# Chapter 5
# Protect and Enhance the Unique Cultural, Recreational, Natural Resource, and Agricultural Values of the California Delta as an Evolving Place

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The Delta Reform Act declared State policy for the resources and values of the Delta (Water Code section 85054):

> *"Coequal goals" means the two goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.*

The Legislature declares the following objectives inherent in the coequal goals for management of the Delta (Water Code section 85020):

> *(a) Manage the Delta's water and environmental resources and the water resources of the state over the long term.*
>
> *(b) Protect and enhance the unique cultural, recreational, and agricultural values of the California Delta as an evolving place.*

Water Code section 85302(h) provides direction on the implementation of measures to promote the coequal goals and inherent objectives:

> *(h) The Delta Plan shall include recommendations regarding state agency management of lands in the Delta.*

The Delta Reform Act states (Water Code section 85022 (d)):

> *(d) The fundamental goals for managing land use in the Delta are to do all of the following:*
>
> > *(1) Protect, maintain, enhance, and, where feasible, restore the overall quality of the Delta environment and its natural and artificial resources.*
> >
> > *(2) Ensure the utilization and conservation of Delta resources, taking into account the social and economic needs of the people of the state.*
> >
> > *(3) Maximize public access to Delta resources and maximize public recreational opportunities in the Delta consistent with sound resources conservation principles and constitutionally protected rights of private property owners.*
> >
> > *(4) Encourage state and local initiatives and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses, including educational uses, in the Delta.*
> >
> > *(5) Develop new or improved aquatic and terrestrial habitat and protect existing habitats to advance the goal of restoring and enhancing the Delta ecosystem.*
> >
> > *(6) Improve water quality to protect human health and the environment consistent with achieving water quality objectives in the Delta.*

Public Resources Code section 29703.5 describes the Delta Protection Commission's role in providing recommendations to the Delta Stewardship Council:

> *(a) The Delta Protection Commission created pursuant to Section 29735 provides an existing forum for Delta residents to engage in decisions regarding actions to recognize and enhance the unique cultural, recreational, and agricultural resources of the Delta. As such, the commission is the appropriate agency to identify and provide recommendations to the Delta Stewardship*

*Council on methods of preserving the Delta as an evolving place as the Delta Stewardship Council develops and implements the Delta Plan.*

*(b) There is a need for the five Delta counties to establish and implement a resources management plan for the Delta and for the Delta Stewardship Council to consider that plan and recommendations of the commission in the adoption of the Delta Plan.*

# Chapter 5
# Protect and Enhance the Unique Cultural, Recreational, Natural Resource, and Agricultural Values of the California Delta as an Evolving Place

The Delta Reform Act provides that the coequal goals of providing a more reliable water supply and protecting, enhancing, and restoring the Delta ecosystem shall be achieved in a manner that protects the unique cultural, natural, recreational, resource, and agricultural values of the Delta as an evolving place. Achieving this objective begins with recognizing the values that make the Delta a distinctive and special place:

- The Delta's geography of low-lying islands and tracts, many below the water level and shaped by sloughs, shipping channels, and rivers; tidal influences; levees; and other water controls is unique among California landscapes.
- The Delta retains a rural heritage, characterized by farms and small towns linked by navigable waterways and winding country roads.
- The Delta's agricultural economy is vital to the region and contributes to California's important agricultural economy.
- The Delta is a region where maritime ports, commercial agriculture, and expanding cities coexist with a unique native ecosystem that is home to many species of wildlife and fish.
- The Delta is a place of multicultural tradition, legacy communities, and family farms.
- The Delta provides opportunities for recreation and tourism because of its unique geography, mix of activities, and rich natural resources.

The Delta's uniqueness, however, does not exempt it from change. Increasing pressures of growing populations, shifting commodity markets, climate changes, and rising sea level will require new ways of adaptation for this region. Some changes are driven by the Delta's location at the center of California's water systems and are required to meet statewide goals of restoring the Delta's ecosystem and improving water supply reliability. Other changes may be caused by floods, earthquakes, or other events that threaten the Delta's levees and islands. Some changes can be managed by policies that shape how the Delta's traditions are honored and its history preserved, guide new development, enhance recreation and tourism, and encourage agriculture, business expansion, and economic development.

Protecting the Delta as an evolving place means accepting that change will not stop, but that the fundamental characteristics and values that contribute to the Delta's special qualities and that distinguish it from other places can be preserved and enhanced while accommodating these changes (Delta Vision Blue Ribbon Task Force 2008). It does not mean that the Delta should be a fortress, a preserve, or a museum.

The Delta Stewardship Council (Council) envisions a future where the Delta's unique qualities are recognized and honored. Agriculture will continue to thrive on the Delta's rural lands; and its cities, ports, and rural villages will be desirable places to live, work, and do business. Visitors to the region will enjoy recreation on and in its waterways, marshes, resorts, parks, and historic legacy communities. The Delta's land uses and development will be resilient, protecting the rural character of the area, reducing risks to people and property, adjusting to changing conditions, and promoting the ability to recover readily from distress. The Delta's economic vitality will provide resources to respond to change and to support the families and businesses that make the Delta home. The vision of the Delta as an evolving place also acknowledges the role of Delta residents in shaping the future of the region through active and effective participation in Delta planning and management.

# Creating a Common Vision of the Delta as a Place

The Delta Reform Act recognizes not only the uniqueness of the region, but also that it is managed and influenced by many State, federal, and local agencies, often with differing views about the Delta and with overlapping and sometimes conflicting jurisdictions. Through the Delta Plan, the Council intends to foster a common vision for the future of the Delta as a place and to promote more effective coordination among these agencies. (See sidebar, Looking at the Delta.)

Fashioning this common vision has begun by drawing much of the information and many of the strategies of this chapter from these agencies' reports and recommendations, including the following documents:

- The *Proposal to Protect, Enhance, and Sustain the Unique Cultural, Historical, Recreational, Agricultural, and Economic Values of the Sacramento-San Joaquin Delta as an Evolving Place* developed by the Delta Protection Commission (DPC) (DPC 2012a)
- The DPC's *Economic Sustainability Plan for the Sacramento-San Joaquin Delta* (ESP) (DPC 2012b)
- The *Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh* (Recreation Proposal) developed by California State Parks (California State Parks 2011)
- The Delta Conservancy's Strategic Plan

**LOOKING AT THE DELTA**

The Delta presents itself from three vantages that display alternative aspects of its character.

From the water, the Delta is a thicket of sloughs, rock-lined channels, and open waterways where the land lies unseen behind tall levees and riparian vegetation. This is a Delta of recreational boating and oceangoing freighters, piers and lift bridges, diversions and water control structures, fish and diving ducks, resorts and marinas.

Another view of the Delta is a predominantly rural, agricultural landscape dotted with historic villages and where waterways are hidden on the other side of the levee, to be glimpsed only from bridges and levee top roads. This is a Delta of vineyards, orchards, and farm fields, ditches, and waterfowl hunting clubs, historic farmsteads and one-of-a-kind shops and restaurants, farm machinery, and bicyclists.

A third view of the Delta looks out from its metropolitan cities: Stockton, Manteca, Lathrop, Tracy, Contra Costa County's shoreline suburbs, Suisun City, Fairfield, Sacramento, and West Sacramento. This is a Delta of downtowns, neighborhoods, and new suburbs, cooling summer breezes and clammy winter fog, waterfront parks and a catch of striped bass in the freezer, and ports, warehouses, offices, and other job sites.

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The Public Resources Code (section 29703.5(a)) names the DPC as "the appropriate agency to identify and provide recommendations to the Council on methods of preserving the Delta as an evolving place." The DPC is an agency created in 1992 by the Delta Protection Act to plan for and guide natural resource conservation and enhancement in the legal Delta while sustaining agriculture and meeting increased recreational demand.

As provided in Water Code section 85301, the DPC developed the *Proposal to Protect, Enhance, and Sustain the Unique Cultural, Historical, Recreational, Agricultural, and Economic Values of the Sacramento-San Joaquin Delta as an Evolving Place* (DPC 2012a). This proposal was submitted to the Council for incorporation into the Delta Plan. The proposal includes a plan to recognize the Delta as a place of special significance by applying for a federal designation of the Delta as a National Heritage Area (NHA). The NHA designation is granted by the U.S. Congress to places where natural, cultural, historic, and recreational resources combine to form a distinctive landscape and tell a nationally important story about the country and its experience.

The DPC also recommends strategies to support increased investment in agriculture, recreation, tourism, and other resilient land uses in the Delta. These strategies are derived from the ESP (DPC 2012b). Established in 2009, the Delta Conservancy is responsible for implementing ecosystem restoration projects protecting and preserving agriculture and working landscapes; increasing recreation and tourism opportunities; promoting legacy communities and economic vitality; and protecting, conserving, and restoring the region's physical, agricultural, cultural, historical, and living resources (Public Resources Code section 32322). Careful coordination between the DPC and Delta Conservancy can maximize the impact of both agencies' economic development activities.

# About this Chapter

This chapter describes the unique values that distinguish the Delta and make it a special region, and outlines the Council's five core strategies for protecting and enhancing these values:

- Designate the Delta as a special place worthy of national and state attention
- Plan to protect the Delta's lands and communities
- Maintain Delta agriculture as a primary land use, a food source, a key economic sector, and a way of life
- Encourage recreation and tourism that allow visitors to enjoy and appreciate the Delta, and that contribute to its economy
- Sustain a vital Delta economy that includes a mix of agriculture, tourism, recreation, commercial and other industries, and vital components of state and regional infrastructure

The policies and recommendations are proposed to carry out these strategies and are found at the end of the chapter. Protecting the Delta as a place also depends on the strategies to reduce flood and other risks to the Delta that are described in Chapter 7.

# Protecting the Delta as an Evolving Place Is Inherent in the Coequal Goals

Protecting the Delta as an evolving place is inherent in the coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. This is partly because attaining these two goals will necessitate a growing awareness among Californians of the Delta

and its values, including its agriculture, recreation, natural resources, and unique culture. It is also because Delta residents benefit from the levees that help convey fresh water through the Delta; enjoy the wildlife, fish, and recreation that the Delta ecosystem produces; and work for its water management agencies and facilities. Changes required to provide a more reliable water supply or restore the ecosystem will influence the kind of place the Delta becomes, especially if structures to improve conveyance or areas of restored habitat significantly alter the Delta's familiar farming landscape. At the same time, the needs to protect the Delta's land uses and people will shape and constrain decisions about water supplies and ecosystem restoration, including allocation of water supplies, flow and salinity objectives, levee priorities, and how impacts to communities and land uses are mitigated.

Water for agricultural, municipal, and industrial uses is a key to the Delta as a place. Delta communities are the most dependent of all Californians on Delta water supplies, which support its residents, businesses, and farms. They, like other Californians, can often do more to use water more efficiently and to develop alternative supplies through recycling, conjunctive use of groundwater, or participation in regional water supply projects. Because the communities and economy of the Delta require water of reliable quality as well as amount, updates to the Bay-Delta Water Quality Control Plan have special influence on the region. The Delta is also influenced by other Central Valley water quality plans because they protect the quality of water for Delta consumers, farmers, and recreationists and the costs Delta residents and businesses pay to meet clean water standards.

A healthy ecosystem is also important to the Delta's communities. Residents find joy and relaxation in outdoor recreation and the connection with nature that the Delta ecosystem provides. Visitors drawn to its scenery, waterways, fish, and wildlife support tourism businesses. Protecting the ecosystem maintains these benefits and restoring it can expand them, especially when it can be accomplished in ways that enhance the Delta's working landscape. Coordinating restoration with planning for flood control can help control costs for levee improvement and management, draw on multiple sources of funds for multipurpose flood control investments, and provide alternate uses for areas that cannot be protected cost-effectively. Restoring marshes, riverbanks, and riparian areas will alter how some land is used, but the impacts of these changes on the Delta's unique values can be managed through cooperation, careful design to lessen or avoid adverse effects, or reasonable mitigation of unavoidable impacts.

# The Delta as a Place

The California Delta is a unique place distinguished by its geography, legacy communities, a rural and agricultural setting, vibrant natural resources, and a mix of economic activities. This section describes the features that make the Delta unique. Its 839,640 acres of land, sometimes centered on a wide river but laced with a network of narrow channels and sloughs, stretch to the horizon, bounded only by the levees that were built to drain the Delta's marshes and floodprone riversides. The Legislature has found that the Delta's uniqueness is particularly characterized by its hundreds of miles of meandering waterways and the many islands adjacent to them, and has described the Delta's highly productive agriculture, recreational assets, fisheries, and wildlife as invaluable resources (Water Code section 12981(b)). These natural assets, including the ecosystem and water resources as described in Chapters 3, 4 and 6, are among the Delta's important values.

The Delta is composed of three areas recognized in California law. The Primary Zone is the largest and includes 490,050 acres at the heart of the Delta (Public Resources Code section 29728). It is primarily rural farmland, but also includes several small towns established in the nineteenth and twentieth centuries. The Secondary Zone includes 247,320 acres surrounding the Primary Zone (Public Resources Code section 29731). It also includes farmland, but is increasingly dominated by the region's cities and suburbs. Suisun Marsh lies northwest of the Primary Zone, encompassing 106,570 acres (Public Resources Code section 29101) primarily of managed wetland. The Suisun Marsh overlaps the boundary of the Delta by about 4,300 acres. (Figure 5-1)

