

EXECUTIVE SUMMARY

The Yolo Bypass Wildlife Area (Wildlife Area) comprises approximately 16,770 acres of managed wildlife habitat and agricultural land within the Yolo Bypass (Bypass). The Bypass conveys seasonal high flows from the Sacramento River to help control river stage and protect the cities of Sacramento, West Sacramento, and Davis and other local communities, farms, and lands from flooding. Substantial environmental, social and economic benefits are provided by the Yolo Bypass, benefiting the people of the State of California.

The California Department of Fish and Game (DFG), as part of the Resources Agency of the State of California, has the following mission to guide its planning and operations: *“The mission of the Department of Fish and Game is to manage California’s diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public.”*

The stated purpose of the Yolo Bypass Wildlife Area Land Management Plan (LMP) is to:

- ▶ guide management of habitats, species, appropriate public uses, and programs to achieve DFG’s mission;
- ▶ direct an ecosystem approach to managing the Yolo Bypass Wildlife Area in coordination with the objectives of the CALFED Ecosystem Restoration Program (ERP);
- ▶ identify and guide appropriate, compatible public-use opportunities within the Yolo Bypass Wildlife Area;
- ▶ direct the management of the Yolo Bypass Wildlife Area in a manner that promotes cooperative relationships with adjoining private-property owners;
- ▶ establish a descriptive inventory of the sites and the wildlife and plant resources that occur in the Yolo Bypass Wildlife Area;
- ▶ provide an overview of the Yolo Bypass Wildlife Area’s operation, maintenance, and personnel requirements to implement management goals, and serve as a planning aid for preparation of the annual budget for the Bay-Delta Region (Region 3); and
- ▶ present the environmental documentation necessary for compliance with state and federal statutes and regulations, provide a description of potential and actual environmental impacts that may occur during plan management, and identify mitigation measures to avoid or lessen these impacts.

This LMP was prepared through a partnership between DFG and the Yolo Basin Foundation (Foundation) and with the benefit of an extensive public-input program. DFG provided overall guidance to the planning process and was responsible for all decisions regarding the content of the LMP. The Foundation was responsible for coordinating substantial stakeholder outreach and facilitating stakeholder input in the LMP development. The Foundation was instrumental in the development of environmental education and interpretation programs at the Yolo Bypass Wildlife Area and helped facilitate the documentation of these programs in this plan.

The public-outreach program featured six focus group meetings conducted before initiation of LMP development (2002); a total of 37 Yolo Bypass Working Group Meetings (1999 to 2006; updates on developments at the Yolo Bypass Wildlife Area have been a frequent topic of discussion); one advertised public meeting for initial input (December 12, 2005, in Davis, attended by 30 persons); five additional focus group meetings to receive input on the Preliminary Draft LMP (March and April, 2006), one advertised public meeting for input on the Draft LMP and Initial Study. Appendix A provides a summary of the comments received at the public meetings and examples of the various communication devices that were used to publicize the planning process.

An environmental analysis pursuant to the California Environmental Quality Act (CEQA) was conducted concurrently with plan development to identify the potential environmental impacts of operating the Yolo Bypass Wildlife Area under the provisions of this LMP. As described in the Initial Study/Negative Declaration (IS/ND) prepared for the plan under CEQA, implementing the plan would not have a significant impact on the environment. The IS/ND is included in the LMP as Appendix H.

The following sections provide a summary of the LMP and of the CEQA analysis of its potential environmental impacts.

HISTORY OF ACQUISITIONS

The Wildlife Conservation Board (WCB) approved DFG's original acquisition of approximately 2,917 acres, establishing the Yolo Bypass Wildlife Area. Subsequent expansions resulted in the 16,770-acre Wildlife Area by 2005.

The largest acquisition consisted of two separate ownerships, the Glide Ranch and Los Rios Farms, totaling approximately 13,062 acres in 2001.

PROPERTY DESCRIPTION AND MANAGEMENT SETTING

The Yolo Bypass Wildlife Area is located within the historic Yolo Basin of the Sacramento Valley and is part of the DFG's Bay-Delta Region. It lies almost entirely within the Yolo Bypass in Yolo County, between the cities of Davis and West Sacramento. The Yolo Bypass Wildlife Area is composed of 17 separate management units throughout its approximately 16,770 acres.

The northern boundary of the Yolo Bypass Wildlife Area is generally formed by the Union Pacific Railroad (UPRR) (formerly Southern Pacific Railroad) tracks that run parallel to and north of Interstate 80 (I-80). The eastern boundary is shaped largely by the East Toe Drain, which runs inside of the east levee of the Yolo Bypass (which is also the west levee of the Sacramento River Deep Water Ship Channel). The western boundary of the Yolo Bypass Wildlife Area is generally defined by the west levee of the Yolo Bypass, except that the boundary also encompasses two properties outside of the Bypass levee. The southern boundary is approximately 8.7 miles south of I-80 on the east side and approximately 10 miles south of I-80 on the west side of the Wildlife Area.

The primary entrance to the Yolo Bypass Wildlife Area, which can be reached via the East Chiles Road (County Road 32B) exit of I-80, is approximately 2 miles east of Davis and 4 miles west of West Sacramento. The entry driveway intersects Chiles Road at the west levee of the Yolo Bypass, immediately west of the west end of the Yolo Causeway.

MANAGEMENT SETTING

The current management of the Yolo Bypass Wildlife Area operates under several legal constraints and existing agreements. These constraints and agreements include: Sacramento River Flood Control Project—Project Modification Agreement, Agreement under Section 8618 of the California Water Code, several agreements and commitments conveyed through the 2001 acquisition of the Glide Ranch and Los Rios Farms, memoranda of understanding regarding threatened and endangered species, memorandum of understanding between DFG and the Foundation, Fish And Game Code 1602 Streambed Alteration Agreement, coordination with the Sacramento-Yolo Mosquito And Vector Control District, management agreement with Dixon Resource Conservation District, programs through the Farm Service Agency, and coordination/cooperation associated with the Putah Creek Water Accord.

ENVIRONMENTAL SETTING

PLANNING INFLUENCES AND CONSIDERATIONS

Planning influences include the Sacramento River Flood Control Project; CALFED Bay-Delta Program; Sacramento and San Joaquin River Basins Comprehensive Study; Central Valley Regional Water Quality Control Board; Sacramento Area Flood Control Agency; Yolo County General Plan; Colusa Basin Drain planning; Delta Protection Commission's Land Use and Resource Management Plan for the Primary Zone of the Delta and Delta Recreation Plan; North American Waterfowl Management Plan; Yolo County Habitat Conservation Plan/Natural Community Conservation Plan; Agricultural/Irrigated Lands Conditional Waiver Program; Natural Resources Conservation Service Programs; Yolo Bypass Fish Passage and Fish Habitat Improvement Planning; Sacramento Area Council of Government's Regional Bicycle, Pedestrian, and Trails Master Plan; City Of Davis' General Plan, Comprehensive Bicycle Plan, and Open Space Program; City Of West Sacramento's General Plan and Access and Bike Plan; and the Lower Putah Creek Watershed Management Action Plan.

