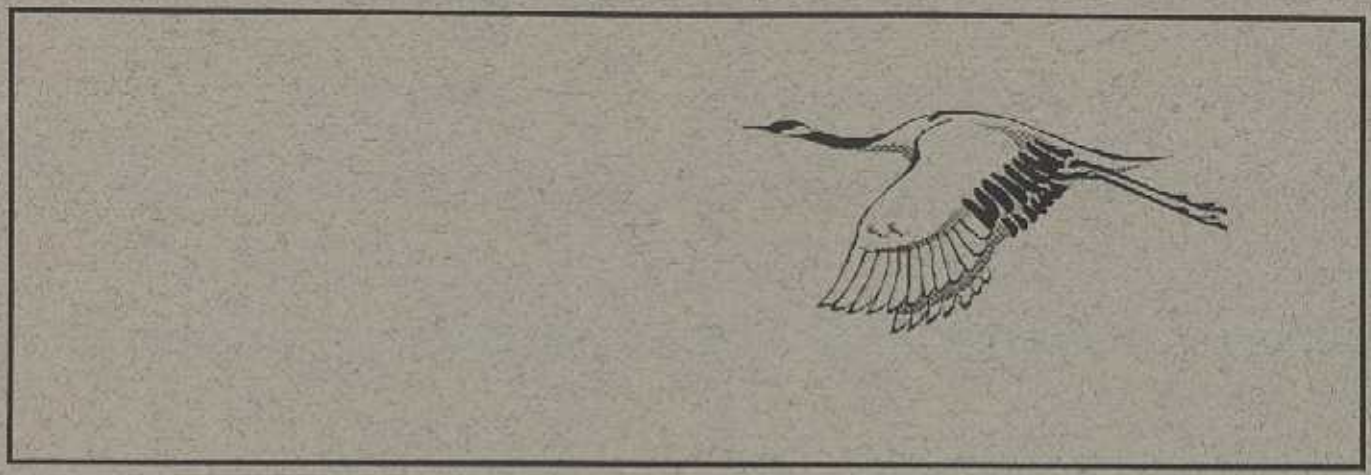

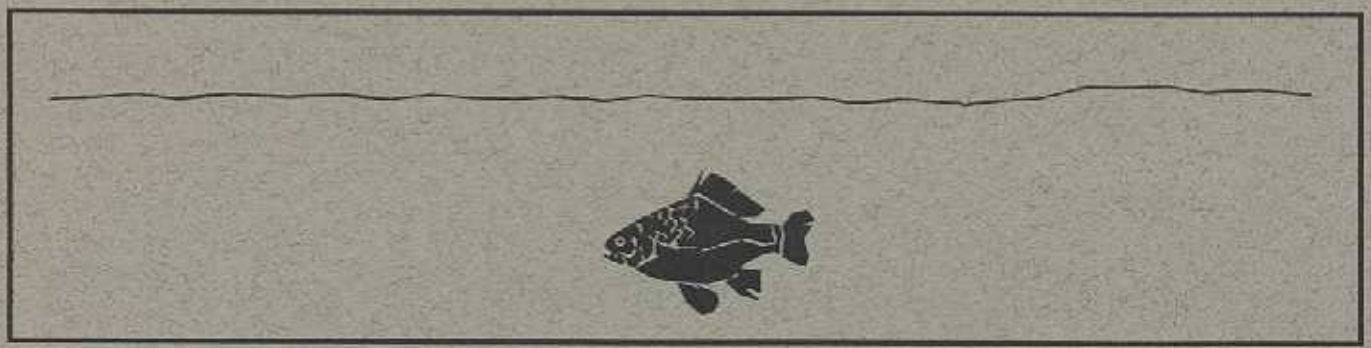

RIPARIAN CORRIDOR POLICY STUDY

CITY OF SAN JOSE

RIPARIAN CORRIDOR POLICY STUDY

City of San Jose

Consultants:
The Habitat Restoration Group
and
Jones and Stokes Associates, Inc.

Approved by City Council
May 17, 1994
Revised March 1999

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INTRODUCTION

PURPOSE OF STUDY

The overall purpose of the Riparian Corridor Policy Study is to explore in detail issues related to General Plan policies which promote the preservation of riparian corridors, the areas along natural streams, and how these corridors should be treated for consistency with the General Plan. This study identifies each riparian corridor within the City's Urban Service Area and Urban Reserves and defines the term "riparian corridor"; it discusses the importance of the riparian corridors, how they may be at risk and how they should be protected.

The General Plan provides the policy foundation for the City's treatment of riparian corridors and (will) incorporate(s) the major findings of this study. The development design guidelines in Chapter 3 are intended to be used in conjunction with the City's *Residential Design Guidelines, Commercial Design Guidelines and Industrial Design Guidelines*; the major provisions of the riparian corridor guidelines will be (are) incorporated into those design guidelines documents.

This study document (will) support(s) the General Plan and Design Guidelines treatment of riparian corridors by providing a more detailed rationale for preservation and specific discussions of the appropriate relationship between development and riparian habitats.

This study has addressed itself primarily to riparian corridors within the Urban Service Area (USA) based on an assumption that corridors outside the USA enjoy some substantial General Plan policy protection and are not typically subject to damage from urban development. It is the City's intent, however, that any development, recreation facilities, or agricultural activities, outside the USA and not subject to specific General Plan direction regarding riparian protection, should be subject, at a minimum, to the development guidelines in this document.

This Study, consisting of this policy document and the separate map set entitled *Riparian Corridor Policy Study - Resource Inventory*, addresses several issues relating to the identification, management and, ultimately, the protection of riparian resources. These include:

- definition of riparian corridor,
- an inventory and description of biotic resources,
- identification of existing public and quasi-public lands adjacent to corridors,
- identification of future flood control activities,
- guidelines to protect biotic resource values when development occurs near corridors, and
- measures for development of recreational facilities along corridors.

This study provides the City, through the baseline inventory and a series of policy guidelines, information to identify and manage its riparian resources in an environmentally sensitive manner to protect them for environmental as well as recreational purposes.

It is recognized that potential conflicts exist among competing land uses along the City's riparian corridors (e.g., land development, flood control protection, habitat preservation). This policy study attempts to achieve a balance among these potentially incompatible land use activities through the application of development guidelines; these development guidelines are intended for use within the context of the overall goals of the City.

Riparian Values

The streams within the City of San Jose are a valuable natural resource supporting a diversity of habitats and a great variety of aquatic and terrestrial resources. Several distinct habitats occur along the stream corridors, such as riparian, freshwater marsh, salt-brackish water marsh, and transitional upland habitats. Numerous species of plants, fish, and wildlife occur within the riparian corridors, including several species identified as sensitive by State and Federal resource agencies. Streams and riparian corridors are also a valuable visual/aesthetic resource, open space and recreational resources, and often are the City's densest urban forest resources.

Riparian systems provide very important habitat for aquatic invertebrates, fish, amphibians, birds and mammals. A number of species are dependent on a healthy riparian community for survival. Riparian habitat widths are necessary to maintain some breeding bird populations. Vegetative buffer areas, outside the defined riparian corridor, are necessary to:

- Protect water quality, ensuring habitat for invertebrates and fish, which support shorebirds, wading birds and other animals.

- Provide food, cover and migration corridors for a number of amphibians and reptile species including sensitive and candidate threatened/endangered species such as the tiger salamander, red-legged frog, yellow-legged frog, and western pond turtle.

- Provide cover and food sources for other riparian wildlife species that range between riparian and upland areas. A number of mammals use the full width of a riparian system for forage, cover, and migration.

- Provide wildlife migration corridors during high runoff periods.

In areas where streamside vegetation has been removed, revegetated buffer zones may be critical to the continued survival of aquatic organisms and native fish species such as steelhead and salmon.

Vegetated stream corridors provide protection of water quality through buffering urban storm water runoff and reducing erosion and sedimentation from construction and agricultural activities. Protection of vegetated stream corridors is consistent with best management practices (BMP's) developed by the Santa Clara Valley Nonpoint Source Pollution Control Program. Nonpoint source pollution alters stream temperatures, turbidity levels, nutrient concentrations and water chemistry, all of which can have significant deleterious effects on aquatic habitat. A functioning riparian system can act as a filter for surface urban runoff if the riparian corridor is of sufficient width and sufficiently vegetated to filter or provide uptake of the pollutants.

There is significant evidence that intact riparian corridors also contribute economic value to a community by adding to property values and providing attractive environments for businesses and their employees.

Residential, commercial, agricultural, open space and recreational land surrounds the riparian corridors within the City (Figure 1). Many of these land uses, coupled with the accompanying need for flood protection have, over time, altered the natural features of the City's landscape, including the amount and condition of its riparian resources. Creeks and rivers that historically supported relatively wide corridors of natural vegetation over their flood plains now support narrow bands of vegetation within their banks or have been modified for flood protection and water supply purposes (e.g., in-stream percolation ponds). Flood protection and water supply are the responsibility of the Santa Clara Valley Water District. Recognizing the biological, aesthetic and even economic importance of its riparian resources and the opportunities these corridors

provide for recreational use, the City of San Jose commissioned this Riparian Policy Corridor Study in 1992.

