislature to a local agency so that it may administer them pursuant to the public trust and statutory guidelines. The 1913, 1962, and 1963 grants to the City

⁴ There is also a privately-owned general aviation airport in Sonoma County, but outside the planning area.

of Vallejo of its waterfront are examples of such transfers, and include the public waterfront land held by Vallejo discussed in the appendix to this report. Where grants in trust, such as Vallejo's, have not occurred, public trust title interests are administered by the State of California acting through the State Lands Commission.

The determination of the location and boundaries of public trust lands is often difficult, due to physical changes that have taken place over the years due to diking, isolating, and filling of tidal waters. A cursory examination of today's waterways is not indicative of the reach of the tides prior to human activities as is shown in Figure 2, and, therefore, not indicative of the extent of public trust land title. These matters are made more difficult because of the inclusion of tidelands within State deeds to private parties in the last century. Over the years, the State Lands Commission has settled many controversies concerning sovereign lands title with private parties in the planning area, with beneficial results. In many cases, these settlements have resulted in confirmed State ownership of property as of the character of the tide and submerged lands. In others, the settlements have generated funds for the purchase of land. Much of the property cited in this background report as owned or administered by the Department of Fish and Game is sovereign land settled in the State Lands Commission and leased to the DFG for fish and wildlife habitat or recreation purposes. The precise holder of State title is not significant to the purpose of this report, which is to itemize those public properties clearly not subject to substantial development pressure.

When calculating public ownership acreage for this report, certain areas were excluded because of the difficulties in knowing the precise boundaries of the State's tide and submerged lands ownership sovereign-owned open water areas such as rivers, tributary streams and sloughs. Other lands not counted as public ownership include public title interests based on sovereignty in former tide and submerged lands which are now in private ownership. For the purposes of this report, those lands are considered private ownership and are not included in the public ownership numbers.

Conclusions

1. Over one-third of the North Bay planning area (37,156 acres), and approximately 50 percent of the diked historic baylands (34,267 acres), are publicly-owned, principally by wildlife and military agencies and special purpose districts such as flood control districts. Approximately 92 percent of the publicly-owned land lies within the diked historic baylands. This ownership provides an important foundation for protecting, enhancing and restoring North Bay wetlands—not only because of ownership by agencies whose mission is to protect, enhance and restore these lands, but because the other agencies can manage their lands in a manner that will enhance wetlands as well as carry out their primary mission of flood protection and sewage treatment and disposal. Moreover, reallocation of the use of closing military facilities offers a particularly significant opportunity to enhance and restore wetlands.

2. Public agencies and non-profit land trusts own approximately 50 percent of the North Bay diked historic baylands. The land owners hold and manage these lands primarily for wildlife habitat, flood control, and treated municipal sewage wastewater and sludge disposal.

3. Wildlife agencies—the Department of Fish and Game (16,144 acres) and the U.S. Fish and Wildlife Service (3,218 acres) are the principal public landowners. The Department of Fish and Game has generally focused its acquisition program on lands on the periphery of the historic wetlands, while the U.S. Fish and Wildlife Service has acquired land in the core of the historic wetlands, creating large, contiguous wildlife management units.

4. Open space and recreation agencies acquire and manage land primarily for passive recreation purposes and to provide a natural landscape relief in urbanized areas. Approximately 2,350 acres of land in the North Bay are owned and managed by open space and recreation agencies, primarily in upland areas adjacent to the diked historic baylands. Because of their location and passive use, these areas are as important habitat for wetland-related wildlife and as promontories from which to view the expanse of the flat North Bay wetlands.

5. The military owns almost seven percent of the land in the North Bay planning area (7,300 acres), of which approximately 6,200 acres are within the diked historic baylands—about ten percent of the historic baylands. All of the military installations in the North Bay—Hamilton Air Field, Skaggs Island Naval Reservation, and Mare Island Naval Shipyard—are in some phase of closure and reuse planning and have considerable potential for wetland enhancement and restoration.

6. Special purpose districts (sanitary and flood control) own about seven percent (6,300 acres) of the land in the planning area, all within the diked historic baylands and comprising around ten percent of the historic wetlands. The land is used primarily for the treatment and application of municipal sewage wastewater and sludge for irrigation and for soil enrichment of agricultural land.

Sanitary districts can manage their diked historic baylands in a manner that provides public benefits in addition to the treatment and disposal of sewage by providing wildlife habitat, passive recreation opportunities and increased agriculture productivity. Flood control districts acquire land in the diked historic baylands to accommodate high amounts of wet weather runoff that historically flooded the historic baylands during flood conditions. These lands can, and in many cases are, managed for public benefits in addition to flood control, such as wildlife habitat, passive recreation, and agricultural use.

7. Much of the land within the planing area are tide and submerged lands owned by the State of California and held in trust for the benefit of the people of the entire State. These lands are referred to as “public trust lands.” In certain cases, the State, by legislative grant, has transferred public trust lands to local agencies to administer pursuant to the trust and the terms of the grant.

APPENDIX A

METHODOLOGY

BCDC staff completed several steps to describe and map existing land uses, local government general plan designations, and major public land ownership in the North Bay. These steps included: (1) data gathering; (2) paper, or "hard copy," mapping; (3) computer, or "electronic," mapping; and (4) statistical analysis of mapped data. As a general approach, BCDC focused on using existing data sources rather than conducting new research. The last two sections of this appendix explain how the land use and general plan designations were aggregated.

Importantly, although staff worked to make the maps and analysis as accurate as possible, the data is intended to be used a regional scale, to provide an overview of the 174-square mile planning area. Thus, the maps and calculations are not intended to be precise at a site-specific level.

Data Gathering

As a first step, BCDC staff conducted a literature search to identify information on existing land uses, local government general plan designations, and major public ownerships in the North Bay planning area. Staff gathered data and mapped information from several secondary sources including city and county general and specific plans, environmental impact reports and environmental impact statements, management plans prepared by special purpose districts, wetland restoration plans prepared by state and federal resource agencies, and aerial photography. BCDC staff supplemented these secondary sources with field visits and interviews. Staff also worked with each of the participating local governments in the North Bay planning area, special purpose districts, and state and federal resource agencies to identify unpublished information on existing land uses and publicly-owned lands.

BCDC staff found that several special purpose districts, state, and federal resource agencies had developed paper maps of publicly-owned land, which were particularly useful. Due to time and resource limitations, staff did not conduct a detailed search of ownership data held by each of the County Tax Assessors nor attempted to individually identify or map land held by private interests. Land that staff did not identify as being in public ownership was assumed to be privately owned.

Paper ("Hard-Copy") Mapping

Staff used United States Geological Survey (USGS) 7.5 minute quadrangle maps as its base in preparing hard-copy (paper) maps for digitizing by the Regional Environmental Geographic Information Systems (REGIS) via Center for Environmental Design and Research (CEDR). Staff

elected to use USGS 7.5 minute quadrangles for several reasons. The 7.5 minute quadrangles are the basis of CEDR's regional mapping system because they are relatively complete in portraying natural and man-made features such as the shoreline and roadways, and are fairly accurate. CEDR has compiled and digitized mapped data based on USGS 7.5 minute quadrangles, such as roads, hydrology, city and county boundaries, and wetlands. One can interactively use this existing information to supplement new data layers or create new data layers. Also, many local, state and federal agencies use USGS 7.5 minute quadrangles as a base for mapping land use and ownership information.

To prepare the 1995 Existing North Bay Land Use map, BCDC staff used as its basis digital land use information that the Association of Bay Area Governments (ABAG) developed in 1985. The 1985 ABAG land use data has over 100 land uses classifications that USGS originally developed and ABAG modified. On the basis of data gathered in step one, BCDC staff corrected and updated the disaggregated 1985 land use map to reflect the existing land uses as of 1995.

To prepare the 1995 General Plan Designations map, BCDC staff used as its basis digital general plan data that the San Francisco Estuary Project and CEDR developed in 1985. CEDR had already aggregated the SFEP general plan designations into six general categories. On the basis of data collected in step one, BCDC staff corrected and updated the 1985 general plan data to reflect the 1995 North Bay general plan designations. To better reflect the general plan designations that local governments in the North Bay now use, BCDC staff included two additional general plan designations, "Public Facilities" and "Open Space and Recreation". This appendix provides a detailed description of the general plan categories and the SFEP aggregations.

No existing digital data was available for BCDC staff to use as its basis for mapping public ownership. To prepare the 1995 Major Public and Non-Profit Land Ownership map, BCDC staff transferred the disaggregated data collected in the literature search to USGS 7.5 minute quadrangles. Each publicly-owned parcel was depicted with an individual polygon. Only publicly owned parcels larger than 2-1/2 acres (1 hectare) were mapped due to the limitations of the GRASS software. BCDC staff did not catalog existing streets and roadways or public easements over private lands.

A variety of local, state and federal government agencies reviewed the hard-copy maps to ensure their completeness and accuracy. On the basis of this review, BCDC staff revised the maps prior to sending them to CEDR for digitizing and/or electronic editing.

Electronic/Computer Mapping

The North Bay Wetlands Protection Program applies an innovative on-line Geographic Information System (GIS), called GRASSLinks,¹ as a land use planning tool to map and analyze the regional distribution of land use data. GRASSLinks, developed by Dr. Susan Huse, allows the public to remotely access the University of California at Berkeley's GIS facilities. The database includes maps of environmental and political interest for the San Francisco Bay and Delta region. BCDC contracted with the Regional Environmental Geographic Information Systems (REGIS) via the Center for Environmental Design and Research (CEDR) to help prepare land use and natural resource maps and place them on GRASSLinks.

GRASSLinks and the data created for the North Bay can be accessed by connecting to the Internet and typing <http://www.regis.berkeley.edu/grasslinks>.

Geographic Information Systems are a combination of spatial data, hardware, and software that allow for complex spatial analysis and querying of mapped information. The capabilities of GIS include inventorying a specific geographic variable, such as existing land uses, querying for the existence of items of interest, measuring the extent of various features, analyzing the coincidence of multiple factors, and monitoring changes over time. Common applications include natural resource management, environmental assessment, and land use planning (San Francisco Estuary Project, 1992). REGIS and GRASSLinks use a public domain software called Geographic Resources Analysis Support System (GRASS), developed by the U.S. Army Corps of Engineers.

To electronically map the distribution of existing land uses, local government general plan designations, and major public ownership in the North Bay planning area, CEDR staff used the Geographic Information System at REGIS and GRASS GIS software. GRASS is an interactive tool for the management, analysis and display of geographically referenced data. GRASS software includes capabilities for digitizing maps, importing existing vector (line) and raster (grid-based) data and performing statistical analysis.

On the basis of the revised hard-copy maps, and using GRASS, CEDR staff electronically edited and updated the 1985 Land Use and the 1985 General Plan maps to create the 1995 Existing North Bay Land Use and 1995 North Bay General Plan Designations maps for the North Bay planning area. CEDR staff also digitized the hard copy maps depicting publicly-owned lands within the North Bay planning area to create the 1995 Major Public and Non-Profit Land Ownership map.

¹ A purpose of GRASSLinks is to provide a prototype for cooperation and data sharing between environmental planning agencies, public interest groups, citizens and private entities.

CEDR staff stored all new digitized maps developed for the North Bay Wetlands Protection Program on the REGIS GeoDatabase and then placed them onto GRASSLinks for BCDC staff to review online. Only a limited set of data stored on the REGIS GeoDatabase is accessible through GRASSLinks. To ensure proper labeling and spatial accuracy, BCDC staff conducted a quality control check of all digitized maps and made corrections as necessary.

Statistical Analysis

Using GRASSLinks, BCDC staff remotely accessed the aggregated 1995 land use data, the 1995 General Plan data, and the public ownership data at REGIS and carried out a number of operations to analyze the mapped data and generate statistical information. These operations included: (1) displaying or interactively creating an image using available maps, colors and/or regions; (2) calculating area totals for categories on a map, or overlaying two maps to find the extent of intersection; (3) viewing descriptive text, or metadata, about the maps including source, scale, date, etc.; (4) reclassifying or creating a new map by aggregating the information from an existing map; and (5) combining or creating a new map that highlights the coincidence or overlap of information from two existing maps.

BCDC staff used GRASSLinks primarily to calculate area totals for existing land uses, general plan designations, and public ownership (i.e., land clearly within public ownership by deed to a public agency). These calculations were conducted both for the overall planning area, and for each of the eight cities and counties within the planning area. Many of these calculations were conducted both for the entire planning area, and for areas within the historic wetlands (i.e., within the Nichols and Wright line¹). Thus, these historic wetlands calculations include both diked historic baylands and tidal wetlands.

Staff also used GRASSLinks to develop estimates for potential growth allowed by general plan designations. For more information about the technique utilized, refer to Chapter 3. In essence, the technique involves determining potential growth in the historic wetlands within a certain designation, such as residential, by subtracting already built areas (such as existing homes) and undevelopable areas (such as protected wildlife sites). This technique thus tells us how many acres of historic wetlands designated for a certain use, which are currently in agricultural or open space uses, can be converted to that designated use. However, potential growth in agriculturally designated areas, which may be significant, was not evaluated in this report.

Staff also used GRASSLinks to develop additional maps by grouping existing disaggregated data on land use and public ownership into more general categories. To produce the graphics used

¹ This line delineates the boundaries of the historic wetlands. For more information about the USGS Nichols and Wright report, refer to the references section.

in the North Bay Land Use and Public Ownership report, the Commission's cartographic consultant, Yuki Kawaguchi, enhanced downloaded copies of the GRASSLinks digital images using Adobe Photoshop and Illustrator.