Yolo Basin Foundation

The Foundation is a community-based nonprofit organization dedicated to the appreciation and stewardship of wetlands and wildlife through education and innovative partnerships. It was founded in 1990 to assist in the establishment of the then approximately 3,700-acre Yolo Bypass Wildlife Area.

One of the principal goals of the Foundation is the facilitation of environmental education in the Yolo Bypass Wildlife Area. Foundation staff, interns and volunteers assist students and visitors with hands on learning activities in the Demonstration Wetlands and lead exploratory walks on the Wildlife Area.

The Foundation also is the sponsoring non-profit organization for California Duck Days, publishes the Yolo Flyway Newsletter, brings wetland education to classrooms with "Wild about Wetlands" learning kits, introduces the public to natural places in the community through public field trips, and hosts the popular Flyway Nights speaker series. The Foundation also hosts and facilitates the Yolo Bypass Working Group, which provides an opportunity for farmers, landowners and agencies with interests in the Yolo Bypass to discuss Bypass related issues as well as provide guidance and opinions on such issues.

AGRICULTURAL RESOURCES

The nearly annual floods that flow through the Yolo Bypass severely limit the kinds of crops that can be grown. The proximity of the Yolo Bypass to the San Francisco Bay system brings a prevailing wind from the south during summer evenings. Although the daily appearance of this Delta Breeze makes life bearable in the Sacramento area, it limits the production of rice to wild rice, or special varieties that are more adapted to the climate.

A small percentage of the land in the Wildlife Area is designated as prime farmland. DFG wildlife area managers commonly grow agricultural crops for the benefit of wildlife. The Yolo Bypass Wildlife Area utilizes agriculture to manage habitats while providing important income for the management and operation of the property. Many innovative, natural resource-compatible agricultural practices occurring in the Yolo Bypass Wildlife Area provide valuable habitat for a diverse assemblage of wildlife species. Rice is grown, harvested, and flooded to provide food for thousands of waterfowl. Corn fields are harvested to provide forage for geese and cranes. Crops such as safflower are cultivated and mowed to provide seed for upland species such as ring-necked pheasant and mourning dove. Much of the grassland in the southern portion of the Yolo Bypass Wildlife Area is managed with cattle grazing, resulting in spectacular blooms of wildflowers during the spring months.

GEOLOGY, SOILS, TOPOGRAPHY, AND CLIMATE

CLIMATE

Yolo County has a Mediterranean climate characterized by hot, dry summers and temperate, wet winters. However, the county receives a marine air influence from the Delta regions to the south that moderates the temperature extremes of the Central Valley. During the summer months (June–August), average daily high temperatures are in the mid-90s Fahrenheit (°F) and average daily low temperatures are in the mid-50s. During the winter months (December–February), average high temperatures are in the 50s and average lows are 38–40°F. Virtually all precipitation falls as rain, between November and April in most years. Annual rainfall typically ranges from 16 to 22 inches, and the average annual air temperature is 60–62°F. The frost-free season is 230–280 days throughout the year.

GEOLOGY

The Yolo Bypass Wildlife Area is located in the Yolo Basin on the west side of the Sacramento Valley, in the Great Valley geomorphic province of California. Most of the surface of the Great Valley is covered with alluvium of Holocene and Pleistocene age, composed primarily of sediments from the Sierra Nevada and the Coast Ranges that were carried by rivers and deposited on the valley floor. These sediments are primarily fine grained silts and clays.

TOPOGRAPHY

Historic landforms in the Yolo Bypass Wildlife Area include the floodplains and natural levees along the Sacramento River; the historic delta and distributary channels of Putah Creek; a remnant oxbow lake (Green’s Lake); the closed depression formations of the Putah Creek Sinks; the edge of the alluvial fan of Putah Creek extending into the Basin; and the Yolo Basin rims within and around its borders.

SOILS

Six general soil associations have been identified in the Yolo Bypass Wildlife Area. A soil association is a landscape that has a distinctive proportional pattern of soil types. The soil associations include: Yolo-Brentwood Association, Rincon-Marvin-Tehama Association, Sycamore-Tyndall-Valdez Association, Willows-Pescadero-Riz Association, Capay-Sacramento-Clear Lake Association, and Corning-Hillgate Association.

GEOMORPHOLOGY, HYDROLOGY, AND WATER QUALITY

GEOMORPHOLOGY

The historic Yolo Basin was a natural depression formed on the Sacramento Valley floor after the last Ice Age. The trough of the Basin did not function as a true floodplain that directly interacted with the Sacramento River as it rose and fell during the winter and spring. Instead it formed a vast mosaic of wetlands that transitioned from seasonal wetlands in the north, through willow thickets, tule marshes, and backwater ponds, to the freshwater tidal marshes and slough channels of the estuary to the south.

During the 1800s, floods from the Sacramento River inundated large portions of the Sacramento Valley leading to the planning and implementation of the Sacramento River Flood Control Project that converted the natural Yolo Basin into the weir regulated Yolo Bypass. The Bypass is 41 miles long and is surrounded completely on the east and partially on the west by levees constructed by the U.S. Army Corps of Engineers (USACE). Levee construction began in 1917 and the weirs were completed in 1917 (Sacramento Weir) and 1924 (Fremont Weir). In 1963, a deep water ship channel was constructed along the eastern edge of the Bypass.

HYDROLOGY

During periods of high snowmelt and rainfall, much of the Central Valley became inundated, forming an extensive inland sea that took months to drain downstream to the Bay-Delta system. In moderate flood years, the river frequently overtopped its banks spilling into the Yolo Basin. The southerly portions of the Basin likely remained inundated until late spring. The Sacramento River historically was the largest watercourse affecting the Yolo Basin from the north and east. Cache Creek, Putah Creek, and Willow Slough were the major tributaries inflowing to the basin from the west. Flows slowly drained towards the south through a vast array of wetlands and non-tidal marshes into the tidal marshes of the north Delta. Permanent bodies of water persisted in the Cache Creek Sink and Putah Creek Sinks.

In 1911 the State Reclamation Board was assigned to coordinate a basin wide plan for flood control for the entire Sacramento Valley. This project included the construction of a bypass capable of delivering 500,000 cubic feet per second (cfs) of water through Cache Slough in the north delta and increasing the Sacramento River capacity to 100,000 cfs from Sacramento to Cache Slough. Levees were constructed along both sides of the Yolo Bypass with project completion in 1948. The Yolo Bypass is the largest flood control bypass in California.