THE DEFINITION OF RIPARIAN CORRIDOR

Any statement of policy needs to clearly define the extent to which it applies. The issue of riparian/stream corridor policy and policy guidelines is particularly complex because there is no accepted standard riparian corridor definition. Municipalities throughout California use several different approaches for defining riparian corridors; these range from physical attributes (i.e., diagnostic vegetation, stream morphology [physical form, shape, and size], or hydrology [capacity to convey floodwaters]), relative importance in relationship to arbitrary standard width, mapping approaches, and combinations, thereof.

"Riparian" is generally used as an adjective to modify other terms. Although it may be narrowly applied to refer to streambank areas only, it may be more broadly defined as

> "pertaining to the banks and other adjacent terrestrial (as opposed to aquatic) environs of freshwater bodies, watercourses, estuaries, and surface-emergent aquifers (springs, seeps, oases), whose transported freshwaters provide soil moisture sufficiently in excess of that otherwise available through local precipitation to potentially support growth of mesic vegetation." (Warner 1984)

In determining a suitable riparian corridor definition for the City of San Jose, a number of different approaches to the definition, as used by various jurisdictions, were reviewed. Based upon this review, coupled with the riparian corridor inventory conducted as part of this study, both a standard definition and a map-based delineation are provided (see Figure 1 and the map set entitled *Riparian Corridor Policy Study - Resource Inventory*).

For purposes of this study, a riparian corridor includes any defined stream channels including the area up to the bank full-flow line, as well as all riparian (streamside) vegetation in contiguous adjacent uplands. Characteristic woody riparian vegetation species could include (but are not limited to): willow, *Salix* sp.; alder, *Alnus* sp.; box elder, *Acer negundo*; Fremont cottonwood, *Populus fremontii*; bigleaf maple, *Acer macrophyllum*; western sycamore, *Platanus racemosa*; and oaks, *Quercus* sp. Stream channels include all perennial and intermittent streams shown as a solid or dashed blue line on USGS topographic maps, and ephemeral streams or "arroyos" with well-defined channels and some evidence of scour or deposition.

Riparian corridors are often referred to as "sensitive resource areas" and/or "sensitive wildlife habitat". These terms are derived from state and federal Endangered Species Acts that protect species and their habitat that are listed as endangered or threatened, or proposed for such listing. The California Environmental Quality Act (CEQA) also recognizes "species of special concern" and their habitats; they are not specifically protected by the Endangered Species Act, but they are recognized as declining species. Since riparian corridors may provide habitat for endangered species and/or Species of Special Concern, they are often referred to as "sensitive resource/wildlife habitat areas".

A map-based riparian definition relies on the availability of inventory data and the ability of the City to refine and add to the mapped data base as staff time allows and/or development project applications are submitted to the City for review/approval. The riparian corridors within the City's Urban Service Area and Urban Reserves were mapped as part of this study and provide a baseline inventory of the City's riparian corridor resources *(Riparian Corridor Policy Study - Resource Inventory)*.

Because of their size, the maps cannot be included in this document and are available for inspection in the Department of City Planning and Building. These maps are an integral part of the City's riparian policies and may be subject to more site-specific mapping and refinement dependent upon potential future development on affected properties and future studies that provide more detailed boundary delineation (e.g., riparian corridor inventory project currently funded by the EPA). With this approach the City can continue to refine its identification of riparian corridors, thus assisting both property owners and the City to make appropriate development decisions.

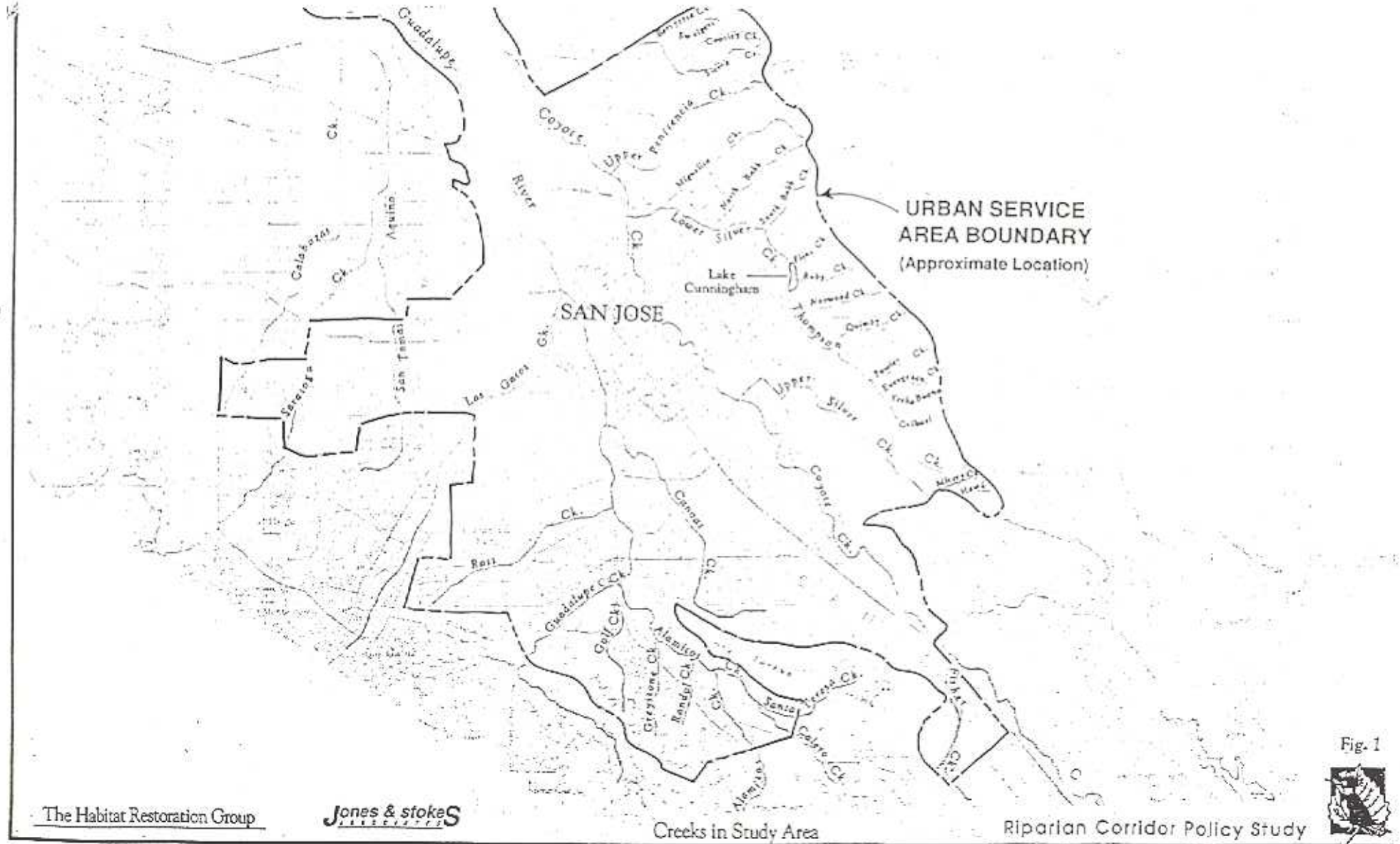

URBAN SERVICE
AREA BOUNDARY
(Approximate Location)
SAN JOSE
Lake
Cunningham
Guadalupe
River
Coyote
Upper Penitencia Ck.
Lower Silver Ck.
Upper Silver Ck.
Thompson
Los Gatos Ck.
San Tomas
Saratoga
Aquino
Calabazas
Ck.
Canoas
Ck.
Rose
Guadalupe C Ck.
Golf Ck.
Greystone Ck.
Randol Ck.
Alamitos
Ck.
Santa Teresa
Calero Ck.
Fisher Ck.
Coyote Ck.
Creeks in Study Area
The Habitat Restoration Group
Jones & stokeS
Riparian Corridor Policy Study
CITY OF SAN JOSE

Fig. 1

RELATIONSHIP TO HORIZON 2000 GENERAL PLAN

Goals and Policies

The Horizon 2000 General Plan as periodically amended is the adopted statement of policy for the physical development of the City of San Jose. As such, it contains a number of goals and policies as well as land use designations that affect the riparian corridors in the City. Goals and policies in the Natural Resources section of the General Plan are intended to "maximize the achievement of environmental, economic, and social objectives" (City of San Jose, 1991).

