

3.2 AGRICULTURAL RESOURCES AND LAND USES



This section describes the agricultural resource and land use characteristics of the Yolo Bypass Wildlife Area. Existing infrastructure including water delivery and management systems are described in Chapter 2, “Property Description.” Biological resources are described in Section 3.5.



The Yolo Bypass Wildlife Area is seen as a model for bridging the seemingly disparate fields of agriculture and wildlife management. The success of this management philosophy is epitomized by the land management scenes played out south of the Yolo Causeway. Commuters in the spring watch tractors endlessly discing rice stubble until a fine seed bed is created. Next, long land planes level these fields. The infrastructure is rebuilt, with rice checks pulled and ditches cleaned. Water floods the fields by late April and soon the airplane is flying back and forth, seeding each field. By early summer the Bypass is a sea of green as the young rice plants break the surface of the water. Multiple duck broods have migrated to this water from their upland nests. During the hot days of summer, the rice grows taller and matures by the end of the summer. In early autumn the harvesters are cutting the rice as hundreds of egrets and white-faced ibis feast on the exposed crayfish. Soon the rice will go to the dryers to be prepared for markets. Much will go to Asia, via the Sacramento River Deep Water Channel. By October, DFG takes over the fields and floods them once again. Within a few days, the fields begin to

attract mallards that have come to the Yolo Bypass after breeding elsewhere. Pintail may accumulate in large numbers in November. By December spectacular flocks of snow geese, white-fronted geese, tundra swans, and innumerable pintail are slowing traffic on Interstate 80, as massive waves of wings roam over the flooded rice fields. Soon winter is upon us, and the rice stubble disappears under the floodwaters. Gone are the snow geese, instead replaced by rafts of scaup and canvasback. Below the water surface, white sturgeon may be roaming the floor of the Bypass, as well as Sacramento splittail engaged in spawning behavior in their ancestral floodplain. As winter turns to spring, the rice fields are once more exposed and eventually drained, with eager farmers in the wings, ready to till the earth once again.

The following text was developed through a review of existing literature, annual agriculture plans, and Yolo Bypass Wildlife Area staff information. These sources provided information on agricultural land characteristics throughout the Yolo Bypass Wildlife Area.

BACKGROUND

Agriculture has been an important land use in the Yolo Bypass since the seasonal wetlands and perennial marsh and riparian areas were first converted to farms in the mid-1800s. Indeed, the massive reclamation efforts of the 19th century were driven by the desire to create productive farmland. For many years, grazing was the primary use of agricultural lands in the Yolo Bypass. In the latter part of the 20th century with the rise in commodity prices, irrigation systems were developed and fields were engineered for the production of row crops such as tomatoes and sugar beets.

The nearly annual floods that flow through the Yolo Bypass severely limit the kinds of crops that can be grown. Orchards and winter crops are not an option, nor are long-term ventures such as alfalfa. The proximity of the Yolo

Bypass to the San Francisco Bay Delta 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 in favor of wild rice, or special varieties that are more adapted to the climate.

At the time of the acquisition of the Glide and Los Rios properties, one concern expressed by the agricultural community was the potential loss of farm land to wildlife habitat. The DFG made a commitment at that time to maintain the existing agricultural leases present on the property and to integrate agriculture into the long-term management of the Wildlife Area.

Agriculture and wildlife management are not that far apart. DFG wildlife areas 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. Working with local farmers, the Yolo Bypass Wildlife Area provides fields of milo, corn, and sudan grass specifically for wildlife forage purposes. 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. The predominance of nonnative annual grasses in that area can otherwise inhibit the production of the native plant community that includes several rare and endangered species. Whereas historically pronghorn antelope and tule elk grazed competing native grasses, exposing the emerging forbs to sunlight, grazing cattle provide this function today, eating the mostly nonnative competing grasses. Due to the aggressiveness of these nonnative grasses, an aggressive grazing strategy is needed to favor the production of native forbs. This can be accomplished through a carefully crafted agricultural lease that reflects the results of scientific grazing studies while still providing the potential for a lessee to make a profit on the Wildlife Area.