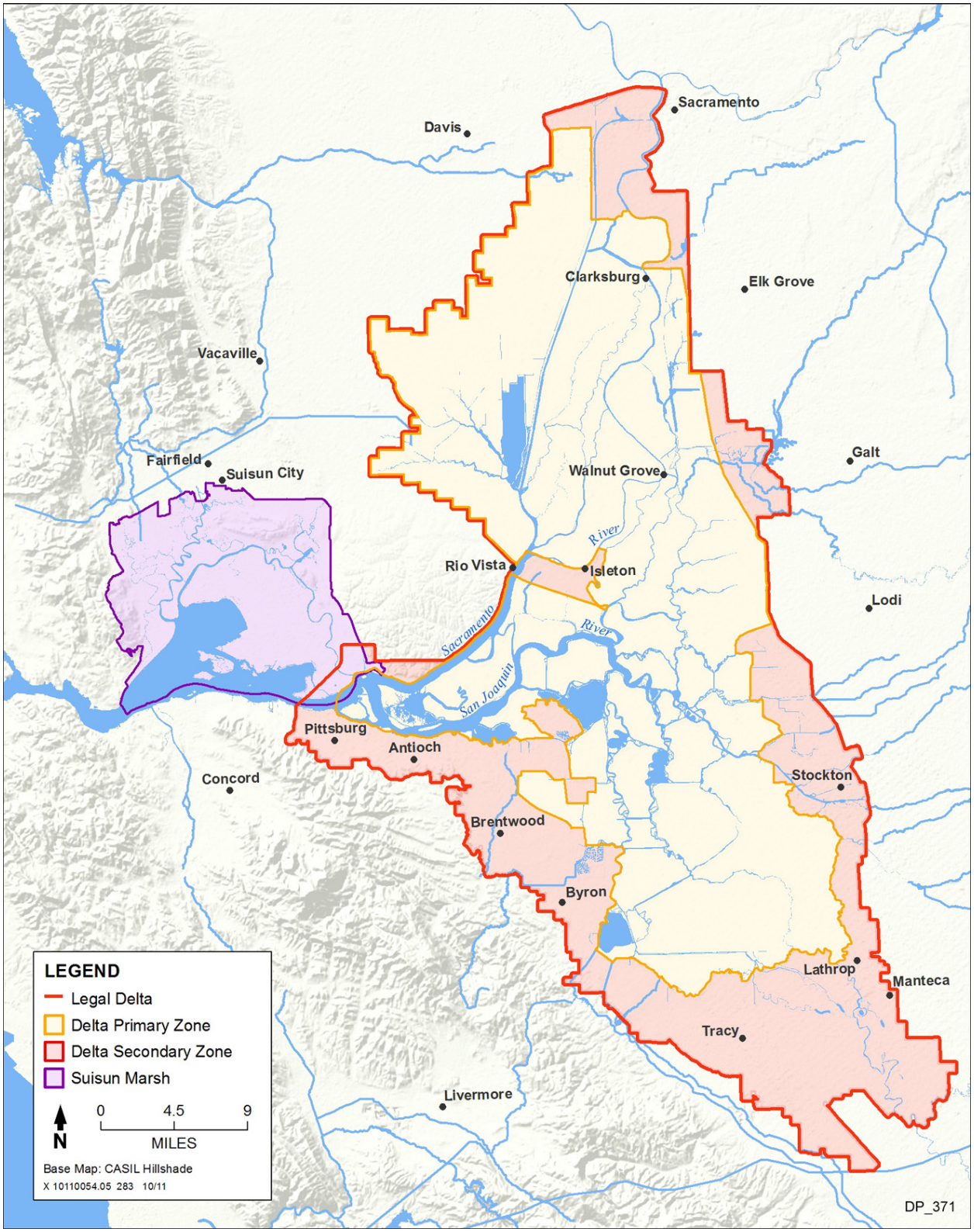


**Figure 5-1**
**Delta Primary and Secondary Zones and Suisun Marsh**

The Legislature has declared that the Delta is a natural resource of statewide, national, and international significance, and that the cities, towns, and settlements within the Delta are of significant historical, cultural, and economic value (Public Resources Code sections 29701 and 29708). However, not all Delta users, visitors, or residents recognize or appreciate the Delta's values. In a recent survey, 78 percent of Californians said they had not heard of or did not know about the Delta (Probolsky Research 2012). A survey in 2007 found that nearly half of Stockton residents had only a vague idea—or none at all—that they lived in or near the Delta (Stockton Record 2012).

This lack of a clearly recognized, widely communicated identity for the Delta is described as the lack of a "brand." Delivering a coordinated message about the Delta and its resources is difficult because responsibilities for the Delta are divided among so many agencies. Many visitors and even some residents of Delta cities and suburbs are unfamiliar with the region beyond their travel route or community, or know it only in name from news media reports about conflicts over its water and natural resources. To some, the Delta's flat agricultural landscape is dull and monotonous, and its resources are "out of sight and out of mind." Access into the Delta by first-time visitors can be difficult because of its winding roads and lack of amenities that signify a special region; simplify wayfinding; educate travelers about an area's history, culture, and natural resources; or encourage public access and recreation.

# The Delta's People

About 570,000 people reside in the Delta, according to the 2010 Census. Ninety-eight percent of them live in the Delta's Secondary Zone, with the remainder in the Primary Zone. Prior to the recent recession, the population of the Delta's Secondary Zone had been growing rapidly, increasing almost 56 percent since the 1990 Census, a rate twice as fast as the state as a whole. Much of that increase occurred in new communities in previously unincorporated county areas, such as Discovery Bay; rapidly growing towns and communities such as Brentwood and Oakley on State Route 4; and cities such as Sacramento, West Sacramento, Stockton, and Lathrop. The age and household composition of the Delta's population is similar to California as a whole, but with slightly younger and larger families. About half the Delta's population is between the ages of 21 and 54, and about 29 percent are younger than 18 years old (DPC 2012b).

In contrast, the population of the Primary Zone has been essentially unchanged over those 20 years. The Primary Zone is also composed primarily of older people without children, living in smaller households.

Today, most Delta residents describe themselves as white or Hispanic, with the next largest groups being Asian, other races, and African-American or black. About one-third describe themselves as Hispanic. This diverse population reflects the many U.S. regions and foreign lands from which settlers emigrated to the Delta, including Mexico, China, Japan, Portugal, the Philippines, and other countries. These origins are reflected in communities and neighborhoods like Locke, an early twentieth century town built primarily by Chinese farmworkers. Cultural events honor many ethnic traditions in the Delta, including Chinese and Cambodian New Years, Portuguese festas, Greek holidays, Indian Diwali celebrations, Filipino fiestas, Cinco de Mayo events, and Juneteenth commemorations. Other festivals feature Delta agriculture, such as the Courtland Pear Fair and the Stockton Asparagus Festival (California State Parks 2011).

# The Delta's Communities

The region's urban communities include the cities of Sacramento, West Sacramento, Stockton, Lathrop, Manteca, Tracy, Oakley, Brentwood, Antioch, Pittsburg, Benicia, Fairfield, Suisun City, Rio Vista, and Isleton, and the unincorporated communities of Freeport, Mountain House, Byron, and Knightsen. They are located entirely or partially in the Delta's Secondary Zone or in the secondary management area of Suisun Marsh. Unincorporated communities in the Primary Zone include Clarksburg, Courtland, Hood, Locke, Walnut Grove, and Ryde. Appendix K includes maps of these unincorporated communities.

The general plans of Delta cities and counties describe where development of these communities may occur. These plans or actions by the local area formation commissions describe "spheres of influence" for each jurisdiction and often identify an urban limit line beyond which intense development cannot occur without amendment of the plan. About 26,000 acres of the Delta within these spheres of influence are expected to undergo urbanization (DPC 2012b) (see Figure 5-2). To encourage the location of new development within these spheres of influence rather than in rural areas, Chapter 7 policies exempt development in these areas from policies to increase flood protection standards. The Delta Plan includes no policies or recommendations to control land use or density in these communities.

Among the Delta's unincorporated communities, Bethel Island warrants a special note because of its flood risks, the development planned there, and its lack of public services. Its developed area occupies part of the 3,500-acre island, most of which is planned for rural agricultural or visitor-serving commercial uses. About 2,100 people reside on the island in about 1,300 residences concentrated on the island's south central shoreline, four mobile home parks, or 13 commercial marinas. Approximately 15 miles of levees surround the island, which is below sea level, limiting the drainage of flood waters in the event of a levee breach. A single road, Bethel Island Road, links the island to the mainland at the city of Oakley, complicating emergency response or evacuation in the event of flooding. Although the entire island is included in the urban limit line that Contra County's voters approved in 2006, development on the island clusters around Delta Coves, a 495-unit water-oriented residential development that was permitted in 1973 but that still remains unfinished, in part because of the bankruptcy of its developer. Other development includes mobile home parks and retail areas. Rural uses include single-family homes along the island's shoreline, marinas, resorts, a golf course, rural residential uses, and farmland. Contra Costa County's General Plan seeks to preserve and enhance the rural quality of Bethel Island and still allow for planned residential and commercial growth related to water-oriented recreation. The general plan notes that development other than a single home on existing parcels must await resolution of several issues, including improvement of the community's public services, levees, and emergency evacuation routes. Due to its flood risks and its rural character, Bethel Island is not excluded from the Delta Plan policy limiting new urban development. Restrictions on development on Bethel Island are consistent with the Contra Costa County General Plan.

As described in Chapter 2, covered actions subject to the Delta Reform Act do not include plans, programs, or projects within the Delta's Secondary Zone that a metropolitan planning agency has determined are consistent with a sustainable communities strategy adopted under California planning law. These sustainable communities strategies will, in part, accomplish the following:

- Identify the general location of uses, residential densities, and building intensities within the region.
- Identify areas within the region over their 20-plus-year planning period sufficient to house the population of the region.
- Identify areas within the region sufficient to house an 8-year projection of the regional housing need for the region.
- Identify a transportation network to serve the transportation needs of the region.
- Gather and consider information regarding resource areas and farmland in the region.
- Set forth a forecast development pattern, which, when integrated with the transportation network and other transportation measures and policies, will reduce greenhouse gas emissions from automobiles and light trucks. The sustainable community strategy development pattern will need to be based upon "current planning assumptions" that include the information in local general plans and sphere of influence boundaries.

As provided in Water Code section 85212, the Council will cooperate with local and regional planning agencies to provide timely advice about sustainable community strategies and other local and regional plans for consistency with the Delta Plan. This will include reviewing their consistency with the ecosystem restoration needs of the Delta and whether these plans set aside sufficient lands for natural resource protection to meet the Delta's ecosystem needs. Through this coordination, decisions about locating and planning new urban development in the Secondary Zone can be coordinated to meet local communities' housing and other needs, as Water Code section 85022(d)(4) provides, while protecting and enhancing the Delta as an evolving place.

# The Delta's Legacy Communities

Bethel Island, Clarksburg, Courtland, Freeport, Hood, Isleton, Knightsen, Rio Vista, Ryde, Locke, and Walnut Grove are the Delta's legacy communities (Public Resources Code section 32301(f)). They are the residential, commercial, processing, and retail centers of the Delta and resonate with its history and culture. Each community has its own character. Bethel Island is a recreation destination. Clarksburg and Courtland are centers for wine and pear production. Freeport and Hood were transportation centers, with river landings and rail spurs to move goods. Locke and Walnut Grove had large Asian populations who worked at packing sheds and surrounding local farms. Ryde is known for its landmark hotel, and Isleton is known for festivals and visitor-serving businesses. Rio Vista is the largest community, and Knightsen is a small community known for several nearby horse ranches. All legacy communities except Freeport, Isleton, and Bethel Island are in the Primary Zone. Rio Vista is partly in the Primary Zone and partly outside the Delta. The DPC ESP highlights the rich cultural histories of these distinctive communities and notes the importance of enhancing their legacy themes and creating better awareness of them. It highlights planning to strengthen these communities by building on the agricultural uses that surround them. It also recommends enhancing the Delta's recreation and tourism opportunities by improving these towns' lodging, entertainment, and retail options; encouraging agritourism; restoring historic buildings; and promoting context-sensitive infill development, including housing for the Delta's workforce.

**THE LEGACY OF THE DELTA'S NATIVE CALIFORNIA INDIANS**

People have occupied the Delta for thousands of years. Early people gathered wild plants, including seeds, roots, greens, mushrooms, and nuts; hunted for rabbits, waterfowl, tule elk, or antelope; and speared or netted salmon, sturgeon, and other fish. Acorn processing allowed populations to grow. Permanent villages of 100 or more residents were established on sand mounds along major waterways, at the margins of tule marshes, and on the shores of Suisun Bay. Sandy uplands on Delta islands held smaller settlements. Boats of tule reeds were used to travel Delta waterways. Trade with neighbors brought obsidian and other tool stones, shell or bone ornaments, charm stones, and other goods from the coast and Sierra.

Four main groups resided in the Delta: Nisenan on the north, Miwok on the east, Yokuts in the south Delta and Contra Costa shoreline, and Patwin around Suisun Marsh and Putah Creek. Their presence is still acknowledged in place names (for example, Yolo, Suisun, and Mokelumne) and in artifacts such as stone pestles and bedrock mortars for grinding seeds and nuts; twined basketry of rushes and other plants; ancient habitations demarked by charcoal, shells, or other refuse; and cemeteries where loved ones were carefully buried, sometimes with ochre, beads, and other objects, or cremated. Today their descendants sustain a contemporary native California Indian community in the Delta.

*Sources: Beals 1933, Bennyhoff and Fredrickson 1969, Fredrickson 1974, Johnson 1978, Kroeber 1932, Kroeber 1925, Levy 1978, Moratto 1984, University of California Archaeological Survey 1956, Wallace 1978, Wilson and Towne 1978*

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Flood risks in these communities are higher than in the Delta's cities, as noted in Chapter 7, and they are too small to be capable of financing major levee improvements without significant assistance. According to the ESP, opportunities for residential or visitor-serving recreation developments in these communities may be impaired if flood risks are too high

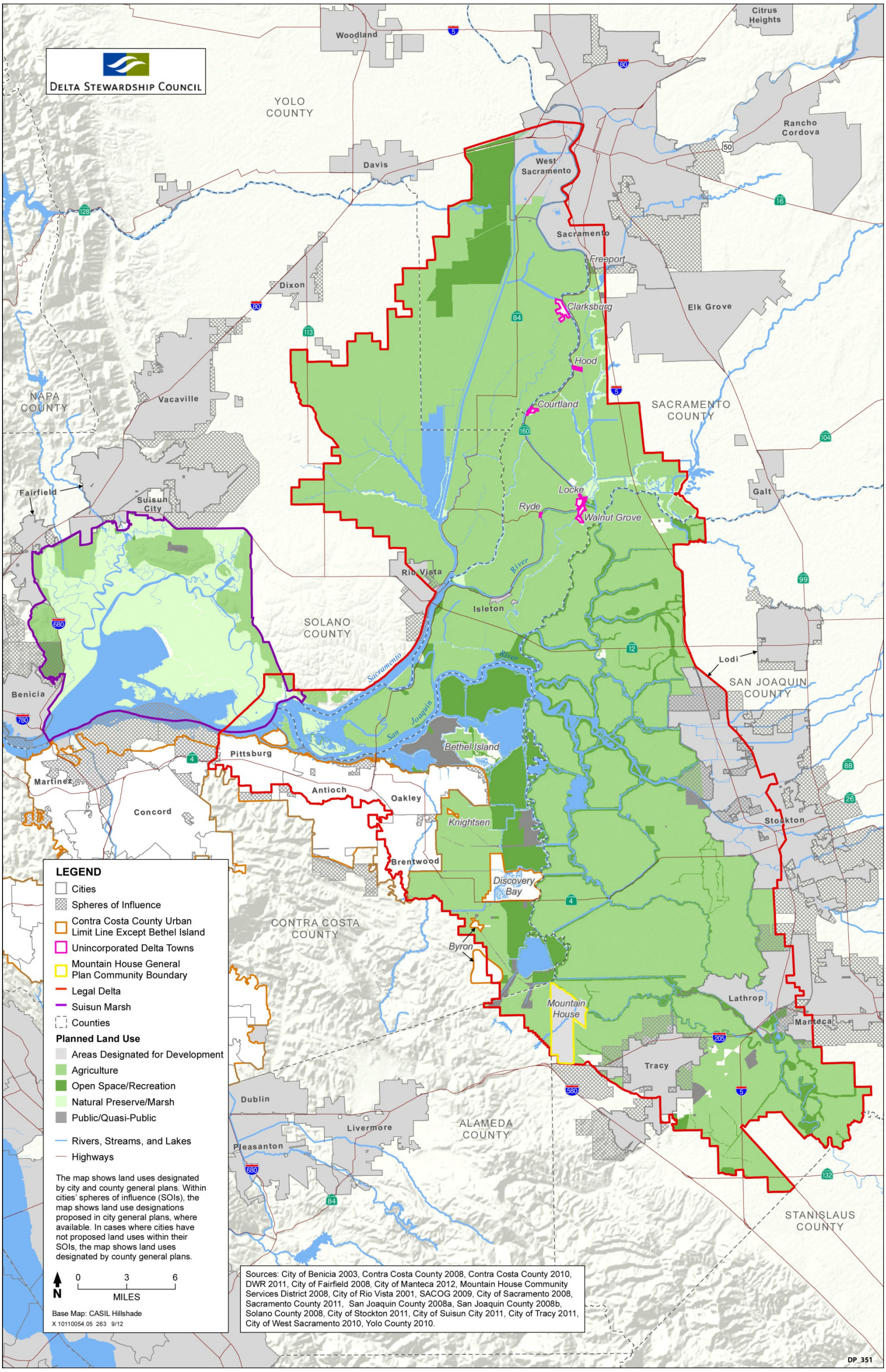


**Figure 5-2**
**Delta Communities**

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or development regulations are unpredictable or too burdensome. Although improvements to these communities' historic structures are exempt from Federal Emergency Management Agency (FEMA) floodproofing standards (FEMA 2008), flood risks, floodproofing standards for new development, and flood insurance costs can be barriers to business investment or development.