In the Natural Resources section, riparian corridors are addressed under the headings of Water Resources, Bay and Baylands, and Marinelife and Wildlife. The plan establishes policies for water resources to "protect important groundwater recharge areas, particularly creeks and creeksides, from urban development" (*ibid.*).

These policies propose protection of water quality through control of storm water run-off and surface and groundwater contamination. General Plan policies also address tidally influenced water areas ("baylands"), which would relate to the lower portions of streams within the City, and recommend preservation and restoration of such habitats.

A distinction is made between riparian corridors inside and outside the Urban Service Area. Outside of the Urban Service area, "natural riparian corridors should be protected from disturbance associated with development (sic) by a minimum 150-foot setback from the top bank line, wherever feasible" (*ibid.*). Within the Urban Service Area, "significant creeks and natural riparian corridors ... should be preserved whenever possible. When disturbances cannot be avoided, appropriate measures should be required to restore, or compensate for damage to, the creeks of riparian corridors" (*ibid.*).

The General Plan also addresses riparian corridors with regard to recreation. Policies recommend control of land development along designated Trails and Pathway Corridors, encourage developers to install and maintain trails, and recommend trails be designed and managed with minimal environmental disturbance. The Trails and Pathway Plan, adopted as part of the General Plan, specifies many riparian corridors within the City for recreational trail use and recommends development of "creekside protective standards to serve as a model for public and private development near creeks".

Applicable policies are found throughout the document in text and map form and are identified below by their topical location in the General Plan:

Urban Design

4. Residential developments which are adjacent to parks or open spaces should be encouraged to provide direct access to, and common open space contiguous to, such areas.

16. When development is proposed adjacent to existing or planned parks or park chains, that development should include public park-frontage roads, wherever feasible, in order to maximize access to park lands without the use of "back-up" design, and to maximize exposure of park lands for scenic and security purposes.

Storm Drainage and Flood Control

12. In designing improvements to creeks and rivers, adjacent properties should be protected from flooding.

13. The "modified floodplain design" is the preferred design for future flood control facilities where a riparian corridor exists. The "widen-one-bank" and "trapezoidal channel" designs should only be used when funding or right-of-way limitations make the use of the modified floodplain design impractical.

14. The City should continue to cooperate with other public and private jurisdictions and agencies to coordinate emergency response and relief efforts in case of flooding.

Parks and Recreation

2. Parks should be located, oriented and designed in such a way as to facilitate their security and policing.

4. The City should accept open space land dedications only when public ownership will preserve the natural and scenic beauty, protect natural and man-made landmarks, or provide a land supply to meet future recreational needs.

6. In the design and maintenance of parks, consideration should be given to impacts on wildlife. In particular, it should be recognized that native plant species may be best suited for providing wildlife cover and food sources and that herbicides, pesticides and fungicides may be damaging to native plants and wildlife.

7. The City encourages the Santa Clara Valley Water District, school districts, the Pacific Gas and Electric Company and other public agencies and utilities to provide for appropriate recreational uses of their respective properties and rights-of-way. Consideration should be given to cooperative efforts between these entities and the City to develop parks, other open space areas and recreational facilities and programs.

12. The City encourages the County and other public agencies to accept dedications of open space lands of regional significance, including watersheds, wildlife habitats, wetlands, historic sites, and scenic lands. The City also encourages private entities to preserve open space lands.

13. Bikeways, hiking trails, equestrian trails, rest areas, and picnicking accommodations should be provided, wherever feasible, within parks and trails corridors designated on the Scenic Routes and Trails Diagram, to access the hillsides, ridgelines, baylands, and other scenic areas.

Trails and Pathways

The Scenic Routes and Trails Diagram indicates that Los Gatos Creek, Guadalupe River, Coyote Creek, Penitencia Creek, the upper portion of Thompson Creek, Silver Creek, Saratoga Creek, Los Alamitos Creek, Calero Creek, Yerba Buena Creek and Fisher Creek are all designated Trails and Pathways Corridors. This designation indicates the most feasible and accessible routes to develop trails. These routes are described as following existing creeks and riverbeds "and include the public and quasi-public rights-of-way of the Santa Clara Valley Water District and other agencies". The text indicates that "some rights-of-way linkages across private property may be required" to develop the trail system.

In addition, the text contains the following policies.

1. The City should control land development along designated Trails and Pathway Corridors in order to provide sufficient trail right-of-way and ensure that new development adjacent to the corridors does not detract from the scenic and aesthetic qualities of the corridor.

2. When new development occurs adjacent to a designated Trails and Pathway

Corridor, the City should encourage the developer to install and maintain the trail.

3. Design, construction, and management of trails and pathways should be carefully executed in order to minimize environmental disturbance.

4. Bridges and other public improvements within designated Trails and Pathway Corridors should be designed to provide safe and secure routes for trails, including grade separation of roadways and trails whenever feasible.

6. The incorporation of trails and pathways into lanes used for public and utility purposes is encouraged.

7. Trails should be built to meet the trail standards established by the Recreation, Parks and Community Services Department. Trail design should provide sufficient light, vertical clearance, and landscape setbacks from adjacent development to ensure a safe and aesthetically pleasing recreational experience.

Woodlands and Grasslands

1. The nature and amount of public access to wooded areas and grasslands, when allowed, should be consistent with the environmental characteristics of these areas.

2. The use of motorized off-road vehicles should be limited and strictly regulated in woodlands and grasslands.

Water Resources

1. The City, in cooperation with the Santa Clara Valley Water District, should restrict, or carefully regulate, public and private development in watershed areas (that drain into City streams), especially those necessary for the effective functioning of reservoirs, ponds, and streams and for the prevention of excessive siltation and contamination.

3. The City should encourage the Santa Clara Valley Water District to restrict public access and recreational uses on water-related lands when water quality could be degraded.

5. The City should protect important groundwater recharge areas, particularly creeks and creeksides, from urban encroachment.

6. When new development is proposed in areas where storm runoff will be directed into creeks upstream from groundwater recharge facilities, the potential for groundwater and surface water contamination should be assessed, and appropriate preventative measures should be recommended.

Marinelife and Wildlife

2. Consideration should be given to setting aside nature preserves in the Bay, marshes, streamsides, streambeds, and hillside areas to protect habitats of essential, rare, and endangered species of plants and animals and to provide areas for educational and research purposes.

4. Natural riparian corridors outside the Urban Service Area should be protected from disturbance associated with development (such as structures, roadways, sewage disposal facilities, and overhead utility lines, except those required for flood control or bridging) by a minimum 150-foot setback from the top-bank line, wherever feasible.

5. Significant creeks and natural riparian corridors within the Urban Service Areas should be preserved whenever possible. When disturbances cannot be avoided, appropriate measures should be required to restore, or compensate for damage to, the creeks or riparian corridors.

Land Use Diagram

Low Density Residential: Two Dwelling Units per Acre Land Use Designation. The Land Use Diagram shows a Low Density Residential: Two Dwelling Units per Acre designation that the text indicates applies (in Almaden) generally to areas near creeks that are subject to ground failure where higher densities are inappropriate.

Public Parks and Open Space Land Use Designation. This designation applies to publicly owned City and County parks, open space lands, and recreation facilities other than parks, including the Santa Clara Valley Water District creeks and percolation ponds. The designation is applied along most riparian corridors, as indicated on the Land Use Diagram.

Discretionary Alternate Use Policies

The Plan indicates that alternate land uses for surplus property designated for Public Parks and Open Space land uses may be approved by the City under Planned Development Zoning without an amendment to the General Plan Land Use/Transportation Diagram, if such use is found to be consistent with applicable General Plan text policies.

The Safety Element of the General Plan

The Safety element of the General Plan also urges flood control solutions along the City's rivers and creeks.

Recommended Additions to General Plan Policy

The following policies are recommended to be added to the General Plan:

Riparian Corridors

1. The City of San Jose should endeavor to preserve, protect and restore riparian corridors within the City's jurisdiction for the protection of vegetation, wildlife and aquatic habitat values.

2. The City should adopt specific Riparian Corridor Development Design Guidelines with the goal that new development and other related activities within and adjacent to the corridors does not adversely impact biotic resource values of the corridor.

RELATIONSHIP TO OTHER CITY LAND USE POLICIES/PLANS/PROGRAMS

Zoning Ordinance

Zoning regulations in the City of San Jose are intended to implement the General Plan by providing standards for development. The various ranges of allowed land uses and development intensity within a given zoning district correspond generally to the respective General Plan land use designations. Although the conventional zoning districts contained in the City's Zoning Ordinance include an Open Space zoning district that may be applied to properties designated for open space use by the General Plan, this Open Space zoning district permits certain uses which are compatible with open space generally but may be inappropriate in riparian corridors.

Planned Development zoning is also available to tailor allowed uses, site intensities, and development standards to a particular site. Planned Development zoning could be used to implement standards appropriate for the protection of riparian areas on a site-specific basis.