To provide a regional analysis of the North Bay land uses, BCDC staff grouped the approximately 100 land use categories into 10 general categories to create the 1995 Existing Land Use map. These aggregated categories include: (1) Extensive Agriculture and Rural Lands; (2) Intensive Agriculture; (3) Housing; (4) Commercial and Light Industry; (4) Heavy Industry; (5) Public Facilities; (6) Open Space and Recreation; (7) Wildlife Areas; (8) Open Water; and (9) Undesignated Areas. This appendix contains a detailed description of how BCDC staff grouped the disaggregated land use data into the nine major categories.

Staff also grouped the approximately 64 individual publicly-owned parcels into seven general categories to create the 1995 Major Public Land Ownership map. These aggregated categories include: (1) Wildlife Areas; (2) Open Space and Recreation; (3) Military Installations; (4) Community Services and Utilities; and (5) Government Institutions. The remainder of the planning area was grouped as lands in private record ownership that are potentially subject to development pressure or open water and historically tidal areas where precise boundaries of public lands are undetermined.

The purpose of the mapped information on existing land uses, general plan designations, and public ownership, including the statistics generated from the maps, is to identify regional trends only. The data is not intended to be parcel precise or used for parcel planning. As well, the grouping of public lands is for descriptive and analytical purposes only and is based on the current use and management of the property. The grouping of a particular parcel is not intended to suggest or imply that the designation is the appropriate public use nor that the use is compatible with wetland values and functions. A subsequent background report will discuss more fully the compatibility of land uses and public ownership with wetland values and functions. In part, the accuracy of the mapped data identified herein is limited by the accuracy of the data sources BCDC staff used to compile the regional profiles.

Land Use Classification System

BCDC staff has divided the land uses in the North Bay planning area into multiple level scheme (or "nesting" system), originally developed by the U.S. Geological Survey (USGS). This system identifies land uses by Level I (one digit) and Level II (two digit) categories. (Anderson and others, 1976), with Level I being the most general and Level IV being the most specific level of detail.

Subsequent work by the USGS and the Association of Bay Area Governments (ABAG) has led to the creation of Level III (three digit) and Level IV (four digit) subdivisions. Although this Level III and IV data is not uniformly available throughout the planning area, when available, BCDC staff has included it on the disaggregated 1995 Land Use Map. BCDC staff elected to use Level III and Level IV data to further specify the type of land use occurring at a site.

To analyze land uses in the North Bay, BCDC staff aggregated approximately 40 of the over 100 land use categories that have been mapped in the North Bay planning area into 10 major categories. The majority of the land use classification system is borrowed from Appendix II of SFEP's *Status and Trends Report on Land Use and Population*. The following discussion presents the methodology by which the USGS and ABAG land use classifications were aggregated in this report for the North Bay planning area.

NOTE: (1) The modifications to the USGS and ABAG classifications are shown in *italics*.

NOTE: (2) The categories and subdivisions which were not used on the 1995 disaggregated Land Use Map are indicated with an asterisk (*). These categories or subdivisions were not used because: (1) this project focuses on regional land uses; (2) the subdivisions or categories were not originally mapped for the North Bay; and/or (3) the subdivisions or categories do not exist in the North Bay planning area.

1. The **NBWPP Extensive Agriculture and Rural Lands Classification** includes:

Category 21 -- Cropland and Pasture

Included in this category are harvested, idle, and cultivated cropland, as well as pasture. Level III and IV categories that are not used for this project include:

211 -- Cropland*

2111 -- Irrigated*

2112 -- Non-Irrigated*

212 -- Pasture*

Category 31 -- Herbaceous Rangeland

This division of land use includes areas where the natural vegetation is largely grasses and grass-like plants, shrub and brush, and chaparral.

Category 32 -- Shrub and Brush Rangeland*

Level III and IV categories that have not been mapped include:

321 -- Chaparral*

322 -- Coastal Shrub*

Category 33 -- Mixed Rangeland

Category 41 -- Deciduous Forest*

These areas include the forested areas in which deciduous trees (those losing their leaves in a dormant season) predominate.

Category 42--Evergreen Forest

These areas include the forested areas in which evergreen trees (those which remain green throughout the year) predominate. Level III and IV categories that have not been mapped include:

421 -- Redwood and Douglas Fir*

422 -- Pine*

423 -- Evergreen Mix*

Note: For the purposes of this project, the oak woodlands in the North Bay have been mapped as Category 42 (Evergreen Forest).

Category 43 -- Mixed Forest*

These areas include both deciduous and evergreen trees. Neither predominates.

Category 62 -- Non-Forested Wetlands*

Note: An extensive area in the North Bay was originally mapped as Category 62 (Non-Forested Wetlands) on the 1985 ABAG Land Use map. Because this report focuses on land use, not land cover, and because the NBWPP will prepare a subsequent report that identifies wetlands in the North Bay, Category 62 has been broken down into Level III subdivisions:

622 -- Non-Forested Wetlands, Undeveloped Private

Areas originally mapped by ABAG as non-forested wetlands but are privately owned and remain basically in an unimproved state.

2. The NBWPP Intensive Agriculture Classification includes:

Category 22 -- Orchards, Groves, Vineyards, Nurseries and Ornamental Horticulture Areas

This land produces most of the various nut and fruit crops. Horticulture areas include greenhouses, floriculture areas, and sod farms used year after year for these purposes. Level III and IV categories that are not used for this project include:

221 -- Orchards or Groves*

222 -- Vineyards and Kiwi Fruit*

223 -- Greenhouses and Floriculture*

Category 23 -- Confined Feeding

Included in this category are large poultry farms, as well as hog and cattle feedlots. The use is characterized by large animal populations in confined areas with many associated buildings, fences, and waste disposal areas.

Category 24 -- Farmsteads and Other Agriculture

The largest component of this land use is inactive farm land. *Note: For the purposes of this project, the main facilities, or "headquarters," of the ranches and farms have been included in this category.*

3. The NBWPP Residential Classification includes:

Category 11-- Residential

Residential areas are delineated to include houses, apartments, garages, sheds, lawn and streets, and can be considered a basis for gross, rather than net, residential acres. Any area of 2.5 acre (one hectare) or more where dwelling units predominate is mapped as residential.

In the nine county Bay Area, ABAG has subdivided the residential areas into three categories based on density (using the metric hectare which equals 2.47 acres) and a fourth based on structural type. The dwelling unit per hectare value is determined as follows:

Residential density = (structures/hectare) x (units/structure) = units/hectare

The resulting subdivisions of residential use are:

111 -- One and Under Dwelling Units (DUs) per Hectare (approx. 2 to 5 acre lots)*

112 -- Two to Eight DUs per Hectare (approx. 1/3 to 1 acre lots)

113 -- Nine and Over DUs per Hectare (less than 1/3 acre lots)*

114 -- Mobile Home Parks (technically a part of 113 but listed separately)

Category 17 -- Other Urban and Built-up Land*

175 -- Urban Vacant Land

Selected land that has been developed as an urban use and is currently vacant but is planned for redevelopment is shown in this category.

1251 -- Military Residential (*Level IV Sub-category of Subdivision 125 (Military Installations) from Category 12 -- Commercial and Services*)

4. **The NBWPP Commercial and Light Industrial Classification includes:**

Category 12 -- Commercial and Services

There are a number of types of these facilities, ranging from retail commercial, to military, to educational.

121 -- Retail and Wholesale

This category includes central business districts, as well as shopping centers, commercial strip development, auto salvage operations and motels. *Note: the auto salvage operations in southern Napa County are mapped as Category 15.*

122 -- Commercial Outdoor Recreation

This category includes intensive areas of recreation which cover a minimum of one hectare, including golf course club houses, tennis courts, amusement parks and drive-in theaters. *Note: commercial marinas and Novato's Renaissance Faire are included in this category.*

123 -- Education*

This category includes all public and private schools, including pre-schools and subsidiary land uses (such as parking, administrative structures, recreation areas and dormitories). Seminaries and novitiates are also included. The category is further subdivided, when the information is available, into:

1231 -- Elementary and Secondary Schools

1232 -- Colleges and Universities

1233 -- Stadium*

1234 -- University Housing*

124 -- Hospitals, Rehabilitation Centers and Other Public Facilities*

Included in this category are all hospitals, medical centers, mental health centers, sanitariums, and convalescent centers that meet the one hectare size specification.

125 -- Military Installations

All areas which reflect military use such as armories, national guard centers, firing ranges, barracks and arsenals have been mapped in this category. Subdivisions of these areas are:

1252 -- Military Commercial Services

1253 -- General Military Use

1254 -- Military Hospitals

1255 -- Military Communications*

Note: Level IV sub-category 1257 (Military Open Areas) is included in the NBWPP Open Space and Recreation classification, Level IV sub-category 1256 (Military Airport) is included in the NBWPP Public Facilities classification, and Level IV sub-category 1251 (Military Residential) is included in the NBWPP Residential classification.

126 -- Other Public Institutions and Facilities

This category includes government facilities of one hectare or more. Such occurrences may be libraries, post offices, police and fire stations, city and county government complexes (*including county jails*) and state and federal facilities. Two additional types of facilities have been included:

1261 -- Churches and Synagogues*

1262 -- Stadium (when not associated with a college or university)*

127 -- Research Centers*

Research centers are research offices and laboratories that meet the minimum size requirements.

128 -- Offices*

Offices are professional centers that meet the minimum size requirements.

129 -- Hotels*

In certain parts of the Bay Area, particularly in San Francisco, areas predominately composed of hotels have been mapped.

Category 15 -- Commercial and Industrial Complexes

Areas of mixed use, as well as areas of multiple uses within a single structure, have been placed in one of two categories. Mixed industrial and commercial areas have been included in this category. Mixed residential and commercial areas have been included as part of Category 16.

Note: For the purposes of this project, the wineries of Napa and Sonoma County have been included in this category.

Category 16 -- Mixed Urban and Built-Up Land

Mixed residential and commercial uses, whether in an area or within a single structure, have been placed in this category. Mixed land use is common in areas converting from residential to commercial. Also, rural centers often are too small to map separately as commercial or residential.

In some portions of the Bay Area, this category is divided into two subcategories that have not been used as part of this project:

161 -- Transitional (mixed use of land areas)

162 -- Mixed Use In Buildings

1712 -- Racetracks (*Level IV Sub-category of Subdivision 171 (Extensive Recreation) from Category 17 -- Other Urban and Built-up Land*)

5. The NBWPP Heavy Industry Classification includes:

Category 13 -- Industrial

This category includes both heavy and light industry.

In the nine-county Bay Area, industrial use has been separated into these two uses based both on the type of production and the product manufactured. For example, the manufacturing of locomotives would be considered heavy industrial, whereas the manufacturing of model trains would be considered light industrial.

131 -- Heavy Industry*

These industrial activities are devoted to heavy fabrication, making and assembling parts which are, in themselves, large and heavy, or to the processing of basic raw materials. Most industries in this category involve mechanical, chemical or heat processing.

132 -- Light Industry*

These industrial activities include the design, assembly, finishing and packaging of products, rather than with processing basic raw materials. Typical industries in this category include electronics firms, small textile mills, warehousing, and assembly plants. These facilities have been mapped along with associated parking lots and grounds. *Note: Although wineries could be included in this category, they have been mapped as Category 15 for the purposes of this project.*

Category 14 -- Transportation Communication and Utilities*

144 -- Ports

This category is characterized by port or dock facilities and associated warehouses and storage areas. This category also includes passenger terminals, slips and associated parking areas.

Category 63 -- Salt Evaporation Ponds

Wetlands along San Francisco Bay used for the production of salt. *This category includes those lands associated with the actual harvesting and processing of salt at the Napa Plant site in the North Bay.*

Category 75 -- Strip Mines Quarries and Gravel Pits

The decision was made to include these areas of extractive mining as a subdivision of barren land rather than of urban or built-up land.

6. The NBWPP Public Facilities Classification includes:

1256 -- Military Airports (*Level IV Sub-category of Subdivision 125 (Military Installations) from Category 12 -- Commercial and Services*)

Category 14 -- Transportation Communication and Utilities*

This category includes the various infrastructure systems.

142 -- Railways*

Railroad tracks have been mapped when they meet a 55-yard (50-meter) minimum mapping specification. Also included are switching yards, terminals, classification yards and maintenance yards.

143 -- Airports

Air strips, both public and private, are included. Also included is all land related to airport operations.

145 -- Power Transmission

All power transmission lines meeting a 55-yard (50-meter) minimum mapping specification have been mapped. Power substations not associated with industrial activities and covering one hectare have been mapped in this category, as well.

146 -- Sewage Treatment Plants

These facilities have been identified downstream or downhill from municipal areas, as opposed to water treatment facilities which are uphill. (Any water treatment facilities have been included as part of "Category 14."). *In the North Bay, most Sewage Treatment Plants have three distinct land uses: The plant and its facilities, the wastewater storage ponds, and lands that are irrigated with wastewater. Because the irrigation lands are basically undeveloped, and because they also function as open space and/or grazing lands, they are not included in this category. Instead, they are included in Extensive Agriculture and Rural Lands. Only the plant and the ponds are identified as sewage treatment plants on the 1995 Land Use map.*

147 -- Covered Water Reservoirs*

These facilities have been identified in certain central urban areas.

