

3.14 Land Use and Planning

This section describes historic, existing, and planned land uses in the study area, and the ways that land use and planning could be affected by implementation of the proposed program. Land uses in the study area are defined using DWR's land use definitions, which provide a general context of land uses within the study area. Historic, existing, and planned land uses are summarized below for the study area as a whole, and then described in greater detail in the respective discussions for the various geographic areas. This section is composed of the following subsections:

- Section 3.14.1, "Environmental Setting," describes the physical conditions in the study area as they apply to land use and planning.
- Section 3.14.2, "Regulatory Setting," summarizes federal, State, and regional and local laws and regulations pertinent to evaluation of the proposed program's impacts on land use and planning.
- Section 3.14.3, "Analysis Methodology and Thresholds of Significance," describes the methods used to assess the environmental effects of the proposed program and lists the thresholds used to determine the significance of those effects.
- Section 3.14.4, "Environmental Impacts and Mitigation Measures for NTMAs," discusses the environmental effects of near-term management activities (NTMAs) and identifies mitigation measures for significant environmental effects.
- Section 3.14.5, "Environmental Impacts, Mitigation Measures, and Mitigation Strategies for LTMAAs," discusses the environmental effects of long-term management activities (LTMAAs), identifies mitigation measures for significant environmental effects, and addresses conditions in which any impacts would be too speculative for evaluation (CEQA Guidelines, Section 15145).

NTMAs and LTMAAs are described in detail in Section 2.4, "Proposed Management Activities."

Issues that pertain to land use and planning are broad in nature and address at a general level some issues that are considered in more detail in other sections of this document. See Section 3.3, "Agriculture and Forestry Resources," for a discussion of existing agricultural resources in the study area, including land identified as Important Farmland by the Farmland

Mapping and Monitoring Program of the California Department of Conservation, as well as the California Land Conservation Act of 1965 (Williamson Act) contract lands. See Section 3.6, “Biological Resources—Terrestrial,” for a discussion of the relationship between land uses and wildlife uses and for an evaluation of the proposed program’s consistency with applicable habitat conservation plans (HCPs) and natural community conservation plans (NCCPs). See Section 3.18, “Recreation,” for a detailed discussion of the lands and waters (both reservoirs and rivers) used for recreation and the recreational access and facilities that support those uses in the study area.

3.14.1 Environmental Setting

Information Sources Consulted

The following discussion of the environmental setting in the study area focuses on existing and planned land uses that could experience temporary, short-term, or permanent effects from implementation of the proposed program. Sources of information used to prepare this section include the following:

- *CALFED Bay-Delta Program Final Programmatic Environmental Impact Statement/Environmental Impact Report* (CALFED 2000)
- *Land Use and Resource Management Plan for the Primary Zone of the Delta* (DPC 2010)
- *Sacramento–San Joaquin Delta Atlas* (DWR 1995)
- *California Water Plan Update 2009* (DWR 2009)
- *Implementing California Flood Legislation into Local Land Use Planning: A Handbook for Local Communities* (DWR 2010)
- *California Rivers and Streams: The Conflict between Fluvial Processes and Land Use* (Mount 1995)
- *Suisun Marsh Habitat Management, Preservation, and Restoration Plan Draft Environmental Impact Statement/Environmental Impact Report* (Reclamation, USFWS, and DFG 2010)

Geographic Areas Discussed

The study area for this analysis consists of the following areas:

- Extended SPA divided into the Sacramento and San Joaquin Valley and foothills, and the Sacramento–San Joaquin Delta (Delta) and Suisun Marsh
- Sacramento and San Joaquin Valley watersheds
- SoCal/coastal Central Valley Project/State Water Project (CVP/SWP) service areas

Greater detail is provided for the Extended SPA than for the watersheds because the effects of the proposed program would be more varied and substantially greater in those areas than in the watersheds, where effects would be more localized.

None of the management activities included in the proposed program would be implemented in the SoCal/coastal CVP/SWP service areas. In addition, implementation of the proposed program would not result in long-term reductions in water deliveries to the SoCal/coastal CVP/SWP service areas (see Section 2.6, “No Near- or Long-Term Reduction in Water or Renewable Electricity Deliveries”). Given these conditions, the program is not expected to result in adverse impacts on land use in the SoCal/coastal CVP/SWP service areas and this geographic area is not discussed in detail in this section.

Historic and Current Land Uses in the Study Area

Historic Land Uses California’s socioeconomic and public policy history has been an important influence on land use and flood management in the Central Valley. Major population growth in California, spurred by the discovery of gold in the Sierra Nevada in 1848, drove development of multiple industries that affected land use and hence the consequences of flood events in the Central Valley.

Spanish missionaries and explorers settled in California before the discovery of gold and forcibly moved indigenous peoples from small scattered villages (which the Spaniards termed *rancherías*) to central communities called *pueblos*. Pueblos, usually sited around military presidios or Franciscan missions, used small-scale water development projects to provide community-owned water. Water development structures included minor dams and ditches to divert water for irrigated agriculture. In addition to pueblos, the Spanish monarchy also granted private property—*ranchos*—to politically favored individuals. The water rights associated with ranchos were usually only for watering livestock, although some small-scale irrigation was also conducted. Spanish settlement resulted in only limited changes to California’s rivers and streams. As populations grew in the late 1700s and early 1800s, logging, farming, and grazing

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activities increased, but these operations were small in scale and had little impact on water resources (Mount 1995).

The 1848 discovery of gold in the Sierra Nevada led to major population growth in California. Spurred by the Gold Rush, grazing and agriculture developed throughout the foothills and Central Valley to provide food for the rapidly growing population. The Central Valley became California's most productive farmland. The majority of the early levee systems in the Sacramento and San Joaquin river basins and the Delta were built to maximize agricultural development in the fertile floodplains (Mount 1995).

Before 1850, the Delta was essentially a broad expanse of water-based habitat and natural channels. Large-scale reclamation of the Delta for agriculture began in 1868; by 1900, most of the lands with mineral-organic soils, around the Delta's exterior, were reclaimed. The final period of Delta reclamation occurred between 1900 and 1920 on lands in the Delta's interior. The result of these reclamation efforts is largely what is seen as the Delta today—approximately 700 miles of meandering waterways and 1,100 miles of levees protecting more than 538,000 acres of farmland, as well as homes and other structures.

Before the 1960s, land uses in the Sacramento and San Joaquin valleys were principally agriculture and open space, with urban uses limited to a handful of small cities such as Sacramento, Stockton, and Fresno and scattered small farm communities. Although agriculture and food processing are still the major industries in the Sacramento and San Joaquin valleys, population expansion from the San Francisco Bay Area and local industrial growth over the past 30 years have created major urban centers throughout the valleys. The land area devoted to agriculture peaked around 1959, and has since gradually declined as urban areas expanded into the floodplains of the Sacramento and San Joaquin rivers.

Current Land Uses The Extended SPA contains the urban areas of Redding, Red Bluff, Chico, Yuba City, Marysville, Woodland, Sacramento, Stockton, Lodi, Modesto, Merced, and Fresno, as well as many smaller communities throughout the Central Valley. As described in greater detail below, the Extended SPA has been divided into two areas: the Sacramento and San Joaquin Valley and foothills, and the Delta and Suisun Marsh. Implementing the proposed program on lands located in the Extended SPA could also result in indirect effects on the Sacramento and San Joaquin Valley watersheds and portions of the SoCal/coastal CVP/SWP service areas adjacent to the Extended SPA. This section provides a broader level of discussion of land use in these areas to address these potential indirect effects.

Extended Systemwide Planning Area

Land use types are discussed below by county within both the Sacramento and San Joaquin Valley and foothills and the Delta–Suisun Marsh areas of the Extended SPA. Major cities and existing land uses in the Extended SPA are shown in Figures 3.14-1, 3.14-1a, and 3.14-1b and are discussed below. DWR uses four general categories of land uses:

- **Agriculture**—This category consists of both agricultural and semiagricultural classes as defined by DWR (2005). In mapping land uses, DWR groups agricultural land uses into a variety of subcategories and types. The subcategories consist of grain and hay crops (e.g., barley and oats); rice; field crops (e.g., cotton, corn, beans); pasture (e.g., alfalfa); truck (e.g., onions and garlic), nursery, and berry crops; deciduous fruits and nuts (e.g., almonds and pistachios); citrus and subtropical (e.g., oranges); vineyards (i.e., table, wine, and raisin grapes); and idle areas (e.g., fallow fields). The “agriculture” category, as defined by DWR, also includes semiagricultural classes (e.g., dairies and livestock feed lots), which for the purposes of this analysis have been designated as nonirrigated agricultural land. Agricultural resources in the Extended SPA are described in detail in Section 3.3, “Agriculture and Forestry Resources.”
- **Native Classes**—This category consists of areas of native vegetation, surface water, and barren and wasteland areas, as defined by DWR (2005). Vegetation includes forest land (e.g., oak woodland) and other types of native vegetation (e.g., grassland), riparian vegetation, surface water, and barren and wasteland areas (e.g., mine tailings).
- **Urban**—This category consists of residential, commercial, industrial, urban landscape, and vacant areas, as defined by DWR (2005). Residential areas comprise single- and multiple-family units, including mobile home parks. Commercial use includes office, retail, hotels, institutions (e.g., hospitals and prisons), schools, and community facilities (e.g., churches, stadiums, parks). Industrial use includes manufacturing, storage, distribution, mills, plants, processing centers, waste sites, and energy features (e.g., wind farms and solar collectors). Urban landscape uses (e.g., irrigated lawns, golf courses, ornamental landscaping, cemeteries) and vacant areas (e.g., paved areas, transportation corridors, airport runways, undeveloped areas within urban areas) are also considered to fall within the urban land-use category. This land use category does not directly represent either “urban” or “urbanizing” areas as defined in 2007 California legislation on flood risk management (Assembly Bills 70, 156, and 162 and Senate Bill (SB) 5) discussed in the “General Plan” section below. The statutory definitions of “urban” and “urbanizing” refer in turn to

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“developed areas,” which DWR interprets to apply federal definitions contained in Title 44 of the Code of Federal Regulations as summarized on pages 86–87 of DWR’s 2010 report *Implementing California Flood Legislation into Local Land Use Planning: A Handbook for Local Communities*. Those definitions, in turn, contain complex formulas for distinguishing developed from undeveloped areas, taking into account factors such as the number of developed units, the availability of infrastructure, the percentage of parcels containing structures, the density of development, and the status of the local entitlement process. No currently available maps reflect the application of these definitions. Mapping the developed areas under these definitions is a complex exercise requiring detailed local knowledge, and could not be reasonably undertaken by DWR for even portions of the planning area, much less entire planning area.

- **Not Surveyed**—This category consists of lands that DWR has not yet surveyed; therefore, no data for these lands are available for analysis in this section.

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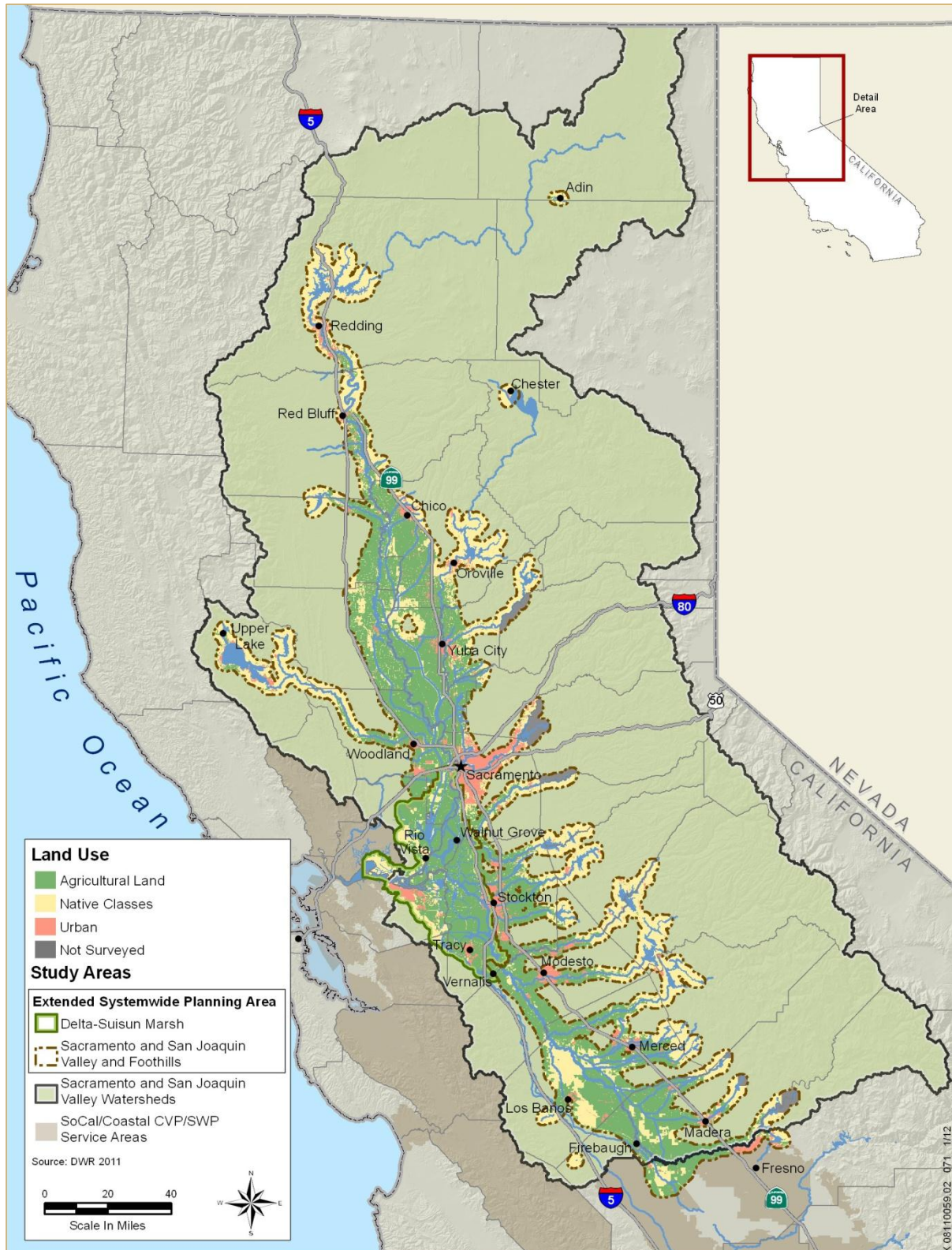


Figure 3.14-1. Land Uses in the Extended Systemwide Planning Area (Overview)

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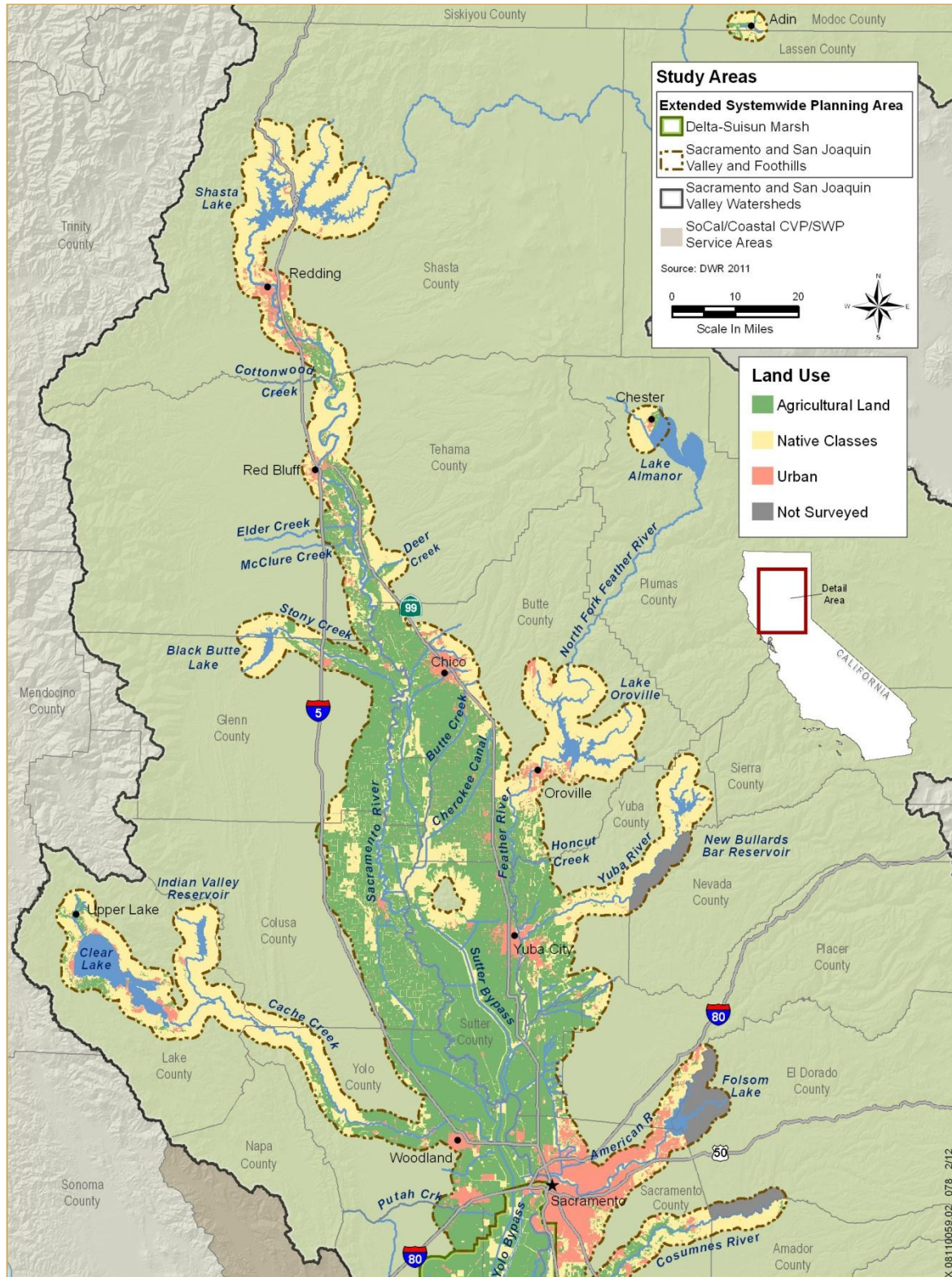


Figure 3.14-1a. Land Uses in the Extended Systemwide Planning Area (Northern Portion)

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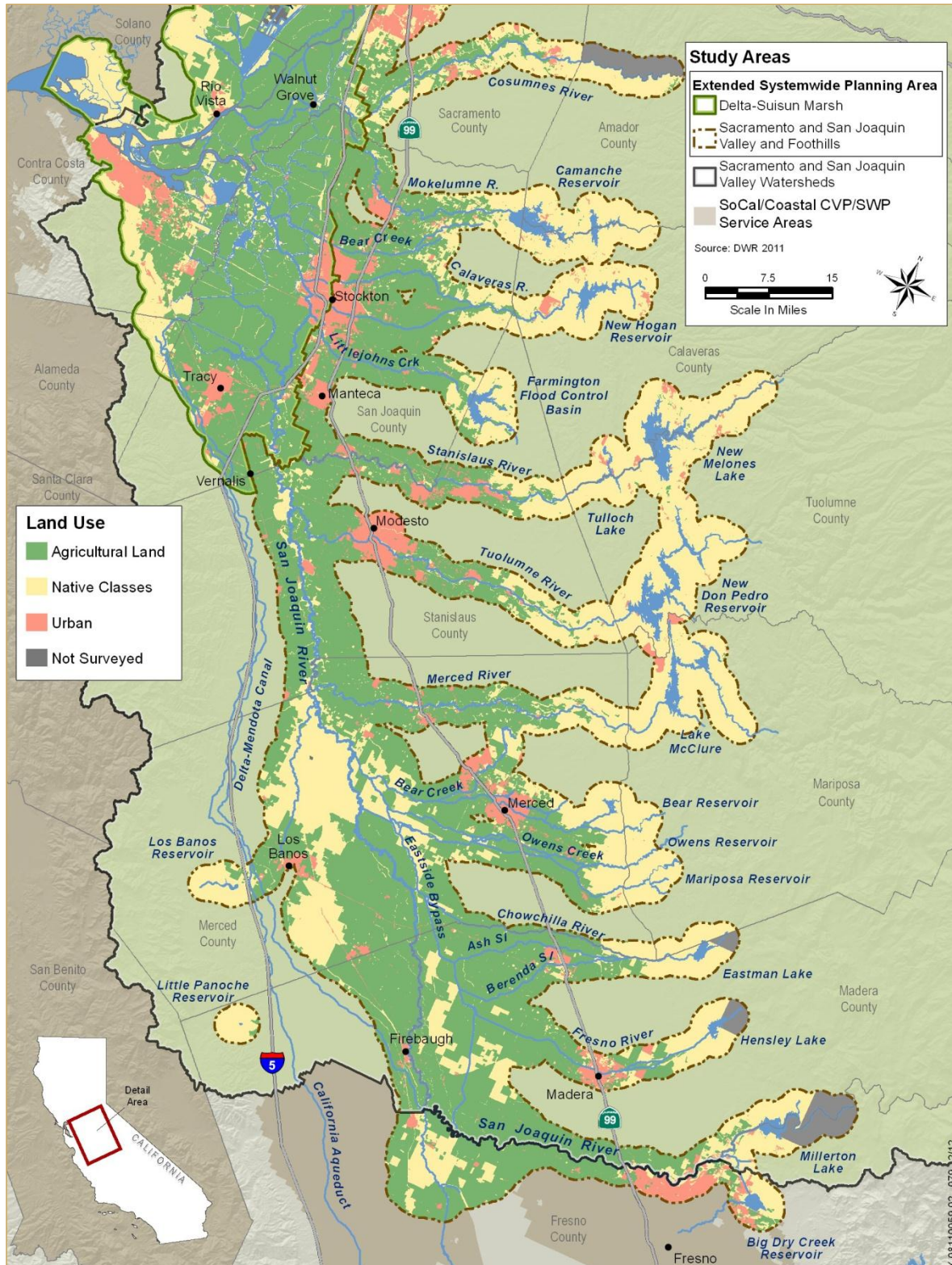


Figure 3.14-1b. Land Uses in the Extended Systemwide Planning Area (Southern Portion)

Sacramento and San Joaquin Valley and Foothills Within the Sacramento and San Joaquin Valley and foothills portion of the Extended SPA, there are 45 cities and 75 census-designated areas¹ in 26 counties, as shown in Table 3.14-1. Relevant portions of six counties within the Sacramento and San Joaquin Valley and foothills area do not include any cities or census-designated areas (shown as “Not applicable” in Table 3.14-1).