# Climate Change

Historical, cultural, and economic resources of the Delta are subject to the impacts of climate change. An increase in sea level of up to 55 inches is projected to occur by 2100. Along with increased flood risk associated with rising sea levels and changes in runoff timing and intensity, levees, highways and other infrastructure that support the Delta's communities and economy will be threatened. In addition, land use planning is complicated by the prospect of rising sea levels and increased flooding that may accompany climate change. Rising water levels and more severe flooding will increase hazards to land uses and developments, and confound efforts to identify safe locations for new homes and businesses.

Impacts on agriculture, such as decreasing revenues, are also likely if Delta water supplies increase in salinity (Lund et al. 2007) and water demand increases. Impacts on agriculture from warming temperatures could reduce yields and increase vulnerability to weeds and pests (CNRA 2008), as well as increase soil subsidence rates through increased rates of organic matter oxidation. In addition, Delta recreation and tourism could be affected by changes in Delta fisheries.

# Land Use Planning in the Delta and Suisun Marsh

The land uses in the Delta are the result of myriad decisions made by residents, businesses, investors, and others since its settlement. These decisions are shaped today by local and State agencies that are responsible for planning or regulating land use or development. Primary authority for land use planning rests with the Delta's twelve cities and five counties, which are required to adopt comprehensive long-range general plans to guide development. In addition, the Legislature has authorized three State agencies to oversee land use planning by local governments or directly regulate land use actions in the Delta and the Suisun Marsh: the Council, the DPC, and the San Francisco Bay Conservation and Development Commission (BCDC). The Council and the DPC have concurrent jurisdiction in the Delta's Primary Zone, while the Council and BCDC have concurrent jurisdiction in the Suisun Marsh. The DPC and BCDC must ensure that local land use planning is consistent with their own laws and plans, and must also certify that any covered actions that they carry out or approve, such as updating their plans, are consistent with the Delta Plan (see Table 5-1).

**Table 5-1**
**State Agencies with Land Use Jurisdiction in the Delta**

| State Agency | Law | Plan |
|---|---|---|
| Delta Stewardship Council | Delta Reform Act of 2009 | Delta Plan |
| Delta Protection Council | Delta Protection Act of 1992 | Delta Land Use and Resource Management Plan for the Primary Zone of the Delta |
| San Francisco Bay Conservation and Development Commission | McAteer-Petris Act of 1965, Suisun Marsh Preservation Act of 1977 | San Francisco Bay Plan, Suisun Marsh Protection Plan |

### *The Council's Role*

The Legislature has declared that existing developed uses and future developments that are carefully planned and developed consistent with Delta Reform Act policies are essential to Californians' economic and social well-being, especially those who live or work in the Delta. The Delta Reform Act includes six goals for managing land use (Water Code section 85022(d)):

1. *Protect, maintain, enhance, and, where feasible, restore the overall quality of the Delta environment and its natural and artificial resources.*
2. *Ensure the utilization and conservation of Delta resources, taking into account the social and economic needs of the people of the state.*
3. *Maximize public access to Delta resources and maximize public recreational opportunities in the Delta consistent with sound resources conservation principles and constitutionally protected rights of private property owners.*
4. *Encourage state and local initiatives and cooperation in preparing procedures to implement coordinated planning and development for mutually beneficial uses, including educational uses, in the Delta.*
5. *Develop new or improved aquatic and terrestrial habitat and protect existing habitats to advance the goal of restoring and enhancing the Delta ecosystem.*
6. *Improve water quality to protect human health and the environment consistent with achieving water quality objectives in the Delta.*

Goals 2, 3, and 4 are addressed in this chapter.

In addition, Water Code section 85305(a) provides, in part:

> *The Delta Plan shall attempt to reduce risks to people, property, and state interests in the Delta by promoting…appropriate land uses.*

Water Code section 85022(a) directs "state and local land use actions identified as covered actions pursuant to section 85057.5 be consistent with the Delta Plan" and that the section's "findings, policies, and goals apply to Delta land use planning and development." Thus, the Council's role in reviewing land use actions is to consider the full range of State interests in the Delta, including the economic and social well-being of Californians, environmental protection, use and conservation of resources, public access and recreation, habitat restoration and enhancement, water quality, and flood protection. The DPC *Land Use and Resource Management Plan for the Primary Zone of the Delta* (2010) guides land uses in the Primary Zone. Local government general plans must be consistent with the DPC's land use and resource management plan. Local government land use actions may be appealed to the DPC for review of consistency with the land use and resource management plan. Chapter 2 describes the special role that the Delta Reform Act gives to the DPC to review and comment on significant projects or programs, such as ecosystem restoration or flood control projects, under consideration by the Council. The referral of projects to DPC for its review and comment and the membership of the DPC chair on the Council assure that the Delta communities will have a voice concerning actions effects on existing and planned uses of the Delta.

The DPC's management plan states these goals for land use in the Primary Zone (DPC 2010):

> *Protect the unique character and qualities of the Primary Zone by preserving the cultural heritage, strong agricultural/economic base, unique recreational resources, and biological diversity of the Primary Zone. Direct new non-agriculturally oriented*

> *non-farmworker residential development within the existing unincorporated towns (Walnut Grove, Clarksburg, Courtland, Hood, Locke, and Ryde).*
>
> *Encourage a critical mass of farms, agriculturally-related businesses and supporting infrastructure to ensure the economic vitality of agriculture within the Delta.*

DPC's management plan also acknowledges the importance of balancing urban development with the protection of agriculture and other rural lands (DPC 2010):

> *The periphery of the Delta is undergoing rapid urbanization associated with substantial population growth. Current and future population growth increases the demand for developable land, particularly in areas near the Bay area, Stockton, and Sacramento. This demand results in the conversion of open space, primarily agricultural land, to residential and commercial uses. Increasing concern exists regarding the potential for urbanization and projects in the Secondary Zone to impact the Primary Zone.*

Thus, the DPC's role in land use review is primarily to protect agricultural land, recreational uses, and biological diversity in the Delta's Primary Zone from urban development, direct most residential development within existing towns, and ensure the economic vitality of Delta agriculture.

### BCDC's Role

The BCDC was established by the McAteer-Petris Act in 1965. The agency prepared the *San Francisco Bay Plan* to guide the conservation of the Bay's natural resources and development of its shoreline. In 1977, BCDC's authority was expanded to protect wildlife use and retain biological diversity of the Suisun Marsh under the Suisun Marsh Preservation Act. With respect to land use, the Act (Public Resources Code section 29003(e) and (f)) calls for:

- Development and implementation of plans and policies to protect the marsh from degradation by excessive human use
- Definition and establishment of a buffer area consisting of upland areas that have high wildlife values themselves and also contribute to the integrity and continued wildlife use of the wetlands within the marsh

BCDC's *Suisun Marsh Protection Plan* (SMPP) guides land use and development in the Marsh (BCDC 1976). The SMPP designates an 89,000-acre primary management area of waterways, including Suisun, Honker, and Grizzly bays, tidal marshes, and managed wetlands; and a buffer zone of upland grasslands and agricultural land composing a 22,500-acre secondary management area. Both the Bay Plan and the SMPP apply to Suisun Marsh, and the SMPP controls if there is a conflict. BCDC also is the federally designated state coastal management agency for the San Francisco Bay segment of the California coastal zone. The federal Coastal Zone Management Act (CZMA) empowers BCDC to ensure that federal projects and activities are consistent with BCDC's laws and policies. A marsh development permit from BCDC is required to place fill, dredge, construct a structure, substantially change land use, subdivide property, or grade land in the wetlands and waterways of the Suisun Marsh.

BCDC retains planning and permitting authority in the primary management area of the Marsh, but shares authority in the secondary management area with local government agencies and special districts. The Suisun Marsh Preservation Act authorizes BCDC to delegate authority to issue marsh development permits to local agencies and special districts with jurisdiction in the Marsh after BCDC has certified that their components of the Suisun Marsh Local Protection Program (LPP) are consistent with the Suisun Marsh Preservation Act and the Suisun Marsh Protection Plan. BCDC first certified all the components of the LPP in the early 1980s. LPP components can be amended only after BCDC holds a public hearing and

votes for recertification. Permits granted by local governments for projects in the secondary management area under the authority of their LPP component may be appealed to BCDC.

Thus, BCDC's role in the Suisun Marsh is to protect the unique natural resources of the Suisun Marsh from the potential adverse effects of development by directly regulating land use in the primary management area of the Marsh and working with local government to regulate land use in the secondary management area.

### *Other Agency Jurisdictions*

Land use and development in the Delta are also affected by other State and federal agencies. The State Lands Commission has jurisdiction over hundreds of miles of waterways in the Delta, and issues leases for in-stream structures and uses. The Central Valley Flood Protection Board issues permits to encroach in floodways and State flood management facilities. The State and regional water quality control boards control discharges from development to public waters. The California Department of Fish and Game regulates projects that affect waterways or habitats of State-listed endangered or rare species.

Among federal agencies, FEMA has a significant effect in the region by establishing floodproofing standards for new development in communities that participate in its National Flood Insurance Program. The U.S. Army Corps of Engineers oversees the filling of public waters and wetlands. The U.S. Fish and Wildlife Service and the National Marine Fisheries Service regulate development that affects essential fish habitat or federally listed endangered or rare species. Some Delta landowners see these complex rules as a barrier to the development and use of private land. As described in Chapter 2, the Delta Plan interagency implementation committee will improve coordination among regulatory agencies to ease some of these barriers.

## Minimizing Land Use Conflicts

Poorly sited or designed development can also encourage additional people to place their lives and property at risk as well as restrict ecosystem restoration opportunities. (See Chapter 4 and Chapter 7.) Many uses are already in hazardous locations. For example, about 116,000 residential structures are located in the 100-year floodplain of the Delta, mostly near Sacramento, West Sacramento, and Stockton. Almost 8,000 residences are below mean higher high water (DWR 2008). Land use planning is complicated by the prospect of rising sea levels and increased flooding that may accompany climate changes. Some necessary water facilities, ecosystem restoration projects, or flood management facilities may need to be located on farmlands or in other locations that are inconsistent with local land use plans. State and federal agency projects are not required to secure approvals from local governments or the DPC, but nevertheless should avoid conflicts with existing and planned land uses when feasible. These projects can alter scenic views, make noise, create conflicts with adjoining land uses, generate traffic, or disrupt transportation routes if not planned carefully. Fully considering local resident views and local government positions can minimize misunderstandings, reduce avoidable conflicts, and build trust and cooperation.

# The Delta's Economy

This section provides an overview of the primary sectors that make up the Delta economy. Like its population, the Delta's economy is primarily urban and service oriented. The Delta is a diverse, growing, and economically integrated region that in many respects is outperforming the state as a whole. Transportation, warehousing, and utilities are important sectors. Construction, housing, and real estate are also important, but have declined with the recent recession. Retail, education, health care, and accommodations are the top employment sectors. The Primary Zone is less diverse, and depends on agriculture and, to a lesser extent, recreation and tourism. Stockton, Sacramento, and other nearby urban

areas provide employment for professionals who commute from the Primary Zone, and lower-skilled workers commute into the Primary Zone to jobs in agriculture and food processing.

# Agriculture and the Delta's Economy

The total value of Delta crops was approximately $702 million in 2009. Truck and vineyard crops account for 54 percent of crop revenues on 18 percent of acreage. The top five Delta crops in terms of value were (1) processing tomatoes, (2) wine grapes, (3) corn, (4) alfalfa, and (5) asparagus. The highest per-acre values in the Delta come from truck crops mainly situated in the southern Delta and deciduous crops principally located in the northern Delta. Table 5-2 summarizes top crops by gross value and acreage.

**Table 5-2**
**Top Five Crops in the Delta**

| Position (2009) | By Gross Value | By Acres Grown |
|---|---|---|
| 1 | Tomatoes | Corn |
| 2 | Wine Grapes | Alfalfa |
| 3 | Corn | Tomatoes |
| 4 | Alfalfa | Wheat |
| 5 | Asparagus | Wine Grapes |

Source: DPC 2012b

When related value-added manufacturing such as wineries, canneries, and dairy products are included, the total economic impact of Delta agriculture is 13,179 jobs, $1.059 billion in value added, and nearly $2.647 billion in economic output in the five Delta counties. Including value-added manufacturing, the statewide impact of Delta agriculture is 25,125 jobs, $2.135 billion in value added, and $5.372 billion in economic output (DPC 2012b).

See the following section on Agriculture in the Delta for a more detailed description of agriculture and its contribution to the Delta's way of life and economy.

# The Delta's Recreation and Tourism Economy

Recreation and tourism are important contributors to the Delta's economy. DPC's ESP estimates that Delta recreation and tourism support 3,000 jobs with $100 million in wages in the Delta counties; $312 million in direct expenditures in the Delta by anglers, hunters, boaters, picnickers, campers, hikers, bicyclists, visitors driving for pleasure, and others who recreate in parks, wildlife areas, trails, or roadways; and a total of $175 million in value added to the regional economy. Statewide, Delta recreation and tourism support 5,200 jobs and contribute $348 million in value added.