Note: for purposes of this project, Subdivision 144 (Ports) is aggregated into the NBWPP Heavy Industry land use classification, and Subdivision 141 (Highways) is classified as an undesignated area.

Category 76 -- Transitional Areas*

These areas of sparsely vegetated land are characterized by having an urban component of use. When the information is available, they have been subdivided into:

761 -- Sanitary Land Fills

762 -- Other Transitional*

7. The NBWPP Open Space and Recreation Classification includes:

1257 -- Military Open Areas (*Level IV Sub-category of Subdivision 125 (Military Installations) from Category 12 -- Commercial and Services*)

Category 17 -- Other Urban and Built-Up Land*

Areas that have been affected by urban development but with minimal paving and buildings are included in this category.

171 -- Extensive Recreation

Included in this category are athletic fields and playgrounds. *Note: for the purposes of this project, the Rush Creek Uplands, McInnis Park, Deer Island, the open space parcels owned by the City of Novato, and public boat launch areas are included in this category. When available, two subdivisions are shown:*

1711 -- Golf Courses (the extensive, not the intensive, portion -- thus, the golf clubhouse is usually shown as Category 122. *Because both of the North Bay's golf clubhouses are on publicly owned land, they are included in this NBWPP Open Space and Recreation classification.*)

Note: For the purposes of this report, Level IV sub-category 1712 (Racetracks), representing the Sears Point Raceway, is aggregated into the NBWPP Commercial and Light Industry Classification.

172 -- Cemeteries

Public, private and military cemeteries are included.

173 -- Parks

All leisure, ornamental, zoological and botanical parks are included when the use is apparent. However, areas of extensive tree cover may be classified as forest.

174 -- Open Space--Urban

Undeveloped urban parks, vacant lots and open areas slated for urban renewal or redevelopment are shown in this category. *The parcel commonly known as the "Antenna Field" adjacent to the Hamilton Airfield, which is owned by the California State Lands Commission, is included in this subdivision.*

Note: For the purposes of this report, Category 175 (Urban Vacant Land) is aggregated into the NBWPP Residential category.

Category 62 -- Non-Forested Wetlands*

Note: An extensive area in the North Bay was originally mapped as Category 62 (Non-Forested Wetlands) on the 1985 ABAG Land Use map. Because this report focuses on land use, not land cover, and because the NBWPP will prepare a subsequent report that identifies wetlands in the North Bay, Category 62 has been broken down into Level III subdivisions:

623 -- Non-Forested Wetlands, Recreation Private

Areas originally mapped by ABAG as non-forested wetlands, are privately owned and are used for recreation purposes such as duck clubs and hunting clubs.

8. **The NBWPP Wildlife Area Classification includes:**

311 -- Wildlife Rangeland, Public (Subdivision of Category 31 -- Herbaceous Rangeland)

Rangeland owned by public wildlife agencies and used, for the most part, as a wildlife refuge.

Category 62 -- Non-Forested Wetlands*

Note: An extensive area in the North Bay was originally mapped as Category 62 (Non-Forested Wetlands) on the 1985 ABAG Land Use map. Because this report focuses on land use, not land cover, and because the NBWPP will prepare a subsequent report that identifies wetlands in the North Bay, Category 62 has been broken down into Level III subdivisions:

621 -- Non-Forested Wetlands, Wildlife Public

Areas which are owned by public agencies, such as the California Department of Fish and Game and the United States Fish and Wildlife Service, that manage the wetlands for wildlife purposes.

9. **The NBWPP Open Water Classification includes:**

Note: Because the Background Report on Land Use is focusing principally on land uses, and because all of the categories below are aggregated into the NBWPP Open Water Classification, the BCDC staff did not attempt to re-apply the classifications below throughout the planning area, rather staff accepted the classifications as shown on the 1985 Land Use Map prepared by ABAG. These areas include those locations in the general land mass predominately covered by water with a minimum mapped width of approximately 55 yards (50 meters).

Category 51 -- Streams and Canals

Category 52 -- Lakes*

Category 53 -- Reservoirs*

Category 54 -- Bays and Estuaries*

Category 55 -- Sedimentation Ponds*

Category 56 -- Water on USGS Base Maps but Land on USGS Land Use Maps

This category includes those areas depicted as water on the USGS 7.5' quadrangle maps, but shown as land on the USGS land use maps. This category, along with Category 64, were created to deal with discrepancies which occur in the mapping of the land-water boundary on these two data sources.

Category 61 -- Forested Wetlands*

According to USGS, "Forested Wetlands are wetlands dominated by woody vegetation. Forested Wetlands includes seasonally flooded bottom land hardwoods, mangrove swamps, shrub swamps, wooded swamps including those around bogs" (Anderson and others, 1976). Within the land use study area, the only type of forested wetlands are those classified in the Wetlands Status and Trends Report as "Riparian Forest" or "Palustrine Wooded Vegetation."

Category 62 -- Non-Forested Wetlands*

According to USGS, "Non-Forested Wetlands are dominated by wetland herbaceous vegetation or are non-vegetated. These wetlands include tidal and nontidal fresh, brackish, and salt marshes and non-vegetated flats and also freshwater meadows, wet prairies, and open bogs" (Anderson and others, 1976). This category includes those classified in the Wetlands Status and Trends Report as tidal and freshwater marshes, as well as seasonal and diked ponds and marshes.

Category 64 - Land on USGS Base Maps but Water on USGS Land Use Maps

This category includes those areas depicted as land on the USGS 7.5' quadrangle maps, but shown as water on the USGS land use maps. This category, along with Category 56, were created to deal with discrepancies which occur in the mapping of the land-water boundary on these two data sources.

Note: for purposes of this project, Category 63 (Salt Evaporation Ponds) is included in the NBWPP Heavy Industry classification. Category 62 (Non-Forested Wetlands) Subdivisions 621 (Non-Forested Wetlands - Wildlife Public), 622 (Non-Forested Wetlands - Undeveloped Private), and 623 (Non-Forested Wetlands - Recreation Private), are included in the NBWPP Wildlife Area classification, the NBWPP Extensive Agriculture and Rural Lands classification, and the NBWPP Open Space and Recreation classification respectively.

10. The Undesignated Areas in the NBWPP includes:

Category 14 -- Transportation, Communication and Utilities*

141 -- Highways

Highways and interchanges which meet a 55-yard (50-meter) minimum mapping specification have been mapped. Both paved areas and adjacent rights-of-way are included.

For the purposes of this report, the areas originally mapped as Subdivision 141 - Highways, are not classified because they represent a relatively small area and because the mapped areas exist only on the edges of the planning area.

Description of General Plan Mapping Units

This report aggregates approximately 100 local general plan designations into 9 designations which are applied uniformly throughout the planning area. These designations include: (1) land extensive agriculture; (2) land intensive agriculture; (3) residential; (4) heavy industry; (5) commercial and light industry; (6) public facilities; (7) open space and recreation; (8) open water; and (9) undesignated. These designations are listed below to show how BCDC staff aggregated the specific City and County General Plan designations.

1. The **NBWPP Extensive Agriculture Designation** includes large-lot parcels and certain types of agricultural uses. Specifically, this designation includes the following:
 - a. Marin County's designations of "Agricultural 1" and "Agriculture 2" "Agriculture 3," only when combined with a Conservation (C) or Bayfront Conservation combining district, is also included in the Land-Extensive designation. The portions of the St. Vincent's and Silveira properties designated "Urban Conservation Reserve" east of the Northwestern Pacific railroad tracks which are in to the County's Bayfront Conservation Zone are included in this extensive agriculture designation because the Bayfront Conservation Zone policies protect agricultural uses in the zone. In addition, the most recent planning efforts for the St. Vincent and Silveira properties by both the City of San Rafael and the County indicate that the area should remain in an agricultural or open space land use.
 - b. The City of San Rafael has no lands designated for Extensive Agriculture in the planning area.
 - c. The City of Novato's designations of "Agriculture" and "Conservation."
 - d. Sonoma County's designation of "Land Extensive Agriculture."
 - e. Napa County's designation of "Agriculture, Watershed and Open Space."
 - f. The City of American Canyon has no lands designated for Extensive Agriculture in the planning area.
 - g. Solano County's designation of "Extensive Agriculture."
 - h. The City of Vallejo has no lands designated for Extensive Agriculture in the planning area.
2. The **NBWPP Land-Intensive Agriculture Designation** includes:
 - a. Marin County's designation "Agriculture 3," when not combined with a Conservation (C) or Bayfront Conservation combining district, is included in the Land-Intensive designation because of its relatively high density of one unit per 1 to 9 acres for agricultural lands.

- b. The City of San Rafael has no lands designated for Intensive Agriculture in the planning area.
 - c. The City of Novato has no lands designated for Intensive Agriculture in the planning area.
 - d. Sonoma County's designation of "Land Intensive Agriculture."
 - e. Napa County's designation of "Agriculture Resource."
 - f. The City of American Canyon has no lands designated for Intensive Agriculture in the planning area.
 - g. Solano County has no lands designated for Intensive Agriculture in the planning area.
 - h. The City of Vallejo has no lands designated for Intensive Agriculture in the planning area.
3. **The NBWPP Residential Designation includes:**
- a. Marin County's designations of "Single-Family," "Multi-Family" and "Planned Residential." The portions of the St. Vincent's and Silveira properties west of the Northwestern Pacific railroad tracks (excluding the hillsides and Miller Creek) have also been included in the residential classification for three reasons: 1) this area has an "Urban Conservation Reserve" interim designation which is awaiting revisions to an upper development limit of 2,100 homes and 360,000 square feet of commercial and office space - the residential component being the much larger of the two; 2) the area is not subject to any of the County conservation or overlay districts, and 3) the City of San Rafael has indicated that a mix of residential and commercial development may be appropriate in this location.
 - b. *The City of San Rafael has designated the portion of the Marin County Honor Farm which is within the City Limit as "Medium Density Residential" with a J (jail) combining modifier. Current planning for the site by the City and Marin County indicates that a public facility use would be preferable; thus, the site is included in the Public Facilities designation below.*
 - c. The City of Novato's designations of "Residential," which includes the Residential sub-categories of: "Rural-," "Ultra Low-," "Low Density A-," "Low Density B-," "Medium Density A-," "Medium Density B-," "Medium Density Multi Family-" and "High Density Multi Family-."
 - d. Sonoma County's designations of "Rural Residential"
 - e. Napa County has no lands designated for Residential in the planning area.
 - f. The City of American Canyon's designation of "Residential," which includes the Residential sub-categories of: "-Estate," "Low Density-," "Medium Density-" and "High Density-."
 - g. Solano County has no lands designated for Residential in the planning area.
 - h. The City of Vallejo's designation of "Residential," which includes the Residential sub-categories of: "Low Density-," "Medium Density-" and "High Density-."
4. **The NBWPP Commercial and Light Industry Designation includes:**
- a. Marin County's designation of "Commercial," which includes the Commercial sub-categories of: "-General," "-Office," "-Recreational," "-Residential," and "-Industrial."
 - b. The City of San Rafael has no lands designated for Commercial and Light Industry in the planning area.

- c. The City of Novato's designations of "General Commercial," "Neighborhood Commercial," "Business and Professional Offices," "Mixed Uses," and "Light Industry."
 - d. Sonoma County's designations of "General Commercial," "Limited Commercial," and "Recreation and Visitor Serving Commercial."
 - e. Napa County has no lands designated for Commercial and Light Industry in the planning area.
 - f. The City of American Canyon's designations of "Commercial," which includes the Commercial sub-categories of: "Neighborhood-," "Community-," "Office-," "Recreation-," and "Mixed Use."
 - g. Solano County has no lands designated for Commercial and Light Industry in the planning area.
 - h. The City of Vallejo's designation of "Commercial," which includes the Commercial sub-categories of: "Highway-," "Waterfront-," and "Retail-."
5. **The NBWPP Heavy Industry Designation includes:**
- a. Marin County has no lands designated for Heavy Industry in the planning area.
 - b. The City of San Rafael has no lands designated for Heavy Industry in the planning area.
 - c. The City of Novato has no lands designated for Heavy Industry in the planning area.
 - d. Sonoma County has no lands designated for Heavy Industry in the planning area.
 - e. Napa County's designation of "Industrial."
 - f. The City of American Canyon's designation of "Industry."
 - g. Solano County's designation of "General Manufacturing".
 - h. The City of Vallejo's designation of "Employment." (The many the lands within the Employment designation constitute heavy industry, such as those on Mare Island and those in the South Vallejo Industrial Park. Heavy industries can also be permitted on lands within this designation.)
6. **The NBWPP Public Facilities Designation includes:**
- a. Marin County's designation of "Public, Quasi-Public and Open Space." (*note: for the purposes of this report, areas used primarily for open space are included in the Open Space and Recreation designation below.*)
 - b. The City of San Rafael's designation of "Public and Quasi-Public." In addition, the portion of the Marin County Honor Farm which is within the City Limit (designated as Medium Density Residential with a J (jail) combining modifier) is included in the Public Facilities designation.
 - c. The City of Novato's designations of "Community Facilities and Civic Uses" and "Public Utilities."
 - d. Sonoma County's designation of "Public and Quasi-Public."
 - e. Napa County's designation of "Public and Institutional Land."
 - f. The City of American Canyon's designation of "Public and Institutional Lands."
 - g. Solano County has no lands designated for Public Facilities in the planning area.