The Zoning Ordinance also regulates development through a number of development permits intended to implement the General Plan. Appropriate treatment of riparian corridors also can be achieved through these permit processes.

Subdivision Ordinance

The City's Subdivision ordinance implements the State Subdivision Map Act by requiring all

subdivisions in the City to be consistent with the City's General Plan and state law. The State Subdivision Map Act requires that "reasonable public access" be provided and requires the dedication of a public easement along the banks of rivers or streams bordering or within a proposed subdivision, unless the City makes a finding that alternative public access is otherwise available within a reasonable distance (Government Code Section 66478, *et seq.*). This public access easement could be implemented to include riparian areas on a site-specific basis.

Evergreen Development Policy

The General Plan describes the Evergreen Development Policy (EDP), a document adopted by the City Council to address (among other issues) flooding problems along creeks within the Study Area. Only portions of Quimby and Fowler Creeks remain to be constructed. The EDP provides for improvement of Quimby and Fowler Creeks that will maintain existing riparian areas in an undisturbed state and improve lower reaches of these creeks to enhance their flood water capacities by development of retention basins.

Parks Plans and Programs

The City of San Jose has adopted specific land use and development plans for areas within the Urban Service Area and Urban Reserves. These include creek master plans such as Los Gatos Creek Trail Master Plan, Upper Penitencia Creek Master Plan, Guadalupe River Park Master Plan, Coyote Creek Park Chain - 1990 Long Range Land Utilization Report, (report accepted only) Guadalupe River South Corridor Park Master Plan Interim Report, and Los Alamitos/Calero Creek Park Chain Master Plan. These plans recommend site specific actions relating to riparian resources, including setback areas, trail locations, and other recreational and land use issues.

Draft Kelley Park Master Plan. The draft Kelley Park Master Plan (not yet approved by City Council) incorporates riparian corridor and development setbacks of the Long Range Land Utilization Report for the Coyote Creek Park Chain (see below) for the development of areas adjacent to Coyote Creek in Kelley Park. In addition, it recommends the clearing and cleaning of debris, "inappropriate vegetation ... to enhance the visual beauty, safety, and accessibility of the Creek", and an on-going maintenance program for the creek and its riparian vegetation. (San Jose 1991, accepted by City Council in 1992).

Coyote Creek Park Policy Statement. In 1969, the City Council and the County Board of Supervisors adopted a joint policy statement that outlines a framework for a linear regional park that would accommodate a wide variety of regional public recreational activities, compatible natural resources, and flood control requirements. Continuity of trails extending throughout the length of the park, location of more intense uses on larger land areas, and limiting consideration of commercial facilities within the Park Chain only to those providing an essential service are all principles established by the policy statement.

1990 Long-Range Land Utilization Report for the Coyote Creek Park Chain. The 1990 Long-Range Land Utilization Report for the Coyote Creek Park Chain (LRLUR) is a City policy document that establishes a number of goals for the future utilization of Coyote Creek between William Street Park and Fontanoso Road. It was this report which raised issues not resolvable within its own scope and became the impetus for this Riparian Corridor Policy Study.

The LRLUR reaffirms the earlier Coyote River Park Policy Statement and establishes goals to promote the following:

- **Public Accessibility.** This includes public access without charge balanced with cost recovery objectives, safe recreation opportunities, "barrier-free" design, and a continuous network of trails and access points.

- **Creek Integrity.** This includes enhancing the visitors' relationship to nature, protecting the natural state of the corridor and its riparian vegetation, and cooperating with the Santa Clara Valley Water District to provide flood control and groundwater recharge functions and to protect water quality.

- **Recreational Development and Use.** This includes dispersing neighborhood parks and high development throughout the park chain, maintaining existing recreation activities, encouraging public-private partnerships to increase the variety of such opportunities, and encouraging parkland acquisition.

- **History.** This includes dispersing cultural and ethnic gardens and historical education activities throughout the park chain, locating or restoring orchards, and protecting historic and archaeologically significant sites within the park chain.

- **Circulation.** This includes centralizing parking facilities and locating trails and service roads with sensitivity to the riparian vegetation. (San Jose 1990.)

- **Trails.** The LRLUR recommends that future master plans incorporate a trail system adjacent to or within the riparian corridor throughout the length of the park chain that is linked to other regional trail systems and external transportation routes. A number of general trail development guidelines and trail use zones are proposed for future planning application.

- **Development Setbacks.** The LRLUR recommends conceptual development setbacks "to be considered in future planning efforts". A development setback of 150 feet from the centerline of Coyote Creek is recommended, except where the creek exceeds 100 feet in width; in this case the footage beyond 100 feet would be added to the 300-foot riparian corridor.

- **Landscape Buffers.** The LRLUR proposes the concept of landscape buffers to separate the park chain uses and adjacent land uses to provide visual and noise impact reduction.

OTHER LOCAL AND MULTI-JURISDICTION RIPARIAN POLICIES AND PROGRAMS

Nonpoint Source Program

The Santa Clara Valley Nonpoint Source Pollution Control Program (NPS Program) was developed in accordance with the requirements of the 1986 San Francisco Bay Basin Water Quality Control Plan, the Federal Clean Water Act, and the Environmental Protection Agency's National Pollution Discharge Elimination System (NPDES). The NPDES permit prepared by the San Francisco Regional Water Quality Control Board (RWQCB) was approved June 1990. This permit required the NPS Program to take steps to improve Bay Water Quality by controlling pollutants from nonpoint sources.

The City of San Jose is one of 13 cities that have joined with the County and the Santa Clara Valley Water District (SCVWD) as co-permittee to the National Pollution Discharge Elimination System (NPDES) permit issued by the San Francisco Bay Regional Quality Control Board (RWQCB) in June 1990. The RWQCB in January 1992 adopted a general permit which regulated storm water runoff from industries in the Santa Clara Valley. This permit required the elimination of on-storm water discharges, development and implementation of Storm Water Pollution prevention Plans, and monitoring of discharges to storm sewer systems. In August

of the same year, the RWQCB adopted a general permit which regulated storm water discharges associated with construction activities of five or more acres. This permit required the elimination or reduction of non-storm water discharges to storm water systems development and implementation of a Storm Water Pollution Prevention Plan and performance of inspections of storm water control structures and pollution prevention measures.

Santa Clara Valley Water District

The Santa Clara Valley Water District (SCVWD) is a special district empowered to protect public health, safety, and welfare by protecting water quality; provide flood control facilities and floodway maintenance services; and regulate construction, deposition, excavation, and vegetation planting activities within watercourses throughout the County and incorporated cities. SCVWD Ordinance 83-2, as amended October 22, 1985, states that "the District accepts an obligation to design, construct and maintain its works in such manner as to avoid or minimize harmful disturbance of the natural environment" (SCVWD 1985).

A SCVWD permit is required for construction activities within 50 feet of the top of the bank of water courses throughout the county.

Santa Clara County

North County Streamside Trail Corridors. The Santa Clara County Advance Planning Office and the Santa Clara County Inter-governmental Council's Trails and Pathways Committee has proposed a draft conceptual plan to extend existing trail segments into an interconnecting system along Saratoga, Los Gatos, Thompson, Alamitos, Coyote, and Penitencia Creeks and Guadalupe River. This conceptual trail system would be within or adjacent to riparian corridors within San Jose and would connect to the proposed regional Round the Bay Trail and Ridge Trail systems.

CHAPTER 2. RIPARIAN CORRIDOR INVENTORY

SUMMARY OF RIPARIAN RESOURCES

Over 136 miles of riparian corridor, encompassing 35 distinct streams, rivers and their tributaries, are situated within the City of San Jose's Urban Services Area (USA) and Urban Reserves (Coyote Valley and Almaden Valley). Guadalupe River and Coyote Creek are the major watercourses of the valley; these two systems contain 13 and 20 tributaries, respectively (Table 1).

These streams support several distinct types of riparian habitats, including herbaceous riparian areas, forested riparian corridors (cottonwood-willow and sycamore-valley oak riparian forest), freshwater marshes, and closer to San Francisco Bay, brackish water marsh. Streams modified as part of flood control and/or urban development activities may contain ruderal (i.e., grassy, weedy) areas, barren, or nearly so, earthen channels and concrete-lined channels. Areas significantly influenced by adjacent residential or commercial land uses may include plantings of non-native ornamental landscaping (often referred to as "urban forest").

Native stands of riparian vegetation possess high wildlife value, providing important habitat for Neotropical migrating birds (i.e., birds that winter in tropical Central and South America and migrate to temperate North America to breed), as well as resident wildlife populations. Many of the streams provide fishery habitat, both for warm water (e.g., green sunfish) and cold water fish (trout, steelhead and salmon). Several riparian corridors support "wildlife species of special concern", species recognized by the State of California as declining in distribution, primarily from overall loss of riparian habitat within the region and the State as a whole.

