COMPREHENSIVE MANAGEMENT PLAN
SOUTH FORK PRESERVE

CITY OF DAVIS
1994

I. INTRODUCTION AND PURPOSE OF THE PLAN

The South Fork Preserve (Preserve) is a 192-acre rural property[11] owned by the City of Davis. The Preserve is located one and a half miles south of the city limits, along County Road 104 (Mace Blvd.). **Figure 1** shows the location. The site is approximately one half mile wide (2,640 ft.) by three fifths of a mile (3,000 ft.) long, north to south. The South Fork of Putah Creek flows through the northern portion of the site. The Putah Creek Floodway as defined by flood control levees overlays approximately sixty percent of the site (**See Figure 2**). The site has been historically used for agricultural activities, a sewer plant site and an informal wildlife habitat area. The City of Davis was fortunate to be able to acquire the site using Proposition 70 funds which were a portion of the last state bond act for parks and wildlife habitat purposes approved by the electorate in 1988.

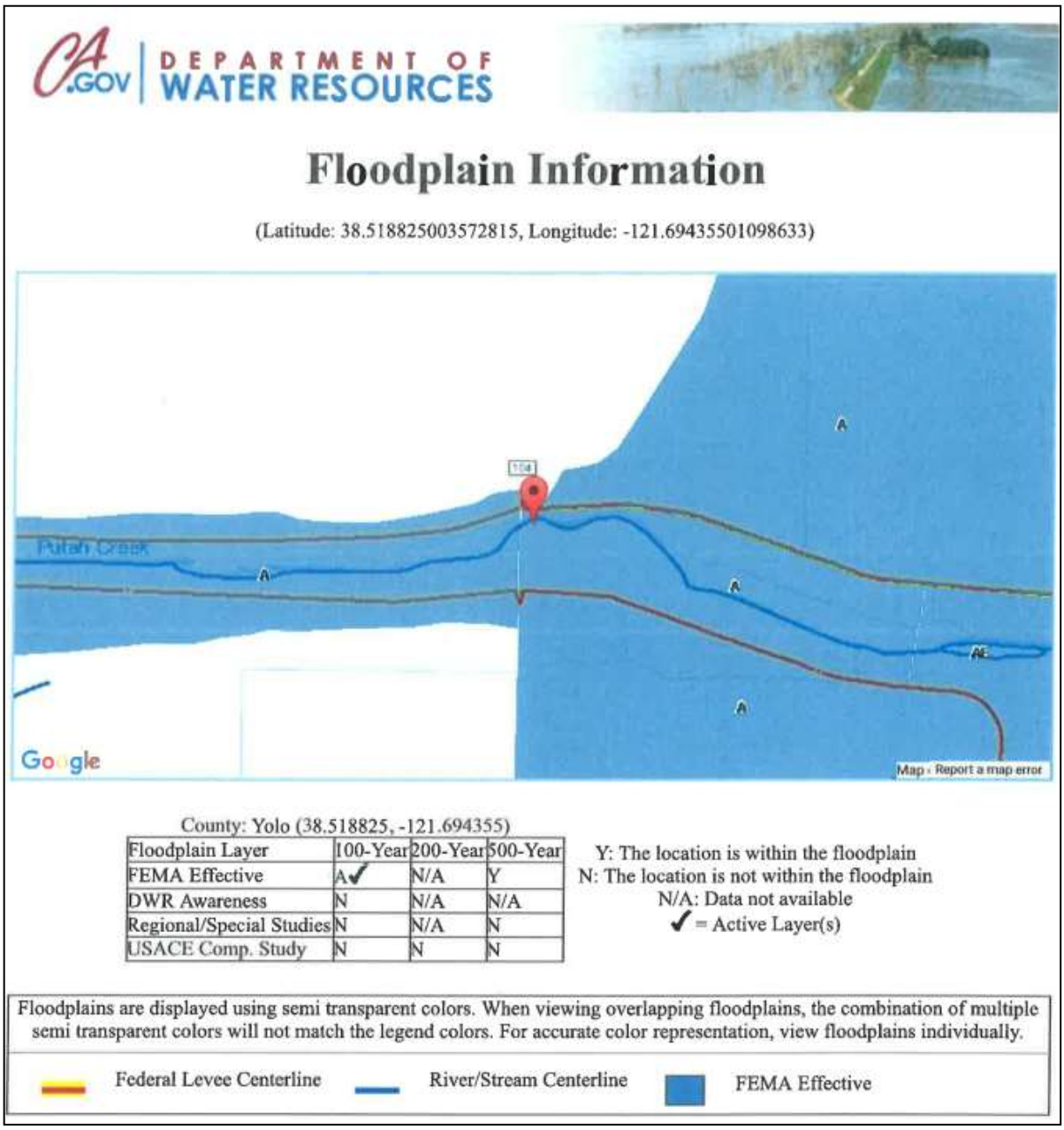
The Purpose of the South Fork Preserve Management Plan (Plan) is to provide background information and to establish policies and action programs for the long term management of the Preserve site. A number of issues such as wildlife sensitivity and minimizing impacts on adjacent landowners require special attention and management practices. The Plan incorporates the philosophy that wildlife habitat, controlled public access, commercial agricultural operations and flood control facilities can coexist with minimal conflicts when a site is managed appropriately. The Plan seeks to demonstrate management practices that can minimize conflicts while providing a valuable wildlife refuge and environmental education resource for the citizens of Davis and Yolo County. The Preserve project itself will strive to educate urban and rural residents and students about wildlife, habitat restoration and management, agriculture, flood control practices and other rural land use issues which are important in the Central Valley. Further, the project will provide a vehicle to interpret both the natural and cultural history of the region.

A management plan can be used as a tool to accomplish the goals of minimal impact, maximum resource value and careful access for passive recreation, education and research purposes. These goals potentially can be accomplished with minimal fiscal impact to the City of Davis through programs identified in the Plan. However a management plan is only as successful as the commitment to implement it and in this case the commitment to establish and maintain working relationships with the various interests concerned with the Preserve site. The Preserve site and project can be viewed as a microcosm of land management issues in Yolo and other counties in the Central Valley. The Plan also reflects the desirability of becoming more creative in accomplishing City objectives in an era of tight fiscal resources.

[1] As of this writing, a 10-acre portion of the Preserve site, including the buildings, remains in escrow and the ownership of the seller while they work with the State of California to clean-up a leak from an underground storage tank that was previously removed. Acquisition by the City of the 10 acres is anticipated in Calendar Year 1996.