- h. The City of Vallejo's designation of "Public and Semi-Public Lands."
7. The NBWPP Open Space and Recreation Designation includes:
- a. Marin County's designation of "Public, Quasi-Public and Open Space." (*note: for the purposes of this report, areas used primarily for public facilities are included in the public facilities designation above.*) In addition, certain areas within the St. Vincent-Silveira site which are designated in the interim "Urban Conservation Reserve" are included in the Open Space and Recreation designation. One of these areas is the St. Vincent tidelands property, which is designated by the County as "Tidelands: subject to State Lands jurisdiction" on its General Plan maps. This designation is a sub-zone of the Bayfront Conservation Zone which defines areas that should be left in their natural state because of their biological importance to the estuarine ecosystem. Also, the oak dotted hills and Miller Creek are subject to the County's Ridge and Upland Greenbelt Areas policies and the Streamside Conservation Zone policies respectively, which protect the natural resources in these areas. Further, the most recent planning efforts for the St. Vincent and Silveira properties by both the City of San Rafael and the County indicate that these areas should remain in an open space land use.
 - b. The City of San Rafael's designation of "Park and Open Space."
 - c. The City of Novato's designations of "Parkland and Open Space."
 - d. Sonoma County has no lands designated for Open Space and Recreation in the planning area.
 - e. Napa County has no lands designated for Open Space and Recreation in the planning area
 - f. The City of American Canyon's designation of "Open Space."
 - g. Solano County's designation of "Marsh and Wetland Habitat."
 - h. The City of Vallejo's designation of "Open Space," which includes the Open Space sub-categories of "Wetlands" and "Community Parks."
8. The NBWPP Open Water Designation includes:
- a. Marin County does not have an Open Water General Plan designation.
 - b. The City of San Rafael does not have an Open Water General Plan designation.
 - c. The City of Novato does not have an Open Water General Plan designation.
 - d. Sonoma County does not have an Open Water General Plan designation.
 - e. Napa County does not have an Open Water General Plan designation.
 - f. The City of American Canyon does not have an Open Water General Plan designation.
 - g. Solano County's designation of "Water Bodies and Courses."
 - h. The City of Vallejo does not have an Open Water General Plan designation.
9. The NBWPP Undesignated Designation includes:
- a. Marin County has no areas that are considered undesignated in the planning area.
 - b. The City of San Rafael has no areas that are considered undesignated in the planning area.
 - c. The City of Novato's highways, as shown on the *City of Novato Draft General Plan Map*.

- d. Sonoma County has no areas that are considered undesignated in the planning area.
- e. Napa County has no areas that are considered undesignated in the planning area.
- f. The City of American Canyon has no areas that are considered undesignated in the planning area.
- g. Solano County has no areas that are considered undesignated in the planning area.
- h. The City of Vallejo's open water areas, including Mare Island Strait, as shown on the *City of Vallejo General Plan Map*.

APPENDIX B

LOCAL LAND USE PATTERNS

This appendix provides detailed information on the land uses within each jurisdiction in the North Bay planning area.

Each jurisdiction has its own land use category names (for example, rural residential versus low density residential). Over one hundred different land use categories can be found in the North Bay planning area alone. To simplify matters, BCDC staff combined these categories into the following eight categories: (1) extensive agriculture and rural lands; (2) intensive agriculture; (3) residential; (4) commercial and light industry; (5) heavy industry; (6) public facilities; (7) open space and recreation; and (8) wildlife areas.¹

Marin County²

Marin County has approximately 11,180 acres of land within the North Bay planning area, of which over 8,000 are historic wetlands. The planning area portion of Marin includes all unincorporated lands east of Highway 101, from Gallinas Creek north to San Antonio Creek. The majority of Marin's bayfront lands are diked historic baylands and scattered oak woodlands used as extensive agriculture.

Of the 11,180 acres in the planning area, Marin County has approximately 57 percent in use as extensive agriculture and rural lands, 19 percent as wildlife areas, eight percent as residential, seven percent as public facilities, six percent as open water, two percent as open space and recreation and one percent as commercial and light industry.

Of the 11,180 acres in the planning area, over 8,000 can be considered historic wetlands. Of the historic wetlands, Marin County has approximately 51 percent in use as extensive agriculture and rural lands, 26 percent as wildlife areas, four percent as residential, nine percent as public facilities, eight percent as open water, one percent as open space and recreation and one percent as commercial and light industry.

1. Extensive Agriculture And Rural Lands. Marin County has approximately 6,350 acres of land in use as extensive agriculture and rural lands. The majority of these lands are in the diked historic baylands. Farmers use these lands for pasture and for cultivating oat-hay and oat crops. The St. Vincent-Silveira and Bel Marin Keys properties comprise a large band of undeveloped lands next to San Pablo Bay that stretches from Gallinas Creek to the Petaluma River. These lands include St. Vincent-Silveira, the oat-hay fields surrounding Bel Marin Keys, and portions of

¹ Appendix A describes how each of the land use types are aggregated into the eight categories.

² In this chapter, the description of publicly-owned lands for counties includes only the unincorporated portion of the county within the North Bay planning area. Similarly, the discussion for cities only includes the incorporated portion of the city within the North Bay planning area boundary.

Burdell Ranch near the Marin County Airport. The extensive agriculture uses also include irrigated pasture lands that receive treated effluent and sludge from the Las Gallinas Valley Sanitation District. The Corda and Silveira dairy farms also have range lands east of Highway 101. Marin County's rural lands are comprised of scattered patches of oak woodlands, such as those on Pacheco Hill, Black Point, Green Point and Pinheiro Ridge.

2. **Residential.** Marin County has approximately 890 acres of land in residential use. The upland areas around Black Point, Green Point and Atherton Avenue make up the majority of residential areas, which consist of single-family dwellings and rural ranchettes. Rush Creek Estates, a new residential community, is being constructed along Atherton Avenue. In the Black Point area along the western shore of the Petaluma River, there are several small single-family dwellings constructed over the marsh. Bel Marin Keys, another residential area, is located in the diked historic baylands just north of the Hamilton Army Airfield. The Catholic Youth Organization also has a small residential area on the upland portion of the St. Vincent site that serves as a group home for disadvantaged and troubled youth.

3. **Commercial And Light Industry.** Marin County has approximately 110 acres of land in commercial and light industrial uses. Most of these land uses are located near Gness Field in the northern part of the County and consist of light industrial and warehousing facilities. Other commercial and light industrial land uses in the County occur south of Highway 37 near Black Point, and at the County Honor Farm near McInnis Park. In addition, this category includes the Rio Marin Marina along Black John Slough and Mira Monte Marina north of Gness Field airport.

4. **Public Facilities.** Marin County has approximately 760 acres of land classified as public facilities. This classification includes sewage treatment facilities, airports and landfills. The Las Gallinas Valley Sanitary District treatment plant and ponds represent the majority of Marin County's sewage treatment plant and pond lands. The sanitary district allows limited access to its wastewater pond levees for hiking and bird watching. Other public facilities include a small private wastewater pond near the Gness Field airport, just east of Highway 101.

The public facilities category includes Gness Field, a general aviation facility that serves small, privately-owned propeller and jet aircraft. Also within the public facilities classification is the Redwood Sanitary Landfill located in the diked historic baylands on the western shore of the Petaluma River.

5. **Open Space and Recreation.** Marin County has approximately 270 acres of land in use as open space and recreational areas. The majority of this is located on Pinheiro Ridge between Atherton Avenue and Rush Creek. Also included in this classification is the Marin County public boat launch ramp located beneath the Highway 37 bridge.

6. **Wildlife Areas.** Marin County has approximately 2,150 acres of wildlife area. Wildlife areas represent the second largest land use in the Marin County portion of the planning area. The

majority of wildlife areas are located in the tidal wetlands adjacent to the San Pablo Bay shoreline, and the Petaluma River. The California Department of Fish and Game's (CDFG) San Pablo Bay wildlife area stretches from Gallinas Creek to the mouth of the Petaluma River, and includes the Day Island Unit. Upstream from the Highway 37 bridge, the CDFG's Petaluma Marsh wildlife area extends along the western shoreline of the Petaluma River to Cloudy Bend, and includes the Toy Unit, Black John Unit, Rush Creek Unit, and the recently acquired Petaluma Marsh enhancement area around Gness Field (see Chapter 4, Land Ownership Patterns).

City of San Rafael

The City of San Rafael has only 380 acres of land in the North Bay planning area, all of which can be considered historic wetlands. These acres consist entirely of lands east of Highway 101, along the north fork of Gallinas Creek. Of the 380 acres, the City of San Rafael has approximately 97 percent in use for open space and recreation and three percent for public facilities.

1. **Public Facilities.** The City of San Rafael has approximately 10 acres of public facility lands. These include the southwestern portion of the Las Gallinas Valley Sanitary District's wastewater treatment plant and a portion of the Marin County Honor Farm site.

2. **Open Space and Recreation.** San Rafael has approximately 360 acres of the land in use as open space and recreation. This category is comprised entirely of McInnis Park. McInnis Park represents the largest multi-purpose recreation facility in the North Bay planning area. The park is divided into a commercial recreation area in the west and an open space area (diked historic baylands) to the east, with tidal wetlands along the bayward perimeter of the open space areas.

City of Novato

The City of Novato has approximately 7,070 acres of land in the North Bay planning area. This includes only those portions of Novato that are east of Highway 101. Similar to Marin County, this area is dominated by the expansive diked historic baylands and scattered oak woodlands in use as extensive agriculture. The City's bayfront lands include the Hamilton Army Airfield and the area along the Petaluma River near the Bahia site. When combined with other lands in Marin County, such as Bel Marin Keys and St. Vincent-Silveira, the City's shoreline serves as an essential link in the nearly continuous band of undeveloped, historic baylands bayfront that stretches from Gallinas Creek to the City of Petaluma.

Of the 7,070 acres, the City of Novato has approximately 41 percent in use as extensive agriculture or rural lands, 14 percent as residential, 13 percent as commercial and light industry, 12 percent as public facilities, nine percent as wildlife areas, eight percent as open space and recreation, two percent as open water areas, less than one percent as heavy industry.

Of the 7,070 acres, approximately 4,550 can be considered historic wetlands. Of these, 46 percent is in use as extensive agriculture or rural lands, two percent as residential, eight percent as

established ranches to board horses, and to provide equestrienne riding and polo facilities (Paul Sheffer - Personal Communication). This includes the Anolik, Williams, and Pegasus Ranches.

2. **Intensive Agriculture.** Sonoma County has approximately 4,920 acres of land in intensive agricultural use. This consists primarily of vineyards in the Carneros region, from Big Bend to Napa County. This classification includes four other major vineyards, one on Lakeville Highway, one on Stage Gulch Road, one near the Sears Point Raceway and one south of Highway 37 on Sonoma Mountain. This category also encompasses a number of farmsteads and dairy farms.

3. **Residential.** Sonoma County has approximately 520 acres of residential land. This includes the small rural residential communities of Big Bend and Schellville. Many rural homes, especially those with larger lots, contain small agricultural areas, vineyards and farm animals .

4. **Commercial and Light Industrial.** Sonoma County has approximately 570 acres of land in use as commercial and light industry. This includes pockets in the Big Bend and Schellville areas, as well as several wine tasting rooms and wineries nestled among the vineyards. The Sears Point Raceway, which is used for racing and auto fabrication and maintenance, is the most prominent commercial and light industry area in the County.

Other commercial and light industry uses include Port Sonoma and the Lakeville Marina. Port Sonoma maintains several dredged material reuse and re handling ponds to facilitate the use of dredged material within the region at the Sonoma Bayland marsh restoration site.

5. **Heavy Industry.** Sonoma County has 50 acres of land in heavy industrial uses. The heavy industry classification includes the quarry just north of Sears Point Raceway on Highway 121.

6. **Public Facilities.** Sonoma County has 90 acres of public facilities land. This consists entirely of the Sonoma Valley Airport, a private airstrip located just south of Big Bend off Highway 121.

7. **Open Space and Recreation.** Sonoma County has 40 acres of land in use as open space and recreation. Open space and recreation areas in the County include portions of privately-owned duck clubs located in the Sonoma Creek and Napa Slough system and the Hudeman Slough boat launching ramp.

8. **Wildlife Areas.** Approximately 4,460 acres of land are wildlife areas. This includes the Petaluma Marsh, the strip marsh along San Pablo Bay, the Tolay Creek wildlife area, and the marshes within the Sonoma Creek and Napa Slough complex (the Wingo Unit, the Ringstrom Bay Unit and portions of the Hudeman Slough Unit). The United States Fish and Wildlife Service (USFWS) Refuge at Lower Tubbs Island also provides wetland recreation opportunities.

State and federal Resource agencies have restored several wetland areas in Sonoma County for wildlife use. There are two wetland restoration sites on lower Tolay Creek, including a 110-acre site owned by the CDFG, and another 50-acre site to be restored to wetlands in the near future as mitigation for levee maintenance activities in the diked historic baylands. Sam Sebastiani

recently restored a wetland area east of Highway 121 at his Viansy winery, just south of the Big Bend, for wildlife; thereby improving existing wetlands in the lower Sonoma Creek. Two other wetland restoration projects also exist in Sonoma County, the Sonoma Land Trust Pilot Project just north of Highway 37, and the Sonoma County Water Agency wastewater assimilation site near Ringstrom Bay. The Ringstrom Bay Unit, which uses reclaimed wastewater, is managed by the CDFG for wildlife purposes. Sonoma Baylands, in the extreme southwest portion of the County, is another high-profile wetland restoration site. (These wetland restoration sites will be mapped and discussed in greater detail in an upcoming background report on Wetland Values and Functions.)