The City's riparian resources are flanked by a variety of land ownerships and, consequently, land uses. These include single family residences, small and large commercial development, tracts of agricultural lands, and varying sizes/types of recreational lands. Many of the City's riparian corridors are owned by or have easements encumbered to the Santa Clara Valley Water District (SCVWD) for purposes of flood control protection. Flood control projects recently completed and/or in the design stages include provisions for such rights-of-way; future flood control projects are also expected to include riparian corridors.

Over 102 miles of the riparian corridors within the USA and Urban Reserves are designated for and/or have public recreational trails. The trails are primarily passive use; walking and bicycle use is common. The City of San Jose and the SCVWD have a joint use agreement relating to recreational use of existing and future flood control project areas and rights-of-way.

Approximately 25 miles of riparian corridor trails have been developed and are open for public recreational use. This represents approximately 16% of the City's total regional trail system from the General Plan designated regional trail corridors and the Bay Area Ridge Trail. The total trail system including the Bay Ridge Trail is approximately 150 miles.

RIPARIAN HABITAT CLASSIFICATION SYSTEM

Purpose

A map-based inventory of the City's riparian corridors was selected as the most useable vehicle to guide planning efforts within and adjacent to the City's rivers and creeks. The mapping (depicted on Riparian Resource Inventory Maps, City Plan Sheets 1, 3 through 5, 18 through 20, 34 through 38, 50 through

Table 1.
Rivers and Creeks within City of San Jose Riparian Corridor Study Project Area

Rivers/Creeks/Tributaries	Linear Miles
Guadalupe River System:	
MAINSTEM: Guadalupe River	19.0
Tributaries:	
Los Gatos Creek	3.5
Ross Creek	5.0
Canoas Creek	7.0
Guadalupe Creek	2.5
Calabazas Creek	1.0
San Tomas Aquino Creek	2.0
Saratoga Creek	2.0
Alamitos Creek	5.0
Golf Creek	3.0
Greystone Creek	1.0
Randol Creek	1.5
Santa Teresa Creek	1.0
Calero Creek	2.0
GUADALUPE RIVER SYSTEM TOTAL	55.5

Rivers/Creeks/Tributaries	Linear Miles
Coyote Creek System:	
MAINSTEM: Coyote Creek	31.0
Tributaries:	
Fisher Creek	3.0
Lower Silver Creek	3.0
Miguelita Creek	4.0
North Babb Creek	3.0
Thompson Creek	7.0
South Babb Creek	2.0
Flint Creek	1.0
Ruby Creek	1.5
Norwood Creek	2.0
Quimby Creek	2.0
Fowler Creek	1.5
Evergreen Creek	1.0
Yerba Buena Creek	1.0
Cribari Creek	0.5
Upper Silver Creek	5.0
Upper Penitencia Creek	4.0
Berryessa Creek	2.0
Sweigert Creek	1.0
Sierra Creek	3.0
Crosley Creek	2.0
COYOTE CREEK SYSTEM TOTAL	80.5
TOTAL MILES OF CREEKS/RIVERS	143.5

53, 66 through 69, 81, 83 through 85, 96 through 102, 112 through 117, 127 through 130, 140 through 144, and 154 through 171) is intended to provide a general definition of the type and magnitude of riparian corridors and to provide property owners and planners early guidance in making site design decisions. At some locations, additional riparian analysis will be necessary for final design decisions.

Methodology

The riparian habitat along the City's streams and rivers was investigated through aerial photo interpretation (1984 and 1990 photos, 1"=200', supplied by the City), literature review and limited field reconnaissance in 1992. Utilizing a habitat classification system that distinguishes riparian habitat by vegetation type and/or channel condition, the riparian resources information was portrayed on 1"=500' scale parcel-based maps. The habitat classification system is listed below. Utilizing existing information sources (e.g., reports, planning studies, California Natural Diversity Data Base), the locations of significant and sensitive botanical, fishery and wildlife resources were depicted on the project base maps.

Channel and Habitat Classifications:

- Freshwater Marsh
- Salt-Brackish Water Marsh
- Cottonwood-Willow Riparian Forest
- Oak-Sycamore Riparian Forest
- Herbaceous Riparian
- Bare-Ruderal
- Ornamental Landscaping-Urban Forest
- Modified Earthen Channel
- Modified Concrete-Rock Channel
- Modified Channel-Underground Culvert

Habitat Descriptions

The biotic resource attributes of each of the habitat classification types were assessed (Figures 2-11). Attributes include salient features of the stream type, dominant overstory and understory plant composition, prominent wildlife habitat features and fishery resource values. The potential presence of sensitive animal and/or plant species was also assessed. An annotated list of rare, threatened, endangered species and species of special concern with potential to occur within the City's riparian corridors is presented as Appendix B. Representative examples of each riparian habitat type, with the corresponding map notation (1"=500' scale maps), are also noted.

The graphic characterization of each habitat type also portrays typical adjacent land uses (i.e., residential, agricultural, commercial and flood control rights-of-way). Resource management concerns and constraints, such as the lack of flood channel capacity, opportunities for recreational use, and degradation of riparian resources values from invasive, non-native plant species, streambank erosion, and poor water quality are also presented.

ADJACENT LAND USES

Methodology

The presence of existing and/or proposed public and quasi-public lands adjacent to the City's riparian corridors is displayed on the project base maps (1"=500' scale maps). Information was derived from the City General Plan map, dated 1991, and other sources. The presence of existing recreational trails was determined through the review of existing park plans/brochures and limited field reconnaissance; proposed trail routes were derived from the City General Plan map and approved park plans. Information on future flood control activities was obtained from the SCVWD. Proposed trails routes are shown schematically; actual alignment (i.e., which side of creek, exact parcel alignment) is subject to more detailed site analysis and park master plan documents.

Land Uses and Recreational Facilities within and Adjacent to Riparian Corridors

There are several parcels of public and/or quasi-public lands adjacent to the City's riparian corridors. Many are relatively small parcels (5-10 acres) that are city parks or public schools. There are, however, several large public holdings encompassing riparian corridors.

Many parks have existing, or planned multi-use recreational trails (e.g., pedestrian, bicycle and equestrian use) along the riparian corridors. The Scenic Routes and Trails Diagram indicates several creeks designated as Trails and Pathways Corridors (see page 7).

Flood control projects constructed by the SCVWD have allowed for recreational trail use within their flood control rights-of-way through agreements with the City.

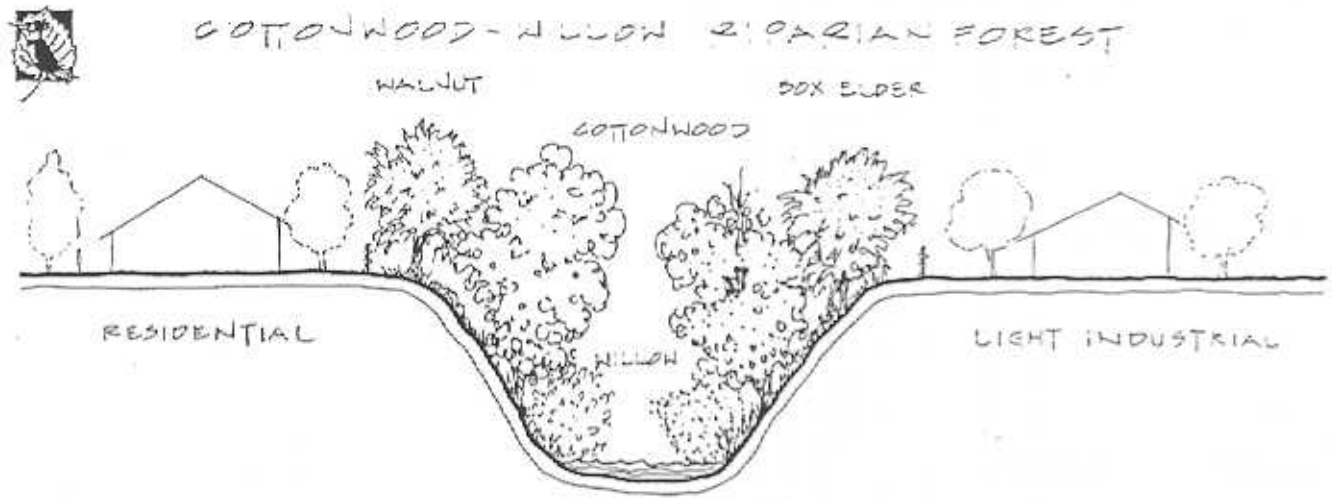
To date, approximately 30 miles of riparian corridor trails exist within the study area; approximately 20% of what is proposed in the City General Plan and other park plans. There is also informal, unauthorized use of SCVWD levees by City residents and visitors for recreational use. Examples include: Guadalupe Creek, upstream of Camden Avenue; Calabazas Creek; and Guadalupe River, downstream of Highway 880.