EXISTING AGRICULTURAL SETTING

Existing conditions related to agricultural resources within the Yolo Bypass Wildlife Area are described in greater detail below. Additional information on agriculture in regards to wildlife management is provided in Section 3.5, “Biological Resources.” Agricultural land characteristics throughout the Yolo Bypass Wildlife Area include lands designated by the California Department of Conservation (DOC) as being of prime, unique, or statewide importance (California Department of Conservation 2004).

3.2.1 AGRICULTURAL LAND CLASSIFICATION

The DOC uses the USDA’s modern classification when administering the Farmland Mapping and Monitoring Program (FMMP) to characterize the types and amounts of agricultural land in an area. The majority of land within the Yolo Bypass Wildlife Area has been classified by the DOC into one of five different agricultural land designations (DOC undated). Lands in the Yolo Bypass Wildlife Area are primarily characterized as:

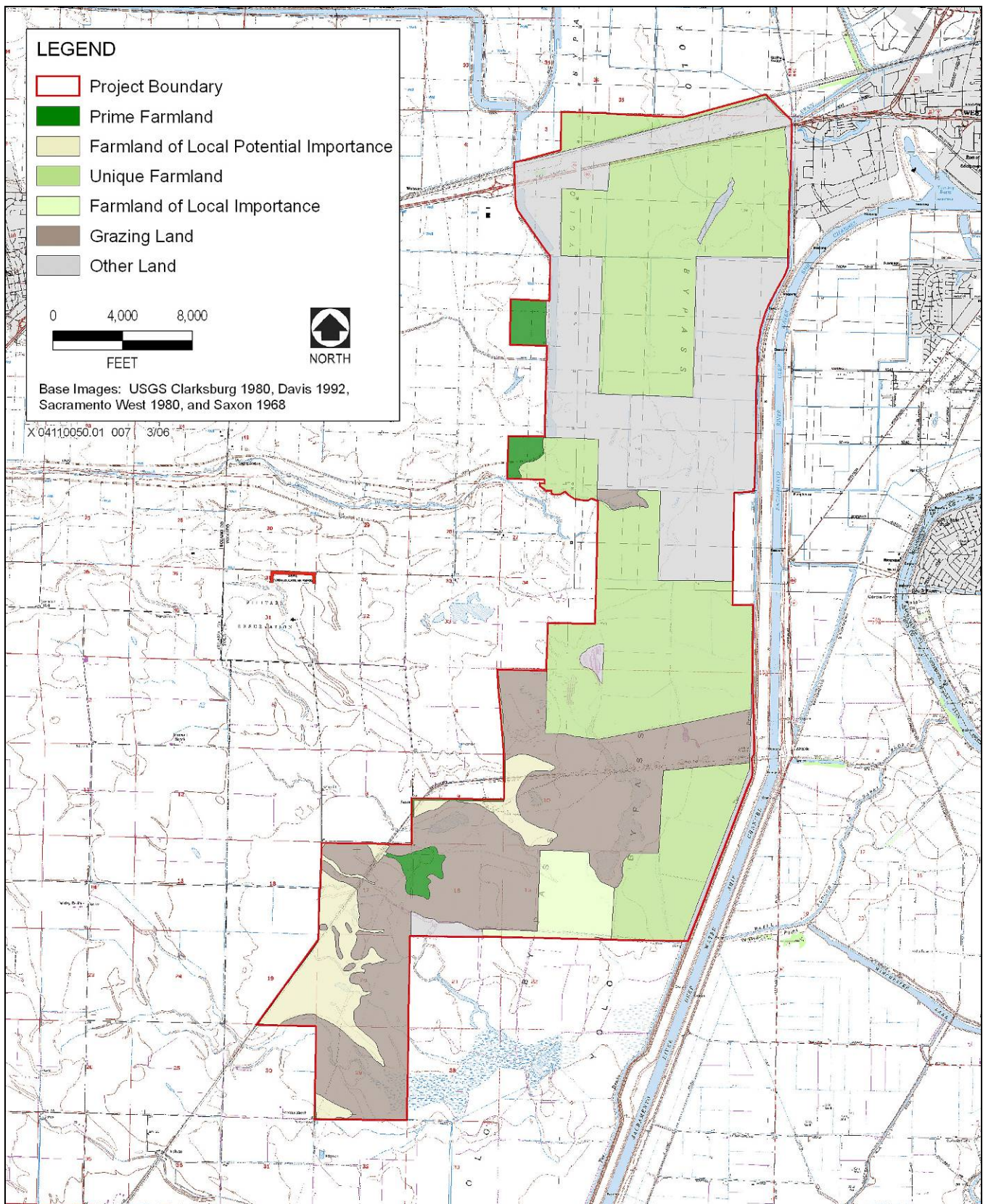
- ▶ *Prime Farmland* – approximately 350 acres: Prime farmland is farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date. Prime farmland is defined by DOC according to mapped soil types developed by the NRCS.
- ▶ *Unique Farmland* – approximately 6,600 acres: Unique farmland is farmland of lesser quality soils used for the production of the state’s leading agricultural crops. This land is usually irrigated, but may include

nonirrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

- ▶ *Farmland of Local Importance* – approximately 450 acres: Farmland of Local Importance is land of importance to the local agricultural economy as determined by each county’s board of supervisors and a local advisory committee. Within Yolo County, these are soils that meet the criteria of Prime Farmland or Farmland of Statewide Importance but are not irrigated. It can also include other nonirrigated farmland as determined by the Board of Supervisors (DOC undated).
- ▶ *Potential Farmland of Local Importance* – approximately 950 acres: Potential Farmland of Local Importance denotes farmland that would otherwise meet the criteria of Farmland of Local Importance but is not currently farmed.
- ▶ *Grazing Land* – approximately 4,100 acres: Grazing land is land on which the existing vegetation is suited to the grazing of livestock. This category was developed in cooperation with the California Cattlemen’s Association, University of California Cooperative Extension, and other groups interested in the extent of grazing activities.
- ▶ *Other Land* – approximately 4,320 acres: Other Lands include land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than forty acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land. This designation does not include urban lands or water, which are mapped in separate categories.

These designations, including the total acreage and locations of each designation within the Yolo Bypass Wildlife Area are provided in Table 3.2-1 and shown in Exhibit 3.2-1.

Table 3.2-1 Yolo Bypass Wildlife Area – Agricultural Land Designations		
Agricultural Land Designation	Approximate Acreage	Management Units
Prime Farmland	350	Northwest, Los Rios Farms, Pacific Flyway Center, and Tule Ranch
Unique Farmland	6,600	Causeway Ranch, 1,000 Acres, Los Rios, Parker, Field 29, Field 38, Tule Ranch
Farmland of Local Importance	450	Tule Ranch
Potential Farmland of Local Importance	950	Tule Ranch
Grazing Land	4,100	Tule Ranch, Los Rios WRP
Other Land	4,320	North, Northwest, West, Central, Cowell Pond, Causeway, Tule Ranch
Source: DOC undated; EDAW 2006		



Source: FMMP 2002

Yolo Bypass Wildlife Area Agricultural Land Designations (DOC/USDA)

Exhibit 3.2-1

Given the prevalence of land within the Yolo Bypass Wildlife Area suited to agriculture, many of the management units incorporate some form of agriculture at least on an occasional basis as a management tool. In general, agricultural activities contribute to Yolo Bypass Wildlife Area goals:

1. Maintain or enhance habitat for native wildlife and plants; and
2. Provide an income source for DFG management and operations of the wildlife area while helping to maintain agriculture as a viable economic activity in Yolo County.