Napa County⁴

Napa County has approximately 22,360 acres of land within the North Bay planning area. This includes all unincorporated County lands south of Highway 116 and consists of three distinct regions: (1) the vineyards in the upland region of the Carneros district; (2) the undeveloped wildlife areas south of the Southern Pacific Railway and west of the Napa River; and (3) the industrial area between the Highway 29 and the Napa River. With the exception of the Napa Sanitation District's Soscal Treatment Plant, and several buildings associated with Cargill's former salt production on Green Island, the eastern bank of the Napa River is generally undeveloped.

Of the 22,360 acres, Napa County has approximately 34 percent as wildlife areas, 21 percent as intensive agriculture, 18 percent as extensive agriculture and rural lands, eight percent for heavy industry, seven percent as open water areas, five percent for public facilities, three percent for open space and recreation, three percent for residential, and one percent for commercial and light industry.

Of the 22,363 acres, 13,620 can be considered historic wetlands. Of these historic wetlands, Napa County has approximately 57 percent as wildlife areas, nine percent as extensive agriculture and rural lands, 12 percent as open water areas, five percent for public facilities, five percent for open space and recreation, one percent for residential, and less than one percent for commercial and light industry and intensive agriculture.

1. **Extensive Agriculture and Rural Lands.** Napa County has approximately 3,970 acres of extensive agriculture and rural land. Most of these lands are located on the east side of the Napa River near the Napa Airport and are undeveloped grasslands, agricultural lands left fallow, or agricultural lands used for grazing and forage crops (Wagstaff and Brady, 1986). In addition, some small parcels of extensive agriculture and rural land exist in the Los Carneros and Duhig Road region of the County, and in other lands west and north of American Canyon. This category

⁴ In this chapter, the description of publicly-owned lands for counties includes only the unincorporated portion of the county within the North Bay planning area. Similarly, the discussion for cities only includes the incorporated portion of the city within the North Bay planning area boundary.

also encompasses the privately-owned rural areas to the west of Fagan Marsh, including Bull Island.

2. **Intensive Agriculture.** Napa County has approximately 4,660 acres of land in use as intensive agriculture. Vineyards are the primary intensive agricultural use in Napa County. With the exception of a small vineyard north of the County airport, all the vineyards are located in the Los Carneros and Duhig Road region. This classification also includes a eucalyptus forest located just west of the City of American Canyon, and several farmsteads.

3. **Residential.** Napa County has approximately 650 acres of residential land. Most of the residential areas in the planning area are located within the vineyards of the Los Carneros and Duhig Road region. A residential area also exists on Milton Road, located on a Napa River levee south of Cuttings Wharf.

4. **Commercial and Light Industry.** Napa County has approximately 260 acres of land in use for commercial and light industry. This classification includes manufacturing, warehouses, and several auto wrecking yards scattered throughout the Napa County Airport region and along Green Island Road next to American Canyon. Other commercial and light industrial uses in Napa County include several wineries in the Los Carneros and Duhig Road region and the Napa River Marina just south of Cuttings Wharf near Bull Island.

5. **Heavy Industry.** Napa County has approximately 1,600 acres of heavy industrial land. The industrial area, east of the Napa River, is dominated by the Cargill Plant and crystallizer ponds (no longer in operation), Napa Sanitation District lands, the Napa County Airport and industrial areas adjacent to the City of American Canyon. The heavy industry category also includes the Napa Flood Control District's dredged material disposal ponds located next to the Napa River, by Edgerly Island. Although shown as heavy industrial because of its current condition, the Cargill Plant has been closed and is designated for future use as agriculture in the County's general plan.

6. **Public Facilities.** Napa County has approximately 1,130 acres of land in public facilities use. This includes the Napa Sanitation District's Soscal Treatment Plant, the Napa County Airport and the American Canyon Sanitary Landfill.

7. **Open Space and Recreation.** Napa County has approximately 610 acres of open space and recreational land. This consists primarily of privately owned duck clubs in the Sonoma Creek and Napa Slough system and the Cuttings Wharf boat launching ramp and staging area.

8. **Wildlife Areas.** Napa County has approximately 7,810 acres of land in use as wildlife areas. The wildlife areas are dominated by CDFG's Napa River Unit, which was recently acquired from the Cargill Company. This is one of the largest wildlife areas in the San Francisco Bay-Delta Estuary. The other wildlife areas in the County include Fagan Marsh Ecological Reserve (located west of the Napa County airport), the CDFG American Canyon Unit (located between the City of American Canyon and the Napa River), the northern portion of the USFWS Cullinan Ranch

property, and a portion of the Napa County Flood Control Department's land near Edgerly Island. The majority of these wildlife areas are wetlands.

City of American Canyon

The City of American Canyon has approximately 1,730 acres of land within the North Bay planning area. This consists entirely of lands located west of Highway 29, between the residential communities of Vallejo and the industrial areas of southern Napa County. American Canyon has a mixture of residential, commercial and light industrial uses. Portions of American Canyon are diked historic baylands.

Of the 1,730 acres, approximately 40 percent is residential, 32 percent is agriculture and rural land, 24 percent commercial and light industry, two percent open space and recreation, one percent heavy industry, and one percent public facilities.

Of the 1,730 acres, approximately 60 acres can be considered historic wetlands, 50 percent of which is agriculture and rural land, and 50 percent of which is public facilities.

1. **Extensive Agriculture And Rural Lands.** The City of American Canyon has approximately 560 acres of land in use as extensive agriculture and rural lands. These areas are primarily undeveloped rural lands that are located west of existing residential and industrial development, including portions of Oat Hill. In many respects, these rural lands serve a temporary open space function, buffering wildlife areas to the west from existing developed areas of the City.

2. **Residential.** American Canyon has approximately 660 acres of residential land. Most of the residential areas are located west of Highway 29, between the commercial development along the Highway and the wildlife areas in southern Napa County. This includes the western portion of the City, south of Oat Hill.

3. **Commercial and Light Industrial.** American Canyon has approximately 410 acres of commercial and light industrial land. Commercial uses are generally located along the Highway 29 transportation corridor. The Highway 29 corridor is characterized by a fragmented mix of retail, service and light industrial uses (City of American Canyon and Envicom Corp., 1994a).

4. **Heavy Industry.** American Canyon has approximately 20 acres of land in use as heavy industry. These lands are located at the base and on the slopes of Oat Hill, and generally consist of large contractor storage yards and similar uses that operate large, heavy equipment. In addition, a major grading and earth-moving operation, which is a part of the larger American Canyon Landfill, is located on Oat Hill.

5. **Public Facilities.** American Canyon has approximately 20 acres of land that are public facilities. This consists of the American Canyon's sewage treatment ponds in the western extreme of the City.

6. **Open Space And Recreation.** American Canyon has approximately 40 acres of land in use as open space and recreation. The American Canyon Creek corridor comprises most of this category. This includes an open space easement beneath the overhead energy transmission lines, and several neighborhood parks, most notably Kimberly Park.

Solano County⁵

Solano County has approximately 8,300 acres of land within the North Bay planning area. This includes all unincorporated County lands west of the City of Vallejo, such as portions of the undeveloped White Slough area. The land uses in the County west of the Napa River are dominated by the USFWS' San Pablo Bay National Wildlife Refuge and the CDFG's Napa River Wildlife Area, while the land uses east of the Napa River are dominated by CDFG's American Canyon Wildlife Unit and White Slough.

Of the 8,300 acres, Solano County has approximately 75 percent in use for wildlife areas, 18 percent for open water areas, six percent for open space and recreation, one percent for extensive agriculture and rural lands, and less than one percent for commercial and light industry. All of Solano County within the planning area can be considered historic wetlands.

1. **Extensive Agriculture And Rural Lands.** Solano County has approximately 120 acres of land that are extensive agriculture and rural lands. This includes the now-abandoned Pritchard site next to Guadalcanal Village, at the southwestern corner of the confluence of the Napa River and Dutchman Slough. Other rural lands include several privately-owned wetland areas near White Slough.

2. **Commercial And Light Industry.** Solano County has less than 10 acres of land in use as commercial and light industry. This consists primarily of several small commercial uses, such as a sand blasting shop next to Highway 37.

3. **Open Space And Recreation.** Solano County has approximately 480 acres of land that are used as open space and recreation. This consists entirely of several privately-owned and operated duck clubs in the western portion of the County including the Can Duck Club and the Detjen Duck Club.

4. **Wildlife Areas.** Solano County has approximately 6,170 acres of land in use as wildlife areas and most of this area is urbanized. This includes wildlife areas that are owned or managed by the USFWS, including most of the San Pablo Bay National Wildlife Refuge, the strip of marsh on the south side of Highway 37, and Cullinan Ranch. The USFWS acquired the marsh in 1974 as a sanctuary for migratory birds and acquired Cullinan Ranch in 1991 for endangered and threatened

⁵ In this chapter, the description of publicly-owned lands for counties includes only the unincorporated portion of the county within the North Bay planning area. Similarly, the discussion for cities only includes the incorporated portion of the city within the North Bay planning area boundary.

wildlife (U. S. Fish and Wildlife Service, 1995b). Other wildlife areas include CDFG's American Canyon Unit, the Napa River Unit and the White Slough Units.

City of Vallejo

The City of Vallejo has approximately 6,050 acres of land within the North Bay planning area. Flanking both shores of Mare Island Strait, the City of Vallejo is strategically located at the confluence of the Napa River and the Carquinez Strait. Vallejo is characterized by the industrial and ship building areas of Mare Island on the western side of Mare Island Strait, and a mixture of new and old residential, commercial and industrial uses on the eastern side of Mare Island Strait. Both Mare Island and the City proper contain a mixture of residential, industrial, wildlife, commercial, recreational, and open space uses in the planning area.

Of the 6,050 acres, approximately 24 percent is residential, 19 percent is commercial and light industry, 19 percent is wildlife area, 13 percent is heavy industry, 11 percent is open water, eight percent is open space and recreation, three percent is extensive agriculture and rural land, and less than one percent is public facilities.

Of the 6,050 acres, approximately 4,460 acres can be considered historic wetlands. Of those historic wetlands, nearly seven percent is residential, 19 percent is commercial and light industry, 26 percent is wildlife area, 17 percent is heavy industry, 15 percent is open water or undesignated, 10 percent is open space and recreation, four percent is extensive agriculture and rural land, and less than one percent is public facilities.

1. **Extensive Agriculture And Rural Lands.** The City of Vallejo has approximately 200 acres of land in use as extensive agriculture and rural lands. These lands are primarily undeveloped areas, without infrastructure. This includes undeveloped lands northwest of White Slough, and the bluffs at the southern end of the City above Mare Island Strait. On the southern end of Mare Island, this includes grasslands periodically used for grazing, and bluffs that slope down to San Pablo Bay and Mare Island Strait. Additional undeveloped areas include the upland portions of Guadalcanal Village.

2. **Residential.** Vallejo has approximately 1,510 acres of land that are residential. Most homes are in the City proper; other residential areas include Mare Island's vacant North Residential Site and Roosevelt Terrace.

3. **Commercial And Light Industrial.** Vallejo has approximately 1,120 acres of land in commercial and light industrial uses. This includes a mixture of small retail shops, highway-oriented services, and large commercial centers. Most of the smaller shops are located in the older, historic downtown area of the City. Also included in this classification is Vallejo's City Hall; the waterfront restaurants, marinas and visitor-serving facilities at the intersection of Wilson Avenue and the Mare Island Causeway; the California Maritime Academy; and two elementary schools.

4. **Heavy Industry.** Vallejo has approximately 810 acres of heavy industrial land. This largely consists of Mare Island Naval Shipyard, which has several dredge disposal ponds, ship building and repair facilities. In addition, the City proper contains extensive industrial lands in the South Vallejo Industrial Area, located on the eastern shore of Mare Island Strait. The South Vallejo Industrial Area supports a large manufacturing plant and other smaller industrial land uses.

5. **Public Facilities.** Vallejo has 10 acres of land in use as public facilities. This consists entirely of the Vallejo Sanitation District's wastewater treatment plant in the southern industrial portion of Vallejo, west of Highway 29.

6. **Open Space And Recreation.** Vallejo has approximately 510 acres of land that are open space and recreation. These areas include River Park (located west of Wilson Avenue just south of the Highway 37 Napa River Bridge), the waterfront area (located along Mare Island Strait, across the street from the Vallejo City Hall), several small neighborhood parks, and a cemetery. Other open space and recreation lands include a nine-hole golf course and several playing fields located on the upland portions of Mare Island.

7. **Wildlife Areas.** Vallejo has approximately 1,170 acres of land in use as wildlife areas. This consists primarily of the expansive tidal marsh areas on the west side of Mare Island, as well as several brackish and seasonal marshes that exist in the low-lying areas of the Island.

APPENDIX C

PUBLIC OWNERSHIP

This appendix identifies and describes the ownership and principal use of the publicly-owned lands in the North Bay planning area. The ownership is categorized by local government jurisdiction and by type of land use.