Table 2. Riparian Corridors with Existing and/or Proposed Trails[1], City of San Jose

Trail Corridor/Park Chain	Total Mileage (General Plan)	Existing Trails	Undeveloped Trails
Bay Trail	5 (wetlands)	less than 0.5	5
Bay Area Ridge Trail[2]	Approx. 40-50	0	Approx. 40-50
Coyote Creek Park Chain	32	14	18
Fisher Creek Trail Corridor	6	0	6
Guadalupe Creek Trail Corridor	7	0	7
Guadalupe Pedway	1.5 (not riparian)	1.5	0
Guadalupe River Trail Corridor	19	1	18
Hetch Hetchy Trail Corridor	1.5 (not riparian)	0.5	1
Los Alamitos/Calero Park Chain	12	5	7
Los Gatos Creek Trail Corridor	3.5	1	2.5
Penitencia Creek Trail Corridor	6	3	3
Saratoga Creek Trail Corridor	2	0	2
Silver Creek Linear Park Chain	8	2	6
Thompson Creek Trail Corridor	7	1	6
Yerba Buena Creek Trail Corridor	1	0	1
Total	**Approx. 150**	**Approx. 28**	**Approx. 122**

[1]Table 2 depicts an approximate breakdown of existing and undeveloped miles of the City's General Plan designated trail corridors and the Bay Area Ridge Trail within the City's Sphere of Influence (as of May 1994).

[2]Does not include interim segments on the Coyote and Penitencia Creeks, majority of trail will be along hillside ridge lines. Significant portions of the trail may not be along riparian corridors.



MANAGEMENT CONCERNS

- Presence of invasive, non-native plant species (e.g., pampas grass, acacia, tree-of-heaven, black locust, giant reed) may have adverse effect on existing riparian vegetation and reduce wildlife value.
- Close proximity of adjacent land uses constrain riparian corridor (e.g., backyard fences, houses, commercial development, gardens, play areas), and may increase presence of domestic and/or feral pets, thus affecting native wildlife.
- Channel may be lacking 100-year flood capacity; potentially subject to future flood control project.
- Periodic flood control maintenance may remove lower bank vegetation, thus reducing fish and wildlife habitat values.
- Private ownership and limited top-of-bank area may preclude or limit opportunities for recreational trails and/or creation of setbacks/buffer. Opportunities for recreational trails may be available along flood control maintenance roads.
- Deposition of household and/or industrial debris (e.g., yard clippings, garbage, other debris) and illegal camping may affect riparian habitat.
- Non-point discharge of urban runoff, household and industrial wastes may affect water quality of stream and aquatic habitat.
- Localized erosion may contribute to sedimentation in streambed and necessitate bank stabilization projects.
- Alteration of riparian habitat and streambed may be subject to California Department of Fish and Game Code 1601/1603.
- Alteration of jurisdictional wetlands (e.g., streambed and adjacent areas) may be subject to Corps of Engineers Section 404 permit.

EXAMPLES

1. Coyote Creek - Montague Expressway to East Julian Street - Maps 50, 51 and 67.
2. Guadalupe River - I-880 to Almaden Expressway - Maps 67, 83 and 99.
3. Los Gatos Creek - West Santa Clara Street to Meridian Avenue - Maps 83, 98 and 99.
4. Upper Penitencia Creek - Mabury Road to King Road - Maps 51 and 67.

Cottonwood-Willow Riparian Forest

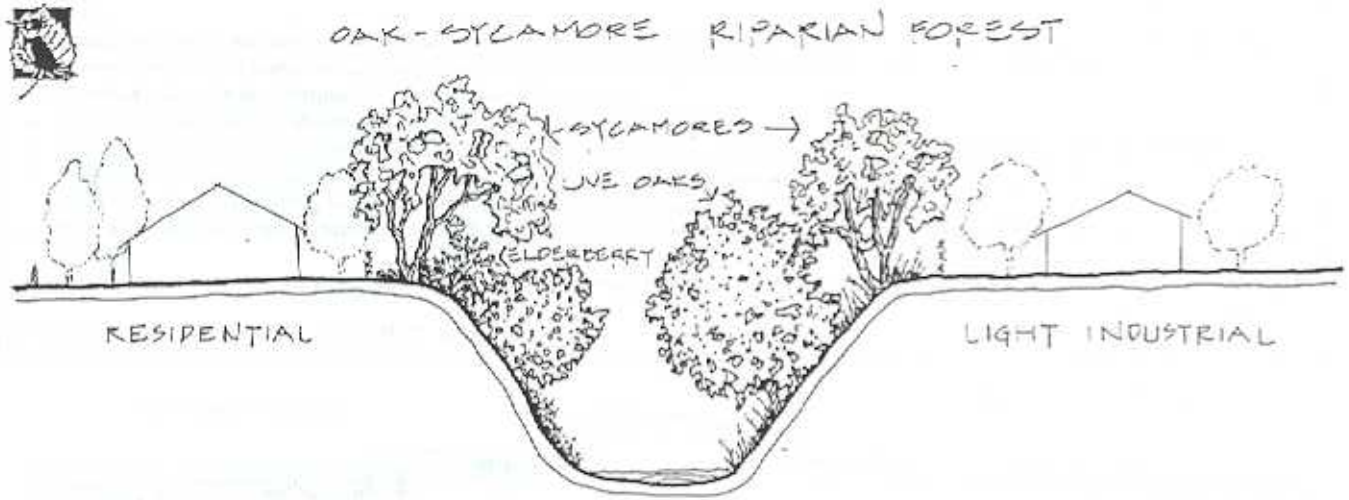
Environmental Features: This community occurs at low elevations along the valley floor, typically where the water table is high and/or there is year-round water flow. Frequent winter flows provide areas of scour and sedimentation within the channel; this dynamic hydrologic regime contributes to the habitat's structural diversity and high wildlife value.

Botanical Resources: Vegetation within this community is predominantly composed of deciduous species. The tall riparian trees and dense understory result in almost full canopy cover. Typical tree species include Fremont cottonwood, several species of willow (arroyo, yellow, red), box elder, black walnut, sycamore, elderberry and coast live oak. Associated trees include big leaf maple, white alder, and valley oak. Shrubs include California blackberry, snowberry, toyon, and California rose.

Wildlife Resources: This habitat type is noted for its very high bird species diversity and abundance. Deciduous trees and shrubs are used by nesting neo-tropical migrants for foraging during migration. Mature trees provide numerous cavities for cavity-dependent wildlife such as woodpeckers. Tall trees are used by nesting raptors; streambanks provide nesting for belted kingfishers.

Fisheries Resources: Vegetation rooted at the water's edge provides escape cover, shade and food for fish. This is especially critical along intermittent streams where remnant summer pools provide refugia for fish. Coyote, Los Gatos and Upper Penitencia creeks, and Guadalupe River are warm-water fish habitat, yet have a potential for salmon and steelhead use.

Sensitive Species: Yellow warbler, Cooper's hawk, sharp-shinned hawk, willow flycatcher, valley oak.



MANAGEMENT CONCERNS

- Presence of invasive, non-native plant species (e.g., pampas grass, acacia, tree-of heaven, black locust, giant reed) may have adverse effect of riparian vegetation and wildlife value.
- Close proximity of adjacent land uses constrain riparian corridor (e.g., backyard fences, houses, commercial development), and may increase presence of domestic and/or feral pets, thus affecting native wildlife.
- Channel may be lacking 100-year flood capacity; potentially subject to future flood control project.
- Private ownership and limited top-of-bank area may preclude or limit opportunities for recreational trails and/or creation of setbacks or buffer zones. Opportunities for recreational trails may be available along flood control maintenance roads.
- Deposition of household and/or industrial debris (e.g., yard clippings, garbage, other debris) may affect riparian habitat.
- Non-point discharge of urban runoff, household and/or industrial wastes may affect water quality of stream and aquatic habitat.
- Localized erosion may contribute to sedimentation in streambed and affect aquatic habitat.
- Alteration of riparian habitat and streambed may be subject to California Department of Fish and Game Code 1601/1603.
- Alteration of jurisdictional wetlands (e.g., streambed and adjacent areas) may be subject to Corps of Engineers Section 404 permit.

EXAMPLES

1. Upper Penitencia Creek - North Jackson Avenue to Dorel Drive - Maps 51 and 52.
2. Alamitos Creek - McKean Road to Bertram Road - Map 155.
3. Upper Silver Creek - Silver Creek Road to Silver Creek Valley Road - Maps 101 and 116.
4. Thompson Creek - Aborn Road to Silver Creek Road - Maps 101, 116 and 117.

Oak-Sycamore Riparian Forest

Environmental Features: The oak-sycamore forest is generally associated with creeks having intermittent flow, such as tributaries to Coyote Creek and Guadalupe River. Where hillside open space adjoins the corridor, the oak-sycamore forest often intergrades with adjacent coast live oak woodland, thus increasing its wildlife habitat value. Oaks and sycamores are tolerant of some flooding, but the flood regime is less frequent than within the cottonwood-willow riparian forest.