Despite these significant contributions, the Delta's recreation and tourism economy has been relatively flat since the 1990s. The recreation and tourism sectors suffer from limited recognition and understanding of the Delta and the lack of an overall marketing strategy for the region. Brannan Island State Recreation Area, the best improved state park, is scheduled to close due to budget constraints. Many other public lands lack facilities for visitors. Motor boat registrations have declined in the region. Participation in fishing and hunting has declined too. Private-sector recreation and tourism businesses are stagnant, with employment unchanged over two decades and little investment in new facilities. Inadequate levees leave key visitor attractions, including the legacy communities, at risk, as described in Chapter 7. Flood risks,

flood insurance, and difficulties in designing attractive but floodproof visitor facilities hinder new investment in recreation and tourism businesses.

## Other Contributors to the Delta Economy

The Delta's infrastructure not only supports its residents and businesses, but also includes facilities that transport people and products through the Delta from the Sierra on the east to the Bay Area on the west, or from the Sacramento Valley on the north to the San Joaquin Valley on the south. The Delta's economy benefits from the surface transportation, utilities, and other infrastructure that crisscross the Delta to serve local needs, provide access to regional urban markets, and, in turn, link the Delta's economy to national and global markets.

The Delta's most recognizable infrastructure components are its levees, which are described in Chapter 7. Key transportation corridors include Interstates 80, 5, and 205; State Routes 4, 12, and 160; and railroads operated by Union Pacific, Burlington Northern Santa Fe, Amtrak, and the Altamont Commuter Express. County roads are important for transporting crops to market and for local circulation.

The ports at Stockton and West Sacramento are served by deep water shipping channels that the U.S. Army Corps of Engineers maintains along the San Joaquin and Sacramento rivers and the Sacramento Deep Water Ship Channel. These ports connect to San Francisco Bay and ultimately to the Pacific Ocean, providing a valuable asset to Delta communities. Rice and other crops grown in the Central Valley and other products are exported across their docks, and fertilizer and other bulk commodities are imported. The Maritime Highway Corridor is a recent initiative to expand maritime traffic between the Delta ports and the Port of Oakland, in part to reduce truck travel and its air quality impacts. Areas for water-dependent industries are located in Collinsville, Rio Vista, Pittsburg, and Antioch, where they benefit from the Delta's abundant and high-quality water.

Other infrastructure in the Delta includes water, drainage, and wastewater treatment facilities. Stockton and Sacramento draw drinking water at least partly from the Delta and discharge wastewater there. The Delta is the site of forebays, pumps, and water control structures of the Central Valley Project and State Water Project, as described in Chapter 3. Aqueducts and other facilities serving the East Bay Municipal Utilities District, the Contra Costa Water District, and other areas are located in the Delta. Natural gas wells in the Delta fuel power plants and other energy uses. Wind turbines and other renewable power sources also are located in the Delta. Electric transmission lines and fuel pipelines cross the Delta to carry energy to energy users. Communications towers support broadcasting and telecommunications. These facilities need to be planned carefully to avoid conflicts with water supply, ecosystem restoration, or flood management facilities and existing and planned land uses.

## Delta Investment Fund

In 2009, the Legislature established a Delta Investment Fund in the State Treasury (Public Resources Code section 29778.5). DPC's ESP recommends forming a regional agency to manage the fund and to implement and facilitate economic development efforts, either through expansion of the DPC's authority or creation of a joint powers authority composed of local governments.

# Agriculture in the Delta

Agriculture is among the qualities that define the Delta as a place. This section provides additional detail about the role of agriculture and discusses issues such as subsidence and water quality that must be considered in policy making. Creating farmland was the purpose for the Delta's initial reclamation and for the maintenance of its levees and water controls. Agriculture dominates the Delta landscape, as seen in Figure 5-3, and provides the setting for Delta residents' communities, homes, and job sites. Agriculture

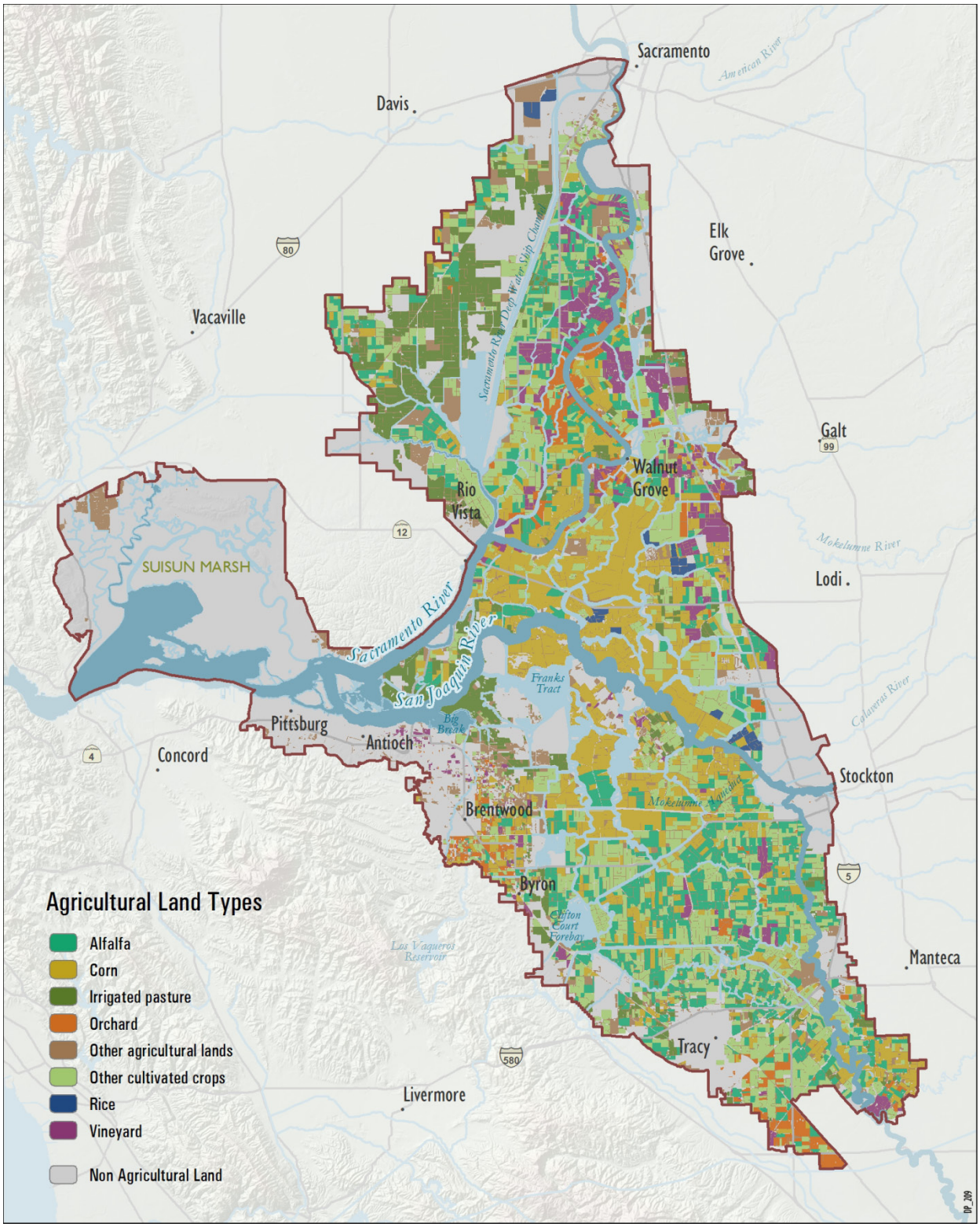



**Figure 5-3**
**Agricultural Land Use in the Delta**
*Source: DOC 2008*

benefits from the Delta's productive soils, special climate, and abundant water. Delta farms provide a local source of nutritious food and forage for nearby dairies. Farming, food processing, and related industries contribute significantly to the economy, particularly in the Delta's Primary Zone, where they predominate economic output, employment, and value-added activities. Characteristic local crops, such as pears, asparagus, and dried beans, are celebrated at annual festivals and county fairs.

Agriculture in the Delta depends on high-quality farmland. Prime farmlands with the best soils comprise about 400,600 acres, close to 85 percent of all farmland in the Delta. Another 101,760 acres are unique farmland, farmland of statewide or local importance, or farmland of potential local importance (DOC 2009). Because of the fertile peat soils and the moderating marine influence, Delta agriculture's per-acre yields are almost 50 percent higher than the state's average (Trott 2007). As described in Chapters 3 and 4, reliable, abundant fresh water is also an essential contributor to Delta agriculture.

Field crops and pasture cover most of the Delta agricultural acreage. In 2010, about one-fourth of farmland in the Delta was corn, much of which is harvested as silage and used in the dairy industry. Alfalfa, the second most widely planted crop, covered about 20 percent of the Delta's farmland. Together, these croplands comprise about 10 percent of the irrigated acreage supporting California's dairy industry. Barley, wheat, and oats were planted on about 69,000 acres. About 41,000 acres of irrigated pasture are used by livestock. Truck crops, including processing tomatoes, asparagus, cucumbers, potatoes, pumpkins, and melons, covered nearly 52,500 acres. Almost 31,000 acres support vineyards. Orchards of pears, almonds, walnuts, and cherries grow on about 17,000 acres (DPC 2012b).

The DPC ESP forecasts that high-value crops, including truck, deciduous, and vineyard crops, are likely to increase in coming decades, potentially increasing farm incomes and economic output. Lower value crops, including field and grain crops, are likely to decline. Some traditional Delta crops are losing markets due to changing consumer preferences and competition from other regions. For example, the Bartlett pear market peaked around World War I, when 50 percent of all Bartletts were produced in California, mainly in the Delta. Until 1930, the Delta was also the world's asparagus capital, producing 90 percent of the globe's production (DPC 2011). Today, a mere 7,200 acres of asparagus fields remain. But growth of wine grapes and other crops, and expansion of local crop processing, particularly winemaking, could enhance agriculture's contribution to the Delta's economy (DPC 2012b). Urban development, ecosystem restoration, or flood control facilities that take farmland out of production could hasten the decline of agriculture.

Value is added to Delta crops when they are processed for ease of use or shipment. Examples include food and beverage manufacturing, such as the tomato canneries or sugar processors that were prominent twentieth century Delta businesses. Today's opportunities include winemaking or emerging sectors such as olive pressing. Special local markets that serve consumers in the Delta counties or Bay Area, such as farm-to-school programs or community-supported agriculture, also may provide new markets for some Delta crops. Facilities that improve the region's capacity to aggregate and distribute its crops to these local markets may enhance Delta agriculture (SACOG 2011). Consistent interpretation and application of regulations about food processing and distribution could help local producers and distributors establish facilities (Sumner and Rosen-Molina 2011).

## Protecting Productive Farmlands

Although agriculture is the principal land use in the Delta, the total area of agricultural lands (including fallow lands) in the combined Delta and Suisun Marsh area has declined from about 549,420 acres in1984[21] to 460,450 acres in 2008, and the percentage of agricultural land has decreased from about 65 percent of this combined area in 1984 to about 55 percent in 2008 (DOC 1984, DOC 1988, DOC 1990, DOC 2008). An additional 28,000 acres of farmland may be lost in the near future under current local

[21] Data for Sacramento and San Joaquin counties were not available in the 1984 DOC report; thus, data for these counties were taken from the 1988 and 1990 reports, respectively.

government general plans. The Delta Plan acknowledges this loss since it focuses growth within existing city boundaries. However, any further loss of farms to urban development is unacceptable. The continued viability of agriculture in the Delta will require the protection of sufficient farmland and fresh water to support commercially viable operations and provide ways for agriculture to coexist with habitat restoration. Policies DP P1 and DP P2 acknowledge the importance of protecting these lands. The DPC and local governments play key roles in the protection of these lands.

The loss of some farmland to urbanization, habitat, and flooding is inevitable, the DPC ESP concludes; but continued shifts to higher-valued crops and value-added activities, as well as planning restoration in appropriate locations, may help compensate if land loss is not too great. As described in Chapter 4, elevations, locations, and other factors are key determinants of the optimal sites for ecosystem restoration. When these restoration areas include farmlands, achieving the coequal goals of restoring the Delta ecosystem and improving water supply reliability may make some loss of productive agricultural lands unavoidable. Some conveyance alternatives could take farmland out of production, too. Improving flood control facilities may also unavoidably affect some farmland.

### *Subsidence*

The reclamation of Delta islands and their cultivation for agriculture initiated a process of land subsidence, mostly due to oxidation of peat soils, but also from wind erosion. Drainage and cultivation dried the saturated peat, reducing its volume by approximately 50 percent. Early cultivation practices also included burning, which further reduced the volume of the soil and altered its structure. Over time, long-term oxidation reduced about 2.6 to 3.3 billion cubic yards of these peaty soils to small particles and gases. As a result, much of the central Delta today is below sea level, with some islands 12 to 15 feet below sea level. Many islands now more closely resemble bowls surrounded by water, with high sides defined by levees and deep, hollowed-out bases. Although subsidence has slowed in some areas, other regions of the Delta continue to lose soil to oxidation and wind erosion at a rate of 5 to 15 tons/acre/year. It is projected that some areas of the Delta could subside an additional 2 to 4 feet by 2050 (Deverel and Leighton 2010), resulting in the loss of up to 350 to 500 million cubic yards of soil at a rate of 5 to 15 tons/acre/year. (See sidebar, Subsidence in the Delta.)

Land subsidence impairs Delta agriculture, not only because of soil loss, but also by increasing the difficulty of maintaining drainage systems and levees. As described in Chapter 7, subsidence makes levees less stable and increases flood risks. The costs to recover a flooded island could be great. Some suggest that many islands would cost more to reclaim after flooding than the value of the land for agriculture. In 1998, 4,200 acres of farmland were lost when Liberty Island flooded and was not reclaimed (Reclamation District 2093 2009). Other once-farmed islands that were not reclaimed after flooding include Big Break, Franks Tract, and Mildred Island (Suddeth et al. 2010).