3.2.2 YOLO BYPASS WILDLIFE AREA AGRICULTURAL LAND USES

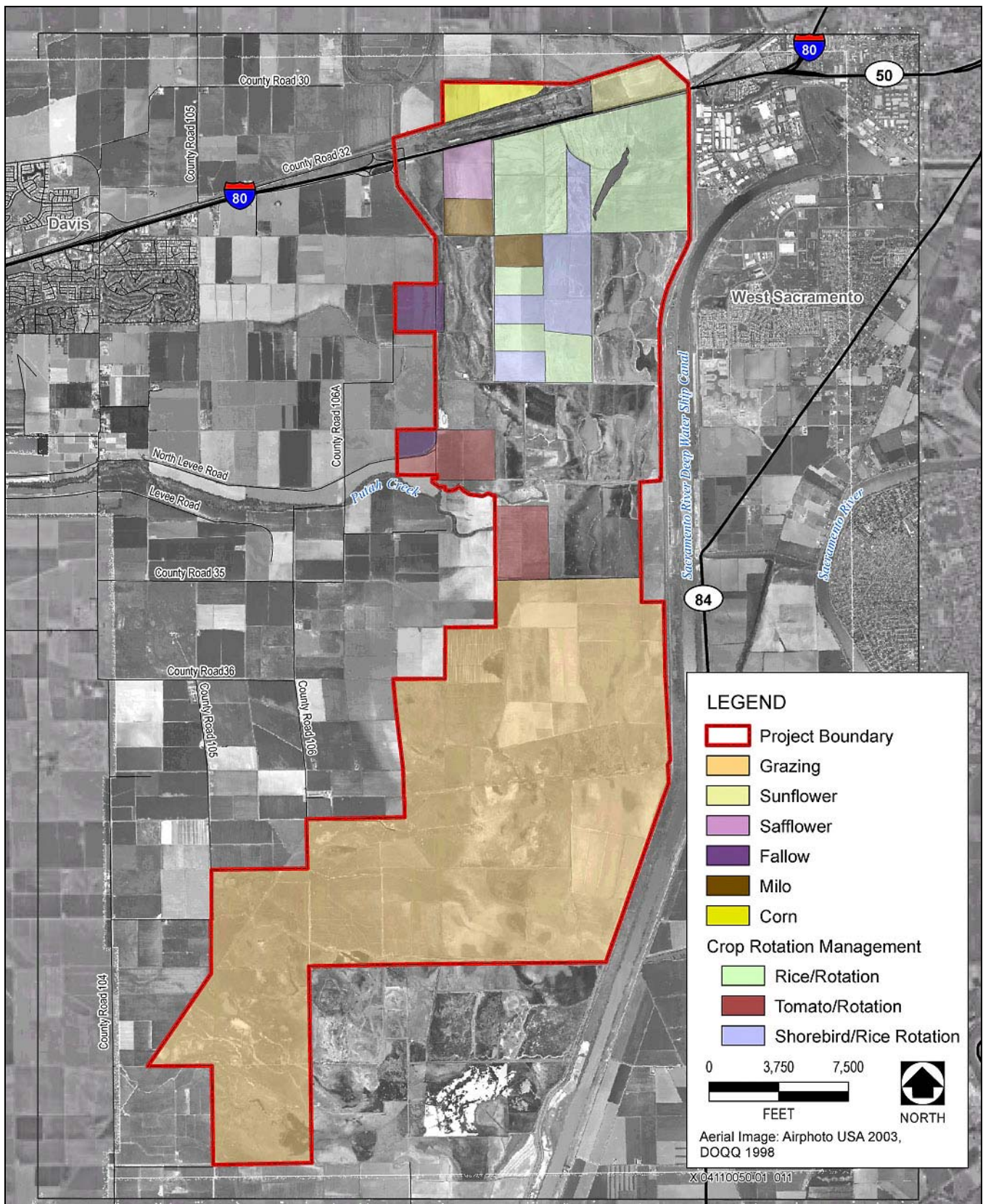
Agricultural lands within the Yolo Bypass Wildlife Area are leased to local farmers and managed, under an agreement with DFG, by the Dixon RCD. Currently, there are four agricultural lease tenants in the Yolo Bypass Wildlife Area. These tenants work in cooperation with DFG to grow a variety of agricultural crops and to manage livestock grazing for wildlife and native plant habitat management. Revenues from these leases provide valuable operating income for the Yolo Bypass Wildlife Area. A description of these two activities is provided below. Exhibit 3.2-2 depicts agricultural land uses throughout the Yolo Bypass Wildlife Area. Crop production practice tables for the Yolo Bypass Wildlife Area are provided at the end of this section.