Marin County

Marin County¹ has approximately 11,180 acres of land within the North Bay planning area. Of the 11,180 acres, 26 percent or 2,910 acres is in public ownership. The 2,910 acres of publicly-owned lands in Marin County represent approximately eight percent of all publicly-owned lands in the North Bay. Of the 2,910 acres, 74 percent is used for wildlife areas, 17 percent for community services and utilities, nine percent for open space and recreation, and less than one percent for government institutions.

1. **Wildlife Areas.** Marin County has approximately 2,150 acres of publicly-owned lands that are used for wildlife. This consists primarily of lands owned and managed by the California Department of Fish and Game.

The CDFG is by far the largest public land owner in Marin County with approximately 2,017 acres. The majority of CDFG's lands are near or tributary to the Petaluma River. These areas include the 570-acre Petaluma Marsh Enhancement Area, the 550-acre Black John Unit, the 200-acre Rush Creek Wildlife Unit and the 80-acre Toy Unit. All of these CDFG wildlife units are part of the larger Petaluma Marsh Wildlife Area, the majority of which is located in Sonoma County. Marin County, the State Coastal Conservancy and the CDFG are currently preparing the Petaluma Marsh Enhancement Plan for the recently acquired Petaluma Marsh Enhancement Area. The Enhancement Plan will consider how to integrate the various wildlife units around the Gness Field Airport to create a diversity of wildlife habitat types and provide linkages with other open space and recreation lands.

The CDFG also owns and manages the 170-acre Day Island Unit, and 450 acres of the San Pablo Bay Wildlife Area. Together, these two parcels provide a contiguous wildlife area that runs from the Petaluma River at Black Point to Hamilton Army Airfield. As well, CDFG's San Pablo Bay Wildlife Area includes a significant parcel along the mouth of Gallinas Creek, adjacent to McInnis Park in the City of San Rafael.

¹ In this chapter, the description of publicly-owned lands for counties includes only the unincorporated portion of the county within the North Bay planning area. Similarly, the discussion for cities only includes the incorporated portion of the city within the North Bay planning area boundary.

As examples of land ownership settlements, the State Lands Commission has been deeded title in several wildlife areas along the Petaluma River comprising a total of 140 acres. A small portion of these lands is sandwiched between the Rush Creek Wildlife Area and the MCOSD's open space area along Pinheiro Ridge. The other parcel is a tidal marsh area along the western shore of the Petaluma River that runs from the Bahia residential development south to Green Point.

2. **Open Space and Recreation.** Marin County has approximately 260 acres of publicly-owned lands that are used for open space and recreation. This consists primarily of lands owned by the Marin County Open Space District.

The MCOSD recently obtained an approximately 250-acre parcel along Pinheiro Ridge North of Atherton Avenue and adjacent to the Rush Creek wildlife area. The parcel consists primarily of oak woodlands with limited trail access and a public access staging area at the terminus of Cemetery Road. This is one of a few publicly-owned sites within the planning area that includes the transition area between wetlands and uplands.

The only other site that is used for open space and recreation is the 3-acre Marin County Boat Launch Ramp that is located beneath the Petaluma River bridge at Highway 37. The site provides direct access to the Petaluma River and used primarily by recreational boaters and fisherman.

3. **Community Services and Utilities.** Marin County has approximately 500 acres of publicly-owned lands that are used for community services and utilities. This consists primarily of lands owned and managed by the Las Gallinas Valley Sanitary District and the Marin County Airport.

The Las Gallinas Valley Sanitary District owns and manages approximately 400 acres of land for treating and disposing of municipal wastewater. The facility is located between McInnis Park and Hamilton Army Airfield, adjacent to the Saint Vincent-Silveira site. The treatment plant itself is located within the City of San Rafael. The facility includes several large wastewater storage ponds, freshwater marshes, saltwater marshes, and irrigation fields.

The Las Gallinas Valley Sanitary District illustrates how a public agency can successfully manage its lands to achieve several important public benefits. Besides wastewater treatment, the District's lands provide wildlife habitat, public access trails and agricultural uses. The storage pond and wetlands were designed to provide habitat and resting areas for shorebirds and migratory waterfowl. According to the District, the Audubon Society has cataloged over 200 species of birds using the storage ponds and wetlands. The levees and service roads have been dedicated for public access and provide 3.5 miles of recreational trails. The adjacent fields are irrigated with effluent, injected with sludge and used for hay production. The Marin Municipal Water District recycles some effluent for landscape irrigation.

Marin County has owned and operated the approximately 100-acre Gness Field Airport since 1968. The Airport is located between Highway 101 and the Petaluma River, north of Black John Slough, and was constructed on former tidelands. Gness Field is one of three small, general

aviation facilities in the North Bay. The other two are located in Sonoma and Napa Counties. Gness Field consists of the runway, clear zones, the aircraft parking apron, and hangars. Once the Army disposes of Hamilton Army Airfield and converts it to other uses, Gness Field will be the only general aviation facility in Marin County.

4. **Government Institutions.** Marin County has approximately 3 acres of publicly-owned lands that are used for government institutions. This represents less than one percent of Marin County's publicly-owned lands in the North Bay planning area and consists only of a portion of the Marin County Honor Farm.² The Honor Farm is located to the west of McInnis Park and has been vacant since late 1994 when the New County Jail became available for occupancy. The future use of the Marin County Honor Farm is uncertain. However, the Marin County Jail is full and the County is again considering re-leasing the former site for use as an Honor Farm (City of San Rafael, 1994).

City of San Rafael

The City of San Rafael has 380 acres of land within the North Bay planning area. Of the 380 acres, 100 percent is in public ownership. The 380 acres of publicly-owned lands in San Rafael represent only one percent of all the publicly-owned lands in the North Bay planning area. Of the 380 acres, 97 percent is used for open space and recreation, while only two percent is used for community services and utilities and one percent is used for government institutions. San Rafael has no publicly-owned lands in the planning area that are used for wildlife areas or military installations.

1. **Open Space and Recreation.** The City of San Rafael has approximately 370 acres of publicly-owned lands that are used for open space and recreation. This is comprised entirely of McInnis Park.

Marin County owns and manages the 370 acre McInnis Park which is located along the north fork of Gallinas Creek. McInnis park a regional recreation facility that provides both active and passive recreation opportunities such as tennis courts, playing fields, a golf course, small boat launching facilities, and trails for hiking.

2. **Community Services and Utilities.** The City of San Rafael has approximately 6 acres of publicly-owned lands that are used for community services and utilities. This consists of the Las Gallinas Valley Sanitary Treatment Plant.

3. **Government Institutions.** The City of San Rafael has approximately four acres of publicly-owned lands that are used for government institutions. This consists of portions of the Marin County Honor Farm.

² The site for the Marin County Honor Farm is privately-owned, but leased by Marin County.

City of Novato

The City of Novato has approximately 7,070 acres of land within the North Bay planning area. Of the 7,070 acres the majority or 54 percent (3,780 acres) is in public ownership. The 3,780 acres of publicly-owned lands in Novato represent approximately 10 percent of all publicly-owned lands in the North Bay. Of the 3,780 acres, 41 percent is used for public services and utilities, 29 percent for military installations, 15 percent for open space and recreation, 13 percent for wildlife areas, and one percent for government institutions.

1. **Wildlife Areas.** The City of Novato has approximately 510 acres of publicly-owned lands that are used for wildlife areas. This consists primarily of lands owned and managed by the California Department of Fish and Game and the State Lands Commission.

The CDFG owns and manages the approximately 340-acre Novato Creek Unit which is part of the larger Petaluma Marsh Wildlife Area. The Novato Creek unit is hydrologically connected to Novato Creek and contains freshwater and brackish wetlands. CDFG also has approximately 30 acres of tidal wetlands that are part of the San Pablo Bay Wildlife Area, principally along the San Pablo Bay shoreline adjacent to Bel Marin Keys and the Hamilton Army Airfield.

The California State Lands Commission owns and manages approximately 140 acres along the Novato Creek, across from the Bel Marin Keys residential development. The site is diked from tidal action and is surrounded by Marin County Flood Control lands. The site supports seasonal wetland habitat and serves as a temporary flood control basin.

2. **Open Space and Recreation.** The City of Novato has approximately 580 acres of publicly-owned lands that are used for open space and recreation. This consists of lands owned and managed by the State Lands Commission, the Marin County Open Space District and the City of Novato.

The State Lands Commission owns the former Hamilton Antennae Fields. The site is approximately 260 acres and is located between Bel Marin Keys and the Hamilton Army Airfield. A portion of the site is leased by the Novato City Police for use as a firing range, with the remainder of the site left as open space.

MCOSD owns and manages the 220-acre Deer Island. The upland site is located along Olive Avenue adjacent to lands owned by the Marin County Flood Control District and the Novato Sanitary District. The site is used for open space and passive recreation.

The City owns approximately 100 acres of oak woodland and grasslands scattered along Pinheiro Ridge and Atherton Estates area, west of the Bahia residential development. These oak woodlands provide open space areas for the City.

3. **Military Installations.** The City of Novato has approximately 1,110 acres of publicly-owned lands that are used for military installations. This represents approximately 29 percent of Novato's publicly-owned lands in the North Bay planning area and consists entirely of the Hamilton Army Airfield and the Department of Defense (DOD) Housing.

The approximately 680-acre Hamilton Army Airfield and the approximately 440-acre U.S. Navy Surplus Housing are the last publicly-owned remnants of the former Hamilton Army Base. The Airfield and the DOD Housing are located between the Bel Marin Keys residential development and the Saint Vincent-Silveira site. The disposal of the Hamilton Army Base has a long and complicated history. Over the years, the federal government has divided the approximately 1,600-acre Army Base in three separate parcels and has transferred some parcels to different public and private entities. These major areas include the support facilities, the DOD Housing and the Hamilton Army Airfield.

The U.S. Navy owns and uses the approximately 440-acre DOD Housing site. Residents of the approximately 1,500 housing units continue to work at military installations throughout the San Francisco Bay Area. The DOD Housing is currently being excessed through the federal real estate screening process. Current plans call for the Navy to vacate the housing area in 1997 (U.S. Department of the Army, 1995).

In 1988, the Defense Base Closure and Realignment Act recommended that the remaining portions of Hamilton Army Airfield be closed. This recommendation was reaffirmed in the Defense Base Closure and Realignment Act of 1990. The approximately 675-acre Hamilton Army Airfield and support structures are currently being evaluated for disposal and reuse. A Hamilton Advisory Committee is preparing a local reuse plan. While the City of Novato has not approved a local reuse plan, the City and several state and federal resource agencies have expressed a desire to enhance a majority of the site for wildlife habitat and open space. The Army has already converted portions of the western end of the runway to freshwater wetlands as mitigation for wetland fill impacts incurred at the Airfield's solid waste facility. BCDC is considering a Bay Plan Amendment to facilitate wildlife enhancement at the Airfield site.

Several local governments and nonprofit institutions including Marin County, the City of Novato, and Pan-Pacific University have requested portions of the Hamilton Army Airfield for various uses including wildlife habitat, recreation, and educational facilities under the public benefit discount. No federal agencies have requested the property. It is unclear as to which entity will receive the property. The City and the State Coastal Conservancy are exploring opportunities to acquire the property and enhance it for wildlife. However, there are acquisition constraints including the potential cost associated with maintaining the exterior levees and managing stormwater runoff to prevent flooding. Whether the Conservancy will be successful in enhancing or restoring the site for wildlife is dependent upon the final reuse plan and available funding.

3. **Community Services and Utilities.** The City of Novato has approximately 1,560 acres of publicly-owned lands that are used for community services and utilities. This consist primarily of lands owned and managed by the Marin County Flood Control District and the Novato Sanitary District.

The Marin County Flood Control District owns and manages approximately 1,220 acres of land for flood control purposes. These flood control lands are located in the diked historic baylands to the north and south of Highway 37, from the mouth of Novato Creek north to Deer Island. Most of these lands are also leased for cattle grazing. The Marin County Flood Control District also owns Pacheco Pond for its flood control functions. However, the CDFG manages Pacheco Pond to maximize its wetland values for shorebirds and migratory waterfowl. The Marin County Flood Control District provides another example of a public agency managing its lands to support several public benefits or multiple uses.

The Novato Sanitary District owns and manages a total of approximately 340 acres of land for the treatment and disposal of municipal wastewater. The District's facility includes the treatment plant, wastewater storage ponds and irrigation fields. These facilities are located next to and southeast of Deer Island. The Novato Sanitary District also owns and manages the Ignacio Treatment Plant at the junction of Highway 37 and Highway 101, and a small dechlorination facility on a levee adjacent to the Hamilton Army Airfield. Besides wastewater treatment, the District's lands support other important uses such as wildlife and agriculture. The wastewater storage ponds provide open water habitat and resting areas for shorebirds and migratory waterfowl. The Novato Sanitary District uses treated wastewater to irrigate Marin County flood control lands surrounding Highway 37. In turn, the Flood Control District leases these lands for cattle grazing. Wildlife, such as gulls, meadowlarks, raptors, turkey vultures and other upland species, also use these pasture lands. However, because the pasture lands have few remaining seasonal wetlands, migratory bird use is infrequent. The Novato Sanitary District provides yet another example of a public agency managing its lands to achieve several important public benefits.

4. **Government Institutions.** The City of Novato has approximately 20 acres of publicly-owned lands that are used for government institutions. This consists of the Olive Avenue School. The School is located along Olive Avenue in an upland area away from wetlands and diked historic baylands.