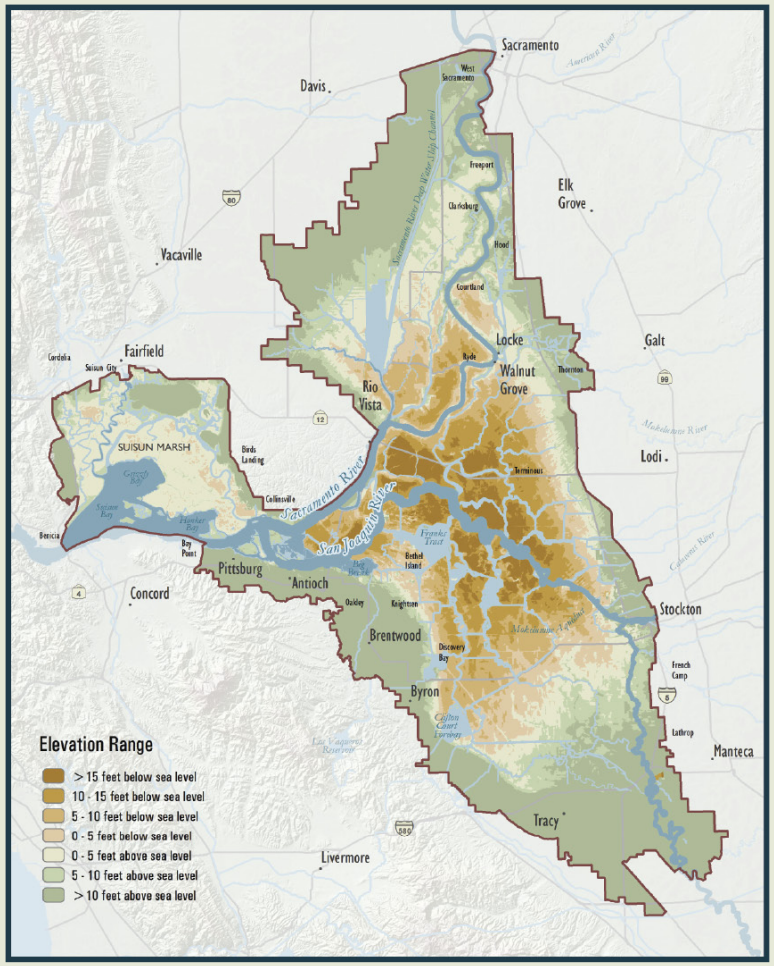
Oxidation of peat soils also liberates vast quantities of carbon dioxide ($CO_2$), contributing to global warming (Armentano 1980). Oxidation of the Delta's agricultural soils emits about 4.4 to 5.3 million tons of $CO_2$ annually (Delta Conservancy 2012). For comparison, a typical 500-megawatt coal-fired power plant emits 3 million tons of $CO_2$ per year.

The potential to retire croplands on deeply subsided islands and manage them to rebuild peat and sequester carbon is sometimes pondered as an alternative to continued farming (Armentano 1980). State and federal agency investigations of alternative land management practices show that soils can be rebuilt, reversing subsidence and sequestering carbon, with some appropriately managed activities, such as tule farming (Miller 2008). Recent actions by the California Air Resources Board, under the California Global Warming Solutions Act of 2006 (Health and Safety Code section 38500 et seq.), provide for the development of a carbon market program, whereby certain activities may be considered acceptable for providing offset credits. Although this program is still in its initial stages, future opportunities may exist for Delta farmers to gain offset credits for growing plants that promote subsidence reversal and sequester carbon.

## SUBSIDENCE IN THE DELTA

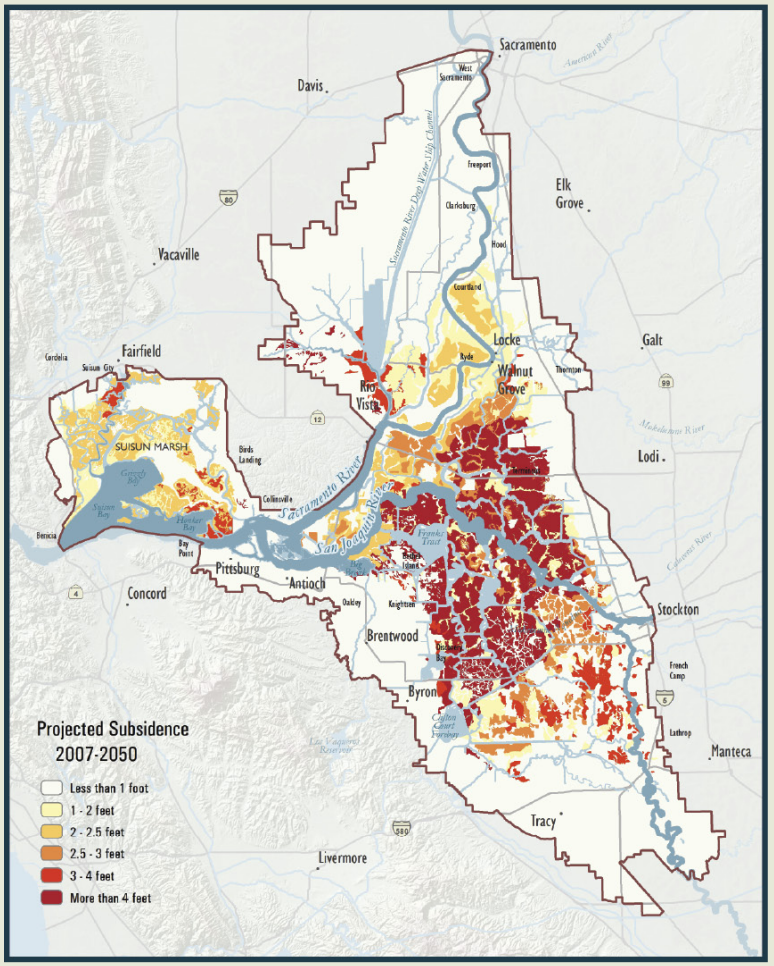
Oxidation of peat soils through natural processes and human activities has caused the land elevation in the Delta to drop. Much of the central Delta is now at or below sea level. Future subsidence has been projected in these areas. As subsidence progresses, levees must be continually maintained, strengthened, and periodically raised to support increasing hydraulic stress.

### Current Delta Elevations




Source: DWR 2009

### Projected Subsidence, 2007-2050




Source: adapted from Deverel and Leighton 2010

### *Agriculture and Water Quality*

The DPC's ESP provides scenarios for how potential declines in water quality that could accompany some water conveyance, ecosystem restoration, or water quality actions could affect Delta agriculture. The potential for the agricultural economy to grow in the Delta will depend, in part, on the protection of the Delta's abundant fresh water, and the policy response. Chapter 6 contains a detailed discussion of water quality and the Council's strategies for water quality.

### *Wildlife-friendly Agriculture*

Agriculture has the potential to coexist with and even enhance restoration of the Delta ecosystem despite the conversion of some farmland to habitat. Techniques that integrate management of agriculture and wildlife habitat, often called "wildlife-friendly agriculture," include crop rotations that include soil-building crops or fallowing; integrated pest management to reduce pesticides; cover crops; the strategic use of permanent crops, such as pasture, to reduce soil disturbance and oxidation; and conservation tillage for field and row crops (Trott 2007). Some native species have adapted to using agricultural lands as habitat in place of tidal marshes, grasslands, and seasonal wetlands. Rice and other flood-irrigated crops support a range of wildlife, especially waterfowl, shorebirds, wading birds, and giant garter snakes. Swainson's hawk, other raptors, and coyote feed on small mammals and ground-nesting birds that inhabit alfalfa fields and other irrigated pastures. Waste grain also provides food for species such as ring-necked pheasant and greater sandhill crane (Trott 2007).

To support Delta agriculture and species recovery, farmers in the Delta are encouraged to implement management practices to maximize habitat values. Some U.S. Department of Agriculture (USDA) programs provide financial incentives for landowners to manage natural areas on their properties, including the Wildlife Habitat Incentives Program, the Environmental Quality Incentives Program, and the Conservation Reserve Program. The California Department of Fish and Game, U.S. Fish and Wildlife Service, and Delta Conservancy also can assist landowners who want to enhance wildlife habitat.

As described in Chapter 4, safe harbor agreements can assure these landowners that the presence of an endangered species on their property will not result in restrictions on activities on their land. Facilitating and creating standard rules for these agreements with Delta landowners may encourage more landowners to participate in conservation programs. Restoring wildlife and fish through wildlife-friendly agriculture can help achieve ecosystem restoration objectives while reducing the loss of farmland to habitat restoration.

### *Agritourism*

Agritourism is another opportunity to add further value to the Delta economy from agricultural activities. Defined as recreational, educational, and other visits to working farms, agritourism is a small but fast-growing source of income for farms in the region and a growing segment of the Delta economy. In the Delta, agritourism destinations may include wineries, on-farm duck clubs, farm stands, and other places. Agritourism was estimated by USDA to generate $4 million in income for farms in the five Delta counties in 2007 (DPC 2012b). For farmers who choose to participate, agritourism can provide additional income, an opportunity to sell farm products directly to consumers, or alternative uses for unproductive lands or buildings. The Discover the Delta Foundation's Delta Discovery Center combines several agritourism functions, including a produce stand, wine sales, and interpretive features that teach people about the Delta's importance (Sumner and Rosen-Molina 2011).

# Recreation and Tourism in the Delta

This section provides an overview of recreation and tourism in the Delta. DPC estimates that about 12 million activity days of recreation occur in the Delta annually (DPC 2012b). Recreational users originate from both within and outside the Delta. Visitors value the wide expanses of open land, interlaced waterways, historic towns, and the lifestyle offered by the Delta. The region's mix of land and water offers diverse recreation experiences and facilities, including fishing, boating, bird watching, other nature activities, hunting, enjoying restaurants, campgrounds, picnic areas, and historic towns and buildings. Recreation also benefits from the Delta's open, agricultural landscape, with its scenic vineyards, orchards, and farmsteads. These are often backed by views of Mt. Diablo or the Montezuma Hills on the horizon, which provide a setting for outdoor photography, a scenic bike ride, or a drive along the Delta's roads. Special events draw visitors to taste local produce and wine and learn about this unique place. These recreation opportunities are described in more detail in the DPC's ESP and in the Recreation Proposal that California State Parks submitted to the Council and DPC pursuant to Water Code section 85301(c)(1). Figure 5-4 shows the locations of State parks and other protected lands in the Delta. Figure 5-5 shows the variety and distribution of some of these opportunities in the Delta.

The DPC ESP and the California State Parks Recreation Proposal both foresee opportunities to increase recreation and tourism in the Delta as the population of surrounding areas grows, especially with improved branding and marketing. Both reports emphasize improvements of "gateways" to the region on the Delta's urban edges and "base camps," focal points for visitors inside the Delta at destinations such as resorts, legacy communities, and parks. They also recommend diversifying dispersed outdoor recreation "adventures" at points of interest and activity areas for boaters, nature area visitors, and others. Ecosystem restoration, as described in Chapter 4, can enhance opportunities for nature-based recreation and boating, especially by nonmotorized boats, according to both reports.

The California State Parks Recreation Proposal recommends enhancing State parks and other State agencies' properties and programs to create a network of recreation areas in the Delta, and encourages improvement of public access along the shorelines of growing Delta communities, consistent with Water Code section 85022(d)(3). It recommends that recreation improvements be provided in new water management and habitat restoration projects unless they are inconsistent with the project purposes, in conformance with Water Code section 11910–11915.5, or public safety. DPC's ESP also recommends that recreation facilities be included in ecosystem restoration projects when feasible. Additionally, the ESP emphasizes growing the tourism and recreation economy through private, visitor-serving businesses, and collaboration and partnerships between public- and private-sector recreation providers.

Future prospects for Delta recreation and tourism will be strongly influenced by decisions about the Delta ecosystem, water quality, levee improvements, and governance, including land use and environmental standards. The Bay Delta Conservation Plan (BDCP), Delta water quality plans, levee investments, and other decisions yet to be made can all significantly affect recreation and tourism.

## Boating

Navigable waterways in the Delta and Suisun Marsh are available for public access and provide many recreational opportunities. Boating activities total more than 6.4 million visitor days annually, composed of 2.13 million annual boat trips with a projected growth to 8 million visitor days by 2020, according to the Department of Boating and Waterways. Almost 100 marinas, with more than 11,000 boat slips, and almost 60 launch ramp lanes support boating in the Delta and Suisun Marsh (DBW 2002). Popular activities include powerboating on the Sacramento and San Joaquin rivers, paddling sloughs and channels in canoes and kayaks, and sailing on the open water of Suisun and Honker bays. About 116,000 boats are registered in the five Delta counties, creating a large pool of potential recreationists (California State Parks 2011).