In total, the Sacramento and San Joaquin Valley and foothills geographic area includes approximately 5.7 million acres (Table 3.14-2). Merced and Butte counties have the greatest total acreage of land within the Sacramento and San Joaquin Valley and foothills area (approximately 690,000 acres and 541,000 acres, respectively). In contrast, Lassen and Modoc counties have the smallest acreage within the Sacramento and San Joaquin Valley and foothills area (approximately 4,700 and 10,000 acres, respectively).

Land use in the Sacramento and San Joaquin Valley and foothills area is primarily agricultural (45 percent) and native classes (44 percent).

Table 3.14-1. Cities and Census-Designated Areas Within the Sacramento and San Joaquin Valley and Foothills

County	Cities/Census-Designated Areas
Amador	Not applicable
Butte	Biggs, Chico, Durham, Gridley, Oroville, Oroville East, and Thermalito
Calaveras	Angels City, Copperopolis, Rancho Calaveras, San Andreas, Vallecito, Valley Springs, and Wallace
Colusa	Colusa
El Dorado	Not applicable
Fresno	Biola, Clovis, Firebaugh, Friant, Mendota, and Tranquillity
Glenn	Hamilton City and Orland
Lake	Clearlake, Clearlake Oaks, Lakeport, Lower Lake, Lucerne, Nice, North Lakeport, and Upper Lake
Lassen	Not applicable
Madera	Chowchilla and Madera
Mariposa	Not applicable

¹ Census-designated areas are delineated for each decennial U.S. Census as the counterparts of incorporated places. They provide data for settled concentrations of populations that are identifiable by name but not legally incorporated under the laws of the state in which they are located. The boundaries of census-designated areas may change from one decennial census to the next, with changes in settlement patterns.

Table 3.14-1. Cities and Census-Designated Areas Within the Sacramento and San Joaquin Valley and Foothills (contd.)

County	Cities/Census-Designated Areas
Merced	Atwater, Dos Palos, Gustine, Hilmar-Irwin, Le Grand, Livingston, Los Banos, Merced, Planada, and South Dos Palos
Modoc	Not applicable
Nevada	Not applicable
Placer	Auburn, Granite Bay, and Roseville
Plumas	Chester
Sacramento	Arden-Arcade, Carmichael, Elk Grove, Fair Oaks, Florin, Folsom, Gold River, La Riviera, Laguna, Laguna West–Lakeside, Orangevale, Parkway–South Sacramento, Rancho Cordova, Rancho Murieta, Rio Linda, Rosemont, Sacramento, and Wilton
San Joaquin	August, Escalon, Farmington, French Camp, Garden Acres, Kennedy, Linden, Lockeford, Manteca, Morada, North Woodbridge, Ripon, South Woodbridge, and Taft Mosswood
Shasta	Anderson, Lakehead-Lakeshore, and Redding
Solano	Not applicable
Stanislaus	Bret Harte, Bystrom, Ceres, Del Rio, East Oakdale, Empire, Grayson, Hickman, Hughson, Modesto, Oakdale, Patterson, Riverbank, Riverdale Park, Salida, Shackelford, Waterford, West Modesto, and Westley
Sutter	Live Oak, South Yuba City, Sutter, Tierra Buena, and Yuba City
Tehama	Gerber–Las Flores, Los Molinos, Red Bluff, and Tehama
Tuolumne	Chinese Camp and Columbia
Yolo	Davis, Esparto, and Woodland
Yuba	Linda, Marysville, Olivehurst, and Wheatland

Source: DWR 2005

Agricultural land uses are distributed primarily in the Central Valley section of the Sacramento and San Joaquin Valley and foothills area, extending from Red Bluff in Tehama County southward to Fresno County. Of the counties in the Sacramento and San Joaquin Valley and foothills area, Colusa, Fresno, Glenn, Madera, Merced, San Joaquin, Solano, Sutter, and Yolo counties contain the highest percentages of land in agricultural use. The largest areas of agricultural lands are located in Butte, Colusa, Madera, Merced, San Joaquin, Stanislaus, Sutter, and Yolo counties.

Table 3.14-2. Summary of Land Use by Category within the Sacramento and San Joaquin Valley and Foothills

Land Use Category				Total
Agricultural Land	Native Classes	Urban	Not Surveyed	
2,580,000 ac	2,500,000 ac	116,000 ac	473,000 ac	5,669,000 ac
45%	44%	2%	8%	100%

Source: DWR 2005

Note:

Percentages do not add up to 100% due to rounding.

Key:

ac = acres

Approximately 44 percent of the Sacramento and San Joaquin Valley and foothills geographical area comprises native classes of land, distributed primarily north of Red Bluff in Tehama County, in the Sierra Nevada foothills, northwest of Esparto in Yolo County, and east of Gustine in Merced County. The counties with the largest percentage of native classes are Amador, Calaveras, Lake, Mariposa, Plumas, Shasta, and Tuolumne counties. The greatest acreages of native classes are in Butte, Lake, Merced, and Shasta counties.

Urban land uses occupy approximately 2 percent of the Sacramento and San Joaquin Valley and foothills geographical area, generally in El Dorado, Fresno, Madera, and Nevada counties. Larger urban areas within the San Joaquin Valley and foothills area consist of Redding, Chico, Yuba City, Marysville, Sacramento, Modesto, Merced, Madera, and Fresno.

Approximately 8 percent of the Sacramento and San Joaquin Valley and foothills geographical area has not been surveyed by DWR. These unsurveyed areas are located primarily in Butte, Merced, Sacramento, San Joaquin, and Stanislaus counties. For the most part, these unsurveyed areas are in the upper watersheds of the major tributaries, and do not include locations where significant program activities are anticipated to occur.

The Colusa, Delevan, Sacramento, Sacramento River, and Sutter national wildlife refuges (NWRs) are federal lands managed for wildlife habitat purposes in the Sacramento and San Joaquin Valley and foothills geographical area. State lands managed for wildlife habitat purposes in the area include the Gray Lodge, Oroville, and Upper Butte wildlife management areas.

Delta and Suisun Marsh The Delta and Suisun Marsh portion of the Extended SPA includes the Delta, portions of Stanislaus County, and portions of Suisun Marsh. Within this area, there are 12 cities and seven census-designated areas in six counties (Table 3.14-3). Relevant portions of two counties within the Delta and Suisun Marsh geographical area do not

include any cities or census-designated areas (shown as “Not applicable” in Table 3.14-3).

Table 3.14-3. Cities and Census-Designated Areas within Counties in the Sacramento–San Joaquin Delta and Suisun Marsh

County	Cities/Designated Areas
Alameda	Not applicable
Contra Costa	Antioch, Bethel Island, Brentwood, Byron, Discovery Bay, Knightsen, Oakley, and Pittsburg
Sacramento	Isleton and Walnut Grove
San Joaquin	Country Club, Lathrop, Lincoln Village, Lodi, Stockton, and Tracy
Solano	Dixon and Rio Vista
Stanislaus	Not applicable
Yolo	West Sacramento

Source: DWR 2005

Note:

Not applicable = No cities or census-designated areas are in the portion of this county within the Delta and Suisun Marsh area.

The Delta was given a legal boundary in 1959 with the passage of the Delta Protection Act. The act was refined in 1992 to provide primary and secondary zones to regulate land use in the previously defined legal Delta. (See the discussion of State regulations in Section 3.14.2, “Regulatory Setting.”)

The statutory Delta (i.e., both the Primary and Secondary zones) totals 738,000 acres: approximately 538,000 acres of agricultural land uses, 60,000 acres of open water, and 64,000 acres of urban and commercial land uses. The remainder of the region mostly consists of open space and wildlife habitat. The land area of the Delta consists primarily of 60 islands or tracts intersected by a network of waterways. Most of the islands and border areas are reclaimed lands protected by levees. More than 700 miles, or 65 percent, of Delta levees have been built and maintained by landowners or reclamation districts to protect agricultural lands. The remaining levees in the Delta are managed through an authorized federal flood control project.

The Primary Zone of the Delta includes more than 500,000 acres of land, waterways, and levees that extend over a portion of the city of Rio Vista, as well as portions of Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties. Unincorporated communities lying along the Sacramento River in the Primary Zone include Clarksburg, Courtland,

Hood, Locke, Walnut Grove, and Ryde. Land-use decisions are based primarily on the counties' respective general plans, which designate Delta Primary Zone lands for agriculture or special Delta resources. The zoning codes for the five Delta counties allow a variety of uses in the Delta Primary Zone: agriculture and agriculturally oriented uses; outdoor recreation; wildlife habitat; public facilities; and limited areas for commercial, industrial, and rural residential development. The parcel sizes specified in the general plans and zoning codes range from 5 to 160 acres, with most of the Delta Primary Zone in the 20- to 80-acre minimum parcel sizes (DPC 2010). Land use decisions that would expand development into the Delta Primary Zone, or acquire land in the Primary Zone for utility or infrastructure facility development, must be carried out in conformity with the Delta Protection Act (described below in Section 3.14.2, "Regulatory Setting").

The Secondary Zone of the Delta consists of approximately 238,000 acres and is defined as all the land and water area within the boundaries of the statutory Delta that is not included within the Primary Zone. Urban land uses can occur within the Secondary Zone. The city of Isleton and portions of the cities of Stockton, Antioch, Oakley, Sacramento, West Sacramento, Elk Grove, Tracy, Lathrop, and Pittsburg are located in the Secondary Zone. (Sacramento, West Sacramento, and Elk Grove are in the Sacramento and San Joaquin Valley and foothills area of the study area.) These areas have a higher likelihood of being developed for residential or other urban uses in the future (DPC 2010).

Since 1990, urban and other land uses have gained substantial acreage while agricultural land use has declined. Acquiring farmed land and subsequently retiring that land affects the economic base for both farm support industries and community businesses that rely on patronage from citizens working in farming or farm support industries. It also affects the tax and assessment base for special districts, counties, and the State, as well as existing wildlife use patterns that have adapted to agricultural land-use patterns.

The periphery of the Delta is undergoing rapid urbanization associated with substantial population growth. Current and future population growth will increase the demand for developable land, particularly near the Bay Area and Stockton. This demand is expected to result in the conversion of open space, primarily agricultural land, to residential and commercial uses. In the recent past, thousands of acres of agricultural lands were developed for residential and other urban uses. Between 1990 and 2004, about 40,000 acres of agricultural land in the Delta were converted to urban and conservation uses (DPC 2010). Estimates indicate that as many as 130,000 new homes could be constructed within the legal boundaries of the Delta within the next decade (DPC 2010).

Implementing local HCPs and NCCPs and other habitat conservation and enhancement efforts would cause land uses on several Delta islands to be converted from agriculture (DPC 2010). For example, portions of both Twitchell Island (south of Isleton) and Sherman Island (south of Rio Vista) may be converted to year-round wildlife habitat, and public access may be restricted. In addition, management programs at Stone Lakes NWR in Elk Grove have resulted in the acquisition of land for conversion to wildlife habitat; Medford Island (in Stockton) is now a mitigation bank managed for both agriculture and wildlife habitat; and DWR is in the conceptual planning stage for a project to restore tidal marsh, open water, and upland and riparian habitats at Prospect Island.

The proposed Delta Wetlands Project, sponsored by Semitropic Water District, would convert Bouldin Island, Webb Tract, Holland Tract, and Bacon Island totaling 20,000 acres into two reservoirs and two wildlife habitat areas.

In addition, at least 4,000 acres in the Yolo Bypass Wildlife Area have been restored to managed seasonal wetlands. This area is part of 16,000 acres comprising agricultural and public lands that provide managed, permanent, and semipermanent wetland habitat.

Suisun Marsh is the largest contiguous brackish water marsh remaining on the West Coast of North America. It encompasses 116,000 acres and includes 52,000 acres of managed wetlands, 27,700 acres of upland grasses, 6,300 acres of tidal wetlands, and 30,000 acres of bays and sloughs. Currently, 90 percent of the wetlands in the Suisun Marsh are diked and managed as food, cover, and nesting habitat for wildlife. More than 10 percent of California's remaining natural wetlands are located within the Suisun Marsh, which serves as the resting and feeding ground for thousands of birds migrating on the Pacific Flyway, as well as resident waterfowl (Reclamation, USFWS, and DFG 2010).

A draft EIS/EIR has been released for public review on the proposed *Suisun Marsh Habitat Management, Preservation, and Restoration Plan* (SMP). At this writing, a final EIS/EIR had not been completed. This plan for Suisun Marsh addresses the various conflicts regarding use of marsh resources, with the focus on restoration of tidal wetlands and managed wetlands. Setting the regulatory foundation for future actions, the *Suisun Marsh Habitat Management, Preservation, and Restoration Plan* is based on the habitats and ecological processes, public and private land uses, levee system integrity, and water quality of Suisun Marsh resources and functions (Reclamation, USFWS, and DFG 2010).

In total, the Delta and Suisun Marsh in the Extended SPA contain approximately 912,000 acres (Table 3.14-4). San Joaquin and Solano counties have the greatest total acreage within the Delta and Suisun Marsh geographical area (approximately 341,000 and 202,000 acres, respectively) and compose more than half of the total area of land in this area. In contrast, Stanislaus County has the least acreage (approximately 2,800 acres) and represents less than 1 percent of the area within the Delta and Suisun Marsh area.

Table 3.14-4. Summary of Land Use by Category within the Sacramento–San Joaquin Delta and Suisun Marsh

Land Use Category				Total
Agricultural Land	Native Classes	Urban	Not Surveyed	
552,466 ac	278,474 ac	78,417 ac	2,739 ac	912,096 ac
61%	31%	9%	< 1%	100%

Source: DWR 2005

Note:

Percentages do not add up to 100% due to rounding.

Key:

ac = acres

Land use in the Delta and Suisun Marsh portion of the Extended SPA is primarily agricultural (approximately 61 percent), reflecting the area’s substantial agricultural production. These agricultural land uses are concentrated closer to the Central Valley in the eastern portion of the Delta and Suisun Marsh area. Sacramento, San Joaquin, Stanislaus, and Yolo counties contain more agricultural lands by percentage than Alameda, Contra Costa, and Solano counties. San Joaquin County makes up the greatest total acreage by county (approximately 341,000 acres) and contains approximately 262,000 acres (79 percent) agricultural lands.

Approximately 31 percent of the Delta and Suisun Marsh area is composed of native land classes, with the greatest acreages and percentages located in Alameda, Contra Costa, and Solano counties.

Urban land uses occupy approximately 9 percent of the Delta and Suisun Marsh area, generally in the cities of Pittsburg and Antioch, and south and southeast of Suisun Bay.

Only a very small portion of the Delta and Suisun Marsh (less than 1 percent) has not been surveyed. Portions of all of the counties in the Delta and Suisun Marsh area are not surveyed.

Sacramento and San Joaquin Valley Watersheds

The Sacramento and San Joaquin Valley watersheds are the portions of the watersheds upstream of the Extended SPA that may be affected by the management actions in those watersheds. Figure 3.14-2 shows the Sacramento and San Joaquin Valley watersheds along with relevant county boundaries. The following counties are within the Sacramento and San Joaquin Valley watersheds: Alpine, Amador, Butte, Calaveras, Colusa, Contra Costa, El Dorado, Fresno, Glenn, Lake, Lassen², Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Sierra, Siskiyou, Stanislaus, Solano, Sutter, Tehama, Tuolumne, Yolo, and Yuba.

The Sacramento and San Joaquin Valley watersheds are described further below.

² Lassen, Modoc, and Plumas counties are included in the Sacramento and San Joaquin Valley watershed territory because of the presence of State Plan of Flood Control (SPFC) facilities. The CVFPP's Extended SPA includes all SPFC facilities and a surrounding buffer area, as well as the area to which they provide flood protection. The CVFPP then divides up the Extended SPA into the Delta and Suisun Marsh region and the Sacramento and San Joaquin Valley and foothills. These isolated portions of the Extended SPA are not contiguous; they have been included in the Sacramento and San Joaquin Valley and foothills portion of the Extended SPA for analytical purposes.

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Figure 3.14-2. CVFPP Study Area

Sacramento Valley Watershed Land uses in the Sacramento Valley watershed are principally agricultural and native classes, with urban development focused in the metropolitan region around the city of Sacramento (including the cities of Davis, Woodland, Elk Grove, Rancho Cordova, Citrus Heights, Folsom, and Galt). Other areas with notable urban development are present in and around the cities of Chico and Oroville, Redding and Red Bluff, Vacaville and Winters, and Yuba City and Marysville. Most of the valley floor is privately owned agricultural land. The more mountainous areas in the Sierra Nevada at the east side of the valley and in the Coast Ranges to the west contain large areas of national forest. Several large national parks, State parks, and DFG wildlife areas are located in the Sierra Nevada as well.

Agricultural acreage in the Sacramento Valley peaked around 1959 and has since declined, mainly because irrigated agricultural lands have been converted to urban development and managed wetlands. Urban uses occupy smaller areas of the Sacramento Valley and are dispersed along the major transportation routes. More than half of the population that resides in the Sacramento Valley watershed lives in the greater metropolitan Sacramento area. Other fast-growing communities include Chico, Dixon, Redding, Vacaville, and several towns in the Sierra Nevada foothills. Urban development along major highway corridors in El Dorado, Placer, Solano, Sutter, and Yolo counties has caused some irrigated agricultural land to be taken out of production. Suburban homes on relatively large parcels (often referred to as rural residential homes or ranchettes) are found on the fringe of many of the urban areas and often include irrigated pastures or small orchards.