ROW AND TRUCK CROPS

Row and truck crops are grown across the northern half of the Yolo Bypass Wildlife Area (i.e., Causeway Ranch and Los Rios Farms Complex) and on the northern portion of the Tule Ranch. The primary crops grown include: rice, corn, millet, milo (grain sorghum), safflower, sunflower, and tomatoes. These crops are cultivated during the summer months. From fall to spring, some farmed areas are fallowed and flooded to provide a valuable source of forage for wildlife (Table 3.2-2) as well as seasonal wetland habitat. Three common crop rotations are:

1. Corn to safflower/sunflower to tomatoes;
2. White rice to white rice to wild rice or;
3. White rice to wild rice to shorebird habitat (fallowed rice fields that are flooded to a shallow depth during the growing season).

Crop	Target Species or Species Groups
Rice (Wild and Conventional)	Ducks, geese, cranes, ibis, egrets, shorebirds, terns
Tomatoes	Swainson’s hawk, shorebirds
Corn	Ducks, geese, cranes, shorebirds
Millet	Pheasants, waterfowl
Wheat	Provides nesting cover and winter green feed for a variety of species
Milo	Waterfowl and shorebirds
Safflower	Mourning dove, pheasant, curlews, plovers



Source: Department of Fish and Game, City of Davis 2005, CaSIL 1993

Yolo Bypass Wildlife Area Agricultural Land Uses (2005 Crop Year)

Exhibit 3.2-2

Rotation strategies are designed to provide a diversity of wildlife habitat elements and to facilitate sustainable agricultural practices (e.g., maintain soil fertility and reduce herbicide application). Other crops, (e.g., millet, milo, safflower, and sunflower) are occasionally planted to provide supplemental sources of wildlife forage. These crops may be planted as part of one of the three above rotation strategies or may be periodically planted on fields designated solely for wildlife forage production. The total acreage of each crop grown during the last three years is provided below (Table 3.2-3).

Crop	Year		
	2004	2005	2006
Wild Rice	829	570	270
Conventional Rice	871	0	0
Tomatoes	368	539	581
Corn	84	78	0
Sunflower	173	84.5	121
Misc./Wildlife Crops	995	60	699
Fallow/Shorebird	538	950	2,240

Source: Dixon RCD Annual Crop Plans for the Yolo Bypass Wildlife Area

GRAZING

Cattle grazing occurs primarily on an extensive portion of the Tule Ranch Unit in the southern end of the Yolo Bypass Wildlife Area. Additional grazing, specifically for vegetation management, occurs throughout many of the remaining portions of the Yolo Bypass Wildlife Area. Cattle are often used as an initial treatment of vegetation prior to discing or spraying with herbicide. Animals are brought onto the Yolo Bypass Wildlife Area in mid spring or early summer after the threat of flooding has passed and they are removed by January. Forage is provided in irrigated pasture, uplands within the Bypass and the annual grasslands-vernal pool complex. Vast areas within the Bypass grow sweet clover, a nutritious legume. This plant can also cause severe bloating or thinning of blood and must be utilized judiciously. During years that experience spring flooding, the vegetation in the Bypass dominated by curly dock and cocklebur, two plants very low in forage value.

The exact number of animals brought onto the Yolo Bypass Wildlife Area varies on an annual basis based on weather patterns and the total amount of available forage. There is currently no set stocking rate, utilization standard, or grazing monitoring program for the Yolo Bypass Wildlife Area. It is anticipated that standard AUM units will be the basis for future grazing strategies. The total acreage of unirrigated range and irrigated pasture grazed over the last three years is provided in Table 3.2-4.