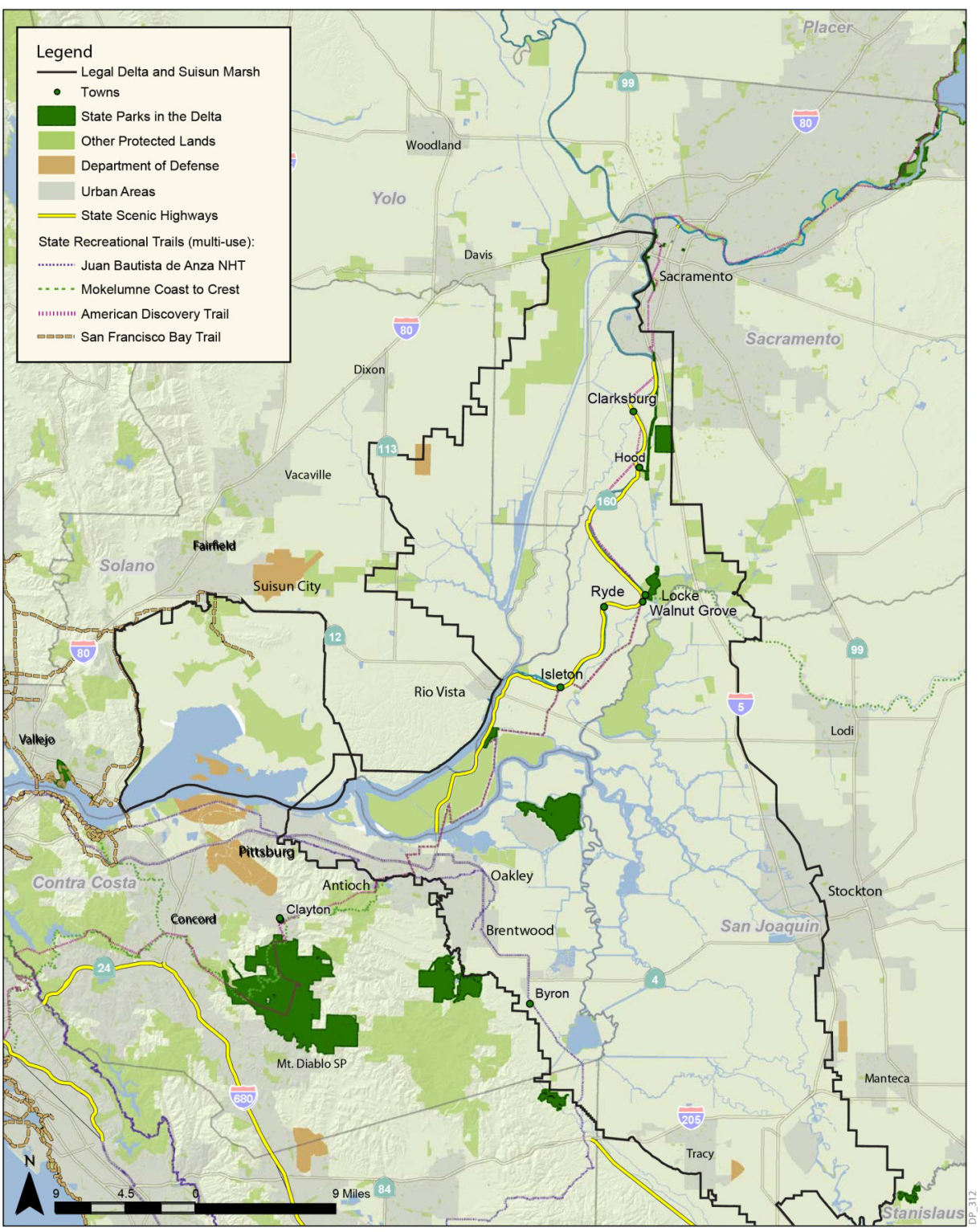



**Figure 5-4**
**State Parks and Other Protected Lands**
*Source: California State Parks 2011*

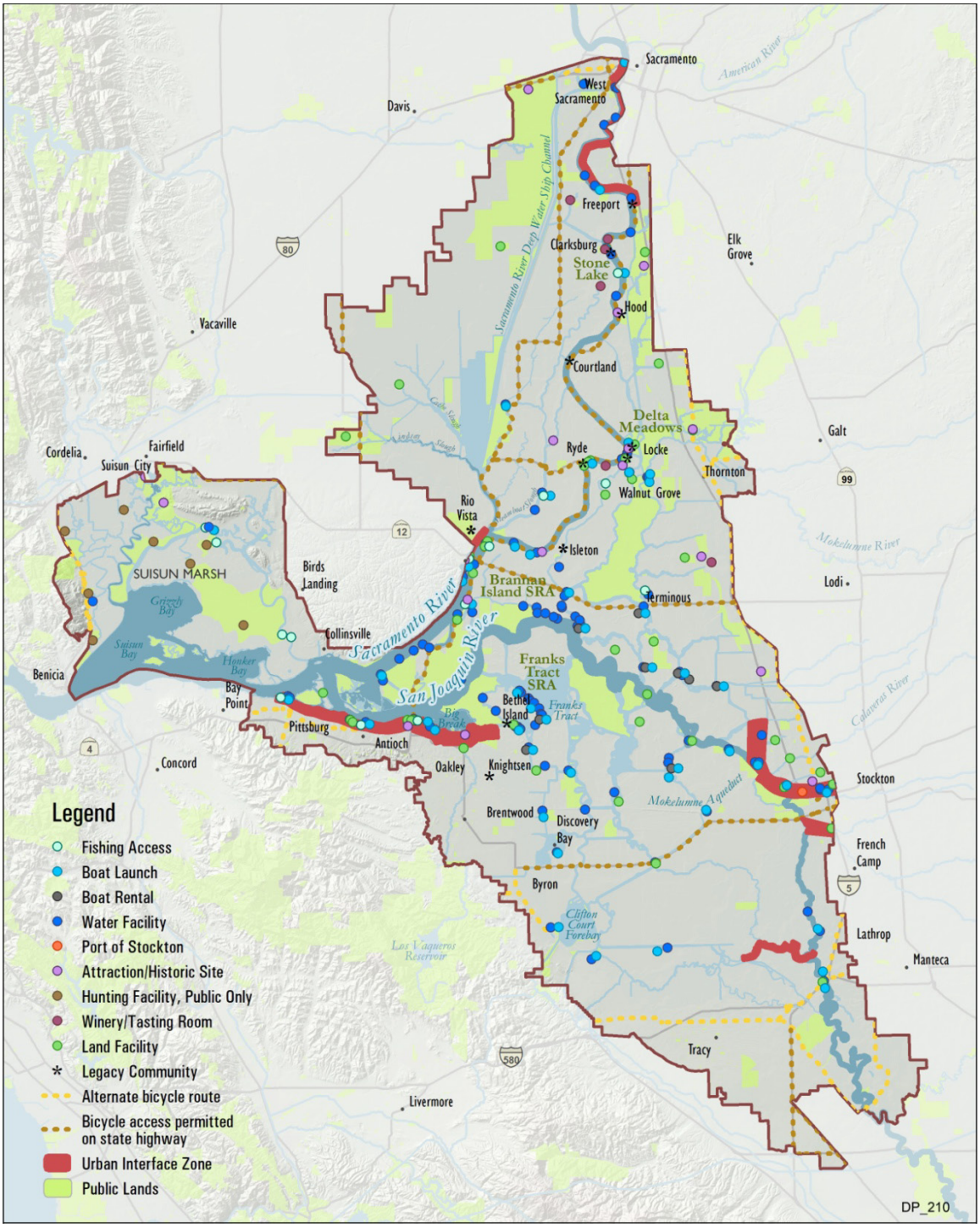



**Figure 5-5**
**Major Delta Resources and Recreation**
*Sources: California Chambers and Visitors Bureau 2010, DBW 2011, California Resources Agency 2007, DPC 2006, Discover the Delta Foundation 2010, DFG 2009*

# Public Recreation Lands

Public lands comprise about 10 percent of the Delta. State and local parks, State or national wildlife areas and refuges, ecological preserves, and other public lands provide important sites for relaxing outdoors, a family picnic, camping, and other outdoor recreation in the Delta. California State Parks owns three properties in the Delta: Brannan Island State Recreation Area and properties at Locke Boarding House-Delta Meadows and Stone Lakes. The California Department of Fish and Game and the State Lands Commission also manage important State-owned recreation areas. The largest State ownerships are the DWR lands on Sherman and Twitchell islands, which are available seasonally for hunting.

Table 5-3 summarizes the agency responsibilities, recreation-related opportunities, and examples of recreation facilities in the Delta managed by the State. City and county parks, including those of the East Bay Regional Park District, also provide important public recreation areas. These public lands are increasingly important for Delta recreation because privately owned riverbanks and levees, which comprise most of the Delta's shoreline, are increasingly posted to prevent trespassing, reducing access to rivers and sloughs for bank fishing, nature observation, and outdoor relaxation.

**Table 5-3**
**State Agencies with Responsibility for Recreation in the Delta**

| State Agency Name and Role | Recreation-related Facilities and Opportunities | Delta and Suisun Marsh Examples |
|---|---|---|
| **California State Parks** offers high-quality outdoor recreation and educational opportunities, protects natural and cultural resources, awards grants for local parks, and oversees the California Recreational Trails System. | Day-use picnic areas, campgrounds, marinas, trails, excursion railroads, interpretive services, heritage resource protection, restrooms | Brannan Island State Recreation Area, Old Sacramento State Historic Park, American Discovery Trail |
| **California Department of Fish and Game** manages hunting and fishing; operates public lands for wildlife conservation, hunting, fishing, environmental education, and nature study; and encourages private conservation. | Ecological reserves, wildlife areas, boat launches, nature-based recreation and events, fish hatcheries | Woodbridge Ecological Reserve, Grizzly Island Wildlife Area, Clarksburg boat launch |
| **Department of Boating and Waterways** provides public recreational boating facilities on public lands, marine patrol law enforcement, boating safety and clean and green education, and controls of aquatic invasive species. | Public boat launching facilities, public visitor docks, boat-in day use and overnight facilities, vessel pumpout facilities, floating restrooms, floating campsites | Antioch Marina, Brannan Island SRA, Sherman Island, Belden's Landing, Bethany Reservoir, and Rio Vista boat launch facilities |
| **California Department of Transportation** operates state highways, historic bridges, and ferries, and designates state scenic highways. | Scenic highways, ferries, historic bridges | State Highway 160, J-Mack Ferry, Steamboat Slough Bridge |
| **California Department of Water Resources** manages California's water resources, including State Water Project reservoirs, dams, land, and waterways available for recreation use. | Reservoirs, water conveyance infrastructure (canals, diversion sites, waterway flows), flood control projects, and habitat management sites and facilities | Bethany Reservoir, Sacramento River flows, Fremont Weir, Suisun Marsh salinity control structure, Dutch Slough habitat restoration project |
| **State Lands Commission** has jurisdiction over hundreds of miles of waterways in the Delta and issues leases for in-stream recreation infrastructure. | Navigable waterways, submerged lands, and dock and pier leases | Threemile Slough, Walnut Grove Public Dock |
| **Sacramento-San Joaquin Delta Conservancy** will implement ecosystem restoration, advance environmental protection, and support economic sustainability, including tourism and recreation. | Projects that enhance natural resources, cultural resources, or economic sustainability in a manner complementary to increased recreation, tourism, and environmental education | The Delta Plan, Bay Delta Conservation Plan, Economic Sustainability Plan, and Delta Conservancy Strategic Plan will guide projects |

**Table 5-3**
**State Agencies with Responsibility for Recreation in the Delta**

| State Agency Name and Role | Recreation-related Facilities and Opportunities | Delta and Suisun Marsh Examples |
|---|---|---|
| **State Coastal Conservancy** makes grants to purchase, protect, restore, and enhance coastal resources, including San Francisco Bay and Suisun Marsh, and to provide access to the shore. | Shoreline accessways, trails, habitat protection and restoration areas, farmland and open space protection | Rush Ranch protection, San Francisco Bay Area water trail, Marsh Creek stream restoration and trail |
| **Delta Protection Commission** adaptively manages the Delta's Primary Zone, including, but not limited to, agriculture, wildlife habitat, and recreation activities. | Heritage resource recognition and enhancement, agritourism program, regional trails | National Heritage Area feasibility study, Great California Delta Trail, Economic Sustainability Plan |

Source: California State Parks 2011

# Nature-based Recreation

Many recreation opportunities depend on the region's wildlife and fish, which support angling, nature observation, and hunting. Anglers pursue native fish, such as salmon and sturgeon, and introduced species such as striped bass, largemouth bass, and catfish. Some of the most visited public wildlife areas include the Yolo Bypass Wildlife Area, Lower Sherman Island, Calhoun and Acker Island, Stone Lakes National Wildlife Refuge, Cosumnes River Preserve, Solano County Land Trust's Jepson Prairie and Rush Ranch, and Suisun Marsh's wildlife management areas, including Grizzly Island and Joice Island. Hunting waterfowl is especially important in Suisun Marsh, most of which is managed by private duck clubs. Careful management of wildlife and fish is important to maintaining nature-based recreation, which can benefit from the restoration of fisheries and expansion of wildlife habitat.

# Heritage Tourism

The Delta's legacy communities and other historic sites, from house museums to twentieth century industrial sites and weather-beaten marine facilities, attract history buffs and heritage tourists. Museums, nature centers, and interpretive programs draw visitors who want to learn about the Delta's natural and cultural resources. The region's productive farms and wineries and its diverse ethnic heritage are attractions for food and wine tourism, and for community festivals and other special events. (Agritourism is discussed earlier in the section on Agriculture in the Delta.)

Linking these areas and providing access to them are the Delta's waterways and roads. State Route 160 has a special role and provides visitors from metropolitan Sacramento and Contra Costa County with access to the Sacramento River, legacy communities, and the Delta's State parks. Its attractive rural landscape is reflected in its designation as a state scenic highway. California State Parks' Recreation Proposal recommends that the California Department of Transportation seek national scenic byway status for this route and prepare a scenic byway plan that would identify opportunities to improve signage, interpretation, and amenities for access, recreation, and nonautomobile circulation. A national scenic byway is a road recognized by the U.S. Department of Transportation for its archaeological, cultural, historic, natural, recreational, and/or scenic qualities. The program preserves and protects the nation's scenic but often less-traveled roads and promotes tourism and economic development. Funding for byway-related projects is granted annually by the Federal Highway Administration. State Routes 4 and 12 are also important for recreational travel.

The American Discovery Trail, Mokelumne Coast-To-Crest Trail, and Great Delta Trail (Public Resources Code section 5852 et seq.) are State trails that can provide recreational access for bicyclists, hikers, and others. DPC's ESP and California State Parks' Recreation Proposal also recommend a system of water trails to guide boaters through the Delta's channels.

# Policies and Recommendations

The policies and recommendations presented in this section address the unique values that distinguish the Delta and make it a special region and outline the Council's five core strategies for protecting and enhancing these values as follows:

- Designate the Delta as a special place worthy of national and state attention
- Plan to protect the Delta's lands and communities
- Maintain Delta agriculture as a primary land use, a food source, a key economic sector, and a way of life
- Encourage recreation and tourism that allow visitors to enjoy and appreciate the Delta and that contribute to its economy
- Sustain a vital Delta economy that includes a mix of agriculture, tourism, recreation, commercial and other industries, and vital components of state and regional infrastructure

Protecting the Delta also depends on the strategies to reduce flood and other risks, as detailed in Chapter 7.

## Designate the Delta as a Special Place

Designating the Delta as a special place can build public recognition of the Delta and its unique resources. The DPC proposes to seek the Delta's designation as an NHA to recognize and promote "Delta-as-a-Place" and to cultivate appreciation and understanding of the Delta. The DPC recommends that the NHA include the legal Delta and Suisun Marsh, as well as adjoining areas in Rio Vista and the Carquinez Strait.

The proposed NHA's vision is "a regional network of partner sites, with interpretive/educational components, that will be linked where possible and serve as the primary attractions, on existing public properties or on private properties with the voluntary consent and involvement of the landowners." The NHA's goals are to "brand the Delta as a region of national significance to educate the public about 'Delta-as-a-Place,' and build more support for preserving, protecting, and enhancing the Delta." Other goals relate to economic development, public access, historic preservation, interpretation, and more.

Although State Route 160 is already recognized as a State scenic highway, national scenic byway status under the U.S. Department of Transportation and a scenic byway plan would provide opportunities to improve signage, interpretation, and amenities for access, recreation, and nonautomobile circulation. The byway program would qualify the route for special funding from the Federal Highway Administration.

### *Problem Statement*

Because the Delta is different, it is sometimes unappreciated and misunderstood. Without a clear message about the Delta and its importance, the region and its resources can suffer from inattention or misuse. If the Delta's unique cultural, recreational, and agricultural values are not recognized, they are unlikely to be protected and enhanced.

### *Policies*

No policies with regulatory effect are included in this section.

### *Recommendations*

**DP R1 Designate the Delta as National Heritage Area**

The Delta Protection Commission should complete its application for designation of the Delta and Suisun Marsh as a National Heritage Area and the federal government should complete the process in a timely manner.

**DP R2 Designate State Route 160 as a National Scenic Byway**

The California Department of Transportation should seek designation of State Route 160 as a National Scenic Byway and prepare and implement a scenic byway plan for it.

## Plan to Protect the Delta's Lands and Communities

Protecting the Delta's lands and communities involves a multipronged policy approach. In the coming years and decades, the Delta will face increasing pressures from a growing population, changes in commodity markets, and changes in climate and sea level that will require flexibility and adaptation.

Some changes will be driven by the Delta's role in California's water systems, and they will be required to meet statewide goals of restoring the Delta's ecosystem and improving water supply reliability. These and other changes will shape how the Delta's communities and history are preserved, guide new development, affect recreation and tourism, and influence agriculture, business expansion, and economic development.

The policies and recommendations below reflect the Council's approach to fostering land uses and development that are resilient to these changes, reduce risks to people and property, adjust to changing conditions, and recover readily from distress. Protecting the Delta also depends on sustaining its economic vitality and maintaining the region as a desirable place to live, do business, and visit.

The maps that the following policies and recommendations reference are based on the best information available to the Council, but they may not precisely match either the built environment or local government land use plans. Where uncertainty exists with respect to the boundaries of areas referenced in these policies, the following rules should be considered in making determinations:

- The areas depicted should be assumed to generally follow parcel lines or other major landmarks, such as a road or highway, or river and stream.
- Local government general plans, including their land use diagrams, in effect at the time of the Delta Plan's adoption, may be consulted.