Figure 1. Location Map

Figure 2. Putah Creek Floodway



II. EXECUTIVE SUMMARY

The Plan is made up of two parts:

Part One identifies different management areas (Chapter III) and lays out a conceptual site plan (**Figure 3**). It also spells out a management philosophy as defined by a set of management policies and implementing actions (Chapter V). The management policies are intertwined with policies that are aimed at using the site as a focal point for an environmental and rural lands education program in addition to providing informal passive recreation opportunities. Eventually interpretive exhibits and programs will provide information on wildlife habitat restoration and management, wildlife species, agricultural practices, rural land management issues, regional flood control and the natural and cultural history of the area. Hopefully, the Preserve also comes to serve as a vehicle for greater dialogue and understanding of rural land issues and the differing perspectives about them.

- **Wildlife Habitat.** The Plan identifies a majority portion of the site to be managed for wildlife habitat (approximately 120 acres). Basically all the area inside the levees in the Putah Creek Floodway (**Figure 2**) will be restored to riparian, oak woodland and grassland habitat. Public access (on a supervised basis in the near term) will be provided by a trail and maintenance road system. City staff is working with the US Army Corps of Engineers to design and carry out the restoration of the majority of the habitat portion of the site under the Section 1135 program. The site plan for this effort should emerge for discussion in mid-1996.

- **Agriculture.** Approximately 70 acres of the site will remain in agricultural production. This will include various row crops and possibly orchards. The purpose of the agricultural area is several fold. First, by leasing a portion of the Preserve for agricultural purposes a revenue stream will be generated that can help defer maintenance and operational costs. The agricultural activity will also occasionally serve as a dynamic exhibit that will help visitors to understand agricultural practices and also serve as a buffer to agricultural activity to the south and east. Further the mixed use management of the site will provide an opportunity to study and maximize the compatibility of agriculture and wildlife habitat. Ultimately it is hoped that a long term relationship can be established with an agricultural tenant that is sympathetic to the City's mixed use objectives. This relationship could lead to greater visitor involvement in the agriculture activities.

- **Buildings.** Lastly, the buildings (that are not yet in the City's possession) on the site will be leased to enhance revenue generation. An arrangement has been made to use the on-site conference room by appointment. Eventually this arrangement may be reevaluated but in the near term it provides badly needed funding for the project and it will take a number of years to develop other programs and exhibits.

- **Maintenance and Operations**. Maintenance and operations costs on the site are currently unknown but will become clear over time and may lead to modifications of the management

strategies. The Parks and Community Services Department is developing maintenance and management expertise that is specifically targeted at open space areas. The near term goal of the project will be to try and stay within the budget created by the revenues generated by the property while slowly developing public use and environmental education opportunities. In addition the goal is to maximize the use of volunteers, donations and partnerships to manage and interpret the site. This is a model that has proven successful for other natural preserves, most notably The Nature Conservancy. These programs will be developed over time as staff time and other resources become available to pursue them.

Part Two of the Plan includes background information that helps define the planning context for the Preserve site. Information on responsible and interested agencies is presented. Additionally, the natural and developed resources on the Preserve site are described. Those resources include soils, hydrology, vegetation and wildlife, various established land uses and buildings and facilities.

PART ONE

MANAGEMENT PLAN

III. MANAGEMENT AREAS

PRESERVE SITE PLAN

Figure 3 is the plan for the Preserve site. The site is divided up into six management areas, some of which overlap. The six areas are the Habitat Management Area (made up of riparian, oak woodland and grassland habitat), the Putah Creek Floodway, Agricultural Buffer Area, Active Agricultural Area, Primary Public Access Areas, and the Building and Facilities Area. As described below, in the next several years the currently dominant agricultural area will be substantially converted to natural vegetation and wildlife habitat with carefully placed public access. This will take place inside the levees with the aid of the Army Corps of Engineers Section 1135 program. **Figure 3** reflects the area to be converted into wildlife habitat. Many of the management areas overlap and don't necessarily have hard and fast boundaries.

HABITAT MANAGEMENT AREA

Riparian Habitat Subarea. The riparian habitat portion of the site is of high value to wildlife. It includes both riparian forest and scrub. Approximately only five percent of this once common habitat type remains in the Central Valley. On the Preserve this area extends across the full width of the northern portion of the property and varies from 150-300 feet wide including the active channel area of the creek. The actual riparian forest is mostly along two narrow 50-100 foot strips along the active channel and grades into the riparian scrub-shrub vegetation complex. This zone provides the greatest value to the greatest number of wildlife species and is the least disturbed portion of the Preserve site. Historically, the habitat value has been diminished however by past land uses and by unauthorized use. This habitat type is being expanded as part of a 24-acre restoration project north of the creek and the Section 1135 restoration project, south of the creek. The expansion and enhancement of this area will significantly improve habitat values.

Oak Woodland and Grassland Subarea. The upland oak woodland and grassland subarea transitions out of the riparian zone on its northern and southern margin and may be intermixed. This zone provides nesting trees for birds and partial shade for various plant species. The grassland provides foraging habitat for wildlife and a location for a broad variety of grasses and flowering herbaceous plants. This type of habitat was historically the most common in the Sacramento Valley and on this portion of the creek corridor probably more extensive than riparian vegetation. Expansion and enhancement of this area will provide more habitat variety and value, more nesting trees and a buffer to the riparian habitat area while expanding the overall habitat corridor. This habitat type will be expanded as part of the S. 1135 restoration project.

Figure 3. Conceptual Site Plan

Current conceptual plans for the expansion of the habitat area would develop additional habitat value and provide more control for public access and wildlife sanctuary. The plans (not finalized as of this writing) would add portions of both habitat subarea types, subject to analysis of the impact on flood flows. This alternative as well as other restoration scenarios will be studied as part of the S. 1135 process. A public review draft (flood control) Project Modification Report with conceptual restoration plans and an Environmental Assessment are currently scheduled for release in mid-1996.

PUTAH CREEK FLOODWAY

The Putah Creek Floodway (See **Figure 2**) is coterminous with the Habitat Management Area. There are three different floodplain terraces that roughly correspond to the frequency of flood inundation. Historically the floodplain of natural drainage channels (including the main creek channel) in this topographic position in the Central Valley included broad areas outside of the creek corridors. This was particularly true during the spring runoff or major storm events. The present day floodway is defined by the levee system.

The floodway technically now includes the full floodplain, but at least one oral account states that the highest terrace inside the levees was only flooded once in the thirty year history on the site of one of the previous owners (Sanchez, 1994). This is due to the fact that a major portion of the creek's historic flow is impounded behind Monticello Dam and then control released and diverted to Solano County. It is estimated that the floodway now must contain only two thirds of its previous peak event flows for which it was originally designed (current Corps of Engineers design flows). The ability of the floodway to accommodate additional vegetation will be studied as part of the S. 1135 process. Any development or planting within the floodway will require an encroachment permit or management agreement from the State Reclamation Board.