Rangeland Type	Year		
	2004	2005	2006
Un-irrigated Range	7,131	7,568	6,793
Irrigated Pasture	764	764	1,083

Source: Dixon RCD Annual Crop Plans for the Yolo Bypass Wildlife Area

The following represent typical activities by crop on an average farm. Activities in the YBWA may differ due to seasonal flooding.

Additional products to those included in the table (s) may be used. For a complete list of products registered for each crop, contact the County Agricultural Commissioner.

Table 3.2-5 Crop Production Practices (information compiled from UC Cooperative Extension Cost Studies and DFG input)			
White & Wild Rice Production Activities			
	Date Range	Special Considerations	
Groundwork (land preparation)	April–May		
Preplant Fertilization	April–May		
Planting	April–May		
Irrigation	May–Aug	flood	
Fertilization	May–July	top-dress by air in production years	
Harvest	Sept–Oct		
Post Harvest (groundwork)	Sept–Oct	not used in Yolo Bypass	
Post Harvest Flooding	Oct–May	for waterfowl	
*Pesticide/ Herbicide Product Options	Target Pest / Weed	Date Range	Special Considerations
Copper Sulfate	Algae / Shrimp	May	after planting
Malathion SS	Midge	May	
Roundup	Levee Weeds	May–Aug	
Propanil, Grandstand	Weeds	May–June	broadleaf, sedges & grass weeds (white rice only)
Warrior	Weevil / Armyworms	May, July	after planting for weevil, in July for armyworms
Quadris	Diseases	July–Aug	
Possible Wildlife Benefited	Use	Date Range	Special Considerations
General Wildlife Species	Habitat and Food	Year-round	in fallow years as wildlife cover crop
Stilts and Avocets	Breeding Habitat	April–May	
	Brood Habitat	May–Oct	
Egrets and Ibis	Food	May–Sept	crayfish
Waterfowl and Shorebirds	Wintering Habitat	Oct–May	during post harvest flooding
* Organic rice is also grown in the YBWA with similar production activities to those listed below, except all practices comply with the USDA National Standards for Organic Food. For more information visit www.ams.usda.gov/nop/NOP/standards.html			
* Not all of the pesticide/herbicide product options will be needed every year.			

**Table 3.2-5
Crop Production Practices**

(information compiled from UC Cooperative Extension Cost Studies and DFG input)

Corn Production Activities			
		Date Range	
Groundwork (land preparation)		Mar–April	
Preplant Fertilization		April–May	
Planting		April–May	
Cultivation		Mar, May	weed control
Irrigation		May–Aug	
Fertilization		May–Aug	
Harvest		Sept–Oct	
Post Harvest (groundwork)		Sept–Oct	
*Pesticide/ Herbicide Product Options	Target Pest / Weed	Date Range	
Roundup	Weeds	Feb	not typical in Yolo Bypass due to winter flooding
Weedar	Weeds	May	
Sevin Bait	Cutworms	May–June	
Comite	Mites	June	
Possible Wildlife Benefited	Use	Date Range	Special Considerations
Upland Game	Cover and Food	May–Sept	Ring-necked Pheasant & Mourning Dove
Ducks, Geese & Sandhill Cranes	Habitat	Oct–Mar	during post harvest flooding
* Not all of the pesticide/herbicide product options will be needed every year.			
Sunflower Production Activities			
		Date Range	Special Considerations
Groundwork (land preparation)		Mar–April	
Planting		April–May	
Fertilization		April–May	
Irrigation		April–July	
Pollinate		May–June	
Harvest		Aug–Sept	
Post Harvest (groundwork)		Sept–Nov	

**Table 3.2-5
Crop Production Practices**

(information compiled from UC Cooperative Extension Cost Studies and DFG input)