### *Problem Statement*

Poorly sited or designed projects can detract from the values that contribute to the Delta's distinctive character, including its primarily rural, agricultural landscape; conflict with established uses, including farming and tourism; reduce opportunities for ecosystem restoration; or increase flood risks. Complex regulations can create barriers to even appropriate development. Careful planning for development in legacy communities is needed to protect their unique character and overcome barriers to investment. The Delta's urban areas will also continue to need sites for housing, employment, and businesses, supported by adequate roads and other infrastructure. Water management facilities, ecosystem restoration actions, and flood control projects will need to be accommodated in the Delta, too. Avoiding condemnation of property for water management, ecosystem restoration, and flood management facilities, when feasible, can promote better relations with Delta residents and local governments.

## *Policies*

**DP P1 Locate New Development Wisely**

New urban development, including residential, commercial, and industrial uses, must be limited to the following areas (as shown in Figure 5-2 or Appendix K):

1. Areas that city or county general plans, as of the date of the Delta Plan's adoption, designate for development in cities or their spheres of influence;
2. Areas within Contra Costa County's 2006 voter-approved urban limit line, except no new urban development may occur on Bethel Island unless it is consistent with the Contra Costa County general plan effective as of the date of the Delta Plan's adoption;
3. Areas within the Mountain House General Plan Community Boundary in San Joaquin County; or
4. The unincorporated Delta towns of Clarksburg, Courtland, Hood, Locke, Ryde, and Walnut Grove.

For purposes of Water Code section 85057.5 (a)(3), this policy covers proposed actions that involve new urban development, including residential, commercial, and industrial uses, that is not located within the areas described in the previous paragraph. In addition, this policy covers any such action on Bethel Island that is inconsistent with the Contra Costa County general plan effective as of the date of the Delta Plan's adoption. This policy does not cover commercial recreational visitor-serving uses or facilities for processing of local crops or that provide essential services to local farms and are otherwise consistent with the Delta Plan.

This policy is not intended in any way to alter the concurrent authority of the Delta Protection Commission to separately regulate development in the Delta's Primary Zone.

**DP P2 Respect Local Land Use When Siting Water or Flood Facilities or Restoring Habitats**

Water management facilities, ecosystem restoration, and flood management infrastructure must be sited to avoid or reduce conflicts with existing or planned uses when feasible, considering comments from local agencies and the Delta Protection Commission. Plans for ecosystem restoration must consider sites on existing public lands, when feasible and consistent with a project's purpose, before privately owned sites are purchased. Measures to mitigate conflicts with adjacent uses may include, but are not limited to, buffers to prevent adverse effects on adjacent farmland.

This policy covers proposed actions that involve the siting of water management facilities, ecosystem restoration, and flood management infrastructure.

## *Recommendations*

**DP R3 Plan for the Vitality and Preservation of Legacy Communities**

Local governments, in cooperation with the Delta Protection Commission and Delta Conservancy, should prepare plans for each community that emphasize its distinctive character, encourage historic preservation, identify opportunities to encourage tourism, serve surrounding lands, or develop other appropriate uses, and reduce flood risks.

**DP R4 Buy Rights of Way from Willing Sellers When Feasible**

Agencies acquiring land for water management facilities, ecosystem restoration, and flood management infrastructure should purchase from willing sellers, when feasible, including consideration of whether lands suitable for proposed projects are available at fair prices.

**DP R5 Provide Adequate Infrastructure**

The California Department of Transportation, local agencies, and utilities should plan infrastructure, such as roads and highways, to meet needs of development consistent with sustainable community strategies, local plans, Delta Protection Commission's *Land Use and Resource Management Plan for the Primary Zone of the Delta*, and the Delta Plan.

**DP R6 Plan for State Highways**

The Delta Stewardship Council, as part of the prioritization of State levee investments called for in RR P1, should consult with the California Department of Transportation as provided in Water Code section 85307(c) to consider the effects of flood hazards and sea level rise on State highways in the Delta.

**DP R7 Subsidence Reduction and Reversal**

The following actions should be considered by the appropriate State agencies to address subsidence reversal:

- State agencies should not renew or enter into agricultural leases on Delta or Suisun Marsh islands if the actions of the lessee promote or contribute to subsidence on the leased land, unless the lessee participates in subsidence-reversal or reduction programs.
- State agencies currently conducting subsidence reversal projects in the Delta on State-owned lands should investigate options for scaling up these projects if they have been deemed successful. The Department of Water Resources should develop a plan, including funding needs, for increasing the extent of their subsidence reversal and carbon sequestration projects to 5,000 acres by January 1, 2017.
- The Council, in conjunction with the California Air Resources Board (CARB) and the Delta Conservancy, should investigate the opportunity for the development of a carbon market whereby Delta farmers could receive credit for carbon sequestration by reducing subsidence and growing native marsh and wetland plants. This investigation should include the potential for developing offset protocols applicable to these types of plants for subsequent adoption by the CARB.

# Maintain Delta Agriculture

Agriculture is the principal land use in the Delta; however, in recent decades, the total area of agricultural lands has declined, as has the overall percentage of lands in agricultural use. The continued viability of agriculture in the Delta will require the protection of sufficient farmland and fresh water to support commercially viable operations and provide ways for agriculture to coexist with habitat restoration. Policies DP P1 and DP P2 acknowledge the importance of protecting these lands. Farming in the Delta will have to respond to changing conditions and new challenges in the coming years. Among these challenges are shifting commodity markets and consumer demand, changes in climate and water supplies, and subsidence of reclaimed agricultural lands. To support both Delta agriculture and species recovery, farmers in the Delta are encouraged to implement "wildlife-friendly" management practices to maximize habitat values. Restoring wildlife and fish through wildlife-friendly agriculture can help achieve ecosystem restoration objectives while reducing the loss of farmland to habitat restoration. Agritourism is

a small but fast-growing source of income for farms in the region. It is another opportunity to add further value to the Delta economy from agricultural activities.

### *Problem Statement*

Agriculture in some parts of the Delta is threatened by urbanization, subsidence, and changing markets due to increased competition from other countries and regions and shifting consumer preferences. The impacts from water conveyance facilities, ecosystem restoration, changing water quality, and flood management plans are yet to be determined, but rapid and significant changes could disrupt agriculture. Farmers are concerned that regulations and other barriers to conducting business and using their land also threaten the continued viability of agriculture.

### *Policies*

No policies with regulatory effect are included in this section.

### *Recommendations*

**DP R8 Promote Value-Added Crop Processing**

Local governments and economic development organizations, in cooperation with the Delta Protection Commission and the Delta Conservancy, should encourage value-added processing of Delta crops in appropriate locations.

**DP R9 Encourage Agritourism**

Local governments and economic development organizations, in cooperation with the Delta Protection Commission and the Delta Conservancy, should support growth in agritourism, particularly in and around legacy communities. Local plans should support agritourism where appropriate.

**DP R10 Encourage Wildlife-Friendly Farming**

The Department of Fish and Game, the Delta Conservancy, and other ecosystem restoration agencies should encourage habitat enhancement and wildlife-friendly farming systems on agricultural lands to benefit both the environment and agriculture.

## Encourage Recreation and Tourism

The Delta region offers diverse recreation experiences and facilities such as fishing, boating, bird watching, other nature activities, hunting, campgrounds, parks and picnic areas, and historic towns and buildings. DPC and California State Parks foresee opportunities to improve and increase recreation and tourism in the Delta. Both agencies recommend improvements of “gateways” to the region on the Delta’s urban edges and “base camps” inside the Delta at destinations such as resorts, legacy communities, or parks that are focal points for visitors. Building on the reports of the DPC and California State Parks, the Council recommends protecting and improving existing recreation opportunities while seeking ways of providing new, and better coordinated, opportunities. Ecosystem restoration, as described in Chapter 4, can also enhance opportunities for nature-based recreation and boating. Future prospects for recreation and tourism will be influenced by decisions about the Delta ecosystem, water quality, levee improvements, and governance, including land use and environmental standards. The BDCP, Delta water quality plans, levee investments, and other decisions yet to be made can all significantly affect recreation and tourism.

## Problem Statement

Recreation opportunities abound, but many have not been fully developed due to inadequate visitor information, aging and inadequate facilities, and restricted access to public lands. Limited cooperation in marketing, planning, and public-private partnerships between public recreation providers, other government land managers, businesses, and others hinders recreation and tourism and impedes expansion of visitor-serving businesses.

## Policies

No policies with regulatory effect are included in this section.

## Recommendations

**DP R11 Provide New and Protect Existing Recreation Opportunities**

Water management and ecosystem restoration agencies should provide recreation opportunities, including visitor-serving business opportunities, at new facilities and habitat areas whenever feasible, and existing recreation facilities should be protected, using California State Parks' *Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh* and Delta Protection Commission's *Economic Sustainability Plan* as guides.

**DP R12 Encourage Partnerships to Support Recreation and Tourism**

The Delta Protection Commission and Delta Conservancy should encourage partnerships between other State and local agencies, and local landowners and business people to expand recreation, including boating, promote tourism, and minimize adverse impacts to non-recreational landowners.

**DP R13 Expand State Recreation Areas**

California State Parks should add or improve recreation facilities in the Delta in cooperation with other agencies. As funds become available, it should reopen Brannan Island State Recreation Area, complete the park at Delta Meadows-Locke Boarding House, and consider adding new State parks at Barker Slough, Elkhorn Basin, the Wright-Elmwood Tract, and south Delta.

**DP R14 Enhance Nature-Based Recreation**

The Department of Fish and Game, in cooperation with other public agencies, should collaborate with nonprofits, private landowners, and business partners to expand wildlife viewing, angling, and hunting opportunities.

**DP R15 Promote Boating Safety**

The Department of Boating and Waterways should coordinate with the U.S. Coast Guard and State and local agencies on an updated marine patrol strategy for the region.

**DP R16 Encourage Recreation on Public Lands**

Public agencies owning land should increase opportunities, where feasible, for bank fishing, hunting, levee-top trails, and environmental education.

**DP R17 Enhance Opportunities for Visitor-Serving Businesses**

Cities, counties, and other local and State agencies should work together to protect and enhance visitor-serving businesses by planning for recreation uses and facilities in the Delta, providing

infrastructure to support recreation and tourism, and identifying settings for private visitor-serving development and services.

## Sustain a Vital Delta Economy

Many of the policies and recommendations in this chapter deal with aspects of the Delta's economy such as maintaining agriculture and encouraging recreation and tourism. The Delta's economy also benefits from the surface transportation, utilities, and other infrastructure that crisscross the Delta to serve local needs and link the Delta to regional, national, and global markets. Facilities such as natural gas wells, wind turbines, other renewable power sources, electric transmission lines, and fuel pipelines need to be planned carefully to avoid conflicts with water supply, ecosystem restoration, or flood management facilities and existing and planned land uses. The ports at Stockton and West Sacramento are valuable assets to Delta communities and the state. Areas for water-dependent industries are located in Collinsville, Rio Vista, Pittsburg, and Antioch.

### *Problem Statement*

Other economic opportunities in the Delta, including port and energy uses, could suffer if unplanned development, flooding, or other land uses interfere with them.

### *Policies*

No policies with regulatory effect are included in this section.

### *Recommendations*

**DP R18 Support the Ports of Stockton and West Sacramento**

The ports of Stockton and West Sacramento should encourage maintenance and carefully designed and sited development of port facilities.

**DP R19 Plan for Delta Energy Facilities**

The Energy Commission and Public Utilities Commission should cooperate with the Delta Stewardship Council as described in Water Code section 85307(d) to identify actions that should be incorporated in the Delta Plan by 2017 to address the needs of Delta energy development, storage, and distribution.

## Timeline for Implementing Policies and Recommendations

Figure 5-6 lays out a timeline for implementing the policies and recommendations described in the previous sections. The timeline emphasizes near-term and intermediate-term actions.

# Science and Information Needs

Better information about recreation and tourism in the Delta and additional research into best practices for managing farmlands in the Delta can contribute to efforts to protect the Delta's unique values. These needs include the following:

- Surveys of Delta recreation at regular intervals, such as every 5 years, to inform marketing and planning for recreation and tourism
- Assessments of opportunities to control or reverse subsidence of farmland

## TIMELINE CHAPTER 5: Delta as an Evolving Place

| | ACTION (REFERENCE #) | LEAD AGENCY(IES) | NEAR TERM 2012–2017 | INTERMEDIATE TERM 2017–2025 |
|---|---|---|---|---|
| POLICIES | Locate new development wisely (DP P1) | Local governments | ● | ● |
| POLICIES | Respect local land use when siting water or flood facilities or restoring habitats (DP P2) | Local governments and State agencies | ● | ● |
| RECOMMENDATIONS | Designate the Delta as National Heritage Area (DP R1) | DPC | ● | |
| RECOMMENDATIONS | Designate State Route 160 as a National Scenic Byway (DP R2) | Caltrans | ● | |
| RECOMMENDATIONS | Plan for the vitality and preservation of legacy communities (DP R3) | Local governments, DPC, Conservancy | ● | |
| RECOMMENDATIONS | Buy rights of way from willing sellers when feasible (DP R4) | Local, State, and federal agencies | ● | ● |
| RECOMMENDATIONS | Provide adequate infrastructure (DP R5) | Caltrans, local agencies, and utility providers | ● | ● |
| RECOMMENDATIONS | Plan for State highways (DP R6) | Council, Caltrans | ● | |
| RECOMMENDATIONS | Subsidence reduction and reversal (DP R7) | State agencies | ● | |
| RECOMMENDATIONS | Promote value-added crop processing (DP R8) | Local governments and economic development organizations | ● | ● |
| RECOMMENDATIONS | Encourage agritourism (DP R9) | Local governments and economic development organizations | ● | ● |
| RECOMMENDATIONS | Encourage wildlife-friendly farming (DP R10) | DFG, Conservancy | ● | ● |
| RECOMMENDATIONS | Provide new and protect existing recreation opportunities (DP R11) | Water management and ecosystem restoration agencies | ● | ● |
| RECOMMENDATIONS | Encourage partnerships to support recreation and tourism (DP R12) | DPC, Conservancy | ● | ● |
| RECOMMENDATIONS | Expand State Recreation Areas (DP R13) | Parks | ● | ● |
| RECOMMENDATIONS | Enhance nature-based recreation (DP R14) | DFG | ● | ● |
| RECOMMENDATIONS | Promote boating safety (DP R15) | Boating and Waterways | ● | |
| RECOMMENDATIONS | Encourage recreation on public lands (DP R16) | DWR, DFG, Conservancy, Parks | ● | |
| RECOMMENDATIONS | Enhance opportunities for visitor-serving businesses (DP R17) | Local governments and State agencies | ● | ● |
| RECOMMENDATIONS | Support the Ports of Stockton and West Sacramento (DP R18) | Ports of Stockton and West Sacramento | ● | ● |
| RECOMMENDATIONS | Plan for Delta energy facilities (DP R19) | Energy Commission and PUC | ● | |

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**Agency Key:**

Boating and Waterways: California Department of Boating and Waterways
Conservancy: Delta Conservancy
Caltrans: California Department of Transportation
Council: Delta Stewardship Council
DFG: Department of Fish and Game
DPC: Delta Protection Commission
DWR: Department of Water Resources
Parks: California State Parks
PUC: California Public Utilities Commission

**Figure 5-6**
**Timeline for Implementing Policies and Recommendations**

# Issues for Future Evaluation and Coordination

Many Delta agencies and residents are concerned that the region's economy may suffer if agriculture or other uses decline significantly due to habitat restoration or water conveyance projects, especially the BDCP described in Chapter 3, or changes in State priorities for levee investment resulting from the studies recommended in Chapter 7. DPC's ESP forecasts adverse economic impacts from farmland loss based on a scenario of how these decisions may affect the region. Its *Proposal to Protect the Delta as a Place* recommends that the Delta Investment Fund support protection of the Delta economy, and be administered by the DPC and guided by an investment committee appointed by the DPC's commissioners. The Delta Conservancy will also play a role in some economic development efforts, as provided in Public Resources Code section 32322(b).