ACTIVE AGRICULTURAL AREA

The Active Agricultural Area currently makes up the majority of the property. It consists of three basic areas: row and grain crop area inside the levees/floodplain, row and grain crop area outside of the levee and the remaining vineyard and orchard areas. The crop fields inside the levees will be replaced over the next several years with native vegetation. The crop fields have historically been used for irrigated and dry farmed crops and research purposes. Up until the mid-1980's orchards and vineyards were also cultivated. The majority of the orchards and vineyards have been removed due to die-off from disease and previous lack of maintenance. The majority of the agricultural area is currently being leased for production. Once restoration activities are completed inside the levees, only the area south of the south levee will remain in agriculture. This area will continue to be leased. Depending on the tenant and other management factors public access will be restricted on the Active Agricultural Area portion of the Preserve property. Hopefully, over time the City can continue to attract agricultural tenants that are supportive of the City's goals for the Preserve and that may allow some limited access.

AGRICULTURAL BUFFER AREA

The Agricultural Buffer Areas are the areas adjacent to neighboring properties that could affect management practices of agricultural operations. The zone should be designed to minimize the impact the establishment of the Preserve will have on existing agricultural operations. Spraying of regulated pesticides is the main management practice that could be affected. For Category I pesticide materials a 500-foot aerial spray buffer and a 100-foot ground spray buffer is required for public access areas. For Categories II and III pesticides the spray buffers are 300 feet and 50 feet respectively. As an alternative only non-sensitive habitat, and public access limited when spraying is necessary, in these areas can minimize the impacts. To the north and northwest of the site farming practice is to use ground spraying only, often on a spot specific basis (Sanchez, 1994). This reduces the buffer zone to 100 feet for any Category 1 materials. Concerns have been expressed about establishing anything within the buffer zones that would be sensitive to agricultural chemicals, such as elderberries.

Other concerns surround the proximity of commercial agriculture. Public access represents a potential conflict. Public access directly adjacent to farm operations could lead to the aforementioned limitations on spraying of restricted materials but also has the potential to lead to trespassing, vandalism, environmental damage and liability problems. It is important that public access areas, trails and facilities be designed to minimize these conflicts. It is also important that open communication between the city and adjacent growers about intended spraying be maintained. This will allow access to the Preserve (or portions) to be restricted if necessary to not hamper normal agricultural activities.

PRIMARY PUBLIC ACCESS AREAS

Historically, public access was allowed to the creek corridor and provided a locale for hunting and fishing, picnicking, bird watching and other natural experiences. As the population grew in the region more and more sections of the creek were cut off from public access. Today the creek corridor on and near the Preserve site continues to receive unauthorized public use, largely without the permission of the property owners (including the City of Davis). Access on the north side, due to the proximity of the levee road to the creek corridor has typically been the most heavily used.

The old El Macero Sewage Plant formerly located in the northeast corner of the Preserve was abandoned in 1976. Up until recently the site was used as a parking area for a number of unauthorized uses. These uses include target practice, hunting, teen drinking parties and motorcycle recreation. These uses used to spill over on to other properties downstream, particularly the adjacent Hamel property. A number of these uses have been curtailed since the City of Davis has carried out its restoration on the north side of the creek and through the cooperation of adjacent landowners and the State Dept. of Water Resources levee crews. Elimination and modification of these undesirable uses will continue to take education, perseverance and ultimately strict enforcement. A consistent presence at the site will be desirable to assist enforcement. This presence will be assisted by leasing the buildings and agricultural fields in the south and construction of a residence just to the north, by an adjacent landowner.

Portions of the creek on the Preserve site and nearby have also become a popular place for observing and studying wildlife. Because of the importance of this remnant of riparian and grassland habitat to wildlife a

number of bird species roost, forage and nest on the Preserve site which attracts amateur and professional naturalists. Even with these passive uses some portions of the site should be reserved for wildlife exclusively so it can find sanctuary from Preserve visitors. This strategy lends itself to leaving portions of the creek corridor without any formal trail access.

To the extent possible, permitted public access should only be encouraged in areas away from neighboring properties. As described above in the Agricultural Buffer section public access could potentially cause land use conflicts. Coordination with surrounding growers and landowners will be necessary to restrict access to the Agricultural Buffer portions of the Preserve when chemical spraying is necessary on adjacent crop fields. The primary unrestricted portion of the Preserve could still be accessible. Not all surrounding fields would be necessary to spray at the same time. Coordination with any tenants on the City's property will also be necessary to restrict access to the Preserve if their activities warrant agricultural spraying. The vast majority of the time no access restrictions would be necessary. However, any main trails or facilities should be designed to focus visitors on internal portions of the site, away from buffer areas. A number of physical features on the site should discourage trespassing off the primary public access area and off the site. These include County Road 104 and fences on the west, the north levee on the north, a barrier ditch and fencing on the east and the south levee on the south. The Preserve property itself is bordered by a slough and fencing on the south.

BUILDING AND FACILITIES AREA

The developed facilities on the site were used by the previous owners for research and development facilities, staff offices, equipment storage, maintenance and repair and greenhouses to support the ongoing research. A highly developed water system, internal roadways, security fencing and a large parking area are also present. The developed buildings occupy approximately 5 acres in the southwest corner of the site.

At the time of this writing, a 10-acre area including all of the buildings has been excepted from acquisition by the City pending clean-up of the remains of a leaking fuel tank. The 10 acres is in an extended escrow and the city will purchase them if the current landowner cleans up the contamination to the satisfaction of the state Regional Water Quality Control Board (RWQCB). The current landowner is diligently working on the problem and has defined the physical extent of the contaminated area. A site remediation plan has been approved and a remediation system is in place and functioning. Current hopes are that the remediation will be completed in mid-1997.

The office building is currently being leased by a small biotechnology research and development operation. The City has entered into a 10-year lease for the building complex and all agricultural land south of the south levee with the same tenant. This will help generate revenues that can partially cover the cost of maintaining and developing the Preserve. In the meantime the City can be focusing on the habitat portions of the site. When the lease expires the City may choose to occupy the building complex.

IV. MANAGEMENT GOALS

These management goals have been developed for the South Fork Preserve.

1. Establish and maintain a natural preserve that maximizes wildlife habitat value, minimizes impacts on adjacent land owners and agricultural operations, and minimizes the fiscal impact on the City of Davis.

2. Create a site and program that will serve as a regional resource for environmental education and other passive nature activities.