In 1957 the U.S. Bureau of Reclamation constructed Monticello Dam on Putah Creek, located 10 miles upstream of Winters, California. The large capacity of the reservoir (Lake Berryessa) has decreased the 100-year peak flow from 90,000 cfs (pre-dam) to 32,300 cfs (post-dam). The large decrease in peak flows and annual discharge has decreased sediment influx and capacity, essentially dried out the Putah Creek Sinks and prevented additional alluvial fan formation.

Cache Creek drains approximately 1,290 square miles as it travels nearly 80 miles from its natural outlet from Clear Lake to its confluence with the Yolo Bypass. Flows have been controlled by the Indian Valley Reservoir on the north fork of Cache Creek since 1974 and by the Clear Lake Dam since 1913.

The Colusa Drain was connected to the Bypass via the artificial overflow channel Knights Landing Ridge Cut. The Drain has a watershed area of 130 square miles, receiving input from all the creeks flowing from the Coast Range between Knights Landing and Stony Creek. The Ridge Cut drains into the Sacramento River near Knight's Landing, except during high flows, when it empties into the Yolo Bypass.

The Yolo Bypass provides a direct path for Sacramento and Feather River flows to enter the Sacramento River Delta. Flow is diverted from the Sacramento River into the Bypass when the stage exceeds 33.5 feet (corresponding to 56,000 cfs at Verona). During large flood events, up to 80% of the Sacramento River flows are diverted into the Bypass. In high flow years, additional water can enter the Bypass via the Sacramento Weir. Water leaves the Yolo Bypass either via the Toe Drain at Prospect Slough or over the southern end of Liberty Island to Cache Slough.

The timing of inundation is of utmost importance to agricultural interests within the Bypass. Inundation in late spring or early fall, although very rare, can have disastrous impacts on unharvested or newly planted crops.

WATER QUALITY

Mercury

One water quality variable of particular concern regarding management activities at the Yolo Bypass Wildlife Area is methylmercury. Mercury occurs as a result of both natural and anthropogenic sources in the environment and continually cycles in the aquatic environments of the Sacramento River and San Joaquin River basins and Delta. The cycle involves different chemical forms of mercury as a result of both chemical and biological reactions in aerobic and anoxic microenvironments. A large proportion of the loads of mercury and methyl

mercury in San Francisco Bay and the Delta are thought to originate in Cache Creek and pass through the Yolo Bypass.

Methylation of mercury is the key step in the entrance of mercury into the food web. The rates of methylation are influenced by the bioavailability of inorganic mercury to methylating bacteria, the concentration and form of inorganic mercury, and the distribution and activity of methylating (i.e., sulfate-reducing) bacteria. Sediments appear to be a net source of methylmercury into the water column. Sinks or losses of total mercury and methylmercury include volatilization, sequestration (i.e., storage) in local soil, and biological uptake (i.e., accumulation in organisms' tissues). Demethylation of methylmercury is considered likely to be the major loss mechanism for this form.

Wetlands support methylation processes and may export methylmercury to surrounding channels, however, recent research shows that there is still much to learn about methylmercury production and export processes from wetlands. Recent studies in the Delta indicate that some wetlands import and some export methylmercury.

The Central Valley Water Quality Control Board identified the Delta as impaired by mercury because Delta fish have elevated levels of methylmercury that pose a risk for human and wildlife consumers. The Central Valley Water Board's development of a water quality attainment strategy to resolve the mercury impairment in the Delta has two components: the methylmercury total maximum daily load (TMDL) for the Delta and the amendment of the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (the Basin Plan) to implement the TMDL program.

Other Water Quality Issues

Toxic chemicals including pesticides have impaired water quality in many Central Valley and Delta waterways and have recently been studied in the Yolo Bypass. High concentrations of some metals from point and nonpoint sources appear to be ubiquitous in these waterways. In addition to mercury, high levels of other metals (i.e., aluminum, copper, cadmium, and lead) in Central Valley and Delta waters are also of concern. Additionally, in localized areas of the Delta, fish tissues contain elevated levels of dioxin as a result of industrial discharges.

BIOLOGICAL RESOURCES

Two-hundred-eighty terrestrial vertebrate species are known to use the Yolo Bypass Wildlife Area at some point during their annual life cycles, over 95 of which are known to breed in the Yolo Bypass Wildlife Area. The Yolo Bypass Wildlife Area also provides suitable habitat for 23 additional species that may occur on site but have not yet been observed there. The Yolo Bypass Wildlife Area is also known to support 38 special-status wildlife species, and many more are locally rare or have specialized habitat requirements that the Wildlife Area provides. The Wildlife Area also provides seasonal or permanent aquatic habitat for 44 species of fish, 8 of which are special-status species. Hundreds of invertebrate species also inhabit the Wildlife Area, including five special-status invertebrates.

VEGETATION COMMUNITIES

Common vegetation communities found within the Yolo Bypass Wildlife Area include seasonal and permanent wetlands, annual grasslands, riparian scrub and woodlands, vernal pools and swales, and row crop-seasonal wetlands.

Managed Seasonal and Permanent Wetlands

Wetlands have evolved as dynamic ecosystems, constantly changing due to the physical and chemical processes associated with floods, drought, and fire. Today, the Yolo Bypass is an engineered floodway; managed wetlands in the Yolo Bypass Wildlife Area are now enclosed by levees and berms, and flooded with water from irrigation

conveyance systems. Whereas natural wetland hydrology was very dynamic, flooding cycles now used for wetlands can be predictable through strategic and innovative management.

Permanent wetlands are flooded year round. They are generally relatively deep (~4 feet) and constructed with islands and shallow underwater shelves. Seasonal wetlands are drained April 1st and flooded September 1st. The management of productive wetland habitat requires dynamic water management, as well as periodic soil and vegetation disturbances. Adequate water conveyance systems are essential for meeting water management objectives, thus pumps, delivery ditches, water control structures, and drainage systems must be maintained in functional condition. Discing and mowing are used to interrupt the natural evolution of wetland habitats, setting back plant succession to a point which is the most productive of those elements required by waterfowl and other wetland-dependent species.

Annual Grasslands

Grasslands are found across the majority of the 9,000-acre Tule Ranch unit and in scattered locations within other management units. Like much of California, these habitats are dominated by a variety of naturalized, nonnative grasses and forbs. Species composition in this community varies widely in response to a variety of micro-scale factors such as soil moisture, soil fertility, disturbance (e.g., gopher mounds), and soil depth. Most grasslands in the Yolo Bypass are dominated by Italian (annual) rye grass.

Community composition in wetter sites is similar to vernal pools on shallower soils grasses generally become less dominant and native forbs are more common. Annual grasslands may occasionally contain small areas of remnant perennial native grasses are important components of the grassland community. The Tule Ranch grasslands are grazed with cattle as a primary management strategy. This strategy has been proven to be successful with resulting spectacular wildflower blooms in recent years.