Approximately 7 million acres in the Sacramento Valley watershed are public lands owned by the federal government and the State. Nearly 5.3 million acres of this area is national forest and 1.1 million acres are designated as other federal lands, including properties owned by the U.S. Bureau of Land Management and the U.S. military. NWRs make up approximately 120,000 acres of the watershed and are located primarily on the valley floor near the major rivers. State-owned lands include State parks and recreation areas (approximately 32,000 acres) as well as California Department of Fish and Game (DFG) wildlife areas and game refuges (approximately 550,000 acres). In addition to these lands, there are nearly 8,000 acres of ecological preserve (USFWS 2010; DFG 2007, 2009; GreenInfo Network 2010; California Resources Agency 2007).

As noted above, there are more than 120,000 acres of land in NWRs in the Sacramento Valley watershed. Key among those wildlife refuges are the Sutter NWR (2,591 acres), Colusa NWR (4,567 acres), Delevan NWR (5,797 acres), Sacramento River NWR (10,146 acres), Sacramento NWR

(10,819 acres), Stone Lakes NWR (18,000 acres), and Modoc NWR (7,000+ acres) (USFWS 2009, 2011a, 2011b, 2011c, 2011d, 2011e, 2011f). The Sutter NWR, Colusa NWR, Delevan NWR, Sacramento River NWR, and Sacramento NWR are mostly part of the Sacramento NWR Complex, which includes more than 35,000 acres, and more than 30,000 acres of conservation easements on private lands (USFWS 2011g).

San Joaquin Valley Watershed Agriculture remains the dominant land use in the San Joaquin Valley watershed. Agricultural production, processing, packaging, handling, shipping, and the sales of goods and services supporting agriculture represent a major economic and land use activity. The valley floor of the San Joaquin River region is primarily privately owned agricultural land.

Urban development in the San Joaquin Valley watershed is increasing as growing cities such as Fresno, Clovis, Los Banos, Madera, Manteca, Merced, Modesto, Patterson, Stockton, Tracy, and Turlock expand into surrounding agricultural lands. Pacheco and Altamont passes serve as commuting corridors into the Bay Area and fuel the growth of San Joaquin Valley cities. Nonetheless, vast tracts of productive agricultural land surround these cities. With the exception of the cities of Patterson and Los Banos, the west side of the San Joaquin Valley, south of Tracy, is sparsely populated. Small farming communities like Gustine and Coalinga (along Interstate 5) and towns like Mendota and Firebaugh (on the valley floor near the San Joaquin River) provide services for farms and ranches in the area and homes for agricultural workers.

Much of the Sierra Nevada, on the east side of the San Joaquin Valley watershed, is national forest. Government-owned public lands include the El Dorado, Sierra, and Stanislaus national forests and Yosemite National Park. Public lands amount to about one-third of the San Joaquin Valley watershed's total land area. The national forest lands and parklands include more than 2.9 million acres. Properties owned by the U.S. Bureau of Land Management and the U.S. Department of Defense occupy more than 200,000 and 5,100 acres of national forest lands and parklands, respectively. State parks, recreation areas, and other State property occupy about 80,000 acres of land (DWR 2009).

Public wildlife refuges in the San Joaquin Valley watershed include the San Luis NWR, which encompasses 26,340 acres; the San Joaquin River NWR, with 2,875 acres; Merced NWR, 8,280 acres; Los Banos Wildlife Area, 5,586 acres; Volta Wildlife Area, 2,891 acres; North Grasslands Wildlife Area, 7,069 acres; White Slough Wildlife Area, 969 acres; and Isenberg Sandhill Crane Reserve, with 361 acres. Toward the northern end of this region, the Cosumnes River Preserve, managed by The Nature

Conservancy, has become the largest refuge area in the region, with 36,300 acres. Additionally, many private duck clubs in the region maintain wetland habitat (CALFED 2000).

SoCal/Coastal CVP/SWP Service Areas

The portion of the SoCal/coastal CVP/SWP service areas outside of the Extended SPA and the Sacramento and San Joaquin Valley watersheds covers a vast geographic area. The SoCal/coastal CVP/SWP service areas are primarily in Southern California and the central coast areas and include the Tulare Lake Basin. This area extends from northern Plumas County to California's southern border (Figure 3.14-2). This area comprises all or portions of the following 20 counties: Alameda, Contra Costa, Fresno, Imperial, Kern, Kings, Los Angeles, Napa, Orange, Riverside, San Bernardino, San Benito, San Diego, San Luis Obispo, Santa Barbara, Santa Clara, Santa Cruz, Solano, Tulare, and Ventura.

The SoCal/coastal CVP/SWP service areas run from north to south along the interior of California and central and southern coastal California. The area includes portions of the Sacramento Valley, Coast Ranges, Sierra Nevada foothills, San Joaquin Valley, Central Valley, Tulare Basin, central and southern coast, and the Inland Empire. The service areas in the more urban and densely populated Bay Area include portions of the North, East, and South Bay including portions of Alameda, Napa, and Solano counties and most of Santa Clara County. South of the Bay Area and within the service areas are portions of southern Santa Cruz County and all of San Benito County. Portions of Fresno, Kings, and Tulare counties are located within the service areas, along the eastern interior of California. The SoCal/coastal CVP/SWP service areas in the southern part of the state run from the northern boundaries of San Luis Obispo and Kern counties through San Diego County to the state border with Mexico. These areas contain some of California's most densely developed and urbanized areas, including Los Angeles County. Western portions of San Bernardino County and central portions of Riverside County are also included in the service areas. Figures 3.14-1a and 3.14-1b show the northern and central portions of the SoCal/coastal CVP/SWP service areas adjacent to the study area and Sacramento and San Joaquin Valley watersheds. Figure 3.14-2 shows all of the SoCal/coastal CVP/SWP service areas.

3.14.2 Regulatory Setting

The following text summarizes federal, State, and regional and local laws and regulations pertinent to evaluation of the proposed program's impacts on land use and planning. In California, land use and development regulations are administered primarily by local governments (i.e., cities and counties), which exercise near-exclusive regulatory authority for

development and the protection of resources on privately owned lands within their jurisdictions. The federal government, State agencies, and numerous special-purpose districts or agencies also exercise authority to regulate land use and manage resources on properties within their ownership or jurisdictions.

Federal

Federal Emergency Management Agency The Federal Emergency Management Agency (FEMA) undertakes activities to maintain and modify flood maps. These activities can have a substantial effect on the location and nature of land uses, and compliance with FEMA-established requirements frequently represent a critical step in the entitlement of major new land uses in or near the floodplain. Please see further discussion of FEMA regulations in Section 3.13, “Hydrology.”

U.S. Fish and Wildlife Service The U.S. Fish and Wildlife Service prepares comprehensive conservation plans (CCPs) that identify issues, goals, objectives, and strategies for refuge management. CCPs provide refuge managers with blueprints for management and give neighbors and others a clear picture of what the U.S. Fish and Wildlife Service intends to do to manage habitat, protect wildlife, and provide a place where people can enjoy wildlife-dependent activities. Within the study area, CCPs have been prepared for the Colusa, Delevan, Modoc, Sacramento, Stone Lakes, and Sutter NWRs.

State

California Department of Fish and Game DFG prepares land management plans to provide the necessary information for consistent and effective management of DFG lands. Land management plans guide the management of habitats, species, and appropriate public use; identify and guide appropriate, compatible public-use opportunities; direct the management in a manner that promotes cooperative relationships with adjoining private-property owners; and present the environmental documentation necessary for compliance with State and federal statutes and regulations. Within the study area, land management plans have been prepared for the Sacramento River Wildlife Preserve, Yolo Bypass Wildlife Area, and Lower Sherman Island Wildlife Area.

California Department of Parks and Recreation The California Department of Parks and Recreation prepares general plans and resource management plans for parks owned by the department, including those in the study area. These plans describe resource management policies, allowable use levels, land use and facility recommendations, and interpretive recommendations.

California State Lands Commission In 1938, the California Legislature created an independent State Lands Commission to administer the State's property interest in public trust lands. The commission acts pursuant to legislative direction, the constitution, and the public-trust doctrine to protect the public's interest in all public trust lands, including granted trust lands.

All agencies with jurisdiction over development or other activities that can affect public-trust lands and resources have a responsibility to consider their actions in the context of the effect on the resource. The public-trust doctrine exists to protect publicly owned property rights in the navigable waters of the State.

1992 Delta Protection Act As stated previously, in 1959 the Delta was given a legal boundary (California Water Code, Section 12220) with the passage of the Delta Protection Act. Anticipating the potential effects of urban development on the Delta, the act was refined in 1992 to provide primary and secondary zones to regulate land use in the previously defined legal Delta. The Delta Protection Act identified the Delta as a natural resource of statewide significance and formalized the State's commitment to preserve its diverse values. The purpose of the Delta Protection Act is to ensure protection, maintenance, and enhancement of the Delta environment; ensure orderly and balanced use of the Delta land resources; and improve flood protection to increase public health and safety (DWR 2010).

The Delta Protection Commission (DPC) has planning jurisdiction over portions of five counties: Contra Costa, Sacramento, San Joaquin, Solano, and Yolo. It was charged with developing a comprehensive regional plan to guide land use and resource management. The resulting *Land Use and Resource Management Plan for the Primary Zone of the Delta* was initially adopted by DPC in February 1995 and updated in 2010. With the adoption of the management plan or any amendments by DPC, all local governments, as defined in Public Resources Code Section 29725, must submit to DPC proposed amendments that will result in their general plans, as defined in Government Code Section 65300 et seq., being consistent with respect to lands located in the Primary Zone of the Delta.

Land uses in the Delta Primary Zone are subject to review by DPC for consistency with the management plan. DPC does not have land use authority, but it can suspend local projects under an appeal process while it reviews them for consistency with the Delta Protection Act and the *Land Use and Resource Management Plan for the Primary Zone of the Delta*. The plan is described in more detail in the following section.

Delta Protection Commission Land Use and Resource Management

Plan At the time of this writing, DPC is updating the *Land Use and Resource Management Plan for the Primary Zone of the Delta* (also known as the Delta Plan) to account for a variety of important events and changing needs. The current draft was adopted by DPC on February 25, 2010; it has not yet been adopted by the State. It contains policies to protect the Delta's unique character, expand public access and recreation, and locate new transmission lines and utilities within existing corridors to minimize impacts (DPC 2010). These policies may apply to program activities that fall within the Primary Zone of the Delta.

The plan outlines the long-term land use requirements for the Delta. The following are the goals of the plan as set out in the Delta Protection Act:

- Protect, maintain, and where possible, enhance and restore the overall quality of the Delta environment, including but not limited to agriculture, wildlife habitat, and recreational activities.
- Assure orderly, balanced conservation and development of Delta land resources.
- Improve flood protection by structural and nonstructural means to ensure an increased level of public health and safety.

Also pursuant to the act, to the extent that any of the requirements specified in the plan are in conflict, the plan specifically does not deny the right of the landowner to continue the agricultural use of the land (DPC 2010).

The plan consists of eight elements: Environment; Utilities and Infrastructure; Land Use and Development; Water; Levees; Agriculture; Recreation and Access; and Marine Patrol, Boater Education, and Safety Programs. Each element includes findings, policies, and recommendations. The findings form the framework of data from which the policies and recommendations are derived. Policies are the directions for action the local governments must embrace and support through amendments to the general plans, if necessary. Recommendations are additional, optional directions for action for local government, for nonprofit groups, State agencies, and others. It is important to note, however, that in the implementation of both the policies and recommendations of this plan, the Delta Protection Act specifically prohibits the exercise of the power of eminent domain unless requested by the landowner.

Sacramento–San Joaquin Delta Reform Act of 2009 The Sacramento–San Joaquin Delta Reform Act of 2009 (Delta Reform Act) established two coequal goals of providing a more reliable water supply for California and

protecting, restoring, and enhancing the Delta ecosystem. The Delta Reform Act created the Delta Stewardship Council to implement these goals through creation of the Delta Plan.

Delta Stewardship Council Final Interim Delta Plan The Delta Stewardship Council is proceeding with development of the Delta Plan. An Interim Plan that includes “recommendations for early actions, projects, and programs” was developed to provide a framework for effective and consistent actions of the Delta Stewardship Council until the Delta Plan is approved. The Final Interim Delta Plan was adopted by the Delta Stewardship Council at its meeting on August 30, 2010. The draft PEIR for the Delta Plan was made available for public review and comment on November 4, 2011.

Nejedly-Bagley-Z’Berg Suisun Marsh Preservation Act The Nejedly-Bagley-Z’Berg Suisun Marsh Preservation Act was enacted in 1974 by the State of California to protect Suisun Marsh from urban development. In 1976, the San Francisco Bay Conservation and Development Commission developed the *Suisun Marsh Protection Plan*. The objectives of the protection plan are to preserve and enhance the quality and diversity of Suisun Marsh’s aquatic and wildlife habitats and to ensure retention of upland areas adjacent to the marsh in uses compatible with its protection. Land use and marsh management findings and policies identify objectives for managing existing land uses and land and water areas, including preserving and enhancing marsh habitat; providing habitat attractive to waterfowl; improving water distribution and levee systems; encouraging agricultural and grazing practices consistent with wildlife use, waterfowl hunting, and elimination of mosquito breeding; and restoring historic wetlands.

Suisun Marsh Preservation Act of 1977 In 1977, the California Legislature implemented the Suisun Marsh Preservation Act of 1977, which calls for implementation of the *Suisun Marsh Protection Plan* and designates the San Francisco Bay Conservation and Development Commission as the State agency with jurisdiction over Suisun Marsh. This law calls for the Suisun Resource Conservation District to have primary local responsibility for water management on privately owned lands in Suisun Marsh (Reclamation, USFWS, and DFG 2010). All public and private management and development activities within the primary and secondary management areas of the Suisun Marsh must be consistent with the policies and provisions of the Suisun Marsh Protection Plan.

Regional and Local

Cities and counties adopt local land use planning documents to regulate land use and development and the protection of resources on privately

owned lands within their jurisdictions. Local plans and regulations generally are not applicable to activities on State or federal lands or activities implemented solely by State or federal agencies. Should a place-based project be defined and pursued as part of the proposed program, and should the CEQA lead agency be subject to the authority of local jurisdictions, the applicable county and city policies and ordinances would be addressed in a project-level CEQA document as necessary. The primary planning documents are general plans, specific plans, and zoning ordinances.

General Plans California Government Code Section 65300 et seq. establishes the obligation of cities and counties to adopt and implement general plans. The general plan is a comprehensive, long-term, and general document that describes plans for the physical development of a city or county and of any land outside its boundaries that, in the city's or county's judgment, bears relation to its planning. The general plan addresses a broad range of topics, including, at a minimum, land use, circulation, housing, conservation, open space, noise, and safety. In addressing these topics, the general plan identifies the goals, objectives, policies, principles, standards, and plan proposals that support the city's or county's vision for the area. The general plan is a long-range document that typically addresses the physical character of an area over a 20-year period. Finally, although the general plan serves as a blueprint for future development and identifies the overall vision for the planning area, it remains general enough to allow for flexibility in the approach taken to achieve the plan's goals.

Counties and cities within the Primary Zone of the Delta have incorporated policies developed by DPC under the Delta Protection Act into their general plans and zoning codes, which enables implementation of the *Land Use and Resource Management Plan for the Primary Zone of the Delta* at the county and city level. Primary Zone lands generally are designated for agriculture or special Delta resources in their respective general plans. The zoning codes allow a variety of uses in the Primary Zone: agriculture and agriculturally oriented uses; outdoor recreation; wildlife habitat; public facilities; and limited areas for commercial, industrial, and rural residential development. The parcel sizes specified in the general plans and zoning codes range from 5 acres to 160 acres, with most of the Primary Zone in the 20- to 80-acre minimum parcel sizes.

New requirements for general plans were included in California legislation passed in 2007 (Assembly Bill 162) to improve and increase coordination of flood management at the State and local levels. This legislation stated that, upon the next revision of housing elements on or after January 1, 2009, the safety elements of general plans must be revised to include maps

and comprehensive goals, policies, and objectives relating to all of the following:

- 200-year floodplains (those where the risk of flooding in any given year is 0.5 percent or greater)
- Inundation from dam failure
- Levee protection zones
- Areas subject to inundation in the event of the failure of a project or nonproject levee or floodwall

Senate Bill 5 Senate Bill 5, also part of the 2007 flood legislation, requires cities and counties within the Sacramento–San Joaquin Valley to amend applicable elements of their general plans within 24 months of CVFPP adoption to incorporate data and analysis contained in the CVFPP. They must also amend general plan goals and policies to reduce the risk of flood damage and protect lives and property, and identify feasible measures and actions designed to implement goals and policies within their general plans, as amended (California Government Code, Section 65302.9).

In addition, within 36 months of the adoption of the CVFPP, but not more than 12 months after amending their general plans, cities and counties within the Sacramento–San Joaquin Valley must amend their zoning ordinances so that zoning is consistent with the general plans, as amended (California Government Code, Section 65860.1). Once those amendments have become effective (measured by the date on which the statute of limitations for challenges to the amendments has run or, if a challenge occurs, when a final court decision is rendered) local jurisdictions can only make certain land-use approvals generally if they can find that the area has (or is on a pathway to have by 2025) the required level of flood protection (protection against a 200-year flood in urban and urbanizing areas and against a 100-year flood in nonurbanized areas).

Specific Plans Pursuant to Section 65450 of the California Government Code, specific plans establish the basis for the systematic implementation of the general plan for all or part of the area covered by the general plan. Specific plans typically include detailed land use and infrastructure plans and development standards, forming the equivalent of zoning for the affected area. The specific plan must include a statement of the relationship between it and the general plan (California Government Code, Section 65451(b)). An agency’s conclusion that a specific plan is consistent with its general plan “carries a strong presumption of regularity” (*Napa Citizens for Honest Government v. County of Napa Board of Supervisors* (2001) 91

Cal.App.4th 342, 357). The requirements of State law related to specific plans do not address flood risk management, but specific plans must be consistent with the provisions of adopted general plans.

Zoning Ordinances As established in Section 65850 of the California Government Code, cities and counties may adopt zoning and other ordinances to regulate land uses and implement general plan policies. Zoning ordinances establish land use zoning designations that are then applied to all land within the jurisdiction. Typically, zoning ordinances will, for each land use designation, establish allowable land uses and requirements to development in each of these designations. These requirements typically address such parameters as number and height of structures, intensity of use, property setbacks and yards, parking and loading, and use of public spaces. When the general plan is amended, corresponding changes in the zoning ordinance may be required within a reasonable time to ensure that the land uses designated in the general plan would also be allowable by the zoning ordinance (California Government Code, Section 65860(c)).

Habitat Conservation Plans and Natural Community Conservation Plans In addition to these local land use planning documents, regional HCPs and NCCPs are implemented in several portions of the study area. HCPs and NCCPs aim to balance development and conservation goals and are discussed further in Subsection 3.6.2, “Regulatory Setting,” in Section 3.6, “Biological Resources—Terrestrial.” Approved and proposed HCPs, multispecies HCPs, and NCCPs in the study area are illustrated in Figure 3.6-4.

3.14.3 Analysis Methodology and Thresholds of Significance

This section provides a program-level evaluation of the direct and indirect effects on land use of implementing management actions included in the proposed program. These proposed management actions are expressed as NTMAs and LTMAAs. The methods used to assess how different categories of NTMAs and LTMAAs could affect land use are summarized in “Analysis Methodology”; thresholds for evaluating the significance of potential impacts are listed in “Thresholds of Significance.” Potential effects related to each significance threshold are discussed in Section 3.14.4, “Environmental Impacts and Mitigation Measures for NTMAAs,” and Section 3.14.5, “Environmental Impacts, Mitigation Measures, and Mitigation Strategies for LTMAAs.”