Botanical Resources: The vegetation is characterized by an overstory of both evergreen and deciduous tree species, including coast live oak, valley oak, buckeye, and blue oak. Associated species include red willow, elderberry, California bay and black walnut. The understory varies from dense shrubs of California blackberry, coyote brush and California rose, to relatively open areas dominated by grasses and other herbaceous plants. The forest is generally not a closed canopy.

Wildlife Resources: Mature oaks and sycamores provide cavities and snags which are important for cavity-nesting species. Oak trees also produce acorns, an important seasonal food for wildlife.

Fisheries Resources: Vegetation that overhangs the stream channel is an important feature for fish within this classification type. The presence of evergreen trees provides some year-round escape cover and shade. Logs, undercut tree roots, pools and riffles are present where there are resident trout populations in portions of Upper Penitencia Creek, Guadalupe Creek, Alamitos Creek and Calero Creek.

Sensitive Species: Cooper's hawk, sharp-shinned hawk, valley oak.

HERBACEOUS RIPARIAN

MANAGEMENT CONCERNS

- Lack of buffer zone between intermittent stream and agricultural/grazing use may affect water quality and contribute to sedimentation within channel.
- Lack of woody vegetation precludes screening or visual buffer between riparian habitat and adjacent land use activities (e.g., intensive recreational uses, agricultural equipment use, noise, light, inadvertent trampling of vegetation).
- Alteration of riparian habitat and streambed may be subject to California Department of Fish and Game Code 1601/1603.
- Alteration of jurisdictional wetlands (e.g., streambed and adjacent areas) may be subject to Corps of Engineers Section 404 permit.
- Potential presence of endangered species, including Mt. Hamilton thistle.
- Localized erosion may contribute to sedimentation in streambed.
- Chemical and animal waste runoff from agricultural lands may degrade water quality and aquatic habitat in streams.
- Runoff from lawns and golf courses may include pesticide, herbicide and fertilizer chemicals which would degrade water quality and aquatic habitat.

EXAMPLES

1. Silver Creek tributary - Evergreen Canal to Yerba Buena Road - Map 101.
2. Unnamed tributary - Upstream and downstream of Evergreen Canal - Map 116.

Herbaceous Riparian

Environmental Features: This community occurs primarily along intermittent streams in the upper watershed areas of the City's Urban Service Area and Urban Reserves. The vegetation is often a response to long-term land use practices, such as livestock grazing, in which woody vegetation has been continually grazed and/or removed.

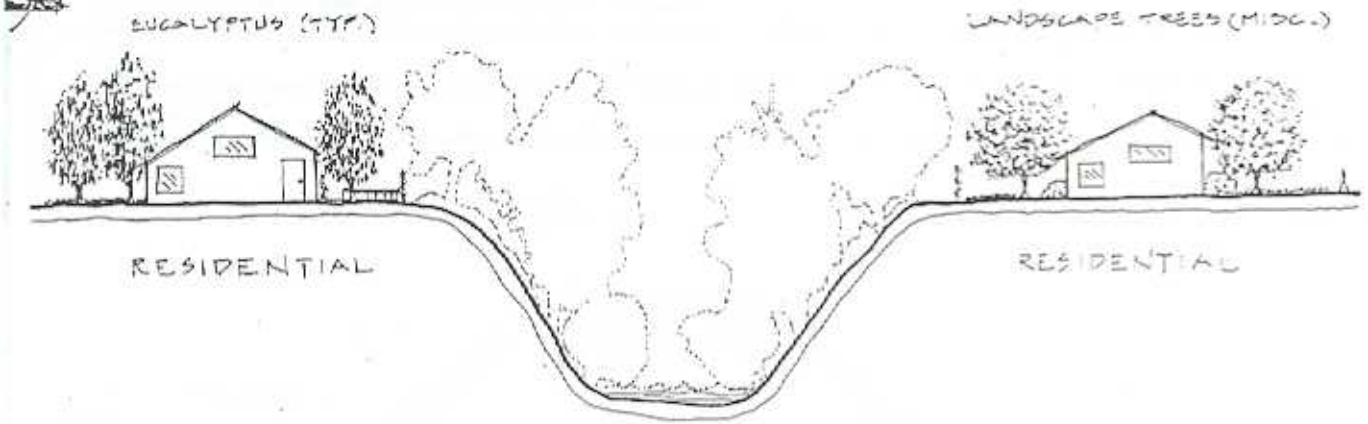
Botanical Resources: The vegetation consists of water-loving herbaceous species that grow within the creek channel. The flora is comprised of native and non-native grasses and herbs, including perennial ryegrass, iris-leaved rush, watercress, wire grass and smartweed.

Wildlife Resources: The herbaceous vegetation provides cover for amphibians and seasonal ponding could provide breeding habitat for amphibians. Ponded areas also provide important water sources for other wildlife and may provide foraging habitat for some waterbirds.

Fisheries Resources: No known fishery habitat.

Sensitive Species: California tiger salamander, California red-legged frog, San Francisco fork-tail damselfly, Mt. Hamilton thistle.

ORNAMENTAL LANDSCAPING / URBAN FOREST



MANAGEMENT CONCERNS

- Mature backyard and street trees may provide important roost and nest sites for wildlife (e.g., raptor nests in Eucalyptus trees) and supplemental food sources (e.g., fruits, nuts, flowers).
- Presence of invasive, non-native plant species (e.g., giant reed, pampas grass, acacia, black locust, tree-of-heaven, young eucalyptus) may spread into adjacent natural riparian areas, adversely affecting habitat and wildlife values.
- Close proximity of urban areas to riparian corridor may increase presence of domestic and/or feral pets resulting in increased predation on native wildlife.
- Non-point source discharge of urban runoff, household and/or industrial wastes may affect water quality of stream and aquatic habitat.
- Groundcover is important to control erosion.

EXAMPLES

1. Upper Penitencia Creek - Linda Vista Street to Toyon Avenue - Map 52.
2. Guadalupe River - Airport Parkway to I-880 - Map 67.

Ornamental Landscaping-Urban Forest

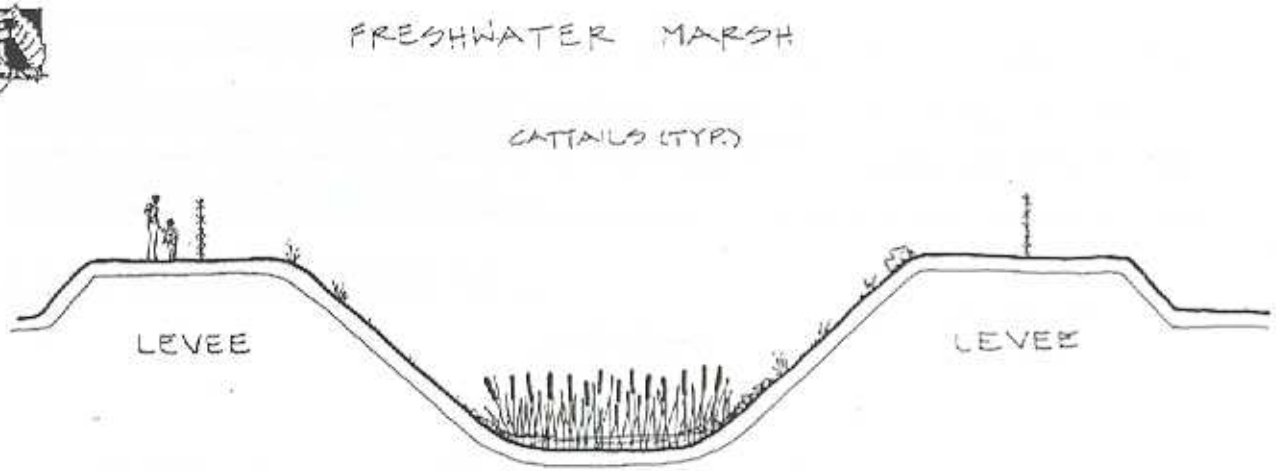
Environmental Features: Ornamental landscaping refers to non-native plants that were intentionally planted or have naturalized within and/or immediately adjacent to the riparian corridor. From a biotic resource viewpoint, they are functioning as a part of the riparian system. Depending upon the species, they can be a detriment to biotic resource values (e.g., invasive, non-native plants that vigorously compete with native species) or can be beneficial (e.g., trees or plants that provide fruits and flowers attractive to riparian-associated wildlife). Most non-native landscaping, however, does not provide significant value to riparian-associated wildlife compared to native plants.

Botanical Resources: The vegetation is typically non-native, including eucalyptus, redwood, myoporum, elm, black locust, tree-of-heaven, and California pepper. Remnant fruit and nut trees, such as almond and English walnut, are also common.