Riparian Woodland

Riparian woodland and associated riparian scrub habitats are primarily found adjacent to Green's Lake, Putah Creek, and along the East Toe Drain within the Yolo Bypass Wildlife Area Riparian scrub is typically dominated by phreatophytes (i.e., water-loving plants) representative of early to mid successional stage vegetation communities within riparian areas in California's Central Valley. Typical species include native plants such as creek dogwood, California rose, Sandbar willow, buttonbush, and arroyo willow, along with nonnative invasive species such as Himalayan blackberry, arundo, and tamarisk. Native trees such cottonwood, alder, and Oregon ash are occasionally found overtopping the shrub layer. Riparian woodland is a tree-dominated community found adjacent to riparian scrub on older river terraces where flooding frequency and duration is less. Common native overstory species in riparian communities include cottonwood, alder, valley oak, Oregon ash, black willow, California sycamore, box elder, and northern California black walnut hybrids (northern California black walnut readily hybridizes with cultivated English walnut). The understory is typically sparse in this community; although, native species such as California rose, California grape, Santa Barbara sedge, mulefat, blue elderberry, California barley, and creeping wildrye may be common in tree canopy openings.

Vernal Pool and Swale

Vernal pools and swales within the Yolo Bypass Wildlife Area are primarily found within the southwest portion of the Tule Ranch Unit. A recent survey of this area (Witham 2003) documented approximately 1,600 acres of vernal pool grassland as well as the presence of a distinct vernal pool subtype, playa pools. Vernal pools typically support a suite of mostly endemic and sometimes rare plants in several genera including *Lasthenia*, *Plagiobothrys*, *Navarretia*, *Psilocarphus*, *Downingia*, and *Limnanthes*, among others. The nonnative Italian ryegrass is also widely distributed in vernal pools. The margins of playa pools support many of the same species as smaller vernal pools. Additionally, several rare grasses, including Colusa grass and Crampton's tuctoria, although not confirmed to be present in Yolo Bypass Wildlife Area, have the potential to occur on the pool

bottoms, which are otherwise typically sparsely vegetated. Developing a refined grazing plan for the vernal pool areas throughout the Tule Ranch is a high priority for future management.

Row Crop-Seasonal Wetland

Row crop-seasonal wetland communities are found across the northern and central portions of the Yolo Bypass Wildlife Area (e.g., Causeway Ranch and 1,000 Acre units). These are generally agricultural plant communities comprising various annual row crops in the spring and summer months. The primary crop is rice but a variety of other crops are produced including grains (e.g., corn, millet, and milo [grain sorghum]). The fields are typically managed as flooded open water habitat in the winter months. During the winter months few, if any, plants are likely encountered except for residual stubble and other by-products remaining after crop harvesting. During the summer months, non-crop plants are limited primarily to agricultural weeds unless fields are fallowed or flooded to shallow depths as a shorebird habitat enhancement strategy. In these cases beneficial wildlife plants such as swamp timothy and the related swamp grass may be common.

Special-Status Plant Species

Based on queries of the California Natural Diversity Database (CNDDDB 2006) and the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2001), there are 24 special-status plant species known from the vicinity of the Yolo Bypass Wildlife Area (Table 3.5-2). Special-status plants are those plants listed as threatened or endangered under either the Federal or California Endangered Species Acts (ESA/CESA). Botanical surveys conducted in 2004 verified the occurrence of several rare plants on the Tule Ranch unit of the Wildlife Area.

WILDLIFE RESOURCES

The Yolo Bypass Wildlife Area supports a diverse assemblage of communities that provide valuable wildlife habitat for a variety of species guilds.

Species Guilds

Waterfowl

A significant feature of the Yolo Bypass Wildlife Area is the abundance and variety of wintering waterfowl that migrate down the Pacific Flyway each year. Large numbers of ducks, geese, and swans winter in the Wildlife Area after migrating from northern breeding areas. Waterfowl populations are a highly valued and diversified biological resource. They are of high interest to a variety of recreational users of the Wildlife Area, particularly hunters and bird watchers. Species that occur in high abundance include northern pintail, northern shoveler, mallard, gadwall, American wigeon, cinnamon and green-winged teal, lesser scaup, tundra swan, snow goose, and white-fronted goose. Some species, such as mallard, gadwall, and Canada goose are year-round residents and breed locally in wetlands and nearby uplands.

Seasonal flooding of wetlands is the primary wetland management strategy in the Yolo Bypass Wildlife Area for migratory waterfowl. Grazing, upland cover plantings, and maintenance of properly spaced brood ponds are strategies used for nesting waterfowl. In addition, agricultural activities result in high quality foraging habitat for some waterfowl species.

Shorebirds and Wading Birds

The Yolo Bypass Wildlife Area has become an important shorebird area in the Central Valley. These species are a significant component of the Wildlife Area and are of high interest to recreational bird watchers. Shorebirds and wading birds that breed in or nearby the Wildlife Area include American avocet, black-necked stilt, killdeer, spotted sandpiper, Virginia rail, white-faced ibis, black-crowned night heron, great blue heron, and snowy and

great egret. Since the opening of the Wildlife Area, a heronry (nesting colony of herons and egrets) has become established. In addition large numbers of ibis from nesting colonies elsewhere in the region use the Wildlife Area during summer months, feeding primarily on crayfish. Large numbers of black-crowned night herons also roost on the Wildlife Area. Many diverse species of shorebirds rely on the Wildlife Area to provide habitat during migration and winter. Species regularly observed during these periods include western and least sandpiper, long- and short-billed dowitchers, dunlin, greater and lesser yellowlegs, whimbrel, long-billed curlew, and Wilson's and red-necked phalaropes.

Managed seasonal wetlands with complex diverse topography combined with innovative rice/shorebird habitat rotations in the Wildlife Area provide critical foraging, nesting, and loafing habitat for an abundance of shorebird and wading bird species.

Neotropical Migratory Birds

Many species of neotropical migratory birds migrate through or breed in the Yolo Bypass Wildlife Area. The neotropical migratory bird guild includes species that breed in North America and winter in Central and South America. Representative species that breed and/or migrate through the Wildlife Area include western kingbird, western wood-pewee, tree swallow, barn swallow, Bullock's oriole, Wilson's warbler, yellow warbler, and blue grosbeak.

Management of upland habitat to provide variations in height and density of vegetation, food crops, and water has proven to be beneficial to many neotropical migratory song birds.

Raptors

A wide variety of wintering and/or breeding raptors utilize the Yolo Bypass Wildlife Area, including red-tailed hawk, white-tailed kite, rough-legged hawk, ferruginous hawk, prairie falcon, peregrine falcon, kestrel, barn owl, great horned owl, short-eared owl, and northern harrier. Of these, Swainson's hawk, red-tailed hawk, kestrel, northern harrier, white-tailed kite, barn owl, burrowing owl and great horned owl are known to nest in the Wildlife Area.