*Pesticide/ Herbicide Product Options	Target Pest	Date Range	Special Considerations
Asana	Moth	June–July	
Treflan	Weeds	Mar–April	pre-plant
Roundup	Weeds	Jan	not typical in Yolo Bypass due to winter flooding
Possible Wildlife Benefited	Use	Date Range	Special Considerations
Tria-colored Blackbird, upland game birds, Mourning Dove	Food source	Sept–Dec	Post harvest
* Not all of the pesticide/herbicide product options will be needed every year.			
Safflower Production Activities			
		Date Range	Special Considerations
Groundwork (land preparation)		Aug–Oct	in year preceding planting
Planting		Mar–May	
Fertilization		Mar–May	prior to planting
Irrigation		May–Aug	
Cultivation		May	
Fertilization		May–June	
Harvest		July–Sept	
Post Harvest (groundwork)		Aug–Oct	
*Pesticide/ Herbicide Product Options	Target Pest	Date Range	Special Considerations
Roundup	Winter Weeds	Feb	not typical in Yolo Bypass due to winter flooding
Treflan	Weeds	Mar–Apr	
Possible Wildlife Benefited	Use	Date Range	Special Considerations
Mourning Dove & Ring-necked Pheasant	Food	Mar–Aug	Unharvested food plots provide food and hunting opportunities.
* Not all of the pesticide/herbicide product options will be needed every year.			

**Table 3.2-5
Crop Production Practices**

(information compiled from UC Cooperative Extension Cost Studies and DFG input)

Tomato Production Activities			
		Date Range	Special Considerations
Groundwork (land preparation)		Mar–Apr	not typical in Yolo Bypass due to winter flooding
Fertilization		April–May	at planting
Planting		April–May	to meet contracted weekly delivery schedules
Fertilization		April–May	side dress at lay by and during planting
Irrigation		Apr–Sept	sprinkler to establish, then furrow
Fertilization		April–Aug	
Harvest		June–Sept	
*Pesticide/ Herbicide Product Options	Target Pest	Date Range	Special Considerations
Roundup	Weeds	Jan	not typical in Yolo Bypass due to winter flooding
Vapam	Weeds	Feb–May	before planting
Devrinol / Telam	Weeds	Feb–May	Pre-emergent
Shadeout, Trilin, Sencor, Dual	Weeds	Feb–May	to seedlings and/or at lay by
Sevin 80	Flea Beetle	Feb–May	after seedling emergence
Sevin 5	Beetle / Cutworm	Feb–May	
Kocide / Dithane	Bacterial Speck	Feb–May	
Sulfur Dust	Russet Mite	Feb–May	
Asana	General Insect Ctrl	Feb–May	
Confirm	Worm	Feb–May	
Bravo	Blight / Fruit Protect	June, Sept	
Ethrel	Fruit Ripening Agent	June–Sept	prior to harvest
Possible Wildlife Benefited	Use	Date Range	Special Considerations
Swainson’s Hawk	Foraging	May–June	Discing for preparation of fields exposes rodents and insects.
* Organic tomatoes are also grown in the YBWA with similar production activities to those listed below, except all practices comply with the USDA National Standards for Organic Food. For more information visit www.ams.usda.gov/nop/NOP/standards.html .			
* Not all of the pesticide/herbicide product options will be needed every year.			

**Table 3.2-5
Crop Production Practices**

(information compiled from UC Cooperative Extension Cost Studies and DFG input)