3. Create a site that demonstrates and maximizes the compatibility of wildlife habitat, commercial agriculture, flood control needs and controlled public access.

4. Create a site and program that serves to facilitate the discussion, understanding and dialogue over rural land use issues.

5. Create a site and program that minimizes maintenance and program costs to the City of Davis by maximizing cooperation with other organizations and individuals and, where acceptable, generating lease and other revenues.

V. MANAGEMENT POLICIES AND ACTIONS

Policy 1. *Pursue the land use plan and management strategy illustrated in* ***Figure 3****.*

Action 1.1 - Continue to work with the Army Corps of Engineers to study, design and develop the Section 1135 habitat restoration project, within the Putah Creek Floodway.

Action 1.2 - Work to find cooperative and sympathetic tenants for leasing of the remaining agricultural fields and building complex to generate project revenues and to develop interpretive experiences.

Action 1.3 - Maintain a qualified open space staff to successfully manage and maintain the Preserve.

Action 1.4 - Apply the City's Integrated Pest Management Policy to operations and maintenance considerations.

Policy 2. *Pursue the preservation and restoration of wildlife habitat in the area identified as the Habitat Management Area.*

Action 2.1 - Commit to manage the restored area to maximize wildlife habitat value within city resource limitations and consistent with other goals for the Preserve.

Action 2.2 - Develop management programs that provide adequate maintenance and security efforts to protect the wildlife habitat in the Habitat Management Area. This could include utilizing City staff and resources (open space and parks, police and fire), cooperation with other public and private organizations and agencies, and the use of community volunteer resources.

Action 2.4 - Design public access areas and trails in the Habitat Management Area to minimize impacts on wildlife behavior and sensitive sites.

Action 2.5 - Manage the Wildlife Habitat Management Area consistent with the overlapping objectives of maintaining adequate flood control capacities and minimizing impacts on adjacent agricultural areas.

Action 2.6 - Develop a program to remove invasive exotic plant species that out compete native vegetation, particularly tamarisk, giant reed and water hyacinth.

Action 2.7 - Release existing single trunk trees within the Habitat Management Area (Putah Creek Floodway) to hasten the establishment of a closed canopy/low profile understory habitat structure. Favor the preservation of single trunk species such as cottonwoods, black walnuts, box elder, and valley oaks and remove and discourage new growth of sandbar willow, tamarisk and giant reed.

Action 2.8 - Develop a program to install enhancements for wildlife, including nesting boxes, bat boxes and perches.

Action 2.9 - Incorporate planting of native grasses, shrubs, trees and living field edges, where appropriate.

Policy 3. *Pursue the interpretation for site visitors of the full range of rural land and natural resource management issues including wildlife; native vegetation management; habitat restoration; agricultural production; the sensitivity and compatibility of agriculture, habitat and public access; flood control issues; natural and social history of the area; rural land use planning and growth management. As a secondary goal work to make the site available for informal, passive recreation activities.*

Action 3.1 - Work with governmental and private organizations and community volunteers to make the site available to the public on a managed basis by developing interpretive programs and materials for all age and knowledge levels. Seek to draw on existing knowledge and programs in the community to provide these educational and interpretive experiences. These cooperators might include:

Davis Joint Unified School District
Other Local School Districts and Science Teachers
Yolo County Office of Education
University of California Faculty, Staff and Graduate Students
Putah Creek Council
Explorit Science Center
Yolo Audubon Society
Yolo Basin Foundation
Friends of the Arboretum
TREE Davis
California Raptor Center
Other Non-Profit Environmental and Educational Organizations
California Farm Bureau
4-H Clubs
Yolo County Resource Conservation District
Individual Professional Biologists and Ecologists
Individual Farmers
State and Federal Land Managers and Resource Professionals

Action 3.2 - Seek to have the City be at least a co-sponsor of the educational activities at the site as City programs but seek to establish at least some of these on a self-funding fee for service basis.

Action 3.3 - On a limited basis make the Preserve available for educational research projects and work to seek grant funding to help cover the City's administrative costs associated with these projects.

Action 3.4 - Work to make the site available for informal passive recreation including hiking, nature observance and picnicking as city governmental resources and restoration activities permit.

Policy 4. - *Seek to minimize net expenditures, recover costs or manage the Preserve assets to cover costs associated with operational and maintenance programs.*

Action 4.1 - Obligate any revenues generated from the South Fork Preserve property to defer maintenance or operational costs on the property (or other open space lands), including the Wildlife Habitat Management Area and any public interpretive programs.

Action 4.2 - Continue to lease a portion of the site for agricultural production for both revenue and interpretive purposes.

Action 4.3 - When possible, try to utilize a portion of the buildings on the Preserve site for revenue generating purposes.

Action 4.4 - When possible work cooperatively with tenants, other organizations and individuals to minimize out of pocket costs to the City.

Action 4.5 - Work to develop a volunteer corps of citizens to help with patrolling, maintenance, restoration, interpretation and enhancement.

Action 4.6 - Work cooperatively with the Public Works Department to share and trade resources.

Action 4.7 - Develop an annual maintenance and operations program and budget and revise it based on actual experience and available resources on a periodic basis.

Action 4.8 - Seek grant funding and private donations to help fund interpretive exhibits and programs, Preserve facilities and environmental enhancement.

Policy 5. *Work with agricultural tenants and surrounding landowners and farmers to minimize and avoid negative impacts from the existence and management of the Preserve. Establish the Preserve as a model of cooperation and sensitivity for a non-agricultural use in the rural area of Yolo (and Solano) County and have it serve as a vehicle for education and dialogue about different perspectives on rural land use.*

Action 5.1 - Maintain open lines of communication with neighboring landowners and farmers. Establish an atmosphere of cooperation.

Action 5.2 - Restrict public access to respective agricultural buffer areas, or the Preserve itself, when notified of planned spray activity.

Action 5.3 - Work with surrounding landowners and the East Davis Fire Protection District to control pests and weeds and provide fire breaks near property boundaries and boundaries of the Habitat Management Area. Develop a fire prevention strategy (see Appendix 2.)

Action 5.4 - Work to inform rural and urban interests about each other's perspectives and objectives and the objectives and management practices aimed at accomplishing the South Fork Preserve management strategy.

Policy 6. - *In the near term limit access to the site for the public to supervised experiences or access by permission only, to minimize enforcement needs, liability risk and damage to fragile restoration areas.*

Action 6.1 - Require persons using the site to abide by Preserve regulations, and if appropriate to sign liability releases.

Action 6.2 - Educate people visiting the site about sensitive management issues such as wildlife and restoration sensitivity and potential conflicts and concerns with surrounding landowners.