All of these raptor species can be seen foraging and hunting for prey in recently flooded wetlands and in fresh cut alfalfa fields. Management strategies for raptors include optimizing foraging opportunities by managing for a food base consisting of rodents and large insects. Discing, mowing, and summer irrigations attract large numbers of Swainson's hawks feeding on grasshoppers.

Cavity-nesting Birds

Cavity-nesting birds, such as kestrels, tree swallows, and wood ducks can be seen throughout the Wildlife Area. Providing nesting boxes for these cavity-nesters benefits these species in the Wildlife Area.

Upland Game Birds

The Yolo Bypass Wildlife Area provides habitat for several upland game birds of great interest to recreational hunters. The primary upland game bird species that utilize the Wildlife Area are mourning dove and ring-neck pheasant. Tenant farmers grow fields of safflower that provide abundant foraging opportunities. Safflower is also left unharvested and mowed to provide additional foraging prospects for these species. These management strategies have resulted in improved upland game bird hunting throughout the Wildlife Area. Spring floods can significantly affect pheasant nesting and recruitment success thereby limiting populations in subsequent years.

Bat Colony

An additional important feature of the Wildlife Area is its breeding colony of over 100,000 Mexican free-tailed bats. These bats roost each summer under the Yolo Causeway and prey on insects throughout Yolo and Sacramento counties. The location of this colony in a protected Wildlife Area will help to ensure its long-term success.

Wildlife Habitats

Open Water (Floodwater Inundation)

Winter floodwaters in the Yolo Bypass support thousands of migratory waterbirds each year. These birds are distributed according to water depth and include American white pelican, double-crested cormorant, and diving ducks, such as canvasback at depths averaging 3–9 feet; dabbling ducks, such as northern pintail at depths averaging 6–10 inches; wading birds, such as great egret at depths averaging 4 inches; and greater sandhill crane and shorebirds, such as black-necked stilt at depths less than 3 inches. The quality of this open water habitat is increased for dabbling ducks and geese by the pre-flood planting of seed crops and managed growth of swamp timothy, which provides high-quality forage underneath the shallow waters. Shorebirds and cormorants also benefit from roosting islands amidst the open water, which are provided by the infrastructure for the flooded agricultural crops. The abundant waterfowl and shorebirds onsite in turn attract many raptors, including American peregrine falcon.

After floodwaters recede, smaller areas of open water habitat remain in the Yolo Bypass Wildlife Area's perennial wetlands and ponds. These areas support foraging waterbirds and raptors throughout the year, including species which breed in the on-site uplands and marshes, such as pied-billed grebe, mallard, gadwall, American avocet, and black-necked stilt. The perennial ponds also support many reptiles such as northwestern pond turtle, and reared sliders, which forage in the open water and breed in adjacent uplands, and amphibians such as Pacific treefrog frog, and the nonnative bullfrog, which forage and breed in the open water and its emergent marsh margins.

Mudflat

Mudflats are present throughout managed seasonal wetlands and in the Wildlife Area's rice rotation that contains a fallow stage specifically managed to support shorebirds. Shorebirds forage exclusively in mudflat/sandflat and shallow open water habitats. The on-site mudflats support abundant invertebrate populations, and thus provide important foraging habitat for large numbers of migrating and wintering shorebirds along the Pacific Flyway, including least sandpiper, western sandpiper, long-billed dowitcher, and dunlin. Some dabbling ducks such as cinnamon teal also forage by skimming the mudflats' surface, and raptors such as American peregrine falcon prey upon the shorebirds and waterfowl in this habitat. Reptiles such as northwestern pond turtle and red-eared sliders also use the mud banks of perennial ponds for basking and thermoregulation.

Managed Seasonal and Permanent Wetlands

Only a small portion of the historical distribution of freshwater marsh remains in California, due to widespread conversion of wetlands to agriculture. Managed seasonal and permanent wetland habitat in the Wildlife Area is especially important to migratory waterfowl which utilize this habitat in tremendous numbers. Other species in the managed wetlands include resident American bittern, terns, Virginia rail, marsh wren, moorhens, grebes, ruddy ducks, and common muskrat, which forage and breed on site exclusively in wetland habitat; northern harrier, tricolored, yellow-headed and red-winged blackbirds, western aquatic garter snake, and Pacific tree frog, which breed in marshes and other habitats on site; and black-crowned night-heron, green heron, great-blue heron, great egrets, and snowy egret, which do not breed on site but commonly forage in the Wildlife Area's wetlands.

Natural Seasonal Alkali Marsh and Seasonal Disturbed Wetland

Portions of alkali marsh containing alkali-adapted plants are structurally similar to seasonal disturbed wetlands. Both plant communities provide lower quality habitat for wildlife than other wetland communities such as freshwater marsh or vernal pool, as they lack the hydrology and vegetation structure necessary to support most wetland-dependent wildlife species. The vegetated alkali marsh and seasonal disturbed wetlands on site do support more generalist wildlife, however, that are capable of breeding and foraging in both upland and wetland communities. These species include common garter snake, savannah sparrow, and California vole.

Agricultural Crops

Agricultural lands at the Wildlife Area are actively managed to benefit wildlife. This management results in the use of safflower fields by foraging mourning doves and ring-necked pheasants; use of corn, milo, and millet fields by foraging sandhill cranes and waterfowl, use of grain fields by foraging waterfowl; and use of grain fields by some grassland bird species. In addition, the on-site rice fields support foraging white-faced ibis,; and tomato fields also support foraging Swainson's hawks and other raptors, which prey on the small mammals made more accessible by grading and harvesting activities. Post harvest flooding of rice fields attracts thousands of waterfowl and shorebirds on an annual basis. The governmental programs that encouraged the flooding of rice have lessened the impacts of wetland loss in the Central Valley.

Ditch

Wildlife use of the ditches on site varies according to each ditch's pattern of water conveyance. Ditches that remain inundated throughout the summer months and are connected to rice fields or permanent wetlands provide very important habitat for giant garter snake. This aquatic species commonly travels through irrigation ditches, forages for amphibians and small fish, which may be present, and uses the dry associated banks for basking and thermoregulation. The connectivity function of ditches is also extremely important for waterfowl and their young during the breeding season. Ditches with suitable hydrology also support the foraging of other aquatic wildlife such as western aquatic garter snake, Pacific treefrog, otters, muskrat and beaver.

Riparian Woodland and Scrub

Although relatively small areas of riparian woodland and scrub communities are present on site, these areas provide very important habitat to a number of wildlife species, many of which are restricted to riparian communities. Wildlife species known to forage in the on-site riparian communities include Cooper's hawk, sharp-shinned hawk, red-shouldered hawk, king fisher, yellow warbler, willow flycatcher, western grey squirrel, and western aquatic garter snake. Recently, tricolored blackbird breeding colonies have also occurred in an on-site patch of buttonwillow trees.