Because BDCP and new levee investment priorities are not yet complete, the magnitude of any impacts to farmland, other uses, or the Delta's economy cannot reasonably be forecast. If significant adverse impacts to the Delta economy do result from farmland losses or other impacts due to habitat restoration, water conveyance, or revised levee investment priorities, then measures to compensate for these losses may warrant consideration. This consideration should include creation of a regional agency to implement and facilitate economic development efforts, guided by the DPC's ESP. The agency's responsibilities could include the following:

- Branding and marketing the Delta
- Coordinating with counties and cities to encourage planning and infrastructure development that is aligned with economic sustainability strategies
- Providing regulatory assistance to reduce impediments to priority activities, including visitor-serving developments, dredging, levee construction, and ecosystem restoration, to reduce impediments and lower costs of these activities
- Encouraging value-added processing of Delta crops, agritourism, visitor-serving commercial businesses, and preservation of the historic buildings in legacy communities
- Recommending and overseeing expenditures from the Delta Investment Fund

# Performance Measures

Development of informative and meaningful performance measures is a challenging task that will continue after the adoption of the Delta Plan. Performance measures need to be designed to capture important trends and to address whether specific actions are producing expected results. Efforts to develop and track performance measures in complex and large-scale systems like the Delta are commonly multiyear endeavors. The recommended output and outcome performance measures listed below are provided as examples and subject to refinement as time and resources allow. Final administrative performance measures are listed in Appendix C and will be tracked as soon as the Delta Plan is completed.

Recommended performance measures for protection and enhancement of the unique cultural, recreational, natural resources, and agricultural values of the Delta as an evolving place are described below.

## Output Performance Measures

- Congress designates the Delta and Suisun Marsh as a National Heritage Area by January 1, 2014. (DP R1)

- Water management, ecosystem restoration, and flood management projects minimize conflicts with adjoining uses by including adequate mitigation measures to avoid adverse effects. (DP P2)
- Recreation facilities are included in new ecosystem restoration projects. (DP R9)
- The Department of Water Resources and others increase the extent of their subsidence reversal and carbon sequestration projects to 5,000 acres by January 1, 2017. (DP R7)

## Outcome Performance Measures

- No further rural farmland in the Delta is lost to urban development. (DP P1)
- Progress toward protecting the Delta legacy communities, as indicated by renovation of historic structures, floodproofing, and other reductions in flood hazards, and maintenance or growth of small businesses and population. (DP R3)
- Increasing tonnage of cargo and the number of jobs at the ports of Stockton and West Sacramento. (DP R18)

# References

Armentano, T. V. 1980. Drainage of organic soils as a factor in the world carbon cycle. *BioScience* 30:825-30.

Beals, R. L. 1933. The ethnology of the Nisenan. *University of California Publications in American Archaeology and Ethnography* 31(6):335–410.

Bennyhoff, J. A., and D. A. Fredrickson. 1969. A proposed integrative taxonomic system for central California archaeology. *Toward a New Taxonomic Framework for Central California Archaeology*. Edited by R. E. Hughes, 15–24. Berkeley, CA: University of California, Archaeological Research Facility.

California Chambers and Visitors Bureau. 2010. Website used to identify recreational facilities in the Delta. http://www.californiadelta.org/index.htm. Accessed by The Dangermond Group. March.

California Resources Agency. 2007. Public, Conservation, and Trust Lands in California. Site accessed June 1, 2010. http://www.atlas.ca.gov/download.html#/casil/planning/landOwnership.

California Natural Resources Agency. 2008. Managing an Uncertain Future: Climate Change Adaptation Strategies for California's Water. Sacramento, CA.

California State Parks. 2011. Recreation Proposal for the Sacramento-San Joaquin Delta and Suisun Marsh. Sacramento, CA.

City of Benicia. 2003. General Plan land use designations within Suisun Marsh. Digitized into GIS format by AECOM from City of Benicia Land Use map in 2012.

City of Fairfield. 2008. General Plan land use designations within Suisun Marsh. Received from the City of Fairfield in 2012.

City of Manteca. 2012. General Plan land use designations in GIS format. Received by Eryn Pimentel, AECOM, from Jeffrey Davis, City of Manteca, on September 4.

City of Rio Vista. 2001. General Plan land use designations in electronic non-GIS format. http://www.riovistacity.com/images/Documents/chapter_04.pdf. Accessed 2009.

City of Sacramento. 2008. General Plan land use designations in electronic GIS format. http://www.cityofsacramento.org/gis/data.html. Accessed 2009.

City of Stockton. 2011. GIS layer for City Spheres of Influence and General Plan land use designations. http://www.stocktongov.com/services/gis/mapdatDat.html. Accessed April 14, 2011.

City of Suisun City. 2011. General Plan land use designations within Suisun Marsh. Digitized into GIS format by AECOM from Land Use map in 2012.

City of Tracy. 2011. City of Tracy sphere of influence and General Plan land use designations provided in GIS format. Delivered via file transfer protocol from Victoria Lombardo, Senior Planner, City of Tracy, to Jessica Law, Urban and Environmental Planner, AECOM, on March 10.

City of West Sacramento. 2010. General Plan land use designations in GIS format. http://www.cityofwestsacramento.org/services/gis/downloads.cfm. Accessed December 28, 2010.

Contra Costa County. 2008. GIS layer for Urban Limit Line for Contra Costa County. October. http://ccmap.us/Details/asp?Product=134490. Accessed June 27, 2011.

Contra Costa County. 2010. GIS layer for City Spheres of Influence in Contra Costa County. January. https://www.ccmap.us/catalog.asp?UserChoice=2&Layercntrl=0000000000000000000000. Accessed January 28, 2011.

Delta Conservancy (Sacramento-San Joaquin Delta Conservancy). 2012. Strategic Plan. West Sacramento, CA.

Deverel, S. and D. Leighton. 2010. Historic, recent, and future subsidence, Sacramento-San Joaquin Delta, Calif., USA. *San Francisco Estuary and Watershed Science*. 8(2):23 p.

Discover the Delta Foundation. 2010. Website used to identify recreational facilities in the Delta. http://www.discoverthedelta.org. Accessed by The Dangermond Group.

DOC (California Department of Conservation). 1984. Farmland Mapping and Monitoring Program 1984. Important Farmland designations for Alameda, Contra Costa, Solano, and Yolo counties. Site accessed July 22, 2010. ftp://ftp.consrv.ca.gov/pub/dlrp/fmmp/.

DOC (California Department of Conservation). 1988. Farmland Mapping and Monitoring Program 1988. Important Farmland designations for Sacramento County. Site accessed July 23, 2010. ftp://ftp.consrv.ca.gov/pub/dlrp/fmmp/.

DOC (California Department of Conservation). 1990. Farmland Mapping and Monitoring Program 1990. Important Farmland designations for San Joaquin County. Site accessed July 15, 2010. ftp://ftp.consrv.ca.gov/pub/dlrp/fmmp/.

DOC (California Department of Conservation). 2008. Farmland Mapping and Monitoring Program 2008. Important Farmland designations for Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties. Site accessed October 8, 2009. ftp://ftp.consrv.ca.gov/pub/dlrp/fmmp/.

DOC (California Department of Conservation). 2009. Williamson Act designations for California. Site accessed August 20, 2010. ftp://ftp.consrv.ca.gov/pub/Dlrp/WA/Map%20and%20PDF/CALIFORNIA%20WILLIAMSON%20ACT/Total%20WA%20GIS%20to %202009/.

DPC (Delta Protection Commission). 2006. GIS layer prepared by The Dangermond Group identifying recreation facilities in the Delta for the Delta Recreation Strategy Plan. Delivered from Doug Gardner, The Dangermond Group, to Eryn Pimentel, AECOM on March 7, 2011.

DPC (Delta Protection Commission). 2010. Land Use and Resource Management Plan for the Primary Zone of the Delta. Adopted February 25. 2010.

DPC (Delta Protection Commission). 2011. Feasibility Study for a Sacramento-San Joaquin Delta National Heritage Area. Public Review Draft. October.

DPC (Delta Protection Commission). 2012a. Proposal to Protect, Enhance, and Sustain the Unique Cultural, Historical, Recreational, Agricultural, and Economic Values of the Sacramento-San Joaquin Delta as an Evolving Place. January 26.

DPC (Delta Protection Commission). 2012b. Economic Sustainability Plan for the Sacramento-San Joaquin Delta. Public Draft. October 10.

DWR (California Department of Water Resources). 2008. Topical Area: Economic Consequences. Technical Memorandum: Delta Risk Management Strategy Phase 1. Final. May.

DWR (California Department of Water Resources). 2011a. Floodplain inundation and floodways in the vicinity of the Sacramento-San Joaquin delta.

DWR (California Department of Water Resources). 2011b. Locations and attributes of levees in California as maintained by the DWR California Levee Database.

DWR (California Department of Water Resources). 2011c. Restoration opportunity areas in the Sacramento-San Joaquin delta. Developed by DWR.

Federal Emergency Management Agency (FEMA). 2008. Flood Plain Management Bulletin – Historic Structures. FEMA P-467-2.

Fredrickson, D. A. 1974. Cultural diversity in early central California: a view from the north Coast Ranges. *Journal of California Anthropology* 1(1):41-53.

Johnson, P. J. 1978. Patwin. *Handbook of North American Indians*. Volume 8: California. Edited by R. F. Heizer, 350-360. Washington, D.C.: Smithsonian Institution.

Kroeber, A. L. 1925. Handbook of the Indians of California. *Bureau of American Ethnology Bulletin 78*.

Kroeber, A. L. 1932. The Patwin and their neighbors. *University of California Publications in American Archaeology and Ethnology* 29(4):253-423.

Levy, R. 1978. Eastern Miwok. *Handbook of North American Indians*. Volume 8: California. Edited by R. F. Heizer, 398-413. Washington, D.C.: Smithsonian Institution.

Lund, J., E. Hanak, W. Fleenor, R. Howitt, J. Mount, and P. Moyle. 2007. *Envisioning Futures for the Sacramento-San Joaquin Delta*. Public Policy Institute of California. San Francisco, CA.

Miller, Robin. 2008. Subsidence Reversal in a Re-established Wetland in the Sacramento-San Joaquin Delta, California, USA. U.S. Geological Survey.

Moratto, M. J. 1984. *California Archaeology*. San Francisco: Academic Press.

Mountain House Community Services District. 2008. Mountain House Zoning map. September 18, 2008. http://www.ci.mountainhouse.ca.us/master-plan.asp. Accessed July 27, 2011.

Probolsky Research. 2012. California Statewide Voter Survey: Report on Results. January 27, 2012.

Reclamation District 2093. 2009. Liberty Island Conservation Bank Initial Study/Mitigated Negative Declaration. April.

SACOG (Sacramento Area Council of Governments). 2009. GIS layer for Spheres of Influence in SACOG region. December. http://sacog.org/mapping/clearinghouse/Mapping Center. Accessed January 28, 2011.

SACOG (Sacramento Area Council of Governments). 2011. Sacramento Region Rural-Urban Connections Strategy. May.

Sacramento County. 2011. General Plan land use designations in GIS format. http://www.sacgis.org/GISDataPub/Data/. Accessed 2012.

San Joaquin County. 2008a. City of Lathrop SOI map. March 4. http://www.sjgov.org/lafco/SOI%20Maps/Lathrop_Sphere_new%202008.pdf. Accessed February 3, 2011.

San Joaquin County. 2008b. City of Manteca SOI map. October 29. http://www.co.san-joaquin.ca.us/lafco/Manteca%20MSR/Manteca_Sphere.pdf. Accessed February 3, 2011.

San Francisco Bay Conservation and Development Commission. 1976. *Suisun Marsh Protection Plan*.

Solano County. 2008a. GIS layer for City Spheres of Influence in Solano County. May. http://regis.solanocounty.com/data.html. Accessed August 10, 2011.

Solano County. 2008b. General Plan land use designations provided in GIS format. Obtained 2009.Stockton Record. 2012. Poll finds few know about Sacramento-San Joaquin Delta. February 5. http://www.modbee.com/2012/02/05/2057167/poll-finds-few-know-anything-about.html.

Suddeth, R., J. Mount, and J. Lund. 2010. Levee decisions and sustainability for the Sacramento-San Joaquin Delta. *San Francisco Estuary and Watershed Science* 9(2).

Sumner, D., and J. Rosen-Molina. 2011. Evaluations of Policy Alternatives to Benefit Agriculture in the Sacramento-San Joaquin Delta of California. Developed by the University of California Agricultural Issues Center for the California Department of Food and Agriculture. February.

Trott, Ken. 2007. Context Memorandum: Agriculture in the Delta Iteration 2. August 10, 2007. Site accessed November 11, 2010. http://deltavision.ca.gov/context_memos/Agriculture/ Agriculture_Iteration2.pdf.

University of California Archaeological Survey. 1956. No 35, *Papers of California Archaeology* 44-46.

Wallace, W. J. 1978. Northern Valley Yokuts. *Handbook of North American Indians*. Volume 8: California. Edited by R. F. Heizer, 462-476. Washington, D.C.: Smithsonian Institution.

Wilson, N. L., and A. H. Towne. 1978. Nisenan. *Handbook of North American Indians*. Volume 8: California. Edited by R. F. Heizer, 387-397. Washington, D.C.: Smithsonian Institution.

Yolo County. 2010a. General Plan land use designations in GIS format. http://www.yolocounty.org/Index.aspx?page=823. Accessed 2010.

Yolo County. 2010b. Yolo County General Plan 2030 layer provided in GIS format. Delivered via file transfer protocol from Marcus Neuvert, GIS Specialist, Yolo County DITT, to Dillon Cowan, Staff Engineer, CH2M HILL, Inc., on July 1.

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