Analysis Methodology

General Methodology Impact evaluations were based on a review of the management actions proposed under the CVFPP, expressed as NTMAAs and

LTMAAs in this PEIR, to determine whether these actions could potentially result in impacts on land use. NTMAAs and LTMAAs are described in more detail in Section 2.4, “Proposed Management Activities.” The overall approach to analyzing the impacts of NTMAAs and LTMAAs and providing mitigation is described in detail in Section 3.1, “Approach to Environmental Analysis”; analysis methodology specific to land use is described below. NTMAAs can consist of any of the following types of activities:

- Improvement, remediation, repair, reconstruction, and operation and maintenance of existing facilities
- Construction, operation, and maintenance of small setback levees
- Purchase of easements and/or other interests in land
- Operational criteria changes to existing reservoirs that stay within existing storage allocations
- Implementation of the vegetation management strategy included in the CVFPP
- Initiation of conservation elements included in the proposed program
- Implementation of various changes to DWR and Statewide policies that could result in alteration of the physical environment.

All other types of CVFPP activities fall within the LTMA category. NTMAAs are evaluated using a typical “impact/mitigation” approach. Where impact descriptions and mitigation measures identified for NTMAAs also apply to LTMAAs, they are also attributed to the LTMAAs, with modifications or expansions as needed. However, because many LTMAAs are more general and conceptual, additional impacts are described in a broader narrative format. Impacts of LTMAAs that are addressed in this narrative format are those considered too speculative for detailed evaluation consistent with Section 15145 of the CEQA Guidelines. Following the narrative description of these additional LTMA impacts is a list of suggested mitigation strategies that could be employed, indicating the character and scope of mitigation actions that might be implemented if a future project-specific CEQA analysis were to find these impacts to be significant.

Methodology for Specific Land Use Impacts Implementation of the proposed program could result in construction-related, operational, and maintenance-related impacts on land use—specifically, the potential for

these activities to physically divide an established community and directly or indirectly alter urban, agricultural, and recreational land uses or patterns of land use. In addition, implementation of the required level of flood protection could redirect future urban development to less flood-prone areas, which could indirectly result in potential impacts on air quality; agricultural, biological, and cultural resources; hydrology; and water quality. It could also result in conflicts with regional and local plans and policies. The following discussion defines the types of impacts that could result from implementation of the proposed program, including impacts from actions to achieve the required level of flood protection (protection against a 200-year flood in urban and urbanizing areas and against a 100-year flood in nonurbanized areas).

Types of Impacts The potential of the proposed program to physically divide an established community (see “Thresholds of Significance” below) is evaluated based on the understanding that this threshold pertains to the potential for a project to create an actual physical barrier in a community. That is, the significance threshold would be exceeded if one established part of a community were to be physically severed from the other (e.g., by construction of new elevated roadways or utility infrastructure) to such an extent that residents in one part of the community would be materially separated from another part of the community.³ Based on this understanding, impacts related to creation of perceived separations by conditions such as traffic, noise, and visual blockages would not exceed this threshold.

Implementing conveyance- and storage-related management activities and other management activities could directly and indirectly alter urban, agricultural, and recreational land uses or patterns of land use. To the extent that agricultural or recreational land uses would be affected, such effects are discussed broadly in this section. This section also summarizes information provided in Section 3.3, “Agriculture and Forestry Resources,” and Section 3.18, “Recreation,” of this PEIR as it relates to potential alterations of these land uses or patterns of land uses. More detailed analyses of potential effects on agricultural resources, including agricultural practices and productivity, and recreational land uses, including facilities and activities, are presented in Section 3.3 and Section 3.18, respectively.

³ This interpretation of “physically divide an established community” was established by the California Court of Appeal, 1st Appellate District, in the case of *Cathy Mortuary, Inc., v. San Francisco Planning Commission* (207 Cal. App. 3d 275). In that case, the Court established that the physical disruption or division of the arrangement of an established community, as referred to in CEQA, “was intended to apply to projects, such as highway construction, that would constitute physical barriers dividing a community.”

Implementing policies calling for the required level of flood protection could indirectly cause new land development to be redirected to less flood-prone areas. The methodology for assessing impacts on communities in the Sacramento–San Joaquin Valley from these policies is summarized below.

Future Flood Control Improvements The potential of the proposed program to physically divide an established community and potential alterations of urban, agricultural, and recreational land uses or patterns of land uses are based on the observed effects of similar projects with flood control elements constructed throughout the Sacramento Valley and Delta. Among them are the following projects:

- Reclamation and DWR’s San Joaquin River Restoration Program (Reclamation and DWR 2011)
- USACE and Sacramento Area Flood Control Agency’s (SAFCA’s) Natomas Levee Improvement Program (USACE and SAFCA 2007)
- USACE and West Sacramento Area Flood Control Agency’s West Sacramento Levee Improvements Program, CHP Academy and The Rivers Early Implementation Projects (USACE and WSAFCA 2011)
- Three Rivers Levee Improvement Authority’s (TRLIA’s) Feather-Bear Rivers Levee Setback Project, Feather River Levee Repair Project, and Upper Yuba River Levee Improvement Project (TRLIA 2004a, 2004b, 2006, 2010)

For purposes of the analysis, it is assumed that future flood control improvements, especially those in and around developed or developing communities in the Extended SPA, would be similar to improvements undertaken over the last decade or more by federal, State, and local agencies. Similarly, the approach taken for this analysis is based on the assumption that it is unreasonable to presume that future actions to increase levels of flood protection for developed and developing areas would be materially different and more intrusive than the types of improvements undertaken recently in Central Valley communities.

Implementing conveyance- and storage-related management activities in the Extended SPA and the Sacramento and San Joaquin Valley watersheds could directly or indirectly alter land uses or patterns of land uses in the Sacramento and San Joaquin Valley watersheds. None of the management actions included in the proposed program would be implemented in the SoCal/coastal CVP/SWP service areas. In addition, implementation of the proposed program would not result in any substantial or long-term reductions in water deliveries to the SoCal/coastal CVP/SWP service areas

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(see Section 2.6, “No Near- or Long-Term Reduction in Water or Renewable Electricity Deliveries”). Given these conditions, no impacts on land use would occur in this geographic area.

Urban and FEMA Levels of Flood Protection Cities and counties within the Sacramento–San Joaquin Valley⁴ that wish to continue to develop in urban areas are required to achieve the urban level of flood protection (protection against the 200-year or 0.5-percent-chance flood) for urban and urbanizing areas, as defined in California Government Code Section 65007(l) and California Water Code Section 9602(i), and the FEMA level of flood protection (protection against the 100-year or 1-percent-chance flood) for nonurbanized areas. This analysis recognizes that once general plan and zoning amendments triggered by the adoption of the CVFPP become effective, all cities and counties within the Sacramento–San Joaquin Valley must make findings related to the required level of flood protection before they may enter into a development agreement for a property, approve a discretionary permit or entitlement for any property development or use, or approve a ministerial permit that would result in construction of a new residence, or approve a tentative map/parcel map for a subdivision (California Government Code, Sections 65865.5, 65962, and 66474.5).

It is impossible to predict precisely how local agencies throughout the affected area will respond to this requirement. The following are some of the current uncertainties:

- *The extent of the 200-year floodplain because agencies have not yet completed mapping of the 200-year floodplain.* In some areas, the 200-year floodplain is likely to have the same or very similar footprint as the 100-year floodplain, with a slight increase in depth. Elsewhere, the 200-year floodplain could cover a much larger area, affecting lands that are currently unaffected by the 100-year floodplain.
- *The ways in which local governments will choose to respond to areas designated for existing and future development that are exposed to the 200-year or more likely flood event in urbanized and urbanizing areas*

⁴ Section 65007(g) of the California Government Code defines the Sacramento–San Joaquin Valley as follows: “*Sacramento–San Joaquin Valley*” means any lands in the bed or along or near the banks of the Sacramento River or San Joaquin River, or any of their tributaries or connected therewith, or upon any land adjacent thereto, or within any of the overflow basins thereof, or upon any land susceptible to overflow there from. The Sacramento–San Joaquin Valley does not include lands lying within the Tulare Lake basin, including the Kings River. According to California Government Code Section 65007(i), “*Tulare Lake basin*” means the Tulare Lake Hydrologic Region as defined in the California Water Plan Update 2009, prepared by the Department of Water Resources pursuant to Chapter 1 (commencing with Section 10004) of Part 1.5 of Division 6 of the Water Code.”

and the 100-year or more likely flood event in nonurbanized areas.

Some communities may choose to implement flood control projects that meet the required level of flood protection. Other communities may be unwilling or unable to do so, and may be required to redirect urbanization in those areas. Of those communities, some may have the opportunity and willingness to “relocate” new urban development to other less flood-prone areas, while some communities may not have such lands available or may be otherwise limited in their ability to respond as such.

The following other potential effects are addressed in the analysis of the required level of flood protection:

- Beneficial effects of improved flood safety for future residents and property caused by reducing or avoiding new development in areas with less than the required level of flood protection;
- Indirect adverse effects on resources present on lands subject to redirected growth (e.g., loss of agricultural lands, sensitive biological habitats, cultural resources);
- Indirect adverse effects caused by construction of infrastructure (i.e., roadways, water, sewer, urban drainage) in new areas; and
- Long-term or permanent adverse effects caused by the inability to complete partially constructed planned communities because the required level of flood protection is not provided (e.g., failure to provide schools, neighborhood commercial, and other planned complementary uses where housing has already been constructed),⁵

Evaluation of Sample Study Areas A qualitative assessment of potential impacts was undertaken in recognition of the current uncertainties listed above—uncertainty about the extent of the 200-year floodplain and about local governments’ potential responses to exposure of existing and planned development areas to 200-year or more likely flood events. Specifically, the assessment reflected the lack of certainty about where

⁵ The extent to which this effect could occur in the future is currently unknown. However, as an example, development in the Natomas portion of the city of Sacramento has been substantially delayed at least twice in the last 20 years while improvements have been made to flood management infrastructure to achieve 100-year flood protection. It is reasonable to conclude that similar effects involving development delays for even longer periods of time could take place in other communities in the Extended SPA in the future; including communities that currently are mapped to have 200-year flood protection because of potential changes to hydrologic modeling, design criteria for flood protection infrastructure, and other requirements.

changes would occur in response to requirements regarding the level of flood protection.

As discussed above, the Sacramento and San Joaquin valleys and foothills contains 45 cities, 75 census-designated areas, and 26 counties. The reasonable assumption was made that the future mapped 200-year floodplain will be greater than the 100-year floodplain and less than the current mapped 500-year floodplain. Generally, comprehensive and publicly available GIS-based maps showing categories of currently developed areas and the anticipated areas of future development are not available for most of these jurisdictions. Moreover, the accurate preparation of these maps would require a substantial degree of local knowledge that is not reasonably available to DWR on a comprehensive basis. As a result, this program-level EIR has selected for more detailed study a representative group of four communities with recently adopted general plans and available land use data to help illustrate some of the land-use issues that may be presented by future local actions responding to the CVFPP.

To substantiate the qualitative assessment, existing land uses were compared to future land uses within the 100-year and 500-year floodplains for three sample locations in the study area: the City of Ripon's sphere of influence (SOI), the City of Merced's SOI, and Sacramento County (two different parts of the county are evaluated). These three communities were selected because (1) they represent examples of a smaller city, a mid-sized city, and a large metropolitan area; (2) they represent some of the geographic diversity of the study area; and (3) existing data were available to support the mapping effort. Geographic information system (GIS) mapping and aerial photo interpretation was used to identify existing development and land uses within the 100-year and 500-year floodplain contours within the jurisdictional boundaries of the City of Ripon, the City of Merced, and Sacramento County. Future land uses were mapped based on the most up-to-date general plan land use designation mapping for the City of Ripon, the City of Merced, and Sacramento County. Potential indirect effects of policies related to the required level of flood protection on land uses, as exemplified by changes in land uses or patterns of land uses within these sample areas, are analyzed in the discussion of Impact LU-7 (NTMA).

Thresholds of Significance

The following thresholds of significance have been used to determine whether implementing the proposed program would result in a significant impact. These thresholds of significance are based on Appendix G of the CEQA Guidelines, as amended. A land use impact is considered significant

if implementation of the proposed program would do any of the following when compared against existing conditions:

- Physically divide an established community
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project, or result in changes to an applicable land use plan, policy, or regulation, adopted for the purpose of avoiding or mitigating one or more environmental effects (including but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) that would result in alterations of land uses or patterns of land use that would cause a substantial adverse physical environmental effect
- Conflict with any applicable HCP or NCCP

Significance Thresholds Not Evaluated Further

The potential for CVFPP management actions to conflict with HCPs or NCCPs is addressed in Section 3.6, “Biological Resources—Terrestrial.” This threshold is not evaluated further in this section.

3.14.4 Environmental Impacts and Mitigation Measures for NTMAs

This section describes the physical effects of NTMAs on land use and planning. For each impact discussion, the environmental effect is determined to be either less than significant, significant, potentially significant, or beneficial compared to existing conditions and relative to the thresholds of significance described above. These significance categories are described in more detail in Section 3.1, “Approach to Environmental Analysis.” Feasible mitigation measures are identified to address any significant or potentially significant impacts. Actual implementation, monitoring, and reporting of the PEIR mitigation measures would be the responsibility of the project proponent for each site-specific project. For those projects not undertaken by, or otherwise subject to the jurisdiction of, DWR or the Central Valley Flood Protection Board (Board), the project proponent generally can and should implement all applicable and appropriate mitigation measures. The project proponent is the entity with primary responsibility for implementing specific future projects and may include DWR; the Board; reclamation districts; local flood control agencies; and other federal, State, or local agencies. Because various agencies may ultimately be responsible for implementing (or ensuring implementation of) mitigation measures identified in this PEIR, the text describing mitigation measures below does not refer directly to DWR but instead refers to the “project proponent.” This term is used to represent all

potential future entities responsible for implementing, or ensuring implementation of, mitigation measures.

Impact LU-1 (NTMA): *Physical Division of an Established Community as a Result of Conveyance-Related Management Activities*

Conveyance-related NTMAs would involve raising or improving existing levees; constructing floodwalls, seepage and stability berms, and slurry cutoff walls; installing relief wells, toe drains, and landside slope armoring; and constructing small setback levees.

The assessment of the effects of NTMAs is based on the observed effects of flood control projects constructed throughout the Sacramento Valley and Delta regions by such entities as DWR, USACE, SAFCA, TRLIA, and the San Joaquin Area Flood Control Agency. As described in greater detail below, most NTMA conveyance activities would probably occur within existing levee footprints or would require those footprints to be widened or extended. In all likelihood, even small setback levees would be constructed near existing levees.

Some individual residences or small clusters of residences may be located within or immediately adjacent to the levee footprints and/or rights-of-way and could be affected by NTMAs. Some residences may be located within the footprints of small setback levees and could be affected by levee construction. In addition, residences may be located within the floodway, on the waterside of the proposed small setback levees; those structures would have to be removed or relocated, or the property would require some other type of alteration. In each of these cases, the affected residences or other land uses likely would be isolated and would be located outside of or on the fringe of an established community.

In conducting this analysis, DWR reviewed a wide variety of past flood control projects in the Central Valley. Among the projects reviewed were the West Sacramento Levee Improvements Program's The Rivers Project (USACE and West Sacramento Area Flood Control Agency); the SAFCA Natomas Levee Improvement Program; and the TRLIA Feather-Bear Rivers Levee Setback Project, Feather River Levee Repair Project, and Upper Yuba River Levee Improvement Project. Based on the review of these projects that have been implemented over the last decade, and their resulting environmental effects, it is reasonable to conclude that NTMAs would not result in the types of changes that would meet the CEQA definition of "physical division of an established community."

More specifically, the review of recent flood control projects undertaken by federal, State, local, and regional agencies identified the following project components that would be similar to proposed NTMAs.

Example Project 1: West Sacramento Levee Improvements Program

USACE and West Sacramento Area Flood Control Agency's The Rivers Early Implementation Project is an example of a levee repair project located primarily in an established urbanized community. The project involved installing a seepage cutoff barrier, grading a levee, and flattening slopes along the Sacramento River from the DWR maintenance yard located in the Bryte community to The Rivers residential community. There are 15 residences in the immediate vicinity of The Rivers EIP project area. Of those residences, 11 are located on top of the levee and four are adjacent to the landside toe. Before construction, West Sacramento Area Flood Control Agency planned to acquire temporary or permanent right-of-way through fee title or easement interest within the footprint of the project improvements to prevent residential or utility encroachments into the flood control system. In addition, the environmental review for the project determined that these residences were located at the edge of the community; that levee improvements would affect residences on the fringe of the community, and would not run through or otherwise divide the community or any West Sacramento neighborhood; and that as a result, the project would not result in the division of an established community (USACE and WSAFCA 2011).

Example Project 2: Natomas Levee Improvement Program

USACE and SAFCA's Natomas Levee Improvement Program has required several phases of levee repairs along the Sacramento River, Natomas Cross Canal, West Drainage Canal, Elkhorn Canal, and Pleasant Grove Creek Canal. These project phases, completed or currently under way, have generally involved constructing slurry cutoff walls, relief wells, seepage berms, and stability berms; widening levees; and completing other in-place improvements. In addition, small adjacent setback levees were constructed along the Sacramento River west of the Sacramento city limits and along the Natomas Cross Canal. Existing levees were repaired and reconstructed within existing levee footprints and setback levees were constructed in areas immediately adjacent to existing levees. Several scattered rural residences were affected by actions proposed under the Natomas Levee Improvement Program. Although some individual residences and outbuildings required demolition and/or relocation, none of these structures were located within established, cohesive neighborhoods. In addition, roadways and other infrastructure affected by construction of the setback levees were realigned or replaced. Thus, the Natomas Levee Improvement Program was determined to not result in the division of an established community (SAFCA 2007).

Example Project 3: Feather-Bear Rivers Levee Setback Project, Feather River Levee Repair Project, and Upper Yuba River Levee Improvement Project

TRLIA's Feather-Bear Rivers Levee Setback Project, Feather River Levee Repair Project, and Upper Yuba River Levee Improvement Project were located in unincorporated Yuba County near the established communities of Linda and Olivehurst, and the developing community of Plumas Lake. TRLIA's levee improvement projects generally involved constructing slurry cutoff walls, relief wells, and other in-place improvements, but also included construction of two substantial setback levees (see Impact LU-1 (LTMA) below for further discussion of setback levees). The new setback levees were constructed in agricultural areas and caused farmland to be placed within the river floodway. In portions of the TRLIA project area where levees were located near existing neighborhoods, such as the Yuba River's south levee near the existing community of Linda, levee improvements were constructed either within the existing levee footprint or right-of-way or on the waterside of the levee. Implementing these projects only resulted in the removal of a limited number of scattered rural residences located on the waterside of the Feather River setback levee and did not result in the physical division of an established community (YCWA 2003; TRLIA 2004a, 2004b, 2006, 2010).

As explained above, it is extremely unlikely that conveyance-related NTMAs would require construction of the types of features that could create a physical barrier within an established community, such as large new levees, weirs, bypasses or similar flood control infrastructure. A review of recent flood control projects undertaken by federal, State, local, and regional agencies over the last decade clearly demonstrates that NTMAs would not result in the division of an established community. Therefore, construction of conveyance-related NTMAs—repairing, reconstructing, and improving existing levee systems—would not result in the physical division of an established community. This impact would be **less than significant**. No mitigation is required.

Impact LU-2 (NTMA): *Physical Division of an Established Community as a Result of Storage-Related Management Activities*

Storage-related NTMAs would involve reoperating water storage facilities (changing the operations of reservoirs) to alter the timing, frequency, and magnitude of flood releases to downstream channels. The proposed program includes forecast-based operations, which would use more accurate long-term runoff forecasting to provide greater flexibility in meeting a reservoir's flood space requirements. Proposed changes to reservoir operations include using long-term forecast data to implement more flexible schedules for reservoir releases using a range of water levels, rather than leaving reservoir releases to be controlled entirely by fixed

reservoir water-surface elevations at specific times of the year. As described in Section 3.13, “Hydrology,” these operational changes would result in relatively minor changes to downstream river flows, and these flows would be comparable to the periodic flood flows that have occurred historically. The changes to river flows that would result from storage-related NTMAs would be entirely contained within existing floodways. These changes would not generate material changes to downstream channels that would require construction or creation of barriers that would divide established communities.