Vernal Pool and Swale

Vernal pools are a unique, rare, and rapidly declining community in California. Because of the limited distribution of this community in the state and its continued decline due to land conversion for development and other uses, many vernal pool-associated wildlife species receive state or federal protection or are considered species of concern. The vernal pools at the Wildlife Area provide high-quality habitat for these species, due to the diversity in pool size, long inundation periods, and active vegetation management through grazing. Vernal pool species known to breed in the Wildlife Area include vernal pool tadpole shrimp, vernal pool fairy shrimp, conservancy fairy shrimp, midvalley fairy shrimp, and California linderiella. The vernal pools at the Wildlife Area also provide suitable habitat for California tiger salamander and possibly western spadefoot toad, although these species have not been documented on site.

Annual Grassland

The grassland community in the Yolo Bypass Wildlife Area's Tule Ranch are important for grasshopper sparrow, northern harrier, California horned lark, savannah sparrow and western meadowlark. Historically, pronghorn antelope and tule elk grazed the grassland plants. However, today, grazing cattle provide this function and control nonnative competing grasses while providing income, which funds management of the Yolo Bypass Wildlife Area. Grasslands also provide important breeding and foraging habitat for upland game birds such as mourning dove and ring-necked pheasant, as well as nesting habitat for resident waterfowl such as mallard, cinnamon teal, and gadwall. Grasslands also support abundant small mammals, which in turn attract many avian, mammalian, and reptilian predators. Large flocks of snow geese and white fronted geese are also attracted to winter grasslands on the Tule Ranch.

Special-status Wildlife Species

Special-status wildlife species are legally protected or are otherwise considered sensitive by federal, state, or local resource conservation agencies and organizations. Special-status wildlife species that occur or have the potential to occur on the Yolo Bypass Wildlife Area include 5 species of invertebrates, 2 species of reptiles, 2 amphibian species, 32 species of birds, and 2 mammal species. Of all the special-status wildlife species, the vernal pool tadpole shrimp, vernal pool fairy shrimp, conservancy fairy shrimp, giant garter snake, California tiger salamander, bald eagle, Swainson's hawk, American peregrine falcon, greater sandhill crane, little willow flycatcher, and bank swallow are listed as a state or federally threatened or endangered species. The remaining species are considered Species of Special Concern by DFG and/or federal Species of Concern by U.S. Fish and Wildlife Service (USFWS).

FISHERIES RESOURCES

Historically, seasonal flooding covered various lands adjacent to the Sacramento River and tributaries and provided important spawning and rearing habitat for many fish species, including Sacramento splittail and juvenile Chinook salmon and steelhead. Levee and flood control facility (i.e., Fremont Weir and Sacramento Weir) construction has caused a reduction in the overall amount of seasonal flooding and shallow-water habitat in the Sacramento River system. In winter and spring, however, agricultural fields and wetland habitats throughout the Yolo Bypass often flood during high flows and are used by Sacramento splittail for spawning and rearing, and by Chinook salmon and steelhead for rearing. Altered flow regimes, flood control, and floodwater conveyance activities along much of the Yolo Bypass have affected available habitat and ecological processes.

Primary aquatic habitats throughout the Yolo Bypass Wildlife Area include the Yolo Bypass floodplain during seasonal flooding events, Putah Creek, East Toe Drain, and permanent wetlands.

Yolo Bypass Floodplain

Similar to other Sacramento-San Joaquin Delta habitats, there are more introduced species than native species in the Yolo Bypass floodplain. Introduced species are one of the major environmental issues in the Delta, where they frequently dominate the fauna on a year-round basis and in fact make up approximately 90 percent of the biomass in the Delta. However, unlike other Sacramento-San Joaquin Delta habitats, this floodplain is seasonally dewatered during late spring for agricultural production. This prevents introduced fish species from establishing year-round dominance except in perennial water sources. Moreover, many of the native fish are adapted to spawn and rear in winter and early spring during the winter flood pulse.

Recent surveys demonstrate that the Yolo Bypass provides habitat for a wide variety of fish species. Sampling to date has shown that the floodplain is used by at least 42 fish species including seasonal fish and fish that are year-round residents in perennial water sources. Examples include federal and state-listed species (steelhead trout, delta smelt, spring-run and winter-run Chinook salmon) and sport fish (striped bass and white sturgeon).

The native minnow Sacramento splittail is perhaps the most floodplain-dependent species in the Sacramento-San Joaquin Delta. Studies by Sommer et al. (1997) demonstrated that the Yolo Bypass provides some of the most important habitat for this species. Their sampling data indicated that adults move onto the floodplain in winter and early spring to forage and spawn among flooded vegetation.

The results published by Sommer et al. (2001) indicated that this seasonal floodplain habitat seems to provide better rearing conditions for Chinook salmon than the adjacent Sacramento River channel. Another important attribute of floodplain habitat is an enhanced food web. Sommer et al. (2001) found that drift insects (primarily chironomids) were 10 to 100 times more abundant in the floodplain than the adjacent Sacramento River channel during 1998 and 1999 flood events.

Although these results suggest that several measures of habitat variables demonstrate their benefit to young salmon in the Yolo Bypass, floodplain habitat carries stranding risks. The relative importance of stranding mortality is difficult to evaluate because there is currently no reliable estimate of the total number of salmon which migrate through the Sacramento River and its tributaries. However, the Yolo Bypass floodplain has been graded for agriculture which promotes successful emigration of young salmon.

Recent analysis of juvenile salmon utilizing the Bypass indicates higher methylmercury levels in these fish when compared to juvenile salmon that used the Sacramento River to reach the Delta. Further study is needed as well as analysis of methylmercury levels in splittail using the Yolo Bypass. Splittail spend their entire lives within the Bay-Delta ecosystem and therefore may have a higher propensity to contribute towards the bioaccumulation of methylmercury in the food chain.

Other Benefits of Floodplain to Aquatic Communities

Floodplain inundation may also provide benefits to organisms downstream in the brackish portion of the Delta (i.e., estuary). At the base of the estuarine food web, phytoplankton are responsible for most of the primary production in the estuary. Modeling studies by Jassby and Cloern (2000) suggest that phytoplankton produced in the Yolo Bypass may be an important source of organic carbon to the Delta, at least during flood events. Moreover, Yolo Bypass is probably also a major pathway for detrital material, an important additional source of organic carbon to the food web of the phytoplankton-deficient Delta.