Action 6.3 - Monitor usage of the site to identify usage patterns and to identify public access problems and successes.

Action 6.4 - Work towards increasing public access to the site and eventually providing unsupervised passive recreation opportunities at the site.

Policy 7. *- Work with the Davis Police Department, the Yolo and Solano County Sheriff's Departments, The California Department of Fish and Game, The Department of Water Resources, surrounding landowners and volunteer citizens to maintain security and to enforce regulations on the site.*

Action 7.1 - Continue to have the police department respond to calls on as needed basis to minimize unauthorized and undesirable uses of the Preserve site.

Action 7.2 - Keep the site posted to discourage trespassing on the site for unauthorized uses and to identify regulations and city objectives.

Action 7.3 - Maintain good records of security incidents and problems so management and enforcement strategies can be appropriately adjusted.

Action 7.4 - Work to develop as soon as feasible a corps of trained volunteers to help patrol the site.

Policy 8. *- Work with Army Corps of Engineers, the State Department of Water Resources and the State Reclamation Board to maintain flood capacities in the Putah Creek Floodway.*

Action 8.1 - Cooperate with the flood control agencies to manage vegetation within the Floodway.

Action 8.2 - Consider allowing research projects on the site to study the development of best management practices for vegetation within floodways.

Action 8.3 - Use the hydraulic analysis provided by the Corps of Engineers S. 1135 restoration project as a base for developing management strategies.

Policy 9. *- Monitor implementation of this Management Plan. Reevaluate the Plan if it is not being successfully implemented, proves infeasible or community objectives change.*

Action 9.1 - Perform periodic analysis of Preserve site operations, maintenance and implementation of the management strategies.

Action 9.2 - Periodically review relationships with other agencies, partners, tenants and the public to determine if adjustments to those relationships, management programs or policies are required.

PART TWO

PLANNING CONTEXT AND BACKGROUND INFORMATION

VI. MANAGEMENT RESPONSIBILITIES

CITY OF DAVIS

The City of Davis is the owner of the South Fork Preserve site. It is responsible for management and maintenance of the property through its Parks and Community Services Department. The responsibility includes security and police services and oversight of any uses and users of the site. The city has reciprocal response agreements with both Yolo and Solano County Sheriffs' Departments so occasionally enforcement activities could involve those agencies as well. The City is also responsible for developing programs and opportunities for public use of the site, working with neighboring landowners and administering any leases of Preserve property.

EAST DAVIS FIRE PROTECTION DISTRICT

The East Davis Fire Protection District is responsible for fire protection in the area of the Preserve. The independent district, with a Board of Directors appointed by the County Board of Supervisors, contracts with the Davis Fire Department to deliver fire protection and emergency rescue services. The independent board handles all business and administrative matters and negotiates contract terms with the City of Davis.

COUNTIES OF YOLO AND SOLANO

Yolo County is responsible for regulating land use in the unincorporated portions of the County. Generally the City of Davis strives to work with the County in regards to land and facilities outside the incorporated area. State law may allow a City (a sovereign jurisdiction) to carry out activities in the unincorporated area that may be inconsistent with County policies. It is the intention of the City of Davis to work with Yolo County on the Preserve project to minimize any impacts resulting from conflicting policy objectives. Solano County borders the Preserve site on the west. Similar communication as with that of Yolo will take place with Solano County although the County's profile in this far corner of its jurisdiction is fairly low.

STATE RECLAMATION BOARD/US ARMY CORPS OF ENGINEERS

The State Reclamation Board is responsible for maintaining the flood control capacity of the Putah Creek Floodway which is part of the Sacramento River Flood Control Project. (See Fig. 2.) This responsibility is delegated to the Reclamation Board (now the Central Valley Flood Protection Board, or the CVFPB), by the US Army Corps of Engineers, who constructed the Flood Control Project in the early 1940's. The CVFPB

maintains jurisdiction and flood control, and maintenance easements obtained and managed by the CVFPB overlay the Floodway and levee portions of the site. The Reclamation Board works with maintenance staff of the California Department of Water Resources (DWR) to annually survey the creek corridor to manage the vegetation to maintain flood flow capacity. In years past the Putah Creek Council has worked with the DWR maintenance staff to preserve valuable wildlife habitat where choices are possible. Any encroachment into the floodway or levee system requires a permit or management agreement from the Reclamation Board.

The City of Davis is working with the US Army Corps of Engineers to design and restore wildlife habitat on the portion of the Preserve within the Putah Creek Floodway. The project is being pursued under the Section 1135 program of the Water Resources Development Act of 1986. Any placement of vegetation or alteration of landforms requires a floodwater hydraulic analysis which is being completed by the Corps as part of a (Flood Control) Project Modification Report and Environmental Assessment. The current schedule for the restoration project would have site development activity start in 1997.

YOLO COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT (YCFCWCD)/DIXON RESOURCE CONSERVATION DISTRICT

The Preserve site is included within the boundary of the Yolo County Flood Control and Water Conservation District (District). Although the authority of the Corps of Engineers and the Reclamation Board supersedes that of the District, the District is responsible for flood control in areas upstream and adjacent to the Sacramento River Flood Control Project. The Dixon Resource Conservation District maintains the drainage channel at the southern boundary of the preserve site.

CALIFORNIA DEPARTMENT OF FISH AND GAME

The California Department of Fish and Game (CDFG) is responsible for protecting wildlife resources in trust for the people of the State of California. In that regard CDFG is considered a trustee agency with jurisdiction over wildlife habitat and species that may be present on the Preserve site. CDFG will also have an increased presence in the area as a result of the establishment of the Yolo Basin Wetlands Area downstream from the Preserve site in the Yolo Bypass.

PRESERVE TENANTS AND PARTNERS

Any tenants the City of Davis leases to will be required to carry out their activities consistent with this management plan and City objectives. All leases will incorporate language that protects the City's interests. The City may form partnerships with other agencies, nonprofit organizations and individual volunteers. These partnerships will be carried out expressly to further the City's objectives for the property.

THE PUBLIC

The South Fork Preserve is being developed to serve the needs and desires of the public, as expressed through many documents and community activities but primarily the City of Davis General Plan. The 1987 General Plan, 1990 Open Space Element and recommended 1996 General Plan Revision call for the city to pursue the preservation and enhancement of wildlife habitat and agricultural lands and for some public access and environmental education programs for these kinds of areas. The telephone survey conducted for the 1995 Parks Master Plan process demonstrated strong community support for additional city-owned natural areas. Additionally many contacts have been made with the City Department of Parks and Community Services over the years about whether there are natural areas accessible to the public. People are seeking opportunities to pursue wildlife observation, nature walks, experience with native habitat and environmental education.