Storage-related NTMAs would not involve constructing new levees, setback levees, weirs, or bypasses, or developing other new infrastructure within an established community that could create a physical division that would meet the threshold of significance under CEQA. Therefore, implementing storage-related NTMAs would not result in the division of established communities. **No impact** would occur. No mitigation is required.

Impact LU-3 (NTMA): *Physical Division of an Established Community as a Result of Policies Associated with the Required Level of Flood Protection*

The requirements of Government Code Sections 65865.5 and 65962 are triggered by the 2007 flood legislation and tied by the State legislature to the Board’s adoption of the CVFPP. Therefore, the adoption of the CVFPP would trigger the statutorily established requirement for cities and counties to make certain revisions to their general plans and zoning ordinances and subsequently make findings relating to providing the required level of flood protection (protection against a 200-year flood in urban and urbanizing areas and against a 100-year flood in nonurbanized areas) as described below. They would also be required to amend their general plans, zoning ordinances, and other local planning documents to “include data and analysis contained in [the CVFPP], goals and policies for the protection of lives and property that will reduce the risk of flood damage, and related feasible implementation measures.”⁶ In addition, cities and counties would be required to amend their zoning ordinances to be consistent with any changes made to their general plans in response to the proposed program. If cities and counties were to approve development agreements, issue or approve discretionary permits or actions, or approve ministerial actions that would result in construction of any new residences in flood hazard zones, they would be required to make one of the following findings regarding the required level of flood protection:

⁶ See Section 65302.9 of the California Government Code.

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- (1) The property is protected to the urban level of flood protection in urban and urbanizing areas or to the FEMA standard of flood protection in nonurbanized areas.
- (2) The city or county has imposed conditions that will protect the property to the urban level of flood protection in urban and urbanizing areas or to the FEMA standard of flood protection in nonurbanized areas.
- (3) The local flood management agency has made adequate progress on the construction of a flood protection system which will result in flood protection equal to or greater than the urban level of flood protection in urban or urbanizing areas by 2025, or to the FEMA standard of flood protection in nonurbanized areas.

The requirements described above would affect future decisions affecting land use planning and approval of permits for currently planned and zoned land in flood hazard zones. They would not directly or indirectly result in the division of an established community.

Because these requirements would most likely affect currently planned and zoned property in flood hazard zones, the requirement to provide the required level of flood protection may indirectly affect partially built established communities. The inability to make required findings could preclude local agencies from approving development agreements for any type of development or discretionary permits or entitlements for new planned residential projects, or from issuing ministerial permits (e.g., building permits) for new residences.

Although the location and duration of such substantial delays in development in partially built communities is not currently known, if such a scenario were to occur, a planned community could be left partially developed for extended periods of time or permanently. For example, if an agency were unable to take a discretionary action, then for a lengthy period the residents of existing homes within the flood hazard zone could be left without either planned public facilities (such as schools and public safety buildings) or planned nonresidential uses (such as offices, retail, or local services), or both. Further, even if all discretionary decisions had been made, some neighborhoods could be left unbuilt or partially built, with empty lots or whole neighborhoods for which residential building permits could not be issued. As an example previously noted, the City of Sacramento has experienced two substantial delays in the development of the North Natomas community over the last 20 years. Similar or even longer delays could take place in other communities with less ability to fund levee improvements or facing more technically challenging solutions to achieving the required level of flood protection. The requirement to

provide the appropriate level of flood protection would not divide an existing community per se, but it could cause planned residential areas to remain unbuilt or could leave planned subdivisions only partially built.

These effects could adversely affect the safety, convenience, sustainability, and/or quality of life in communities where construction in flood hazard zones may have already begun. In some instances, partially built communities may be fully developed after a 200-year level of flood protection is provided; however, long-term adverse effects would still occur if communities were to require 20–30 years to address flooding problems or if flood control issues were to continue to incrementally emerge.

Although these effects would adversely affect existing residents and homeowners in particular flood hazard zones if they were to occur, such effects would not trigger a finding of significance under the established CEQA threshold related to the “physical division of an established community.” Thus, this impact would be **less than significant**. No mitigation is required.

Impact LU-4 (NTMA): *Physical Division of an Established Community as a Result of Other NTMAs*

Other NTMAs that could affect established communities include purchasing easements to improve natural floodplain processes and ensure that land uses remain compatible with periodic flooding. Purchasing such easements would not result in the division of established communities. Using easements to expand floodplains could result in the removal or relocation of isolated existing individual residences or clusters of residences located within the floodplain; however, such residences likely would be located outside of established communities or might be located along the edge of existing established communities. There is no evidence to suggest that easements would be purchased in densely developed areas to support floodplain expansion, or that affected residences either would be located in densely developed areas or would be so configured that their removal would divide an established community.

Purchasing these easements could allow flood flows to periodically inundate existing roadways and may create a physical distance between isolated homes or small groups of homes in rural locations. If such a situation were to occur, it is reasonable to expect that detours would be established for affected roadways during flood events or that the roadways would be replaced. In these cases, however, periodic or permanent inundation of existing roads would not cause physical changes that would meet CEQA’s definition of division of an existing established community.

Therefore, using easements to support floodplain expansion would not result in the division of established communities. This impact would be **less than significant**. No mitigation is required.

Impact LU-5 (NTMA): Alterations of Land Uses or Patterns of Land Use as a Result of Conveyance-Related Management Activities that Could Cause a Substantial Adverse Physical Environmental Effect

Repairing, reconstructing, and improving levees would be unlikely to affect a substantial quantity of existing and planned urban land use patterns. However, they could affect or alter isolated developed uses and existing agricultural and recreational land uses, resulting in a substantial adverse physical effect on the environment. Multiple activities could affect such land uses: raising or improving existing levees; constructing floodwalls, seepage and stability berms, and setback levees; and installing relief wells, toe drains, and landside slope armoring.

As discussed previously for Impact LU-1 (NTMA), most NTMA conveyance activities would probably occur within existing levee footprints or would require those footprints to be widened or extended. In all likelihood, even small setback levees would be constructed near existing levees.

Some isolated developed uses could be adversely affected by NTMAs, particularly where individual residences or small clusters of residences may be located within or immediately adjacent to levee footprints and/or rights-of-way. Where small setback levees would be constructed, some residences or nonresidential structures located within the footprints would need to be removed to accommodate levee construction. In addition, residences or nonresidential structures may be located within the floodway, on the waterside of the proposed small setback levees; those structures would need to be removed or relocated, or the property would require some other type of alteration.

In each of these cases, the affected residential or other land uses would likely be limited to a few isolated homes or other buildings located outside of or on the fringe of an established community. As described for Impact LU-1 (NTMA), extensive review of recent flood management projects undertaken by federal, State, local and regional agencies supports this conclusion. Nevertheless, a limited number of residences and other nonresidential structures may be adversely affected by conveyance-related management activities. Removing residences or nonresidential structures would cause developed uses to be converted to nondeveloped uses, and would adversely alter land uses or the pattern of land uses.

Conveyance-related management activities could substantially alter agricultural and recreational land uses or patterns of land use. Implementing NTMAs could result in substantial conversions of Important Farmland and lands under Williamson Act contracts to nonagricultural uses. These impacts are more thoroughly addressed under Impact AG-1 (NTMA), “Conversion of Substantial Amounts of Important Farmland and Land under Williamson Act Contracts to Nonagricultural Uses Resulting from Conveyance-Related Management Activities,” in Section 3.3, “Agriculture and Forestry Resources.”

In addition, implementing NTMAs could result in the temporary or permanent alteration of lands used for recreational purposes, recreational facilities, and/or access that facilitates recreational uses. These impacts are more thoroughly addressed under Impact REC-1 (NTMA), “Substantial Permanent Displacement of or Decreased Access to Recreational Facilities Caused by Levee Reconstruction, Improvements, or Setbacks,” and Impact REC-2 (NTMA), “Substantial Temporary Decrease in Opportunities for Recreation or Access to Recreational Facilities during Construction of Conveyance or Storage Improvements,” in Section 3.18, “Recreation.”

By improving the effectiveness of the flood control system, conveyance-related activities would have the beneficial effect of providing improved flood protection to residential and nonresidential uses in protected areas. However, to the extent that such activities would directly or indirectly adversely affect homes or other developed uses, convert agricultural lands to nonagricultural uses or adversely affect the agricultural productivity of farmlands, and/or displace or disrupt lands used for recreational purposes, conveyance-related NTMAs would result in substantial adverse physical effects on the environment. This impact would be **significant**.

Mitigation Measure LU-5a (NTMA): Provide Financial Compensation for Property Loss and Relocation Assistance to Compensate for the Removal and Displacement of Residential Land Uses

The project proponent will provide financial compensation for property loss and relocation expenses to any person displaced because of the acquisition of real property, as required by the State of California Relocation Assistance Act (Chapter 16, Section 7260 et seq. of the California Government Code). Before an offer is made to each property owner, all real property to be acquired will be appraised to determine its fair market value. The project proponent will assist eligible property occupants in finding comparable replacement housing and will pay for actual, reasonable moving costs consistent with applicable State and federal law.

Mitigation Measure LU-5b (NTMA): *Implement Mitigation Measure AG-1a (NTMA), “Preserve Agricultural Productivity of Important Farmland to the Extent Possible”*

Mitigation Measure LU-5c (NTMA): *Implement Mitigation Measure AG-1c (NTMA), “Establish Conservation Easements Where Potentially Significant Agricultural Land Use Impacts Still Occur after Implementation of Mitigation Measures AG-1a and AG-1b”*

Mitigation Measure LU-5d (NTMA): *Implement Mitigation Measure REC-1 (NTMA), “Replace Displaced Recreational Facilities and Access”*

Mitigation Measure LU-5e (NTMA): *Implement Mitigation Measure REC-2 (NTMA), “Avoid Construction Activities and Staging near Recreational Facilities and Time Such Activities to Avoid the High-Use Recreation Season”*

Implementing Mitigation Measure LU-5a (NTMA) would reduce impacts associated with the removal of residences to a **less-than-significant** level. Implementing Mitigation Measures LU-5b (NTMA) and LU-5c (NTMA) would reduce impacts associated with changes in agricultural land use patterns, but not to a less-than-significant level; Impact LU-5 (NTMA) would be **significant and unavoidable** with regard to agricultural resources. Implementing Mitigation Measures LU-5d (NTMA) and LU-5e (NTMA) would reduce impacts associated with changes in recreational land uses to a **less-than-significant** level.

Impact LU-6 (NTMA): *Alterations of Land Uses or Patterns of Land Use as a Result of Storage-Related Management Activities that Could Cause an Adverse Physical Environmental Effect*

Reoperating water storage facilities (i.e., changing reservoir operations) to reduce flood stages and flow volumes along rivers could alter the timing, magnitude, or frequency of flood releases to downstream channels. The proposed program includes forecast-based operations, which would use more accurate long-term runoff forecasting to provide greater flexibility in meeting a reservoir’s flood space requirements. Proposed changes to reservoir operations include using long-term forecast data to implement more flexible schedules for reservoir releases using a range of water levels, rather than leaving reservoir releases to be controlled entirely by fixed reservoir water-surface elevations at specific times of the year.

These changes to reservoir flood releases would alter conditions only in existing downstream rivers and associated floodways; thus, they would not materially affect land uses other than those that already exist in affected

floodways. The only developed uses that could be affected would be a limited number of residences or agricultural or water-dependent commercial or industrial buildings located within established floodways. (Some such residences or other buildings are located on the waterside of the Sacramento River levee in Sacramento, Redding, and several other communities in the Sacramento Valley.) These operational changes could alter the timing and magnitude of flood events that affect access to or the utility of these uses that exist in the floodway.

Aside from this limited number of developed uses, storage-related NTMAs—if sufficiently large—could alter agricultural land uses within established floodways. These impacts are more thoroughly addressed under Impact AG-2 (NTMA), “Conversion of Substantial Amounts of Important Farmland and Land under Williamson Act Contracts to Nonagricultural Uses Resulting from Storage-Related Management Activities,” in Section 3.3, “Agriculture and Forestry Resources.”

Changing the operational criteria of existing reservoirs could also alter the amount and timing of the annual reservoir drawdown and could reduce access to recreational facilities, reduce the length of time that recreational facilities are available to the public each year, and affect the amount of shoreline and the surface area of the reservoir available for recreation. These impacts are more thoroughly discussed under Impact REC-3 (NTMA), “Reduced Functionality of Recreational Facilities and Decreased Opportunities for Recreation at Reservoirs as a Result of Changes in Reservoir Operational Criteria,” in Section 3.18, “Recreation.”

Changes in reservoir drawdown and downstream flows under the NTMAs would be minimal. These changes would not be of sufficient magnitude or duration to materially alter developed uses located along floodways, or the suitability of existing agricultural lands for continued agricultural production, nor would they permanently displace recreational facilities. Therefore, this impact would be **less than significant**. No mitigation is required.

Impact LU-7 (NTMA): Alterations of Land Uses or Patterns of Land Use as a Result of Policies Related to the Required Level of Flood Protection that Would Cause a Substantial Adverse Physical Environmental Effect

Pursuant to existing State law, adopting the CVFPP—regardless of its content—would trigger several requirements related to local land use planning and management. As is described for Impact LU-3 (NTMA), all local land use agencies within the Sacramento–San Joaquin Valley would be required to update their general plans and zoning ordinances to

appropriately reflect information contained in the CVFPP. Where appropriate, they would be required to make one of several possible findings related to the required level of flood protection (protection against a 200-year flood in urban and urbanizing areas and against a 100-year flood in nonurbanized areas) before they could do any of the following with regard to land within a flood hazard zone: enter into a development agreement for a property, approve a discretionary permit or entitlement for any property development or use, approve a ministerial permit that would result in construction of a new residence, or approve a tentative map/parcel map for a subdivision. (See Sections 65865.5, 65962, and 66474.5 of the California Government Code.)

Many cities and counties in the Central Valley use their general plans' land use designations and zoning ordinances to restrict land uses in areas exposed to flooding, particularly more urbanized areas. In the past, many local jurisdictions have used the 100-year flood risk (1 percent risk of flooding in any given year) as the threshold for acceptable flood risk. Where such a level of flood protection has not been available, many of these jurisdictions have required other flood protection measures, such as elevating structures and providing notice of risk, as a condition of development. Several new requirements have been adopted into State law by the California Legislature and are statutorily triggered by adoption of the CVFPP, regardless of its other content (see Section 3.14.2, "Regulatory Setting," above):

- The acceptable level of risk in urban and urbanizing areas has decreased from the 1 percent flood risk to the 0.5 percent flood risk (i.e., 100-year to 200-year flood risk).
- Local jurisdictions are obliged to consider flood risk and flood management in their planning and decision-making processes (e.g., amending general plans, zoning ordinances).
- The approval of new habitable development in flood-prone areas is explicitly subject to detailed findings requirements generally requiring that the provision of adequate flood protection is reasonably assured by 2025.

California's planning laws delegate the authority for land use and land use planning to local jurisdictions. DWR has no land use authority (aside from control of DWR-owned land), and under the CVFPP, would not be authorized to make decisions about local land use plans and development activity. Local planners and decision makers throughout the Central Valley would determine the nature and extent of changes made to local land use plans or development permitting processes in response to statutorily

established 2007 flood legislation requirements for the necessary level of flood protection. The statutorily required amendments to land use plans and zoning codes are policy-related and regulatory effects on land use regulation, rather than physical environmental effects in and of themselves; therefore, adoption of such amendments would not be considered direct impacts of the CVFPP.

However, implementing laws and policies requiring the applicable level of flood protection, as described above, could indirectly alter land uses or patterns of land use. If cities or counties were to find attaining this level of flood protection to be infeasible, they could respond by altering their land use plans to redirect land uses from areas subject to flood risk to areas that are not similarly exposed (i.e., to areas with 200-year or 100-year flood protection, if such lands occur within their jurisdiction). Generally, the land-use implications of avoiding hazardous developments in floodplains would be considered to be beneficial, which is implicit in the Legislature's decision to adopt these new restrictions. However, indirect effects could occur from the resulting redirection of development to safer areas, which may present other environmental issues. The following discussion analyzes the potential for policies related to the required level of flood protection to indirectly result in changes in land uses or patterns of land uses for three example locations in the study area: the city of Merced, the city of Ripon, and Sacramento County.

Evaluation of Example Study Areas

As discussed in “Evaluation of Sample Study Areas” in Section 3.14.3, “Analysis Methodology and Thresholds of Significance,” the cities of Merced and Ripon and Sacramento County are examples of areas with land that is designated for future urbanization but exposed to flood risks between the 100-year and 500-year floods (Figures 3.14-3 through 3.14-6). Some of the land between the 100-year and 500-year floodplains would be likely to fall into the 200-year floodplain. These jurisdictions also have land use authority over, or are adjacent to other unincorporated lands that are not currently planned for urban development but which are exposed to less flood risk. The Cities of Merced and Ripon and the County of Sacramento could respond to new statutorily established 2007 flood legislation requirements by moving urban designations from land that is currently so designated to less flood-prone land that is currently designated for agriculture or open space uses.