Putah Creek

The reach of Putah Creek within the Yolo Bypass Wildlife Area (i.e., Putah Creek Cross Channel) consists of an unnatural ditch that is seasonally dammed by the Los Rios Check Dam. The Los Rios Check Dam is a 12-foot-high, 30-foot-long concrete box that serves as a seasonal check dam in the Yolo Bypass to create a head of water for irrigation pumping for neighboring agricultural lands and to flood the seasonal wetlands in the Yolo Bypass Wildlife Area. The Los Rios Check Dam is currently being managed to facilitate the migration of fall-run Chinook salmon into lower Putah Creek by removing boards in fall/winter in conjunction with pulse flow releases from the Putah Creek Diversion Dam (PDD).

Habitat and fisheries conditions in this reach of lower Putah Creek have been affected and shaped by several factors, including historic agricultural activities in the Yolo Bypass, upstream flood control grading and vegetation removal, construction and operation of the Solano Water Project, and, in May 2000, settlement and implementation of the historic Putah Creek Water Accord (Accord). The purpose of the Accord is to create as natural a flow regime as feasible and to maintain a living stream for the benefit of fish, wildlife, and plants from the PDD to the connection at the East Toe Drain in the Yolo Bypass.

Fisheries response to the Accord flow releases is currently being evaluated; however, based on initial data, several improvements have been noted. The most noteworthy result of the new flow releases is that fall-run Chinook salmon are migrating up Putah Creek to spawn. An estimated 70 adult fall-run Chinook salmon migrated up lower Putah Creek in the of fall 2003, resulting in the largest salmon run in more than 40 years.

East Toe Drain

The tidally influenced East Toe Drain provides perennial aquatic habitat for several fish species. The East Toe Drain is characterized by a wide (50 to 1,500 feet) and fairly deep (more than 5 feet) channel with no canopy and little bank or overhead vegetation. Portions of the Toe Drain bank bordering the Yolo Bypass Wildlife Area are riprapped. The channel is homogeneous with little habitat complexity and having generally low fish habitat value. The Lisbon Weir is located in the East Toe Drain adjacent to the Tule Ranch Unit. The Lisbon Weir is a rock weir used to capture water at high tide to maintain a higher elevation pool for irrigation source water.

Fish studies in the East Toe Drain show that this aquatic feature likely functions as year-round habitat for resident species, as a migration corridor (e.g., fish movement into Putah Creek and onto the seasonally inundated floodplain), and potentially as spawning habitat for striped bass and American shad. Resident species are primarily nonnative and include common carp, channel catfish, white catfish, striped bass, threadfin shad, black crappie, white crappie, Sacramento blackfish, and Sacramento sucker.

Permanent Wetlands

Permanent wetlands in the Yolo Bypass Wildlife Area provide perennial aquatic habitat for a diverse assemblage of fish species (dominated by nonnative species). Three of the permanent wetland ponds in the Yolo Bypass Wildlife Area were surveyed in 2001 to examine the functional role of perennial floodplain ponds for fishes in a regulated and highly invaded temperate river-floodplain system (Feyrer et al. 2004). Fish sampling resulted in the collection of 18 different species, all of which were nonnative with the exception of one native fish species, Sacramento blackfish.

Special-Status Fish Species

A total of nine special-status fish species occur or have the potential to occur in the Yolo Bypass and/or lower Putah Creek and are described below. Of the nine species, Central Valley steelhead Evolutionarily Significant Unit (ESU), Central Valley spring-run Chinook salmon ESU, Sacramento River winter-run ESU, green sturgeon, and delta smelt are listed as a federally threatened or endangered species. The USFWS de-listed Sacramento splittail from its federally threatened status on September 22, 2003. National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) determined that listing is not warranted for Central Valley fall-/late fall-run Chinook salmon ESU. However, it is still designated as a Species of Concern because of concerns over specific risk factors. The two remaining species (hardhead and Sacramento perch) are considered Species of Special Concern by DFG.

CULTURAL RESOURCES

The Yolo Basin is rich in cultural history. From the earliest Native American inhabitants to those farming and residing there in recent times, the Yolo Basin has been an important part of people's being and livelihood.

The Yolo Basin is within the ethnographic territory of the Patwin. The word "Patwin" literally means "the people" in the native tongue. Although native people did not identify themselves as Patwin, this name is used to describe a series of linguistically and culturally related groups who occupied a portion of the lower Sacramento Valley west of the Sacramento River and north of Suisun Bay. The southern group or Poowin claimed the Yolo Basin, however, no known ethnographic village locales are within this area. Because of reoccurring seasonal flooding, the area would have most likely been used during the drier summer months.

An early settler was J. H. Glide who purchased a large portion of land in the Yolo Bypass in the 1870s. Much of this property was held by this family until 2001.

Several cultural resources surveys have been conducted within and directly adjacent to the Yolo Bypass Wildlife Area. With the exception of a few all have been linear surveys which have resulted in the inventory of only a very small percentage of the area. These investigations have resulted in the identification of five resources (two prehistoric archaeological sites, an historic farmhouse with associated outbuildings, the remains of the historic Sacramento Northern Railroad, and the route of the Southern Pacific Railroad) within the Yolo Bypass Wildlife Area. While not formerly documented, other resources located within the Yolo Bypass Wildlife Area include the “Umbrella Barn” in the southern portion of the Tule Ranch Unit, and two locales, the “Tree House” and another known as “The Fireman’s Club” also located in the Tule Ranch Unit.

RECREATION AND PUBLIC USE

Since the inception of the Yolo Bypass Wildlife Area, tens of thousands of visitors from throughout the region have used the area for hunting, fishing, walking, hiking, wildlife viewing, nature photography, and a broad range of environmental education activities for all ages of students, and the general public. A trail and road network present in the Yolo Bypass Wildlife Area supports these activities.

The Yolo Bypass Wildlife Area is managed by the DFG with education programs and public outreach provided by the Foundation. This mutually beneficial partnership was memorialized in June of 1997 when the Foundation and DFG signed a Memorandum of Understanding (MOU) with DFG recognizing their long-term partnership to provide public outreach and educational programs. The MOU allows the Foundation to use DFG facilities for a base for programs related to the Yolo Bypass Wildlife Area.

ENVIRONMENTAL EDUCATION AND INTERPRETIVE PROGRAMS

Environmental education and interpretive programs for school children and the general public are an important component of the Yolo Bypass Wildlife Area’s existing public use activities. The Foundation and DFG collaborate in managing and staffing a wide variety of environmental education and interpretation programs including the Discover the Flyway program, Marsh Madness Youth Days, Nature Bowl, public tours, docent program, Flyway Nights lecture series, California Duck Days, Project Wet, and other workshops. Yolo Basin Foundation is the primary organization for developing, establishing, and acquiring funding for Yolo Bypass Wildlife Area’s education and interpretation programs. DFG provides facilities, staff support, and expertise towards the education program in its shared role with the Foundation.