Wheat Production Activities			
		Date Range	Special Considerations
Groundwork (land preparation)		Aug–Oct	
Pre-Plant Fertilization		Aug–Oct	preplant
Planting		Oct–Dec	
Irrigation		April	
Fertilization		Oct–Dec, Feb	at planting & during growing season
Harvest		May–July	
*Pesticide/ Herbicide Product Options	Target Pest	Date Range	Special Considerations
2, 4-D	Winter Weeds	Feb	
Possible Wildlife Benefited	Use	Date Range	Special Considerations
Ducks & Geese	Food	Oct–May	Birds foraging on green feed may affect yield.
Waterfowl, Pheasant	Nesting Habitat	April–July	
* Wheat Production on the Yolo Bypass has occurred in extended drought periods. Currently wheat is not in the crop rotation.			
* Not all of the pesticide/herbicide product options will be needed every year.			
Oat Hay Production Activities			
		Date Range	Special Considerations
Groundwork (land preparation)		Sept–Oct	
Pre-Plant Fertilization		Oct	
Planting		Oct–Nov	
Irrigation		Mar–May	
Harvest		May–June	
*Pesticide/ Herbicide Product Options	Target Pest	Date Range	Special Considerations
2, 4-D	Winter Weeds	April	not typical on the Yolo Bypass
Possible Wildlife Benefited	Use	Date Range	Special Considerations
Egrets, Herons, Swainson’s Hawk	Food	Summer	irrigation provides rodent & insect food sources
Swainson’s Hawks, Egrets, Heron, Crows	Food	May–Aug	haying process provides food
* Not all of the pesticide/herbicide product options will be needed every year.			

**Table 3.2-5
Crop Production Practices**

(information compiled from UC Cooperative Extension Cost Studies and DFG input)

Rye Grass Hay Production Activities			
		Date Range	Special Considerations
Pre-Plant Fertilization		Sept–Nov	
Planting		Sept–Nov	
Irrigation		Sept–Apr	quick applications to keep soil moist
Fertilization		Dec–Feb	after grazing or 1st cut
Harvest		Jan–Apr	75 days to 1st cut, then on 28–40 day cycle
*Pesticide/ Herbicide Product Options	Target Pest	Date Range	Special Considerations
Possible Wildlife Benefited	Use	Date Range	Special Considerations
Waterfowl, pheasant, Northern Harrier	Nesting Habitat	April–July	
<p>* Rye Grass Hay is grown occasionally on the grazing lands in years when there is more vegetation than can be grazed in a timely manner. This hay is typically used by the tenant and no rent is charged above normal grazing rents, except where noted in Annual Crop Plans.</p> <p>* Not all of the pesticide/herbicide product options will be needed every year.</p>			
Grain Sorghum (Milo) Production Activities			
		Date Range	Special Considerations
Groundwork (land preparation)		Mar–May	
Planting		Apr–June	
Irrigation		May–Aug	
Fertilization		May–Aug	
Harvest		Sept–Nov	dependent on grain moisture content
*Pesticide/ Herbicide Product Options	Target Pest	Date Range	Special Considerations
2, 4-D	Weeds	May–Aug	dependent on plant height
Atrazine	Weeds	Apr–Aug	for grasses and broadleaves
Possible Wildlife Benefited	Use	Date Range	Special Considerations
Upland Game	Cover & Food		Ring-necked Pheasant & Mourning Dove
Ducks, Geese, Shorebirds, Sandhill Cranes	Habitat		During post-harvest flooding
<p>* Not all of the pesticide/herbicide product options will be needed every year.</p>			

**Table 3.2-5
Crop Production Practices**

(information compiled from UC Cooperative Extension Cost Studies and DFG input)

Grazing Activities (compiled for 300 head cow/calf operation)

	Date Range	Special Considerations
Winter Range Feeding	Nov–Apr	
Summer Feeding	May–Oct	
Irrigation	May–Oct	for winter weed control
Calving		
Breeding	Dec–Feb	
Sale of Culls (Bulls & Cows)	March	time frames vary based on tenant’s operation
Sale of Calves	May	time frames vary based on tenant’s operation
Sale of Yearling Heifers	Sept	time frames vary based on tenant’s operation

*Pesticide/ Herbicide Product Options	Target Pest	Date Range	Special Considerations

Possible Wildlife Benefited	Use	Date Range	Special Considerations
Establishment of Native Forb Communities and vernal pools			managing grazing to remove non-native grasses and control unwanted vegetation in wetlands
Mallard & Ring-necked Pheasant	Nesting		can be managed as dense nesting cover
Geese & Sandhill Cranes	Food		can be grazed as low pasture

* Not all of the pesticide/herbicide product options will be needed every year.