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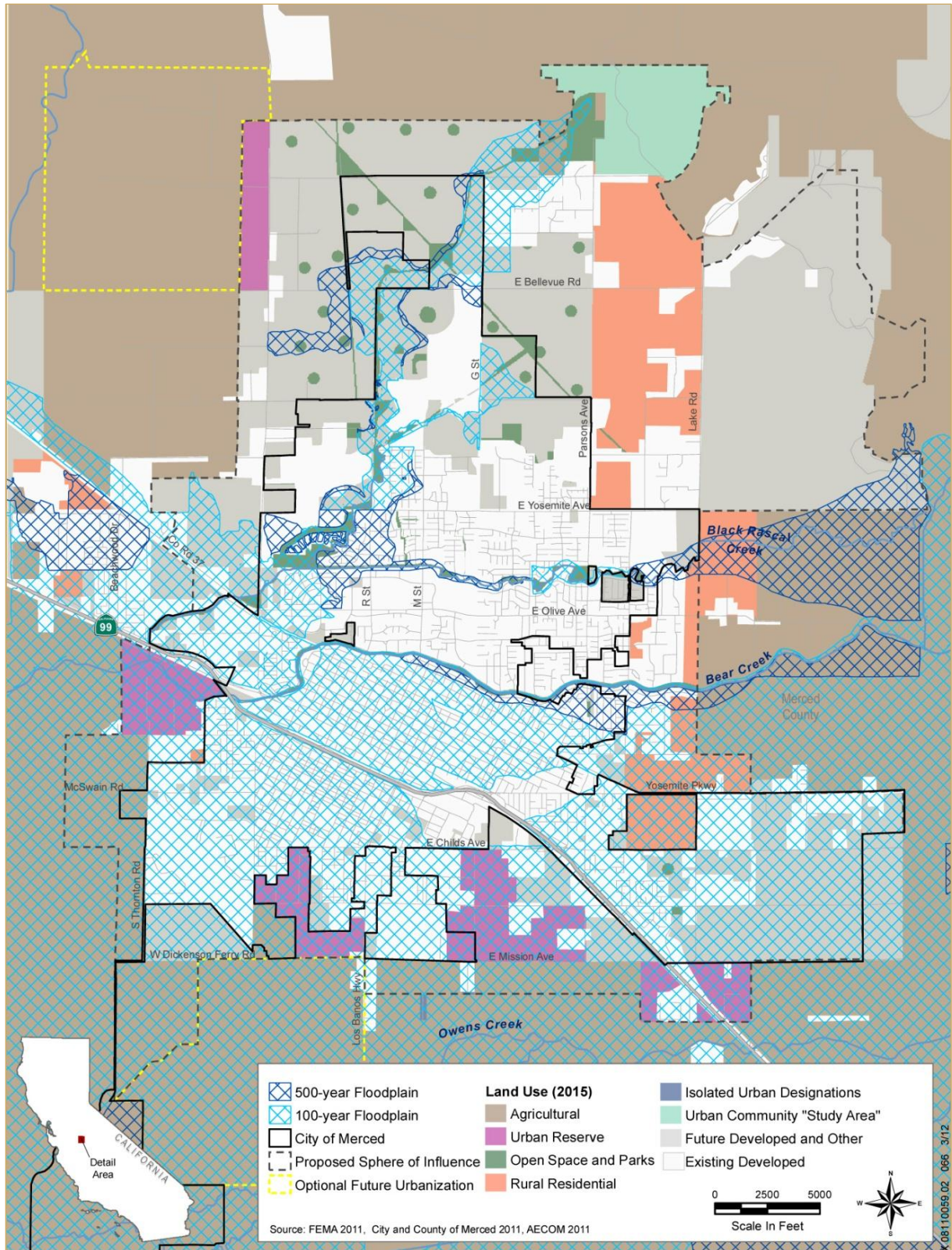


Figure 3.14-3. City of Merced Example Area

3.0 Environmental Setting, Impacts, and Mitigation Measures
 3.14 Land Use and Planning

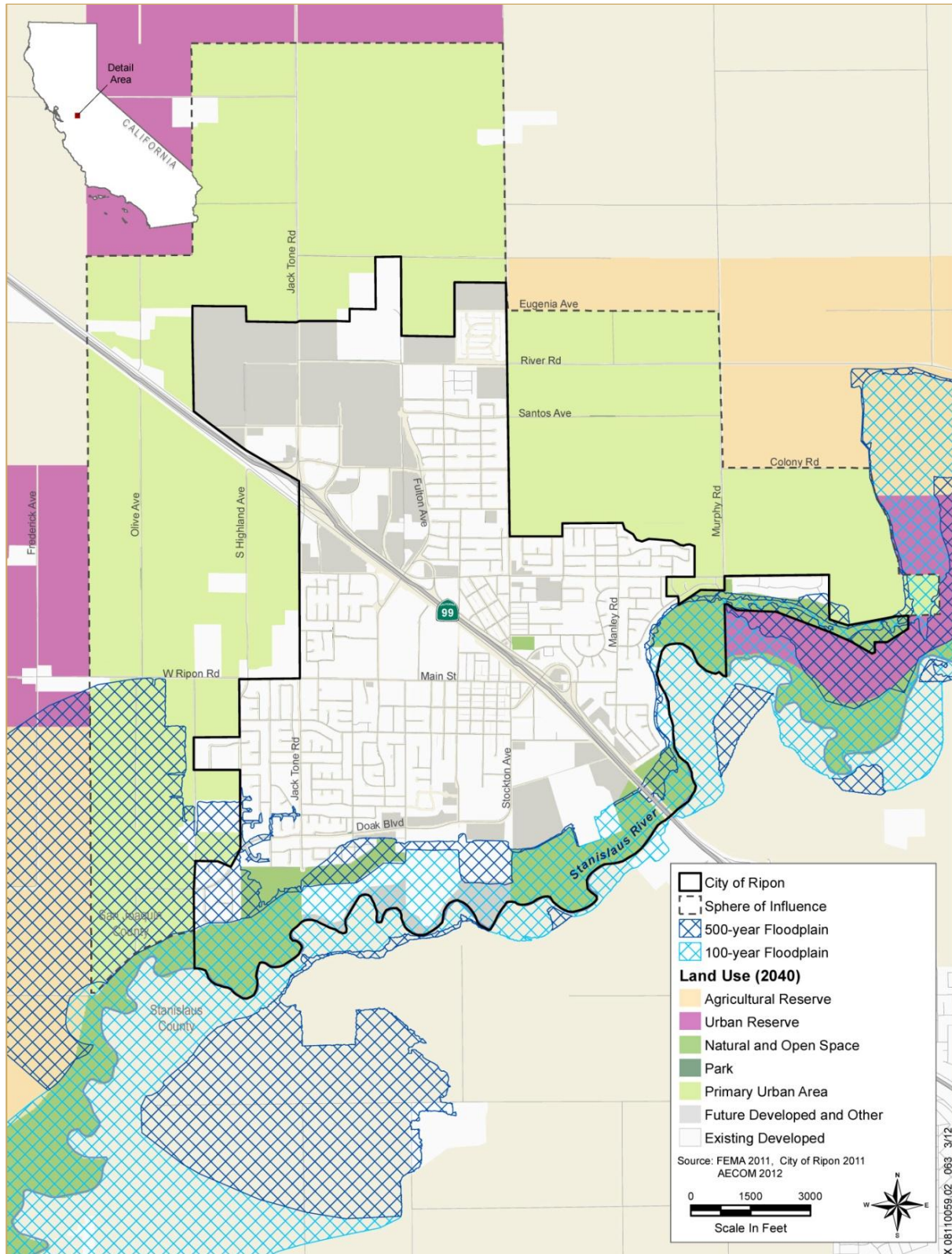


Figure 3.14-4. City of Ripon Example Area

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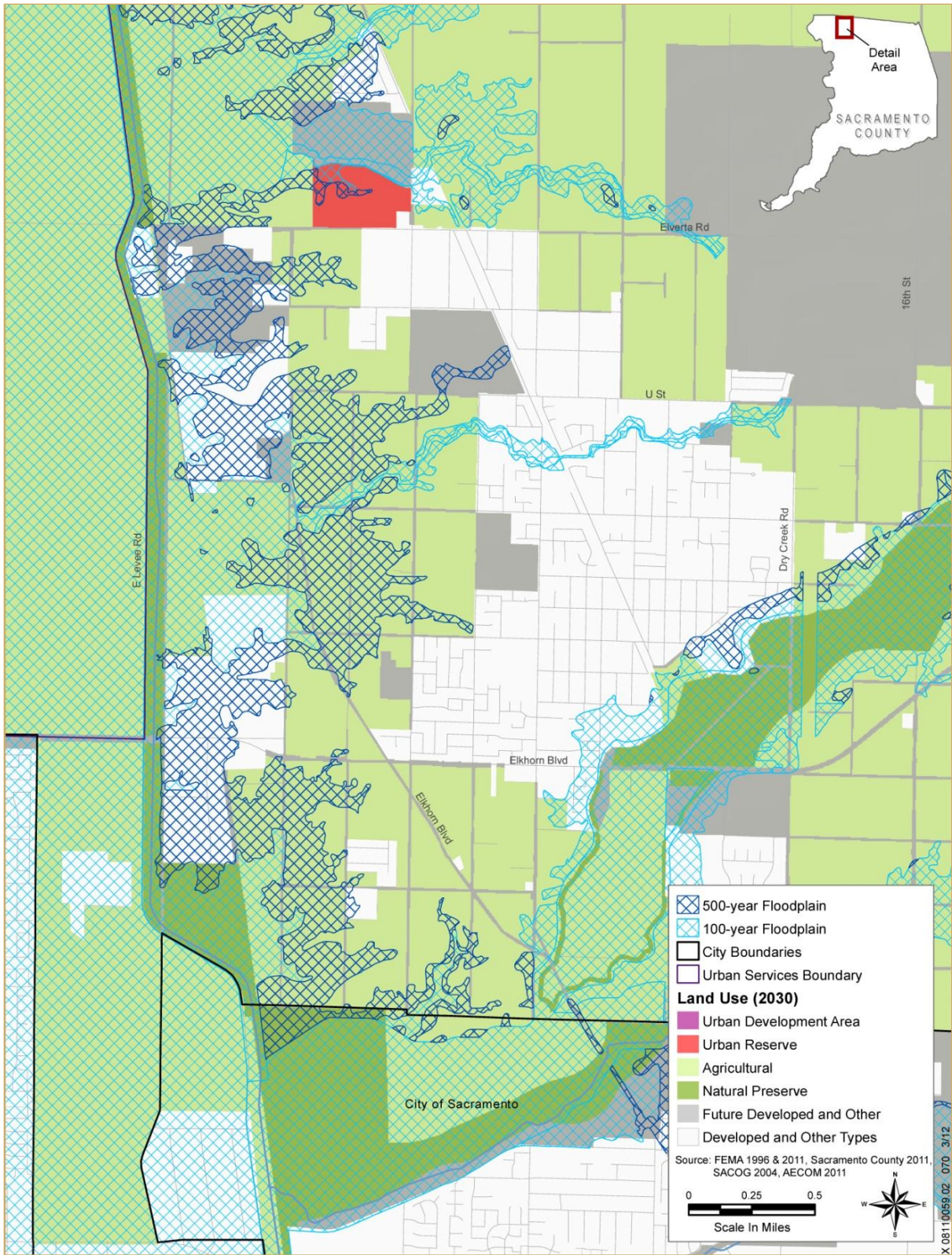


Figure 3.14-5. Sacramento County—North Example Area

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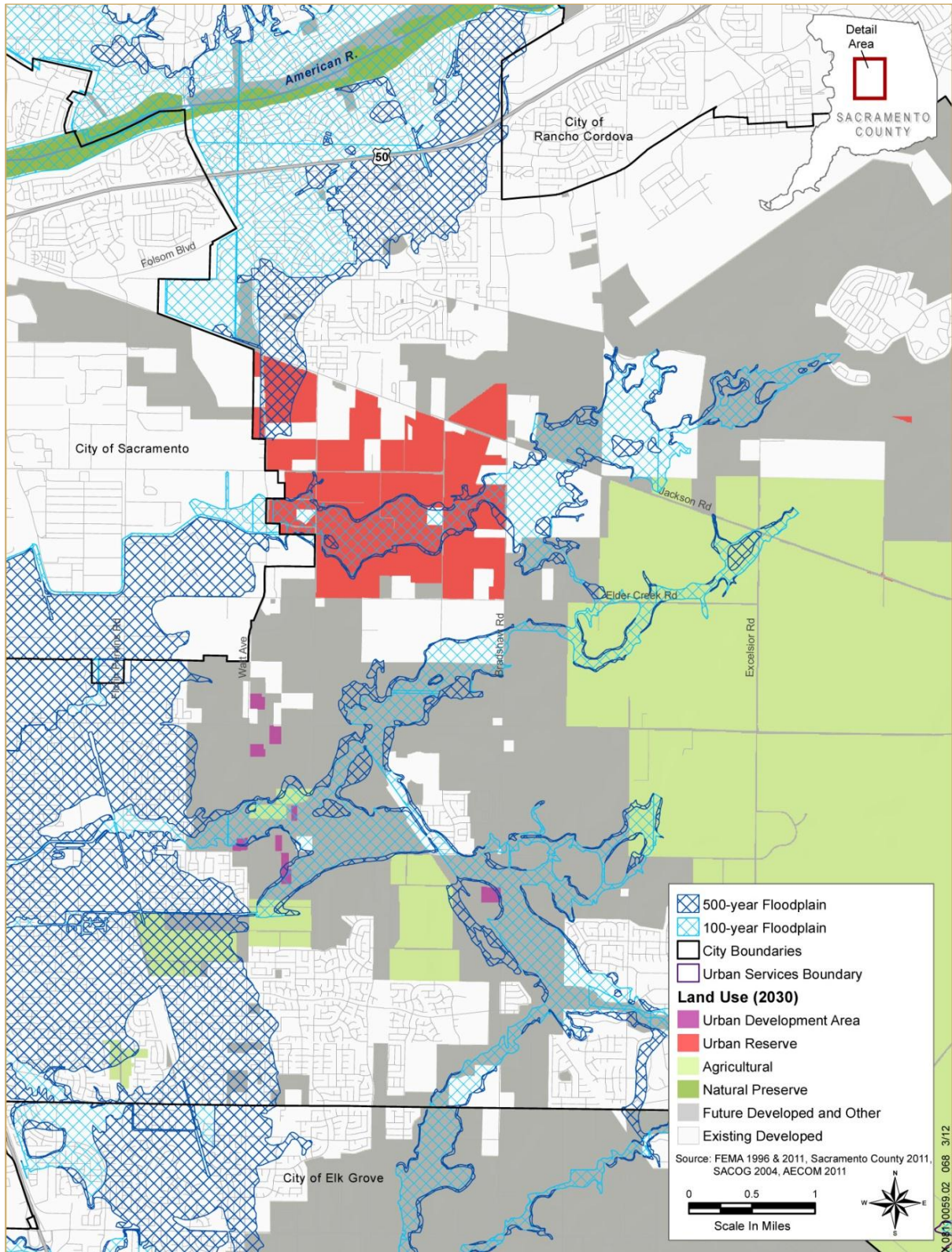


Figure 3.14-6. Sacramento County—South Example Area

Example 1: City of Merced Example Area The City of Merced example area encompasses approximately 29,050 acres in central Merced County. The example area includes the city limits and its proposed SOI⁷ (Figure 3.14-3). An area of approximately 2,635 acres in the City of Merced example area, or about 9 percent, is currently in agricultural, open space, and parks uses. Approximately 12,292 acres of the example area, or about 42 percent, are currently in developed land uses. Of the total developed land uses, approximately 6,443 acres are located within the 100-year floodplain, 621 acres are between the 100-year and 500-year floodplains, and 5,228 acres are located outside the flood hazard zone (Table 3.14-5). The areas within the 100-year flood floodplain include all of Merced south of Bear Creek, including downtown Merced and older neighborhoods along north and south of State Route 99. After adoption of the CVFPP, statutorily triggered requirements of Government Code Section 66474.5 would prohibit the approval of ministerial permits, including building permits, for residential units in this area of Merced without making appropriate findings.

Approximately 13,310 acres of land within the City of Merced example area are set aside for future urbanization, including rural residential and urban reserve lands. As shown in Figure 3.14-3, most future urban development in the City of Merced example area is anticipated to occur within the areas identified as urban reserve, future developed and other, and urban community study areas. The total acreage of future development (including rural residential and development urban reserve) would include approximately 4,906 acres within the 100-year floodplain, 451 acres between the 100-year and 500-year floodplains, and 7,954 acres outside of the flood hazard zone (Table 3.14-5).

The area outside of the flood hazard zone accounts for approximately 60 percent of land designated for future urban development and would not be affected by the flood protection requirements triggered by adoption of the CVFPP. Approximately 900 acres of land in the City of Merced example area currently located within the 100-year floodplain could be affected by the requirements related to approval of development agreements and other discretionary entitlements or actions within areas that are not afforded the required level of flood protection. A portion of the land between the 100-year and 500-year floodplains (i.e., in the area where the 200-year floodplain contour would occur) could also be affected by these requirements. This would include substantial portions of the north Merced

⁷ On January 3, 2012, the City of Merced adopted a new general plan. As part of the approval of the 2030 General Plan, the City of Merced adopted Resolution 2012-4, which requested that the Merced County Local Agency Formation Commission amend Merced's SOI. The analysis presented herein is based on land uses within the currently proposed Merced SOI as presented in Resolution 2012-4.

development corridor that are affected by floodplains created by Fahrens Creek and Cottonwood Creek. It would also include portions of the city located in the South Merced Community Plan area and the Southeast Merced Employment Area, as well as the City of Merced's Regional Enterprise Zone south of State Route 140 on the city's eastern boundary.

The requirements of Government Code Sections 65865.5 and 65962 were established in the 2007 flood legislation and are tied by the Legislature to the Board's adoption of the CVFPP. Development agreements and discretionary entitlements and other actions would be prohibited in the areas described above unless the City of Merced could make findings that the required level of flood protection had been provided or would be provided by year 2025. In light of the costly and extended nature of constructing urban flood control projects, these requirements could delay or effectively prohibit development in these parts of Merced that have been previously identified as key growth areas through the City of Merced's recently adopted general plan.

As described above, substantial amounts of urbanized and planned urban lands in Merced would be affected by the 2007 flood legislation—triggered requirements of Government Code Sections 65865.5, 65962, and 66474.5 tied by the State Legislature to the Board's adoption of the CVFPP. If long-term flood protection could not be provided to exposed areas within the 200-year floodplain, the City of Merced could redirect growth to less flood-prone areas to the northwest and northeast that are currently designated for agricultural uses. These are agricultural lands, some of which are known to contain important natural resources such as vernal pool habitats with endangered flora and fauna. Further, lands to the northwest of Merced city limits are located near Castle Airport (the former Castle Air Force Base) and are exposed to noise and safety concerns, especially for those lands closer to the air facility.

Table 3.14-5. Land Uses in FEMA Flood Zones: City of Merced Example Area

Land Use	Acres within 100-Year Floodplain	Acres between 100- and 500-Year Floodplains	Acres Outside Flood Hazard Zone	Total Acres
Agricultural	1,686	–	218	1,904
Existing Developed	6,443	621	5,228	12,292
Future Developed and Other	3,127	425	6,334	9,886
Isolated Urban Designations	2	–	–	2
Open Space and Parks	374	104	398	876
Urban Reserve	1,272	–	241	1,513
Rural Residential	507	26	1,379	1,912
Open Space—Urban Community "Study Area"	–	–	665	665
Grand Total	13,411	1,176	14,463	29,050

Source: Data compiled by AECOM in 2012

Notes:

Acres have been rounded (either up or down) to the nearest whole number.

Key:

FEMA = Federal Emergency Management Agency

Example 2: City of Ripon Example Area The City of Ripon example area encompasses approximately 6,400 acres in southern San Joaquin County. As shown in Figure 3.14-5, the example area includes the city limits and its SOI, including an area affected by the floodplains of the Stanislaus River, which runs along the southern boundary of the city. An area of approximately 425 acres in the City of Ripon example area, or about 7 percent, is currently designated for natural and open space uses. Approximately 1,900 acres of the example area, or about 30 percent, are in currently developed land uses. Of the total developed land uses, approximately 105 acres are located within the 100-year floodplain, 115 acres are between the 100-year and 500-year floodplains, and 1,690 acres are located outside the flood hazard zone (Table 3.14-6).

Approximately 4,075 acres of land within the City of Ripon example area are set aside for future urbanization. As shown in Figure 3.14-4, most future urban development is anticipated to occur in two areas: in the

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northern portion of the city limits, in the areas designated as future developed and other; and in areas north, east, and west of the city limits that are designated as primary urban area. Land subject to future development would include approximately 75 acres within the 100-year floodplain, 395 acres between the 100-year and 500-year floodplains, and approximately 3,610 acres outside of the 500-year flood hazard zone (Table 3.14-6).

The area outside of the flood hazard zone accounts for approximately 90 percent of land designated for future urban development and would not be affected by the requirements of Government Code Sections 65865.5, 65962, and 66474.5 triggered by the 2007 flood legislation that are tied by the State Legislature to the Board’s adoption of the CVFPP. All of the land in the City of Ripon example area located within the 100-year floodplain could be affected by the requirements related to the approval of development agreements and other discretionary entitlements or actions within areas that are not afforded the required level of flood protection. A portion of the land between the 100-year and 500-year floodplains (i.e., in the area where 200-year floodplain contour would occur) could also be affected by these requirements. As a result, 75–470 acres of land could be affected by the 2007 flood legislation–triggered requirements. The affected area is no more than approximately 10 percent of the example area, and sufficient land designated for urban development exists outside of the 500-year floodplain. Therefore, it is unlikely that the 2007 flood legislation requirements of Government Code Sections 65865.5, 65962, and 66474.5 would create a substantial pressure to relocate land designated for urban uses, even if these requirements would restrict development in floodplain areas.

Table 3.14-6. Land Use in FEMA Flood Zones: City of Ripon Example Area

Land Use	Acres within 100-year Floodplain	Acres between 100- and 500-year Floodplains	Acres Outside Flood Hazard Zone	Total Acres
Existing Developed	105	115	1,690	1,900
Future Developed and Other	55	5	570	625
Natural and Open Space	295	95	40	425
Primary Urban Area	20	390	3,040	3,450
Grand Total	475	605	5,340	6,400

Source: Data compiled by AECOM in 2012

Notes:

Acres have been rounded (either up or down) to the nearest whole number.