Sonoma County³

Sonoma County has approximately 54,020 acres of land within the North Bay planning area. Of the 54,020 acres 19 percent or 10,230 acres are publicly-owned. The 10,230 acres of publicly-

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owned lands in Sonoma County represent approximately 28 percent of all publicly-owned lands in the North Bay. Of the 10,230 acres, 42 percent is used for wildlife areas, 33 percent for military installations, 20 percent for community services and utilities, and five percent for open space and recreation. Sonoma County has no publicly-owned lands within the planning area that are used for government institutions.

1. **Wildlife Areas.** Sonoma County has approximately 4,260 acres of publicly-owned lands that are used for wildlife areas. This consists primarily of lands owned and managed by the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the State Coastal Conservancy.

The CDFG owns a total of 2,980 acres that are used for wildlife areas. The CDFG lands are located primarily along the Petaluma River, the Sonoma Creek, and the Napa River. The Petaluma Marsh Unit, which accounts for the majority of CDFG's Petaluma River Marsh Wildlife Area, totals approximately 1,990 acres. When combined with other CDFG lands in Marin County that are part of the Petaluma River Marsh Wildlife Area, this tract makes up the second largest wildlife area in the North Bay. The CDFG also owns the 3-acre Schellmaker site near the mouth of the Petaluma River.

The CDFG owns and manages the 480-acre Wingo Unit which is tributary to Steamboat Slough between the Southern Pacific and Northwestern Railroads, the 290-acre Tolay Creek Unit, which includes an area directly across from the Sears Point Raceway along Highway 121 and 110 acre tidal lagoon south of Highway 37, and the approximately 70 acres of the Napa River Unit, the majority of which is located in Napa County along Sonoma Creek and Napa Slough. The CDFG also owns and manages 90 acres of the Huichica Creek Unit, the majority of which is located in Napa County south of the Southern Pacific Railroad. While the CDFG has not generally provided improved staging areas or public access facilities on its lands in Sonoma County, CDFG does allow recreational boating and limited hunting in and around the sloughs and creeks. The CDFG is in the process of acquiring an additional 50 acres of Lower Tubbs Island from the Vallejo Sanitation and Flood Control District for use as wetland mitigation for the Southern Sonoma County Resource Conservation District's levee maintenance project (San Francisco Bay Conservation and Development Commission, 1995a).

The U.S. Fish and Wildlife Service owns approximately 900 acres of the San Pablo Bay National Wildlife Refuge including portions of the San Pablo Bay shoreline, from the Petaluma River to Sonoma Creek, Lower Tubbs Island and the lower portion of Tolay Creek. While managed primarily for wildlife purposes, the USFWS provides access along the Tolay Creek levees to Lower Tubbs Island for hunting, fishing and hiking. The USFWS is actively exploring the acquisition of other diked historic baylands in Sonoma County for wildlife areas (U.S. Fish and Wildlife Service, 1995a).

The State Coastal Conservancy owns two sites totaling 380 acres. The largest of these sites is the 370-acre Sonoma Baylands that was historically diked from the Bay for agricultural uses. The site is currently being restored to tidal wetlands by constructing a new perimeter levee around the site, using dredge materials to raise the interior elevations, and then breaching the exterior levee to allow tidal action to inundate the site. The State Coastal Conservancy also owns the 10 acre West Bank site.

Finally, the Sonoma Land Trust owns and manages a 60 acre parcel adjacent to the east Petaluma River shoreline immediately north of Highway 37 and Port Sonoma. The Sonoma Land Trust recently restored the former agricultural lands to tidal wetlands by contouring the site and breaching the exterior levee along the Petaluma River.

2. Open Space and Recreation. Sonoma County has approximately 520 acres of publicly-owned lands that are used for open space and recreation. This consists of lands owned and managed by the Sonoma Land Trust and Sonoma County Parks and Recreation.

The Sonoma Land Trust owns the 520 acre Leonard Ranch and the Baylands Hay Ranch North Parcel. Both the Leonard Ranch and the Baylands Hay Ranch are leased for oat hay production and serve as open space. Neither site is used for active or passive recreation. The Land Trust is now exploring wetland restoration options (Bay Institute, 1987).

The only other site in Sonoma County that is used for open space and recreation is the 4-acre Hudeman Slough staging area and boat launching ramp. The site is owned and managed by Sonoma County Parks and Recreation and provides one of the only access opportunities into the heart of the Sonoma Creek and its tributary sloughs. Use of the staging area and launching ramp are free. The site is used primarily by recreational boaters, fisherman and hunters. The Sonoma County Parks and Recreation is exploring opportunities to develop a continuous access trail from Ramal Road along Hudeman Slough down to Skaggs Island.

3. Military Installations. Sonoma County has approximately 3,400 acres of publicly-owned lands that are used for military installations. This consists solely of the Skaggs Island Naval Facility.

Skaggs Island is owned and managed by the Department of Defense and is located within the diked historic baylands of the Napa and Sonoma slough complex. The Navy purchased the site in 1941 for a Naval Radio Station. Prior to closure, the facility served as a high frequency direction finding and communications center. With the exception of the administration, operation and residential buildings, which are located at the northern entrance, and the old radio antenna field, the majority of Skaggs Island is leased for oat hay production. Extensive salt marsh is found on the outboard of the Island's perimeter levees and provides high quality habitat for several fish and wildlife species (Naval Facilities Engineering Command, 1989).

The Navy closed Skaggs Island in September of 1993 and relocated the Naval Security Group Activity. Because the federal government did not close Skaggs Island under the Defense

Base Realignment and Closure Act, the GSA will have the responsibility for property disposal. The Navy has put the Island into custodial status under the Naval Security Group Activity command and is preparing the property for disposal through the General Services Administration (U.S. Department of the Navy, 1991). The federal government and local reuse authorities are beginning to consider reuse options. The Skaggs Island Reuse Committee envisions reusing the existing buildings for cultural organizations, an ecological research station, a computer training center and affordable housing. Several educational institutions, including UC Davis, Napa Valley College, Solano Community College, and the Sonoma County Office of Education, have all expressed an interest in setting up programs at Skaggs Island. USFWS would like to acquire and manage the remainder of Skaggs Island as part of the San Pablo Bay National Wildlife Refuge (U.S. Fish and Wildlife Service, 1995). Skaggs Island presents an important opportunity for resource agencies to add a major site to existing wildlife areas particularly because of the Island's location in the center of the Napa and Sonoma Slough complex, the tidal wetlands along its perimeter levee, and because the Island could potentially support the restoration of several thousand acres of diked historic baylands to wetlands.

4. **Community Services and Utilities.** Sonoma County has approximately 2,060 acres of publicly-owned lands that are used for community services and utilities. This consists of lands owned and managed by the Vallejo Sanitation and Flood Control District and the Sonoma County Water Agency.

The Vallejo Sanitation and Flood Control District owns approximately 1,720 acres of Lower Tubbs Island at the mouth of Sonoma Creek. The District uses the site to recycle solid wastes that it generates at its municipal wastewater treatment plant in Vallejo. The District then leases the site for agricultural uses. Studies conducted by the District show that the use of recycled sludge as a soil amendment and fertilizer can increase oat hay and oat production in diked historic baylands (Vallejo Sanitation and Flood Control District, 1994).

The Sonoma County Water Agency owns the approximately 340 acre Ringstorm Bay site. The site used primarily for wastewater storage and disposal and is located south of Ramal Road adjacent to Hudeman Slough. The Sonoma County Water Agency treats municipal wastewater at a location outside the North Bay planning area and then pipes it to the site for storage and discharge. The Water Agency leases their site to the CDFG which manages it to maximize its wetland functions for shorebirds and migratory waterfowl. The Sonoma County Water Agency provides another example of a public agency that manages its lands to achieve several important public benefits.

Napa County⁴

Napa County has approximately 22,360 acres of land within the North Bay planning area. Of the 22,360 acres 45 percent or 10,090 acres are in public ownership. The 10,090 acres of publicly-owned lands in Napa County represent approximately 27 percent of all publicly-owned lands in the North Bay. Of the 10,090 acres, 77 percent is used for wildlife areas, 19 percent for community services and utilities, and four percent for open space and recreation. Napa County has no publicly-owned lands within the planning area that are used for military installations or government institutions.

1. **Wildlife Areas.** Napa County has approximately 7,740 acres of publicly-owned lands that are used for wildlife areas. This represents approximately 77 percent of Napa County's publicly-owned lands in the North Bay planning area and consists of lands owned and managed by the California Department of Fish and Game, the State Lands Commission, and the U.S. Fish and Wildlife Service.

The CDFG owns and manages a total of 7,400 acres that are used for wildlife areas. The majority of CDFG lands are located in and around the sloughs west of and tributary to the Napa River. The largest of these CDFG wildlife units is the approximately 5,600-acre Napa River Unit which CDFG acquired from Cargill Salt in 1994. Other CDFG wildlife areas west of the Napa River includes approximately 710 acres of the Huichica Creek Unit and the approximately 250-acre Coon Island Unit. Together, these CDFG lands form the largest contiguous wildlife area in the North Bay.

CDFG also owns and manages several important wildlife areas east of the Napa River. This includes 540 acres of the American Canyon Unit and the 300-acre Fagan Marsh Ecological Reserve. The American Canyon Unit is located along the eastern shore of the Napa River around the North Slough. The Fagan Marsh Ecological Unit is located on the eastern shore of the Napa River near Bull Island, adjacent to the Napa Sanitation District's Soscal Treatment Plant and the Napa County Airport. Both of these CDFG wildlife areas provide buffers between urban uses in the City of American Canyon and Napa County and the wildlife areas west of the Napa River.

The State Lands Commission owns and manages approximately 290 acres of land at the mouth of Sonoma Creek and Napa Slough, adjacent to the Detjen Duck Club. The majority of this site is actually located in Solano County and can be accessed from Highway 37 near the Sonoma Creek bridge.

The U.S. Fish and Wildlife Service owns and manages approximately 61 acres of the 1,560 acre Cullinan Ranch. The majority of Cullinan Ranch, 1,500 acres, is located in Solano

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County. Cullinan Ranch is sandwiched between Highway 37 and Dutchman Slough, with the Napa County portion located along Dutchman Slough.

2. **Open Space and Recreation.** Napa County has approximately 420 acres of publicly-owned lands that are used for open space and recreation. This consists of land owned and managed by the Port of Oakland and the Napa County Parks and Recreation Department.

The Port of Oakland owns an approximately 420-acre parcel adjacent to the wastewater treatment facility in the City of American Canyon. The Port originally purchased the site for use as wetland mitigation for impacts incurred when developing the Oakland Airport Distribution Center. Because of its strategic location along the Napa River, and because the Port apparently does not need the site for mitigation, several resource agencies have expressed an interest in acquiring the site for use as a wildlife area. The site is currently being leased to a local rancher for grazing cattle and principally serves as open space (McDonald, Mark - Personal Communication). The site is not used for active or passive recreation.

The only other open space and recreation area in Napa County is the 3-acre Cuttings Wharf staging area and boat launching ramp. The site is owned Napa County and managed by the Napa County Department of Public Works. Cuttings Wharf provides one of the only access points into the heart of the Napa River and its tributary sloughs. Use of the staging area and launch ramp is free and is used primarily by recreational boaters and fisherman.

3. **Community Services and Utilities.** Napa County has approximately 1,920 acres of publicly-owned lands that are used for community services and utilities. This represents approximately 19 percent of Napa County's publicly-owned lands in the North Bay planning area and consists of lands owned by the Napa Sanitation District, the Napa County Airport, the South Napa Waste Management Authority and the Napa County Flood Control District.

The Napa Sanitation District owns and operates the approximately 930 acre Soscol Treatment Plant. The facility is located at the terminus of Soscol Ferry Road on the eastern shore of the Napa River, north of Steamboat Slough. The site includes the treatment plant, oxidation ponds and irrigation fields. Similar to other wastewater treatment facilities, the District's lands serve other important uses besides municipal wastewater treatment and disposal. The wastewater storage ponds provide open water habitat and resting areas for shorebirds and migratory waterfowl. The District uses treated effluent to irrigate grazing lands. The District also uses reclaimed effluent to irrigate other landscaped areas such as golf courses.

Napa County owns and operates the approximately 740 acre Napa County Airport that is located in an upland area east of the Southern Pacific Railway line and west of Highway 29. The Airport is a general aviation facility serving privately-owned propeller and business jet aircraft. The Airport provides various flying services, a large pilot training facility and a restaurant. Napa County is currently updating the Napa County Airport Industrial Area Specific Plan to address economic development in and around the Airport.

The Napa County Waste Management Authority owns and manages the approximately 130-acre American Canyon Sanitary Landfill. The landfill is located on the eastern shoreline of the Napa River west of Oat Hill and adjacent to the Cargill Salt Production Plant. The Landfill began accepting solid waste in 1942 and was historically part of the Napa River marshlands. The Landfill discontinued accepting waste in early 1995 and was replaced by a solid waste transfer station in southern Napa County. The State Coastal Conservancy, in association with other local and state agencies, has recently secured funding for the Lower Napa River Wetland Enhancement Project and will explore potential uses for the site including park and recreation opportunities (State Coastal Conservancy, 1995).

The Napa County Flood Control District owns and manages approximately 1120 acres of land on the western shore of the Napa River. The Flood Control District uses a portion of the site to dispose of dredge sediments from the Napa River. An adjacent area has been restored to wetlands and is managed for flood control and wildlife.