HUNTING

Hunting is one of the main forms of recreation currently available within the Yolo Bypass Wildlife Area. Waterfowl and pheasant hunting are the most popular, however, visitors also participate in hunting of other upland game species including dove. The Yolo Bypass Wildlife Area currently maintains 16 duck blinds and one fully accessible blind on the approximate 3,000 acres available for waterfowl hunting. DFG currently allows 40 hunters to free roam plus up to 16 parties in designated blinds on any given hunting day. With the recent acquisition of additional lands, the Wildlife Area will someday have a capacity of over 200 hunters, with 38 acres per hunter at any one time, to ensure a safe, high quality hunting experience. Pheasant hunting is currently allowed on approximately 5,000 acres of the Yolo Bypass Wildlife Area. Five designated parking lots are available for use by hunters. Hunters are allowed to use shotguns and archery for hunting.

FISHING

Fishing is also popular and several opportunities are provided within the Yolo Bypass Wildlife Area. Primary game species present include sturgeon, catfish, black bass, and striped bass. Primary fishing locations include the East Toe Drain and along Putah Creek near the Los Rios Check Dam. Access can be obtained through parking Lot F (Toe Drain) and Lot G (Putah Creek). The East Toe Drain can also be reached from outside the Yolo Bypass Wildlife Area on the West Sacramento (east) side of the drain. Sturgeon and striped bass are both

anadromous fish (i.e., fish that spend all or part of their adult life in salt water and return to freshwater streams and rivers to spawn) that can be caught in the Toe Drain during their upstream migration from San Francisco Bay.

WILDLIFE VIEWING

Many species of birds and mammals may be observed in the Yolo Bypass Wildlife Area. Visitors may see a multitude of birds of prey, shorebirds, waterfowl and other migratory birds with over 200 known species having been identified within the area. Typical species include ibis, pelicans, cormorants, great blue herons, orioles, blue grosbeaks, and western kingbirds. Mammals that can be seen in the area include coyotes, raccoons, gray fox, mule deer, beaver, mink, and river otters. The extensive water system maintained on the Yolo Bypass Wildlife Area also harbors large numbers of fish, amphibians, and invertebrates.

Public wildlife viewing is currently allowed along the existing auto tour route and along existing open trails as well as through scheduled tours and educational programs. Wildlife viewing is also permitted within designated hunting areas during non-hunting seasons.

RESEARCH ACTIVITY

Yolo Bypass Wildlife Area has been the site of several research projects in recent years, as the scientific community has focused a tremendous amount of interest and effort on learning about the biological conditions and processes in the Yolo Bypass. Examples of recent study topics include: native fish use of seasonal floodplains, floodplain processes and productivity, effects of vegetation removal on mosquito production, effects of mowing on native forb communities and investigations about mercury methylation in wetlands. The Wildlife Area strongly supports high school science classes, colleges and universities getting involved in conducting field studies and research at the Yolo Bypass Wildlife Area.

MANAGEMENT GOALS

In the LMP, the current and planned management of the Yolo Bypass Wildlife Area is described using the terminology that is part of DFG's standardized format for management plans. This terminology includes the terms element, goal, and task, which are defined below.

Element: refers to any biological unit, public use activity, or facility maintenance or management coordination program, as defined below, for which goals have been prepared and presented within this plan.

Goal: is a statement describing management and its intended long-term results for an element.

Task: an individual project or work element that implements the goals and is useful in planning operation and maintenance budgets.

This LMP contains 10 elements; the biological element contains 7 sub-elements. They are:

- ▶ Biological Resources
 - Management for Species Guilds
 - Special-Status Species
 - Nonnative Invasive Species
 - Seasonal and Permanent Wetland Communities
 - Riparian Communities
 - Grassland and Upland Communities
 - Aquatic Ecosystems
- ▶ Agricultural Resources
- ▶ Cultural Resources

- ▶ Authorized Public Use
- ▶ Unauthorized Public Use
- ▶ Facilities
- ▶ Administration
- ▶ Fire Management
- ▶ Scientific Research and Monitoring
- ▶ Management Coordination

For these elements and sub-elements, the LMP has 45 goals and 300 tasks.

It is important to note that implementation of many of the tasks identified in the LMP is dependent upon the availability of the necessary staff and an adequate operations and maintenance budget. Thus, additional resources may be required to accomplish the tasks identified in the LMP.

OPERATIONS AND MAINTENANCE

Additional staffing and resources will be required to perform all the tasks described in this LMP. Thus, it will require a commitment of additional budgetary resources if the goals of this plan are to be achieved.

FUTURE REVISIONS

To prevent this LMP from becoming outdated, a process will be implemented to accommodate minor revisions. The minor revision requires approval by the Regional Manager.

Major revisions or a new LMP could occur if new policy direction requires a procedure comparable to the LMP planning process. A major revision or new plan requires recommendation by the Regional Manager and approval by the Director of DFG.

An exhaustive review of the achievement of the goals of the LMP will be prepared every five years following the date of adoption of this LMP. A status report documenting this review will be prepared by the Area Manager. It will be submitted to the Regional Manager and to the Director of DFG. This report will serve as a basis for revision of this LMP and appropriate adjustments to ongoing management practices.

ENVIRONMENTAL REVIEW

The management goals and tasks described in this LMP were evaluated for their potential impact on the environment in accordance with the provisions of the CEQA. An IS, which is included herein as Appendix H, was prepared in accordance with the State CEQA Guidelines. This IS concluded that this LMP, as proposed, would not have any significant or potentially significant impacts on the environment. Accordingly, a proposed Negative Declaration (ND) has been prepared for adoption with a finding that the project will not have a significant impact on the environment.

This CEQA document analyzes impacts resulting from the programmatic implementation of this LMP. The details of specific projects that may be developed consistent with this LMP are not yet known. Any future projects that may involve environmental effects will need to be evaluated in light of the IS/ND to determine if additional project-specific CEQA document preparation is necessary. Permits, consultations and/or approval actions may also be required to approve specific future projects. Examples of potential future permit requirements include the following:

- ▶ **U.S. Army Corps of Engineers (USACE)** – Section 404 of the Clean Water Act (CWA), permit for discharge of fill in waters of the U.S.; Section 10 Rivers and Harbors Act permit for work in navigable waters of the U.S.; approval of modification of USACE levees.

- ▶ **California Department of Fish and Game** – streambed alteration agreement (Section 1602 of Fish and Game Code);
- ▶ **California Department of Water Resources (State Reclamation Board)** – encroachment permit to work on or adjacent to levees and in designated floodways, approval/authorization of new or restored levees;
- ▶ **Regional Water Quality Control Board** – National Pollutant Discharge Elimination System construction stormwater permit (Notice of Intent to proceed under the statewide General Construction Permit), potential discharge permit for wastewater, general order for dewatering, CWA Section 401 certification if a Section 404 permit is required.