Key:

FEMA = Federal Emergency Management Agency

Example 3: Sacramento County—South Example Area The Sacramento County south example area encompasses approximately 47,510 acres in central and southern Sacramento County. As shown in Figure 3.14-5, the example area is generally south of the American River and U.S. Highway 50 and west of Mather Airport (the former Mather Air Force Base). This example area also includes the western portion of the city of Rancho Cordova; portions of the southern part of the city of Sacramento; and all or portions of the unincorporated communities of Carmichael, La Riviera, and Vineyard. The area shown in Figure 3.14-5 is affected by the floodplains of the American River, Morrison Creek, Florin Creek, Elder Creek, and Laguna Creek.

An area of approximately 8,355 acres of the Sacramento County south example area, or about 18 percent, is currently designated for agricultural land uses. Approximately 24,160 acres of the example area, or about 50 percent, is currently in developed land uses. Of the total developed land uses, approximately 3,290 acres are located within the 100-year floodplain, 6,020 acres are between the 100-year and 500-year floodplains, and 14,850 acres are located outside the 500-year flood hazard zone (Table 3.14-7). The approximately 9,310 acres of existing developed land uses within the 100-year floodplain and between the 100-year and 500-year floodplains could be affected by 2007 flood legislation–triggered requirements related to the required level of flood protection. Because the land is already developed, it would most likely be affected by the limitations that Government Code Section 66474.5 places on the ability to grant ministerial permits for residential construction.

In the Sacramento County south example area, approximately 12,950 acres of land are set aside for future urbanization. As shown in Figure 3.14-5, most future urban development in the example area is anticipated to occur in and around the cities of Rancho Cordova and Sacramento within the areas designated as urban reserve and as future developed and other, and in urban development areas. Future development is planned to be accommodated on approximately 1,980 acres within the 100-year floodplain, 630 acres between the 100-year and 500-year floodplains, and 10,340 acres outside of the flood hazard zone (Table 3.14-7).

The area outside of the 500-year flood hazard zone accounts for approximately 80 percent of land designated for future urban use and would not be affected by the requirements triggered by the 2007 flood legislation, which are tied by the State Legislature to the Board’s adoption of the CVFPP. All of the land in the Sacramento County south example area located within the 100-year floodplain could be affected by the requirements related to the approval of development agreements and other discretionary entitlements or actions within areas that are not afforded the

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required level of flood protection. A portion of the land between the 100-year and 500-year floodplains (i.e., in the area where 200-year floodplain contour would occur) could also be affected by these requirements. As a result, 630–2,600 acres of land could be subject to the 2007 flood legislation–triggered findings requirements. Over time, if the required level of flood protection could not be effectively created to protect these lands, there could be pressure on local government to plan for urban land uses on additional lands, likely in less flood-prone areas to the east.

Lands in the eastern portion of Sacramento County are farther from the urban core, which includes areas in and around downtown Sacramento. Redirecting development farther to the east could lead to increased commuting distances with concomitant increases in congestion, vehicle miles traveled, emissions of criteria air pollutants and greenhouse gases, increased noise, and other similar effects. These eastern lands also include vernal pools and other sensitive habitats, agricultural land uses, Important Farmland, and land under Williamson Act contracts. Development could result in conversion of sensitive habitats and agricultural land uses to urban development. In addition, relocating urban development may conflict with local general plan goals and policies related to urban growth and conflict with the smart growth principles of the Sacramento Area Council of Governments’ Regional Blueprint.

Table 3.14-7. Land Uses and FEMA Flood Zones: Sacramento County South Example Area

Land Use	Acres within 100-Year Floodplain	Acres between 100- and 500-Year Floodplains	Acres Outside Flood Hazard Zone	Total Acres
Agricultural	305	280	7,770	8,355
Agricultural—Urban Reserve	310	140	1,060	1,510
Existing Developed	3,290	6,020	14,850	24,160
Future Developed and Other	1,980	630	10,340	12,950
Urban Development Area	10	5	45	60
Natural Preserve	465	0	10	475
Grand Total	6,360	7,075	34,075	47,510

Source: Data compiled by AECOM in 2012

Notes:

Acres have been rounded (either up or down) to the nearest whole number.

Key:

FEMA = Federal Emergency Management Agency

Example 4: Sacramento County—North Example Area The Sacramento County north example area encompasses approximately 12,000 acres in northern Sacramento County. As shown in Figure 3.14-6, this example area is located generally north of Dry Creek and Interstate 80 and east of Steelhead Creek and the Natomas Basin; it includes a substantial portion of the unincorporated community of Rio Linda. The area depicted in Figure 3.14-5 is affected by the floodplains of the American River, Dry Creek, Steelhead Creek, and several small tributaries to Steelhead Creek.

An area of approximately 6,905 acres of the Sacramento County north example area, or about 60 percent, is currently designated for agricultural or open space uses. Approximately 2,935 acres of the example area, or about 25 percent, is currently developed. Of the total developed land uses, approximately 550 acres are located within the 100-year floodplain, 325 acres are between the 100-year and 500-year floodplains, and 2,060 acres are located outside the 500-year flood hazard zone (Table 3.14-8). Thus, approximately 875 acres of existing developed land uses within the 100-year floodplain and between the 100-year and 500-year floodplains could be affected by 2007 flood legislation–triggered requirements related to the appropriate level of flood protection, most likely by the limitations that Government Code Section 66474.5 places on the granting of ministerial permits for residential construction.

Approximately 1,970 acres of land within the Sacramento County north example area are set aside for future urbanization. As shown in Figure 3.14-5, future urban development in the example area is anticipated to occur in and around Rio Linda within the areas designated as future developed and other and urban reserve. The total acreage of future development would include approximately 370 acres currently within the 100-year floodplain, 180 acres between the 100-year and 500-year floodplains, and 1,420 acres outside the 500-year flood hazard zone (Table 3.14-8).

The area outside of the 500-year flood hazard zone accounts for approximately 70 percent of land designated for future urban development and would not be affected by the requirements triggered by the 2007 flood legislation and legislatively tied to adoption of the CVFPP. All of the land in the Sacramento County north example area located within the 100-year floodplain could be affected by the requirements related to the approval of development agreements and other discretionary entitlements or actions within areas that are not afforded the required level of flood protection. A portion of the land between the 100-year and 500-year floodplains (i.e., in the area where 200-year floodplain contour would occur) could also be affected by these requirements. Over time, if the required level of flood protection could not be effectively provided to these 180–550 acres of land,

there could be pressure on local government to plan for urban land uses on additional lands, likely in less flood-prone areas to the south and east that are largely in agricultural use. This area is generally agricultural and open space and is farther from the urban core, which could lead to increased commuting distances with concomitant increases in congestion, vehicle miles traveled, emissions of criteria air pollutants and greenhouse gases, increased noise, and other similar effects. These lands also include vernal pools and other sensitive habitats, agricultural land uses, Important Farmland, and land under Williamson Act contracts. Development of these lands could result in conversion of sensitive habitats and agricultural land uses to urban development. In addition, relocating urban development may conflict with local general plan goals and policies related to urban growth and conflict with the smart growth principles of the Sacramento Area Council of Governments’ Regional Blueprint.

Table 3.14-8. Land Uses with FEMA Flood Zones: Sacramento County North Example Area

Land Use	Acres within 100-Year Floodplain	Acres between 100- and 500-Year Floodplains	Acres Outside Flood Hazard Zone	Total Acres
Agricultural	3,110	640	2,250	6,000
Agricultural—Urban Reserve	5	5	45	55
Existing Developed	550	325	2,060	2,935
Future Developed and Other	370	180	1,420	1,970
Natural Preserve	850	40	15	905
Total	4,885	1,190	5,790	11,865

Source: Data compiled by AECOM in 2012

Note:

Acres have been rounded (either up or down) to the nearest whole number.

Key:

FEMA = Federal Emergency Management Agency

As the analysis of these illustrative communities demonstrates, local agencies would face a wide range of situations in responding to the legislatively directed obligations to modify general plans and zoning ordinances and make findings before development could occur in floodplains that would benefit from the required level of flood protection. In some communities, adequate acreage for development is already provided in areas that are not subject to the findings requirements and associated development restrictions imposed by the 2008 flood legislation. In other areas, development already exists and/or has been planned in areas without the required level of flood protection. In some of those situations, particularly those where it is infeasible to provide the required level of

flood protection, future development may need to be redirected into areas different from those previously anticipated.

Potential Indirect Impacts from Implementation of Policies Related to the Required Level of Flood Protection

Redirecting land uses in this manner could result in the urbanization of areas currently designated for agriculture or open space, or existing urbanized or planned urban areas could be replanned with higher densities than called for in current city and county general plans and zoning ordinances. Revising such plans and ordinances could lead to the loss of previously protected agricultural and open space lands, or additional public-services facilities and utility infrastructure may need to be altered or developed to maintain established level-of-service goals for these types of facilities or infrastructure. These effects, in turn, could lead to significant construction-related and operational physical impacts on the environment.

If the results of local land-use planning responses were to result in the urbanization of previously protected agricultural or open space lands, several effects could occur: loss of Important Farmland, loss of sensitive habitats and/or species, changes to the visual character surrounding established communities, loss of or adverse effects on cultural resources, changed hydrological and water quality conditions, and other similar effects. To the extent that land uses would be redirected farther from core central cities and employment centers, increased vehicular travel could lead to increased congestion, noise, and production of mobile-source emissions of air pollutants, including greenhouse gases.

On a regional scale, redirecting new land development from the more flood-prone lands on the valley floor to higher lands on the east and west sides of the Sacramento–San Joaquin Valley could, in some instances, reduce the loss of productive farmlands, which are the predominant use of undeveloped flatland on the valley floor. Redirecting such development would also tend to increase the loss of sensitive habitats in the low rolling lands and foothills on the fringes of the Central Valley. The lands located on the fringes of the valley floor are known to contain sensitive habitats and numerous endangered species. The east and west fringes of the San Joaquin Valley contain some of the state’s richest vernal pool and other wetland habitats, including numerous federally listed and State-listed vernal pool flora and fauna. They also contain habitat for such species as San Joaquin kit fox, as well as foraging habitat for numerous protected raptors and other birds and similar species. The upland fringes of the Sacramento Valley generally contain habitats similar to those of the San Joaquin Valley, with large acreages of vernal pool wetlands, oak woodlands, gabbro soil vegetation, and the like. Redirecting urbanization

could result in the loss of thousands of acres of natural habitats in the rising lands located on the fringes of the Sacramento and San Joaquin Valley.

In addition to resulting in the direct loss of habitat, redirecting urban uses from the lower flood-prone lands to lands at higher elevations could require redesigning and configuring urban infrastructure and delivery of urban services. In most valley communities, water and wastewater infrastructure has been designed to accommodate a specific planned configuration of development—a configuration that has been approved and incorporated into the particular jurisdiction’s land use, infrastructure, and service delivery plans. Failure to urbanize based on those plans, coupled with redirection of growth based on a different geographic pattern, would likely require local jurisdictions and special districts to undertake major new investments to build new infrastructure and redesign or resize urban water and wastewater delivery and conveyance systems.

In many parts of the study area, substantial amounts of planned development have been approved in flood-prone areas comparatively close to older city centers. Locating the existing employment and shopping areas and future planned residential uses relatively close to city centers has tended to result in shorter trips; a reduction in vehicle miles traveled; and lower levels of congestion, mobile-source emissions of air pollutants, and greenhouse gas emissions. Examples of locations like these include the Natomas Basin and the Southport area of West Sacramento, all relatively close to downtown Sacramento. Should urban development be redirected to available, less flood-prone land, commutes could be longer, with concomitant increases in air pollution, noise, and congestion.

On the other hand, if local jurisdictions were to redirect land uses, new development, and growth to higher densities in existing cities and urban areas, other types of adverse physical environmental effects could result: increased congestion, localized emissions of air pollutants, localized noise, increased demand on existing urban services and infrastructure, potential loss of historic structures, and the like. However, as reflected in the recently adopted SB 375 and “smart growth” strategies in California and nationwide, increased densities have also demonstrated environmental benefits by reducing the amount of open land consumed by development, thus reducing potential impacts on biological, cultural, and agricultural resources and open space. In addition, because of the higher densities, trip lengths could be reduced and the potential for successful use of transit and other nonvehicular modes of travel could be increased, with a resultant reduction in traffic, air pollution, and greenhouse gas emissions. Thus, the nature of secondary environmental effects resulting from implementation of the required level of flood protection would depend entirely on the nature of the planning decisions made by local land use agencies in the

areas subject to the statutory requirements of SB 5. Identifying specific environmental effects further before local agencies make their planning decisions would be too speculative for meaningful analysis and conclusions.

Impact Conclusion

As explained above, implementing the requirements of Government Code Sections 65865.5 and 65962 that are triggered by the 2007 flood legislation and tied by the State Legislature to the Board's adoption of the CVFPP, and that require the urban level of flood protection in urban and urbanizing areas and the FEMA level of flood protection elsewhere, could indirectly result in changes to future land uses and/or patterns of land use. Such changes could occur if cities or counties would be unable to make required findings about the adequacy of flood protection and, as a result, would decide to redirect land uses and new development to less flood-prone areas. The effects of such changes could be environmentally adverse or beneficial, depending on the nature of future land use planning undertaken by local agencies and jurisdictions with land use authority.

It is currently not possible to know which cities and counties would revise their land use plans to redirect land use and development away from flood-prone areas, and to what extent such changed plans would result in adverse or beneficial environmental effects; therefore, further analysis would be speculative. Section 15145 of the State CEQA Guidelines states that if "a particular impact is too speculative for evaluation, the agency should note its conclusion and terminate discussion of the impact." Thus, because a reasonable conclusion cannot currently be reached about the potential for adverse environmental effects to result from redirecting land use and development to comply with the required level of flood protection, this impact is **too speculative to make a significance determination**.

Impact LU-8 (NTMA): Alterations of Land Uses or Patterns of Land Use as a Result of Other NTMAs that Would Cause a Substantial Adverse Physical Environmental Effect

One of the other NTMAs that could affect land uses is integrating environmental conservation elements to enhance habitat and restore natural ecosystem processes and functions.

Environmental conservation elements have been integrated into implementation actions to enhance habitat and restore natural ecosystem processes and functions. These elements have been developed to increase the quantity, quality, diversity, and connectivity of riparian, wetland, floodplain, emergent, and shaded riverine aquatic habitats. As a result, conversion of agricultural land to nonagricultural uses would result in some

areas from implementation of these elements. These impacts are more thoroughly addressed under Impact AG-3 (NTMA), “Effects of Other NTMAs on Important Farmland and Williamson Act Contract Land.” This impact would be **significant**.

Mitigation Measure LU-8 (NTMA): *Implement Mitigation Measure LU-5b (NTMA)*

Implementing this mitigation measure would reduce Impact LU-8 (NTMA), but not to a less-than-significant level. Impact LU-8 (NTMA) would be **significant and unavoidable**.

3.14.5 Environmental Impacts, Mitigation Measures, and Mitigation Strategies for LTMAs

This section describes the physical effects of LTMA on land use and planning. LTMA include a continuation of activities described as part of the NTMA and all other actions included in the proposed program, and consist of all of the following types of activities:

- Widening floodways (through setback levees and/or purchase of easements)
- Constructing weirs and bypasses
- Constructing new levees
- Changing operation of existing reservoirs
- Achieving protection of urban areas from a flood event with 0.5 percent risk of occurrence
- Changing policies, guidance, standards, and institutional structures
- Implementing additional and ongoing conservation elements

Actions included in LTMA are described in more detail in Section 2.4, “Proposed Management Activities.”

Impacts and mitigation measures discussed above for NTMA would also be applicable to many LTMA and are identified below. The NTMA impact discussions and mitigation measures are modified or expanded where appropriate, or new impacts and mitigation measures are included if needed, to address conditions unique to LTMA. The same approach to future implementation of mitigation measures described above for NTMA

and the use of the term “project proponent” to identify the entity responsible for implementing mitigation measures also apply to LTMA.

In addition, as described previously and in Section 3.1.2, “Analysis Methodology,” because many LTMA are more general and conceptual, additional impacts of those LTMA are also described below in a broader narrative format, along with a list of suggested mitigation strategies that could be applied to these impacts. This more general analysis is provided in the subsection titled “LTMA Impact Discussions and Mitigation Strategies.”

LTMA Impacts and Mitigation Measures

Impact LU-1 (LTMA): Physical Division of an Established Community as a Result of Conveyance-Related Management Activities

This impact would be similar to Impact LU-1 (NTMA), described above. Conveyance-related LTMA could involve constructing larger setback levees than under NTMA and widening existing bypasses or constructing new bypasses or levees.

As explained below, although constructing conveyance-related LTMA could potentially require the removal or relocation of isolated and/or scattered existing residential or nonresidential buildings, these activities are not anticipated to result in the type of disruption to the existing urban fabric that would constitute physical division of an established community. Residences on the waterside of a newly constructed levee or setback levee, or individual residences or clusters of residences that would be within widened floodways or within new bypasses, would be removed or relocated because such uses are generally not allowed within an established floodway or bypass. Widening floodways would alter flood flows, which could inundate existing roadways either periodically in the short term or permanently or could obstruct infrastructure that traverses the added inundation area.

Review of TRLIA’s Feather-Bear Rivers Levee Setback Project and Feather River Levee Repair Project and of Reclamation and DWR’s proposed San Joaquin River Restoration Program reinforces that it is reasonable to assume that LTMA would affect scattered, isolated, developed structures and could cause the loss of farmland or disrupt agricultural or recreational activities. However, the evidence from recent projects such as the construction of setback levees does not support the conclusion that conveyance-related LTMA would be designed so as to result in the physical division of an established community. More specifically, review of recent flood control projects aimed at achieving 200-year flood protection demonstrates that many components of these recent

projects are similar to proposed LTMA's. These flood control features are discussed further below.

Example Project 1: Feather-Bear Rivers Levee Setback Project

TRLIA's Feather-Bear Rivers Levee Setback Project involved replacing 9,600 feet of the existing Bear River and Feather River levees at the confluence of the two rivers. The floodway was enlarged at the confluence by removing the existing levee segments and restoring riparian habitat to approximately 600 acres of land that previously had been used for agricultural purposes. The land uses displaced by the construction of this setback levee project were agricultural lands and access roads (which were realigned). The site was approximately 1,500 feet from developed urban uses and did not result in the displacement or disruption of any developed structures (TRLIA 2004a).

Example Project 2: Feather River Levee Repair Project TRLIA's

Feather River Levee Repair Project involved constructing an approximately 6-mile setback levee along the east bank of the Feather River between Star Bend and approximately Shanghai Bend in Yuba County. Constructing the new levee and degrading the prior existing levee enlarged the Feather River floodway by approximately 1,150 acres of land. That land will incrementally be restored to riparian habitat while allowing for continued use of some lands for agricultural purposes. Implementing this project required removal of several rural residences and nonresidential structures that were located within the footprint of the new levee or within the newly expanded floodway. None of the residences that were removed were clustered or within an identified community, neighborhood, or subdivision. TRLIA negotiated with the owners to reach an agreement that resulted in appropriate compensation for the loss of these residences. In addition, roadways and other infrastructure affected by the construction of the setback levee were realigned or replaced. Thus, construction of the Feather River setback levee as part of the Feather River Levee Repair Project did not result in the physical division of an established community (TRLIA 2006).

Example Project 3: San Joaquin River Restoration Program

Reclamation and DWR's San Joaquin River Restoration Program, as currently proposed, would involve constructing a new bypass around the Mendota Pool with improved levees, as well as creating integrated floodplain habitat along portions of the San Joaquin River. The draft PEIS/EIR prepared for the San Joaquin River Restoration Program documents that no residences are located within the affected area and that any affected roadways and infrastructure would be rerouted or replaced. Although this project has yet to be approved and implemented, the current

proposal would not result in a division of an established community (Reclamation and DWR 2011).