As time proceeds and management strategies are refined the public, through the use of volunteers and donations, could play an increasing role in the management of the Preserve site. This is a model that The Nature Conservancy uses very successfully along with their paid preserve managers. Volunteer efforts could include trained docents, habitat restoration, maintenance and enhancement activities. Donations could include plant, building and interpretive materials, equipment and furniture and of course monetary donations. The Davis community is fortunate to have many civic- and conservation-minded individuals and organizations that are a potential resource that can be used to benefit the Preserve and provide another way for people to be involved with and enjoy the Preserve project.

VII. SITE DESCRIPTION AND INVENTORY OF RESOURCES

SOILS AND GEOMORPHOLOGY

The soils on the Preserve site are alluvial deposits associated with the historic action of Putah Creek. The soil survey of Yolo County shows the stream channel as river wash which is a variable deposit of gravely and sandy alluvial materials with low natural fertility. The remainder of the site is silty loams (south of the creek: Yolo series, north of the creek: Reiff and Sycamore series) with high capability for the establishment of native vegetation and agricultural production.

The site consists of gently sloping alluvial plains and the creek channel. Superimposed over the northern portion of the site are the levee improvements of the Sacramento River Flood Control Project. The site drains from west to east with elevations ranging between 35 to 25 feet above sea level. A small drainage slough borders the Preserve property on the south.

HYDROLOGY/PUTAH CREEK FLOODWAY

The Preserve site is located along the South Fork of Putah Creek, three miles upstream of the Yolo Bypass and Putah Creek Sinks, and directly east of the County Road 104 Bridge. Approximately 60 percent of the Preserve site is within the Putah Creek Floodway (**Figure 2**). Dramatic physical changes to the creek from impoundments, diversions, channel excavations and flood control levees have changed the characteristics of flows that must be accommodated. Unfortunately, the relationship of current flow patterns to historic flow patterns is not clearly understood other than that flow requirements now are substantially less than from historic uncontrolled peak events. The original design flow for the floodway in the Preserve area was 62,000 cubic feet per second (cfs). The current design flow is estimated to be 40,000 cfs by the US Army Corps of Engineers. A recent court decision (April, 1996)[2] requires that certain flow levels must be maintained in the creek during the dry season to support fish and wildlife and other beneficial uses of the creek. Mean daily flows must be equal to or greater than the following rates, expressed in cfs:

Mean Daily Flows (cfs)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	10	10	15	15	25	30	20	15	15	10	5

[2] The original 1996 court decision establishing the Settlement Agreement was appealed. The First Amended Judgement was entered September 8, 2000 and incorporated the 1996 Settlement Agreement. The Second Amended Judgement was entered October 30, 2002 and incorporated the 1996 Settlement Agreement.

HISTORIC CONDITIONS AND MODIFICATIONS

Historically the lower reach of Putah Creek over-topped its banks during major storm events. As the flows approached the vicinity of the present day Yolo Bypass a number of braided distributary channels and swales carried flows to the east. Creek flows were highly variable and would sometimes drop to zero in the lower creek although remnant pools and sections of base flow were common during these dry periods. Historically the original main creek channel (North Fork) flowed through the southern portion of what is now the Davis urban area. In the 1870's Davisville residents straightened, excavated and diverted the majority of the flow into what is now known as the South Fork to hasten the flow into the Yolo Basin area to the east. This was done to alleviate flooding within the town and on neighboring farms. The diversion was completed when the US Army Corps of Engineers dammed off the entrance to the North Fork during the early 1940's.

The Sacramento River Flood Control Project which was completed in the 1940's by the Corps established levees along the South Fork and along the newly created Yolo Bypass to further contain flood flows. A backwater effect of major storm flows trying to pass out through the Yolo Bypass and North Delta can cause an increase in water levels along the lowest reach of the creek just west of the Putah Creek Sinks area, including the Preserve site.

The construction of the Solano Project, in 1957, further altered the seasonal flooding of the lower creek. The project established the Monticello and Solano Diversion Dams, Lakes Berryessa and Solano and the Putah South Canal that delivers water to agricultural and urban water users in Solano County. (USFWS, 1993)

In addition to the diversion of flows, removal of vegetation to expand agricultural cultivation and increase flood control capacity has been carried out along the lower creek. The material to construct flood control levees was often excavated from the creek channel. The channel is roughly in its natural location on the Preserve site, however excavation has created several relatively large pools that usually retain water year round. The largest of these on the Preserve is the western most pool. These pools serve as valuable wildlife areas during the dry months. A recent court decision (April, 1996)[3] has also guaranteed minimum water flows during the spring and summer which should improve conditions for fish and wildlife. Mean daily flows must be equal to or greater than the following rates, expressed in cfs:

Mean Daily Flows (cfs)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	10	10	15	15	25	30	20	15	15	10	5

[3] The original 1996 court decision establishing the Settlement Agreement was appealed. The First Amended Judgement was entered September 8, 2000 and incorporated the 1996 Settlement Agreement. The Second Amended Judgement was entered October 30, 2002 and incorporated the 1996 Settlement Agreement.

Direct diversions of surface water and increased groundwater pumping have also contributed to decreased water availability in the dry season. Decreased scouring from flood flows, the excavated pools and the containment of silt load within the levees has contributed to the increase in riparian vegetation along portions of the South Fork. This is particularly true on the Preserve site. To maintain flow capacity the California Department of Water Resources periodically removes vegetation. A recent review (1993) of the Creek by the Corps of Engineers confirmed that the lower reach of Putah Creek below the Solano Diversion Dam was capable of passing flows greater than a 100-year storm event. How much additional capacity may exist, particularly as a result of the upstream impoundments and diversions, was not determined. The California Reclamation Board which is delegated the responsibility for overseeing flood control improvements of the Sacramento River Flood Control Project maintains a policy of not reducing flood control capacity regardless of what level of protection currently exists. However the Corps of Engineers is studying this issue further as part of the Section 1135 restoration project being pursued in cooperation with the City.

In general, the majority of the Preserve site outside of the Putah Creek Floodway, surface drains from west to east. Grading for agricultural production has modified this somewhat. The southern boundary of the Preserve site is bordered by an historic but channelized drainage slough which drains some properties to the west and merges with the creek about a mile downstream. Groundwater has been determined to have a slight gradient to the west and in 1993 was recorded between 15 and 35 feet below the ground surface depending on location, time of year and pumping for irrigation (Kleinfelder, 1994).