City of American Canyon

The City of American Canyon has approximately 1,720 acres of land within the North Bay planning area. Of the 1,720 acres, only six percent or 103 acres is in public ownership. The 100 acres of publicly-owned lands in American Canyon represents less than one percent of all publicly-owned lands in the North Bay. Of the 100 acres, 58 percent is used for community services and utilities, 33 percent for government institutions, and nine percent for wildlife areas. American Canyon has no publicly-owned lands in the planning area that are used for wildlife areas or military installations.

1. **Open Space and Recreation.** American Canyon has approximately 10 acres of publicly-owned lands that are used for open space and recreation. This consists of City parks.

The City of American Canyon owns and manages Kimberly Park, which is adjacent to American Canyon Creek. Together, the park and creek form a greenbelt that connects with other open space areas beneath a set of high tension power lines and the CDFG's American Canyon Unit. American Canyon is the only community in the North Bay planning area to provide a greenbelt area along a tributary stream.

2. **Community Services and Utilities.** The City of American Canyon has approximately 60 acres of publicly-owned lands that are used for community services and utilities. This consists of property owned and managed by the City itself.

The City of American Canyon owns 60 acres of land that are used as a corporation yard by the City Public Works Department and for the City's wastewater treatment ponds. This site is located on the end of West American Canyon Road near North Slough, adjacent to the Port of Oakland property. The City's wastewater receives primary treatment at the ponds. The City then pipes the effluent to the Soscol Treatment Plant where the Napa Sanitation District provides

additional treatment and discharges the effluent into the Napa River or recycles it to irrigate pasture lands (American Canyon, City of, 1994). The City and the Vallejo Sanitation and Flood Control District are negotiating options for Vallejo Sanitation to accept and treat American Canyon's wastewater at the Vallejo Treatment Plant. The City is also exploring the feasibility of enhancing their own treatment capabilities at the existing site using constructed wetlands (American Canyon, City of, 1994).

3. **Government Institutions.** The City of American Canyon has approximately 30 acres of publicly-owned lands that are used for government institutions. This consists primarily of public schools and the City's Civic Center.

Solano County⁵

Solano County has approximately 8,300 acres of land within the North Bay planning area. Of the 8,300 acres, 74 percent or 6,150 acres is in public ownership. The 6,150 acres of publicly-owned lands in Solano County represent approximately 17 percent of all publicly-owned lands in the North Bay. Of the 6,150 acres, 99 percent is used for wildlife areas and one percent is used for community services and utilities. Solano County has no publicly-owned lands within the planning area that are used for open space and recreation, military installations, or government institutions.

1. **Wildlife Areas.** The Solano County has approximately 6,110 acres of publicly-owned lands that are used for wildlife areas. This consists primarily of lands owned and managed by the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the California State Lands Commission.

The CDFG also owns and manages a total of 3,540 acres of land that are used for wildlife areas. The largest of these parcels is the Napa River Unit⁶ totaling approximately 3,450 acres. The Solano, Sonoma and Napa County portions of the Napa River Unit comprise the single largest wildlife area in the North Bay planning area totaling approximately 9,120 acres. The CDFG is preparing a restoration and management plan to enhance and maximize the wildlife functions of the Napa River Unit and provide compatible public access opportunities.

The CDFG owns and manages approximately 60 acres adjacent to White Slough north of Highway 37. This property, along with other privately-owned lands, is subject to the White Slough Protection and Development Act. Pursuant to the Act, the City of Vallejo and Solano County have adopted a specific plan to address issues of permanent wetland protection and enhancement, public access, flood control, and highway improvements. The CDFG also owns and manages 30 acres of the American Canyon Unit, the majority of which is located in Napa County.

⁵ In this chapter, the description of publicly-owned lands for counties includes only the unincorporated portion of the county within the North Bay planning area. Similarly, the discussion for cities only includes the incorporated portion of the city within the North Bay planning area boundary.

⁶ Formerly the Cargill Salt Ponds.

In Solano County, the U.S. Fish and Wildlife Service owns and manages a total of approximately 2,260 acres of land as part of the San Pablo Bay National Wildlife Refuge. The largest of these areas is 1,500 acres of the 1,560 acre Napa Marsh Unit, more commonly known as Cullinan Ranch. Cullinan Ranch is sandwiched between Highway 37 and Dutchman Slough. When the U.S. Fish and Wildlife Service purchased the Ranch in 1991, it permanently protected the site from development. The U.S. Fish and Wildlife Service is now preparing a restoration and management plan to enhance the wildlife functions and provide compatible public access opportunities. Portions of the site are subject to a public trust access easement as a result of a State Lands Commission title settlement. Cullinan Ranch illustrates how acquisition by a public agency can permanently protect diked historic baylands and wetlands that are vulnerable to development.

The U.S. Fish and Wildlife Service also owns and manages approximately 760 acres of tidal marsh on the southern side of Highway 37 that runs from the mouth of Sonoma Creek to Mare Island. This portion of the San Pablo Bay National Wildlife Refuge, referred as the Strip Marsh, provides habitat for the endangered salt marsh harvest mouse and the California clapper rail.

The State Lands Commission owns and manages approximately 310 acres of land at the mouth of Sonoma Creek and Napa Slough, adjacent to the Detjen Duck Club. One can access the site from Highway 37 near the Sonoma Creek bridge.

2. Community Services and Utilities. Solano County has approximately 40 acres of publicly-owned lands that are used for community services and utilities. This consists of lands that are owned by the California Department of Transportation.

Caltrans owns 40 acres of land in White Slough. The property is part of the Highway 37 right-of-way. Caltrans may use portions of this property for improvements to the Highway 37 and Highway 29 intersection or for wetland mitigation that may be required pursuant to the White Slough Development and Protection Act.

City of Vallejo

The City of Vallejo has approximately 6,050 acres of land within the North Bay planning area. Of the 6,050 acres 58 percent or 3,520 acres are in public ownership. The 3,520 acres of publicly-owned lands in the City of Vallejo represent approximately nine percent of all publicly-owned lands in the North Bay. Of the 3,515 acres, 78 percent is used for military installations, eight percent for wildlife areas, six percent for open space and recreation, five percent for public services and utilities, and three percent for government institutions.

1. Wildlife Areas. The City of Vallejo has approximately 270 acres of publicly-owned lands that are used for wildlife areas. This consists primarily of lands owned and managed by the California Department of Fish and Game.

The CDFG owns and manages 270 acres of the American Canyon Wildlife Unit, the majority of which is in Napa County. The American Canyon Wildlife Unit is located in the northernmost portion of the City on the eastern shore of the Napa River, near White Slough.

2. **Open Space and Recreation.** The City of Vallejo has approximately 200 acres of publicly-owned lands that are used for open space and recreation. This consists of lands owned, managed and/or leased by the City of Vallejo or the Redevelopment Agency of Vallejo.

The City of Vallejo or Redevelopment Agency owns, manages and/or leases approximately 100 acres along the eastern shore of Mare Island Strait from the Mare Island Causeway south to Marin Street. This area includes the Waterfront Promenade, which provides shoreline access for walking, biking, fishing and other passive recreation opportunities, the Municipal Marina and boat launching ramp, and commercial uses, as well as ferry service to San Francisco. This waterfront area also provides linkages to the Vallejo Civic Center and adjacent residential and commercial areas.

The City of Vallejo and the Greater Vallejo Recreation District manages the approximately 70-acre River Park. River Park is located along the eastern shore of Mare Island Strait from Tennessee Street to the Napa River Bridge. The Park currently provides improved access trails, view points with benches, and several small parking areas. The Park also contains tidal and freshwater wetlands (MPA Design, 1993). The Greater Vallejo Recreation District prepared the River Park Master Plan in 1993 to guide the restoration and enhancement of the wildlife functions and the provision of passive recreational uses. Implementation of the Master Plan has not yet begun.

The City of Vallejo also owns and manages approximately 30 acres of neighborhood parks that are located adjacent to commercial and residential areas away from the waterfront.

3. **Military Installations.** The majority of public lands in the City of Vallejo are used for military installations (2,760 acres). This consists of Mare Island Naval Shipyard (MINSY).

As with other military installations, the Navy has closed MINSY and is evaluating disposal and reuse options. The base itself closed in April 1996. After the closure was announced in 1993, the City of Vallejo developed a two-part approach for reuse planning. First, the Mare Island Futures Legislative Committee addressed the local, state and federal legislative issues surrounding the proposed closing, while the second group, the Mare Island Futures Work Group developed a final reuse plan, which was completed in July of 1994. The Mare Island Final Reuse Plan proposes a mixture of industrial, commercial and residential uses in the existing developed portions of MINSY, and open space, wetland and recreation uses in the undeveloped portions of MINSY. For the most part, the Reuse Plan incorporates existing structures and historic land uses. Vallejo's goal is to replace the employment and revenues provided by the military activities on Mare Island through reuse opportunities. In the long term, the City's Reuse Plan envisions Mare Island as a new City neighborhood that the City could enhance by retaining the Island's unique historic

resources and expansive open space areas (Vallejo, City of, and the Mare Island Futures Reuse Group, 1994).

A significant portion of MINSY, including the dredged material disposal ponds and tidal wetlands along San Pablo Bay, may revert to state ownership when military activities cease. Lands not subject to state reversion are included in the federal property screening and disposal process. Local and federal agencies have requested portions of MINSY for reuse activities. The U.S. Forest Service has requested the use of a building and support facilities for its regional headquarters. The U.S. Fish and Wildlife Service has requested the tidal wetlands along the San Pablo Bay to expand the San Pablo Bay National Wildlife Refuge, the use of several dredge disposal ponds for wetland restoration and enhancement, including land which is subject to the state reversion, and an adjacent building for a North Bay Wildlife Interpretive Facility.

The request of the U.S. Forest Service is being processed for approval, while the requests of the U.S. Fish and Wildlife Service are still under consideration (Vallejo, City of and the U.S. Department of the Navy, 1995). The Navy cannot transfer lands that may revert to the State, such as the dredge disposal ponds, to another federal agency. The Mare Island Reuse Plans calls for reactivating the ponds for use as a regional disposal and re handling facility for dredged materials. The State Lands Commission, which administers the State's title interests at Mare Island, has been working with the City of Vallejo, the U.S Fish and Wildlife Service, and the Navy regarding the future uses of the dredge ponds and the Service's request. The Navy may transfer the portions of MINSY that are not subject to State reversion or transferred to other federal agencies to the City of Vallejo for economic development (Vallejo, City of, and Mare Island Futures Reuse Group, 1994).

4. Community Services and Utilities. The City of Vallejo has approximately 168 acres of publicly-owned lands that are used for community services and utilities. This consists of lands owned and managed by the City of Vallejo, the Vallejo Sanitation and Flood Control District, and Caltrans.

The City of Vallejo or the Redevelopment Agency owns and manages an approximately 60 acres that are reserved for industrial uses. The site is located along the Mare Island Strait in southern Vallejo and could provide deep water access required for water-related industrial uses. The City of Vallejo also owns the approximately 50-acre Guadalcanal Village and the 21-acre North Housing site. At one time these sites provided housing, but are now vacant, except for some limited infrastructure. The City may use both sites as mitigation for work that may occur under the White Slough Specific Plan.

The Vallejo Sanitation and Flood Control District owns approximately 20 acres that are used primarily for its wastewater treatment plant that serves the greater Vallejo area. The site is located in an industrial area in southwest Vallejo adjacent to Mare Island Strait. Unlike most wastewater treatment facilities, the District lands in Vallejo do not include large wastewater storage

ponds. Rather, the District relies on a more sophisticated and intensive process for treating wastewater.

Caltrans owns approximately 10 acres of land in the vicinity of White Slough. As with their lands in Solano County, Caltrans may use this land for the future expansion or improvement of Highway 37 and 29 or for wetland mitigation required pursuant to the White Slough Protection and Development Act.

5. **Government Institutions.** The City of Vallejo has approximately 120 acres of publicly-owned lands that are used for government institutions. This consists of the 80-acre California Maritime Academy, which is owned by the State of California, and 30 acres of public schools and the 14-acre Vallejo Civic Center, both of which are owned by the Vallejo Redevelopment Agency.

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ACRONYMS

ABAG - Association of Bay Area Governments
BCDC - San Francisco Bay Conservation and Development Commission
Caltrans - California Department of Transportation
CCMP - Comprehensive Conservation and Management Plan
CDFG - California Department of Fish and Game
CEDR - Center for Environmental Design and Research
CEQA - California Environmental Quality Act
DOD - Department of Defense
GIS - Geographic Information System
GRASS - Geographic Resources Analysis Support System
GSA - General Services Administration
HAAF - Hamilton Army Airfield
LAFCO - Local Agency Formation Commission
LGVSD - Las Gallinas Valley Sanitary District
MALT - Marin Agricultural Land Trust
MCOSD - Marin County Open Space District
MINSY - Mare Island Naval Shipyard
NBWPP - North Bay Wetlands Protection Program
NEPA - National Environmental Policy Act
NPS - Nonpoint Source Pollution
REGIS - Research Program in Environmental Planning and Geographic Information Systems
SCC - State Coastal Conservancy
SCWA - Sonoma County Water Agency
SFEP - San Francisco Estuary Project
SLC - State Lands Commission
UCB - University of California Berkeley
USFWS - United States Fish and Wildlife Service
USGS - United States Geological Survey
VSFCD - Vallejo Sanitation and Flood Control District