As documented above, the evidence in the record suggests that even with the potentially larger projects included in the LTMA, conveyance-related flood management activities would not be designed in a manner to create a major disruption in the physical arrangement of an existing developed community. To the contrary, implementation of conveyance-related LTMA, including construction of setback levees and flood bypasses, would be designed to provide greater protection to existing developed communities in almost every case. In addition, the economic value of existing infrastructure and/or development present in more established communities and urbanized areas should influence project siting and design. Constructing new levees, expanding floodways, or constructing new bypasses in a configuration that would require demolishing and replacing large quantities of urbanized land would most likely be infeasible because of both the economic effect and the related public controversy associated with such actions.

The evidence clearly indicates that repairs and improvements to existing flood management facilities in existing urbanized communities would be much more likely to be implemented within the footprints of current facilities (in-place fixes); new facilities, such as setback levees or flood bypasses, would be designed and constructed so as to avoid adverse effects on densely urbanized land. (See additional discussion of this issue in Impact LU-1 (NTMA) above.) Therefore, implementing conveyance-related LTMA would not result in the physical separation of an established community. This impact would be **less than significant**. No mitigation is required.

Impact LU-2 (LTMA): *Physical Division of an Established Community as a Result of Storage-Related Management Activities*

The storage-related LTMA include all storage-related NTMA mentioned above in Impact LU-2 (NTMA). There are no additional storage-related LTMA; thus, this impact would be the same as Impact LU-2 (NTMA). However, the LTMA could occur across a broader geographic setting than the NTMA. As described in Section 3.13, "Hydrology," these changes to reservoir releases under LTMA would result in relatively minor changes to reservoir levels and downstream river flows, and these flows would be comparable to the periodic flood flows that have occurred historically. Therefore, storage-related operational changes would not result in changed river flows of such a magnitude that existing residences in established communities would have to be removed or relocated. **No impact** would occur. No mitigation is required.

Impact LU-3 (LTMA): *Physical Division of an Established Community as a Result of Policies Associated with the Required Level of Flood Protection*

The requirements related to the appropriate level of flood protection would be exactly the same in the long term as in the near term. As noted for Impact LU-3 (NTMA), the effects of implementing the requirements associated with the appropriate level of flood protection could adversely affect the safety, convenience, sustainability, and/or quality of life in communities where construction in flood hazard zones has already begun. If these effects were to occur, they would adversely affect existing residents and homeowners in particular flood hazard zones; nevertheless, such effects would not trigger a finding of significance under the established CEQA threshold related to the “physical division of an established community.” This impact would be the same as Impact LU-3 (NTMA), described above, except that it would occur over a longer period of time. This impact would be **less than significant**. No mitigation is required.

Impact LU-4 (LTMA): *Physical Division of an Established Community as a Result of Other LTMA*s

Other LTMA include all “other NTMA” described above in Impact LU-4 (NTMA), and impacts would be similar to those described under Impact LU-4 (NTMA).

In addition to ongoing implementation of other NTMA, other LTMA would require urban areas and small communities to provide the required level of flood protection (protection against a 200-year flood in urban and urbanizing areas and against a 100-year flood in nonurbanized areas) by implementing conveyance-related actions and potentially storage-related actions. As described in Impact LU-1 (NTMA), urban and small communities could be protected by making in-place structural repairs and improving levees and other facilities, such as by raising and strengthening existing levees. Urban areas also could be protected by constructing new levees along river reaches or around development where no levees are present.

Under other LTMA, small communities could be protected with in-place fixes by constructing ring levees, internal levees, or floodwalls. If implemented, ring levees and internal levees would be built around a specific protected area, isolating that area from potential floodwaters. Ingress and egress to the protected area could become more limited based on the alignment and design of the levee, and thus could potentially create a physical barrier between portions of dispersed communities. Examination

of other flood protection projects in the Central Valley suggests that it is unlikely and unreasonable to expect that future ring or internal levees would be constructed so as to sever parts of existing communities.

As an example, the city of Marysville is protected by a ring levee. The Marysville ring levee was aligned to surround the existing city without separating various portions of the developed community. In theory, ring or internal levees could be designed to bisect or physically divide an established community; however, there are no past or recent examples of such designs. Further, even if such a levee were constructed, it is common for roads, bridges, utility alignments, and other infrastructure to pass over levees, eliminating the potential for a levee to serve as a substantial barrier between locations. This pattern supports the reasonable assumption that new roadways and other connections would be coordinated with any project involving construction of an internal or ring levee, and thus, that there would be no division of an established community relative to existing conditions.

The potential for implementation of conservation elements and use of flood easements to divide an established community would be similar to that described in Impact LU-4 (NTMA). The potential for construction activities to physically divide an established community would be similar to that described above in Impact LU-1 (LTMA). Therefore, implementing other LTMA's would not result in the physical division of an established community that would meet the threshold of significance under CEQA. This impact would be **less than significant**. No mitigation is required.

Impact LU-5 (LTMA): Alterations of Land Uses or Patterns of Land Use as a Result of Conveyance-Related Management Activities that Could Cause a Substantial Adverse Physical Environmental Effect

Conveyance-related LTMA's would include all of the conveyance-related NTMA's described previously for Impact LU-5 (NTMA). The activities that could cause alterations in land uses or patterns of land use that could cause a substantial adverse physical environmental effect could include raising or improving existing levees; constructing floodwalls, seepage and stability berms, and setback levees; and installing relief wells, toe drains, and landside slope armoring.

As described in Impact LU-5 (NTMA), proposed construction-related activities aimed at the repair, reconstruction, and improvement of levees would be unlikely to affect a large number of existing and planned urban land uses and land use patterns. However, they could affect or alter isolated developed uses and could result in the conversion of agricultural land to nonagricultural uses and displacement of recreational land uses. These

impacts are more thoroughly addressed in the discussions of the following impacts:

- Impact AG-1 (LTMA) “Conversion of Substantial Amounts of Important Farmland and Land under Williamson Act Contracts to Nonagricultural Uses Resulting from Conveyance-Related Management Activities,” in Section 3.3, “Agriculture and Forestry Resources”
- The following impacts analyzed in Section 3.18, “Recreation”:
 - Impact REC-1 (NTMA), “Substantial Permanent Displacement of or DECREASED Access to Recreational Facilities Caused by Levee Reconstruction, Improvements, or Setbacks”
 - Impact REC-2 (NTMA), “Substantial Temporary Decrease in Opportunities for Recreation or Access to Recreational Facilities during Construction of Conveyance or Storage Improvements”
 - Impact REC-7 (LTMA), “Substantial Displacement of or Decreased Access to Recreational Facilities Caused by Conveyance-Related and Other Management Activities”

Conveyance-related LTMAAs would also involve improving the overall conveyance of the flood system through a combination of widening floodways, modifying existing weirs and bypasses, and constructing new weirs and bypasses. In addition, facilities associated with conveyance-related LTMAAs would be constructed over a larger geographic area, and additional land would be required for staging areas, access haul roads, and borrow sites. The effects would be similar to those described above for Impact LU-5 (NTMA); however, the scale and magnitude of the effects would be greater for LTMAAs.

Floodway widening and/or construction of new weirs and bypasses would likely take place in rural areas in which the land uses are primarily agricultural. As noted for NTMAAs, isolated developed uses, including individual residences or small clusters of rural residences, may be removed or otherwise adversely affected to accommodate expanded levee footprints or relocated floodways. Some of the affected structures could include buildings and other built facilities and infrastructure that support agricultural uses. Because of their potential size and scale, the creation of new bypasses would have the potential to affect the largest number of built structures.

Because conveyance-related LTMAAs could adversely affect rural residential and other developed uses, result in disruption to agricultural

infrastructure and access roads and convert farmland to nonagricultural uses, and disrupt or displace recreational uses, this impact would be **significant**.

Mitigation Measure LU-5a (LTMA): *Implement Mitigation Measure LU-5a (NTMA)*

Mitigation Measure LU-5b (LTMA): *Implement Mitigation Measure LU-5b (NTMA)*

Mitigation Measure LU-5c (LTMA): *Implement Mitigation Measure LU-5c (NTMA)*

Mitigation Measure LU-5d (LTMA): *Implement Mitigation Measure LU-5d (NTMA)*

Mitigation Measure LU-5e (LTMA): *Implement Mitigation Measure LU-5e (NTMA)*

Mitigation Measure LU-5f (LTMA): *Implement Mitigation Measure REC-7 (LTMA), "Replace Displaced Recreational Facilities"*

Implementing these mitigation measures would reduce Impact LU-5 (LTMA), but cannot be assured to reduce the impact to a less-than-significant level in all cases. Impact LU-5 (LTMA) would be **significant and unavoidable**.

Impact LU-6 (LTMA): *Alterations of Land Uses or Patterns of Land Use as a Result of Storage-Related Management Activities that Could Cause an Adverse Physical Environmental Effect*

The storage-related LTMA's include all storage-related NTMA's mentioned above in Impact LU-6 (NTMA). There are no additional storage-related LTMA's and this impact would be the same as Impact LU-6 (NTMA). These changes would alter the timing, magnitude, and/or frequency of flood releases to downstream channels, and, as with NTMA's, would be limited to existing floodways. The potential scale and magnitude of changes in downstream flows could be somewhat greater because in the timeframe of the LTMA's, a larger number of reservoirs could have increased operational flexibility with CVFPP implementation. Changes in reservoir drawdown and downstream flows under the LTMA's would be minimal. Therefore, these changes would not be of sufficient magnitude to materially alter developed uses along floodways in the study area or the suitability of existing agricultural lands for continued agricultural production, or to permanently displace recreational facilities. Therefore, this impact would be **less than significant**. No mitigation is required.

Impact LU-7 (LTMA): Alterations of Land Uses or Patterns of Land Use as a Result of Policies Related to the Required Level of Flood Protection that Would Cause a Substantial Adverse Physical Environmental Effect

As described above in Impact LU-7 (NTMA), no direct physical environmental effects would result from implementing the statutorily established and 2007 flood legislation requirements related to the appropriate level of flood protection. Under the 2007 legislation, adoption of the plan would trigger requirements that local agencies revise general plans and zoning ordinances, along with requirements to adopt one or more specific findings related to approval of development agreements, discretionary actions, and ministerial actions for residential uses within designated flood hazard zones. The LTMA would be limited to the long-term implementation of these same requirements.

Implementing the requirements of Government Code Sections 65865.5, 65962, and 66474.5 would ensure that local governments would appropriately consider flood risk in their local planning documents and land use decisions. It would also ensure that new land uses in flood-prone areas would not be exposed to risks of floods with more than a 0.5 percent chance of occurring in urban and urbanizing areas or that the risk of flooding would be reduced to such a level by 2025.

The long-term indirect effects of implementing requirements related to the appropriate level of flood protection (protection against a 200-year flood in urban and urbanizing areas and against a 100-year flood in nonurbanized areas) would be similar to those described above in Impact LU-7 (NTMA). In the longer term, cities and counties would continue to incorporate information related to the required level of flood protection into their future updates to and revisions of general plans and zoning ordinances. By virtue of the fact that land use decisions must comply with the general plan and zoning, future development proposals would have to be shown to be consistent with applicable city and county general plans that reflect current information on flood risk and management.

For the reasons articulated above in Impact LU-7 (NTMA), the nature, magnitude, and timing of any indirect physical environmental effects of implementing the required level of flood protection are essentially impossible to predict with any precision or confidence. The extent to which cities and counties would fail to be able to provide the required level of flood protection is not known. Because of the unique situation regarding flood hazards, land use planning, land availability, other environmental constraints, and other factors related to urban development in each flood-prone community, it is currently not possible to know the degree to which

cities and counties would revise their land use plans to redirect land use and development away from flood-prone areas, and to what extent such changed plans would result in adverse or beneficial environmental effects.

In situations where such a high degree of uncertainty exists, the impact should be determined to be “too speculative” and “the agency should note its conclusion and terminate discussion of the impact” (CEQA Guidelines, Section 15145). Thus, because it is not currently possible to draw a reasonable conclusion without speculation about the potential for adverse environmental effects resulting from the redirection of land use and development to less flood-prone areas, this impact is **too speculative to make a significance determination**.

Impact LU-8 (LTMA): Alterations of Land Uses or Patterns of Land Use as a Result of Other LTMA's that Could Cause a Substantial Adverse Physical Environmental Effect

Other LTMA's include all NTMA's described above in Impact LU-8 (NTMA); therefore, this impact would be the same as Impact LU-8 (NTMA). However, with wider and more active implementation of conservation elements and increasing flood protection for urban lands, a larger overall acreage of agricultural land would likely be converted to nonagricultural use, which could result in a larger effect on agricultural land uses.

In addition to the ongoing implementation of other NTMA's (such as the implementation of conservation elements and purchase of flood easements), other LTMA's would require urban areas and small communities to provide the appropriate level of flood protection (protection against a 200-year flood in urban and urbanizing areas and against a 100-year flood in nonurbanized areas) by implementing conveyance-related actions and potentially storage-related actions. As described in Impact LU-4 (LTMA), urban and small communities could be protected by making in-place structural repairs and improvements to levees and other facilities, such as by raising and strengthening existing levees. In addition, small communities could be protected in place using ring levees, internal levees, training levees, or floodwalls. The potential for construction of these facilities to alter existing agricultural and recreational land uses, resulting in a substantial adverse physical effect on the environment, would be the same as described in Impacts LU-5 (NTMA). Therefore, this impact would be **significant**.

Mitigation Measure LU-8 (LTMA): Implement Mitigation Measures LU-5a (NTMA), LU-5b (NTMA), LU-5c (NTMA), LU-5d (NTMA), and LU-5e (NTMA)

Implementing this mitigation measure would reduce Impact LU-8 (LTMA), but not necessarily to a less-than-significant level in all circumstances. Impact LU-8 (LTMA) would be **significant and unavoidable**.

LTMA Impact Discussions and Mitigation Strategies

Because of the more general and conceptual nature of many LTMA's, a great deal of uncertainty exists about how some LTMA's may be implemented and what environmental effects might result following their implementation. This uncertainty is to be expected for a broad, multiyear, and in some areas, conceptual program such as the CVFPP. Although these uncertainties exist, sufficient information exists to at least disclose additional potential impacts of LTMA's besides those discussed in the impact/mitigation pairings provided above. The following additional LTMA impacts are described in a broad narrative format; because of the uncertainty surrounding these impacts, no determination regarding their significance is provided. Consistent with Section 15145 of the CEQA Guidelines, these impacts are too speculative for evaluation beyond the narrative disclosure provided here.

Future project-specific evaluations for individual LTMA's will be used to determine the potential for the impacts described below to occur, determine their level of significance, and identify project-specific mitigation measures for significant impacts. Examples of potential mitigation strategies are provided after the following narrative impact discussions to disclose the nature and extent of mitigation actions that might be necessary to address these impacts.

For more information on this approach to evaluating LTMA impacts and providing mitigation strategies, see Section 3.1.2, "Analysis Methodology."

Impact discussions are divided among the geographic areas in the study area (i.e., Extended SPA, Sacramento and San Joaquin Valley watersheds, and SoCal/coastal CVP/SWP service areas). They are further subdivided according to the type of action (i.e., construction of conveyance facilities, facilities operations and maintenance from storage or conveyance actions, and other management actions).

LTMA Impact Discussions

Extended Systemwide Planning Area

Construction of Conveyance Facilities

Construction-related impacts of LTMA's that could physically divide an established community and alter agricultural and recreational land uses, resulting in changes to those land use patterns that could cause substantial

adverse physical effects on the environment, are thoroughly described and evaluated above in the analysis of NTMAs and LTMAs. Impacts on land use patterns from implementation of policies related to the required level of flood protection are also thoroughly described and evaluated above. A more general narrative description of additional construction-related impacts of LTMAs in the Extended SPA is not required.

Facilities Operations and Maintenance from Conveyance and Storage Actions LTMAs include various activities that could alter downstream flows more substantially than NTMAs. These activities could include reoperating existing water storage facilities and operating new flood bypasses and other large-scale conveyance facilities. Conveyance- and storage-related impacts of LTMAs that could physically divide and established community and alter agricultural land uses, resulting in changes to those land use patterns that could cause substantial adverse physical effects on the environment, are thoroughly described and evaluated above in the analysis of NTMAs and LTMAs. Impacts on land use patterns from implementation of urban level of flood protection are also thoroughly described and evaluated above.

Conveyance- and storage-related activities could alter recreational land use that could result in substantial adverse physical effects on the environment. More specifically, it is possible that implementing storage, conveyance, or other management activities may affect river flows downstream from reservoirs or floodplain storage improvements that could affect recreational activities that occur on the rivers or in the river floodways. Changes in flows may reduce or increase access to recreational facilities and opportunities depending on whether the facility or opportunity is positively or adversely affected by increased or decreased flows. For example, higher flows might positively affect opportunities for whitewater rafting, but reduce fishing opportunities. Reduced flows may reduce boating opportunities, but extend the period of time when hiking trails in a river floodway are accessible. (See the discussion of LTMA impacts in Section 3.18, "Recreation," for a further description of effects of flows on recreation.) Where facilities are adversely affected, these changes may permanently displace recreational facilities and access. However, because of the uncertainty regarding the nature of effects on recreation facilities and opportunities, the impact of LTMAs on recreation is necessarily speculative.

Other Management Actions Impacts resulting from "other management actions" included in LTMAs are thoroughly described and evaluated above in the analysis of NTMAs and LTMAs. A general narrative description of additional impacts of LTMAs related to other management actions in the Extended SPA is not required.

Sacramento and San Joaquin Valley Watersheds

Construction of Conveyance Facilities Construction-related impacts from LTMAAs that would alter agricultural and recreational land uses, resulting in changes to those land use patterns that would cause substantial adverse physical effects on the environment, are thoroughly described and evaluated above in the analysis of NTMAAs and LTMAAs. A general narrative description of additional impacts of construction-related LTMAAs in the Sacramento and San Joaquin Valley watersheds is not required.

Facilities Operations and Maintenance from Conveyance Actions The mechanisms for and land use effects of operating and maintaining storage facilities in the Sacramento and San Joaquin Valley watersheds would be similar to those described above for operating and maintaining water storage facilities in the Extended SPA. Mitigating these potentially significant adverse land use impacts to less-than-significant levels may not always be possible.

None of the program's management actions related to conveyance would be implemented in the Sacramento and San Joaquin Valley watersheds. Therefore, no land use impacts would result from conveyance-related management actions in this area.

Other Management Actions Impacts from "other management actions" included in LTMAAs are thoroughly described and evaluated above in the analysis of NTMAAs and LTMAAs. A general narrative description of additional impacts of LTMAAs related to other management actions in the Sacramento and San Joaquin Valley watersheds is not required.

SoCal/Coastal CVP/SWP Service Areas None of the program's management actions would be implemented in the SoCal/coastal CVP/SWP service areas. Any changes to water deliveries in this region that might result from implementing proposed management actions would be minimal (see Section 3.13, "Hydrology"). A general narrative description of additional LTMAA impacts related to other management actions in the SoCal/coastal CVP/SWP service areas is not required.

LTMA Mitigation Strategies The following mitigation strategies are examples of approaches that may be considered to address significant impacts via the mechanisms described above. These mitigation strategies may be considered, as applicable, during project-level evaluation of specific LTMAAs. For more information on LTMAA mitigation strategies, see Section 3.14.2, "Analysis Methodology."

Specific mitigation measures identified above in the NTMAA and LTMAA impact/mitigation pairings are not identified again in the mitigation

strategies. It is assumed that mitigation measures described in the impact/mitigation pairings above would already be required, as applicable, as part of the project-level evaluation of specific LTMAAs. Not all mitigation strategies will apply to all LTMAAs; the applicability of mitigation strategies will vary based on the location, timing, and nature of each management action. In addition, some mitigation strategies on their own may not constitute sufficient mitigation under CEQA but must be coupled with other mitigation strategies to fully address the impacts of LTMAAs.

The following potential mitigation strategies have been identified for land use:

- Modify existing river recreational facilities that are subject to substantial adverse effects from downstream changes in flows.
- Where modifying facilities is not feasible, expand existing river recreational facilities or construct new facilities to replace facilities that would be subject to substantial adverse effects from downstream changes in flows.
- Enhance recreation access on unaffected rivers or river reaches in the vicinity of river reaches that would be subject to substantial adverse effects.