HISTORIC USES OF THE SITE AND PUBLIC ACCESS

The majority of the preserve site has been used for a number of uses. A recent cultural resources survey of the site south of the creek channel found no evidence of prehistoric use by Native Americans. Archival research produced no records of prehistoric or historic sites located on site or within a one-mile radius (Biosystems Analysis, 1994). This is probably due to several factors. The first is that the North Fork of the creek was originally the main fork until the farmers in the nineteenth century excavated and "improved" the capacity of the South Fork and diverted flows into it. The second reason is that the areas adjacent to the creek and the historic flood plain have been heavily modified by agricultural activity and flood control improvements. Native peoples (River Patwin) probably did use the site for hunting and gathering of plants and acorns. The alignment of the creek on the preserve is considered to be the original natural alignment although the channel has been excavated to increase water storage capacity and to obtain borrow for other improvements. The major levees on the site were constructed in the early 1940's as part of the Sacramento River Flood Control Project.

In the mid part of this century the whole site plus additional lands to the north were owned by the Wilber family. In 1963 the southern part of the Preserve (south of the creek channel) was sold for use as an agricultural research station. That use remained in place, developing significant facilities, until 1987. After that the site remained idle except for occasional leasing to local growers.

On the north side of the creek the far eastern portion of the site was sold (also in the 1960's) and developed as the El Macero Sewage Treatment Plant. The sewage plant was abandoned in 1976 and soon after the site became used for unauthorized hunting, target practice, motorcycle recreation, teen parties (often involving alcohol) and occasional illegal dumping. These uses continued until recently but have been substantially reduced through increased reporting and actions of City of Davis staff (including the Police Department) and other interested agencies and landowners. The remainder of the north side of the creek is relatively undisturbed although some tree removal and grazing have historically taken place. Unauthorized public access has historically taken place the full length of the creek on the north side. The creek corridor was used for hunting and fishing and informal nature observation. These activities continue somewhat and wildlife research activities have also been added in recent years. A habitat restoration project completed in January, 1996 demolished the last of the sewer plant and re-established native vegetation.

Public access to the site, particularly on the north side of the creek, has never been encouraged but in recent years not actively discouraged until the City's ownership. Many of the informal uses by the public have not been appreciated by surrounding property owners and some communication has taken place on an occasional basis to discourage many of these activities. The demolition of the sewer plant, new signage and increased authorized use should also help curtail the undesirable uses.

VEGETATION AND WILDLIFE

Prior to the original water diversions, the Preserve site probably contained an area of oak woodland and riparian forest in the vicinity of the present day creek channel. The majority of the site was a combination of oak woodland and native grassland habitat (JSA, 1994) and seasonal wetland swales. This is corroborated by reviewing 1937 aerial photos in the map collection at UC, Davis. These photos predate the development of the Sacramento River Flood Control Project and El Macero Sewage Plant that heavily modified vegetation and land forms on the Preserve site and allowed for more intensive agriculture. The photos show groves of large trees both north and south of the present creek location with a riparian corridor along the main channel. The vegetation pattern and improvement plans for the treatment plant indicate that trees in that vicinity were large oaks and black walnuts. In addition to the main channel (alignment of present day creek) several minor channels or swales are visible on the site in the photo.

The US Fish and Wildlife Service mapped and classified cover types along lower Putah Creek in its 1993 Fish and Wildlife Resource Management study. The study identified and mapped four habitat types in addition to the agricultural row crop area on the Preserve site. The cover types include Riparian Forest, Riparian Scrub-Shrub, Grassland and Open Water. The preserve site also includes the agricultural row crop area, former vineyard and orchard area, manmade permanent structures and exotic landscaping, outside of the floodway. A brief description of each cover type adapted from the USFWS report is included below and **Figure 4** shows the location of all these areas on the Preserve site. A complete description of wildlife found on the Preserve site is included in the Jones and Stokes report "Biological Resources Survey and Management Recommendations for the City of Davis' Putah Creek South Fork Preserve". The full report is included in the appendices and a list of plant and animal species actually observed or expected to occur on site is included in the appendix of that report. The survey results are summarized here by habitat type.

Figure 4. Existing Vegetation Distribution (June 1993)

OPEN WATER

Vegetation. The open water portion of the Preserve supports little vegetation during the dry season. Typically the two large pools on the site and mud flats are all that remain when flow in the Creek ceases or is reduced to a low trickle. These pools are overhung with riparian vegetation and the shaded mud flats support minimal quantities of rushes, grasses and algal blooms. This condition demonstrates the effectiveness of a closed forest canopy in controlling stream choking vegetation such as cattail and sandbar willow. The stream channel between the pools, where not shaded, tends to be choked with sandbar willow. In the last several years several years water hyacinth has begun to appear in the pools. This exotic plant can eventually grow to completely choke waterways and alter the ecosystem.

Wildlife. The open water areas provide habitat for a number of water dependent species, including water birds, amphibians and aquatic reptiles. Many of the water birds including several types of herons, egrets, grebes and mallards roost and forage in the creek corridor. Aquatic species such as frogs, toads, turtles, ducks and grebes use the creek as breeding and rearing habitat. Several species of mammals have been observed, are expected, or known to occur along the creek including raccoon, beaver, river otter and mink. Putah Creek, on site and in the area, serves as an important year-round aquatic habitat.

RIPARIAN FOREST

Vegetation. Riparian forest on the Preserve site occurs in relatively narrow bands of approximately one hundred feet wide on high terraces and banks adjacent to the main creek channel and seasonal pools. Riparian forest is characterized by a multi-layered structure. The dense to partial canopy layer (80-100 feet) is dominated by cottonwood, valley oaks, and black walnut. The middle layer (20-80 feet) is made up of box elder, elderberry, willows and young canopy trees. The understory is a thicket of shrubs and vines including wild grape, poison oak, wild rose and blackberry.

Wildlife. The riparian forest provides a great diversity of plants and consequently habitat for a great number of species. In addition to supporting the species identified above under **Open Water** this habitat type provides nesting and roosting habitat for hawks, owls, and wood ducks. Bats, woodpeckers, flycatchers, squirrels, skunks and coyote are also likely species to be expected in the riparian forest.

RIPARIAN SCRUB

Vegetation. Riparian Scrub-Shrub is located on the more active portions of the creek outside mature riparian forest that are subject to frequent inundation. The canopy of this cover type is generally less than 20 feet in height. An understory thicket is made up of woody shrubs interspersed with blackberries and wild rose. Typical shrub scale species are young cottonwoods and willows, sandbar willow, giant reed, tamarisk and box elder.

In the riparian scrub zone invasive exotic shrubs such as tamarisk and giant reed have colonized areas. Both of these species out compete native vegetation, provide reduced habitat value and consume a disproportionate share of available moisture. Removal of these species requires a concerted effort over time and the species' establishment in other areas in the region will continue to contribute seed material. Specific recommendations for removal are included in the Appendix.

Wildlife. This habitat type supports a number of shrub-dependent species including quail, wrens, bushtits, towhees, pheasant, mourning dove, phoebes, ground squirrels and coyotes.

GRASSLAND

Vegetation. Grassland along the creek is typically dominated by introduced annual grasses and weedy species. Historically open grasslands did occur near the creek and amidst the seasonal swale network but the native grass species have been replaced by imported annual grasses. A number of a combination of native and non-native weedy forb species are interspersed with the grasslands. Many of the weed species are considered undesirable by local farmers. The City is attempting to restore a few acres of native grasslands on the old sewer plant site in the northeast of the Preserve.

Wildlife. The grassland areas support rodents and some songbird species. Hawks, owls, coyotes, and gray fox hunt gophers and voles which are common in the grassland areas. In addition pheasants, doves, crows, magpies, finches, lizards, ground squirrels and snakes are expected to occur in the grassland areas.

AGRICULTURAL AREA

Vegetation. Agricultural Area currently covers approximately eighty percent of the Preserve site. Roughly sixty percent of the Preserve site historically produced row crops. Some row crop agriculture will continue on the site. In the short term this would include areas inside and outside the levees. In the long term (starting in 1997) the area inside the levees will be restored to native vegetation. An area south of the south levee will remain in production to produce revenues and hopefully provide an opportunity for visitors to learn about agricultural practices. Up until recently orchards and vineyards covered about fifteen percent of the site outside the Floodway although most have died from historic lack of maintenance and been removed. Starting in spring, 1995 approximately two-thirds of the row crop area had been leased for production. In anticipation of the habitat restoration inside the levees all of the row crop area was leased again in 1996. If the current restoration schedule holds the area inside the levees may be available for crop production for one more year. The agricultural area outside the levees has been leased along with the buildings to an agricultural research and development tenant.

Wildlife. The cropland portion of the Preserve has moderate value for wildlife. This area is currently being leased for crop production. Row crops are of varying value to wildlife depending on the type of crop and point in the growing cycle. Fallow fields provide the highest habitat value. The crop fields provide habitat for small rodents such as gophers and voles, and reptiles. Because of the prey base and ready visibility the

crop area provides foraging habitat for hawks and owls. Other species that can be expected to use this area include snakes, lizards and birds such as cowbirds, crows, sparrows, finches, pheasants and mourning doves. Ultimately the area inside the levees will be restored to a mixture of riparian and grassland vegetation.

The remnants of the orchard and vineyard areas provide fruits and nuts for locally common birds and small mammals. Wildlife species include woodpeckers, crows, scrub jays, magpies, finches and ground squirrels.

EXOTIC LANDSCAPING

Vegetation. Exotic Landscaping is present on the Preserve site both as ornamental landscaping around the building complex and trees in windrows. Most of the windrows, particularly the cypress are dying off and volunteer species such as valley oak have started to establish themselves in their midst. Release of the intermixed oak seedlings could allow for them to eventually replace the failing trees with species more climactically adapted, of higher habitat value and reminiscent of historic farmscapes.

Wildlife. The landscaped areas and windrows provide little foraging habitat for most species but do provide good roosting and nesting habitat. The species that use these areas include hawks, owls and mourning doves and smaller birds. During the winter some of the evergreen trees provide cover for wildlife while most native species are barren.

SPECIAL STATUS SPECIES

Special-status species are those that have been identified and listed under the state and federal threatened and endangered species acts, are candidates for listing, are considered sensitive or rare under state and federal programs and plants considered rare or endangered by the California Native Plant Society. A field survey of the Preserve indicated that no suitable habitat exists for any special-status plant species that are likely to occur within the region. There are six potential special-status wildlife species that could use the Preserve. Swainson's Hawks are known to nest and forage on the site. The White-Tailed Kite forages, and a pair has recently nested on the Preserve. The Northern Harrier hawk is known to forage on the Preserve but no evidence of nesting activity has been observed. Based on field surveys and lack of high quality habitat the Valley Elderberry Longhorn Beetle is not expected to occur on the Preserve. While not providing high quality habitat the creek corridor on the preserve could support the Giant Garter Snake in limited numbers. The creek corridor provides suitable habitat for the Northwestern Pond Turtle but the adjacent crop fields provide poor upland breeding habitat. Habitat restoration activities should improve habitat quality for most of these and other species.

IMPROVEMENTS ON THE SITE

Buildings. The buildings on the Preserve site include an office/laboratory building several equipment sheds and shop buildings. As of this writing the buildings and associated grounds are not in the City's possession although an extended escrow has been opened and acquisition is pending the successful cleanup of a fuel tank leak. The remediation of the leak is well under way through implementation of a plan approved by the state Regional Water Quality Control Board. Ownership of the buildings is expected to transfer to the City sometime in 1997. Currently the building complex and surrounding ten acres is leased to a small biotechnology research and development firm. The firm also holds a lease for the buildings and the land south of the south levee with the City that goes into effect when the City takes title to the buildings.

Access and Parking. The access to the Preserve is through several points. The main access and a large parking area is at the southwestern corner of the Preserve near the buildings. Other access points and small parking areas are available at the intersection of the north and south levees and County Road 104. Good views of the Preserve are available from the levees. Access to other parts of the Preserve can be gained off the levees from ramps that lead down to the surrounding ground surface. Another main point of access is near the County Road 104 bridge. Access from this point is by foot only.

Water Supply Improvements. An agricultural well is located at the western edge of the property just south of the south levee. An irrigation system with water mains feeding alfalfa valves can distribute water to the edge of any of the crop fields and orchard areas. Additional irrigation equipment such as fittings to connect to the alfalfa valves and irrigation pipe or line, are necessary to supply the interior of the fields. Alternatively, irrigation ditches can be developed to supply crops such as those used for tomatoes. The existing pump and the agricultural well have recently been repaired. The irrigation system cannot supply enough water to heavily irrigate all of the property at one time. Historically crops were irrigated in rotation and a combination of dry and irrigated crops and fallow fields would exist in any given year.

Once the City and Corps of Engineers restoration project is established it is hoped that the existing irrigation system can accommodate all irrigation needs on the Preserve site. Allocation of pumping costs on a prorated basis will be necessary between the various users. The age and condition of the existing well is such that eventually a new well will have to be drilled. A portion of the lease revenues should be set aside for this eventual need.

VIII. REFERENCES

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PERSONS CONTACTED

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