Wildlife Resources: Large eucalyptus trees provide nesting and roosting habitat for hawks and owls and important late-winter foraging habitat for landbirds (when trees are flowering). Fruiting trees (e.g., plums, pepper trees) produce seasonal food. Flowering trees and shrubs are used by hummingbirds; small trees and shrubs provide nesting sites for birds of suburban and urban habitats. There is limited use of this habitat by riparian-associated wildlife. Squirrels will utilize nuts from remnant orchard trees.

Fisheries Resources: Where ornamental landscaping plants grow close to the water and may provide fish with escape cover and shade, these plants would be valuable.

Sensitive Species: None.



MANAGEMENT CONCERNS

- Periodic flood control channel maintenance may impact/remove marsh habitat (e.g., herbicide application and/or manual removal of vegetation).
- Deposition of household and/or industrial debris (e.g., yard clippings, garbage, other debris) may affect quality and distribution of riparian habitat.
- Non-point discharge of urban runoff, household and/or industrial wastes may affect water quality of stream and aquatic habitat.
- Opportunities for recreational trails may be available along levees.
- Alteration of streambed may be subject to California Department of Fish and Game Code 1601/1603.
- Alteration of jurisdictional wetlands (e.g., streambed and adjacent areas) may be subject to Corps of Engineers Section 404 permit.
- Presence of invasive, non-native plant species (e.g., hoary cress, giant reed, pampas grass) may have adverse effect on marsh habitat and wildlife values.

EXAMPLES

1. Guadalupe River - Highway 237 to Montague Expressway - Maps 34, 35 and 50.
2. Guadalupe River - Blossom Hill Road to Branham Avenue - Map 128.

Freshwater Marsh

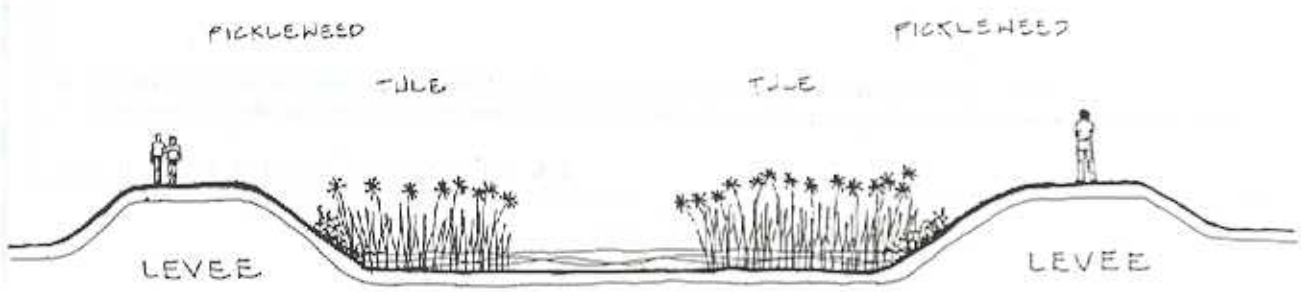
Environmental Features: Freshwater marsh generally occurs along creeks in the valley floor, often as understory component of the cottonwood-willow riparian forest. Freshwater marsh is also common in the bottom of modified channels where natural hydrology has been modified by the widened channel or the water is artificially controlled by downstream seasonal dams and weirs. This plant community occurs in most of the creeks in the study area although the extent of the community fluctuates in relation to water availability and intensity of winter flooding.

Botanical Resources: The vegetation consists of emergent herbs and hydrophytic (water-loving) herbs and grasses. Typical species include cattail, California tule, umbrella sedge, burreed, smartweed, and creeping primrose.

Wildlife Resources: This community provides foraging habitat for herons, ducks, grebes and shorebirds. Nesting waterbirds occur in large areas of freshwater marsh vegetation. The dense vegetation provides breeding sites and cover for pond turtles, frogs and newts.

Fisheries Resources: The marsh vegetation provides some cover and shade for fish within the channel. Areas of large expanses of freshwater marsh (e.g., lower Guadalupe River), support warm-water fisheries; the lack of woody overstory along these streams results in warm summer water temperatures that preclude resident trout.

Sensitive Species: California tiger salamander, California red-legged frog, foothill yellow-legged frog, southwestern pond turtle, San Francisco forktail damselfly, Ricksecker's water scavenger beetle.



MANAGEMENT CONCERNS

- Periodic flood control channel maintenance by SCVWD may impact/remove marsh habitat (e.g., herbicide application and/or manual removal of vegetation).
- Deposition of household and/or industrial debris (e.g., yard clippings, garbage, other debris) may affect quality and distribution of riparian habitat.
- Non-point discharge of urban runoff, household and/or industrial wastes may affect water quality of stream and aquatic habitat.
- Opportunities for recreational trails may be available along levees.
- Alteration of streambed may be subject to California Department of Fish and Game Code 1601/1603.
- Alteration of jurisdictional wetlands (e.g., streambed and adjacent areas) may be subject to Corps of Engineers Section 404 permit.
- Potential presence of endangered species, including salt marsh harvest mouse, salt marsh yellowthroat, California clapper rail, salt marsh bird's beak.
- Presence of invasive, non-native plant species (e.g., hoary cress, pampas grass) may have adverse effect on marsh habitat and wildlife values.

EXAMPLES

1. Guadalupe River - Alviso Slough to Highway 237 - Maps 3, 18, 19 and 34.
2. Coyote Creek - Baylands to Dixon Landing Road - Maps 3, 4 and 5.

Salt-Brackish Water Marsh

Environmental Features: Occurring along the baylands and in creeks subject to tidal influence, this community is adapted to prolonged inundation. The habitat features (e.g., the presence of exposed mudflats and the stratification of plant species) can vary in relation to the duration of inundation and salinity of the water. Many of the creeks associated with this community have been modified for flood control protection.

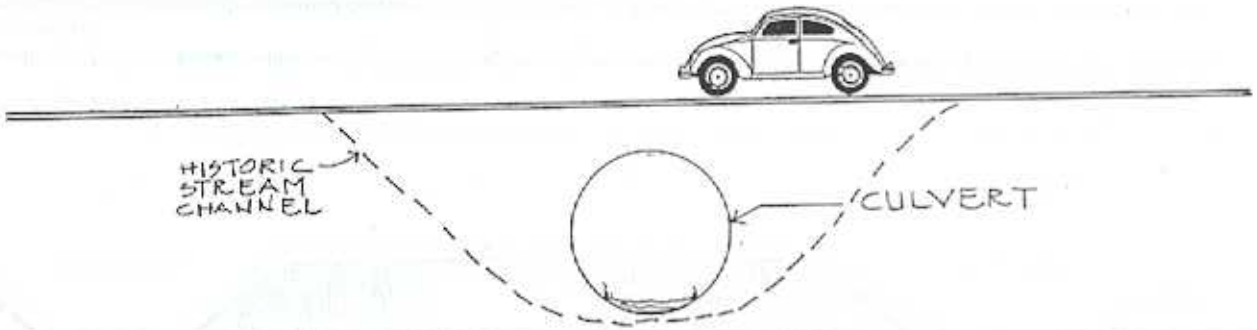
Botanical Resources: The vegetation is composed of emergent plant species adapted to salt water intrusion and periodic inundation. Typical plant species include pickleweed, alkali bulrush, California tule, jaumea and saltgrass.

Wildlife Resources: This habitat is used for foraging and roosting by shorebirds during migration and winter and limited nesting by American avocet and black-necked stilt. The vegetation provides cover for several species of landbirds and rodents, even at high tide.

Fisheries Resources: The marsh vegetation provides some cover and shade for fish within the channel. Most of the areas supporting salt/brackish water marsh (e.g., lower Guadalupe River and lower Coyote Creek), support both warm-water and estuarine fisheries which often move upstream and downstream depending upon tidal activity.

Sensitive Species: Salt marsh harvest mouse, salt marsh yellowthroat, California clapper rail, northern harrier, marsh gum plant and Pt. Reyes bird's-beak.

MODIFIED CHANNEL - CULVERT



MANAGEMENT CONCERNS

- Non-point discharge of urban runoff, household and/or industrial wastes may affect water quality of stream and aquatic habitat.
- Culvert may block movement of fish, amphibians, and some wildlife to other portions of the river system.

EXAMPLES

1. North Babb Creek at White Road. and Dale Drive.
2. San Tomas Aquino Creek at Stevens Creek Blvd. and Williams Road.

Modified Channel - Underground Culvert

Environmental Features: Streams that have been placed underground into culverts, or similar structures, have been given this classification code. The riparian values of the stream have been eliminated, although they do function as a conduit for water flow to less-disturbed and/or natural riparian areas downstream. Streams that have been replaced by culverts create gaps in the linear continuity of the riparian corridor and may act as barriers to wildlife movement (e.g., fish, some birds, reptiles, amphibians, and some mammals).

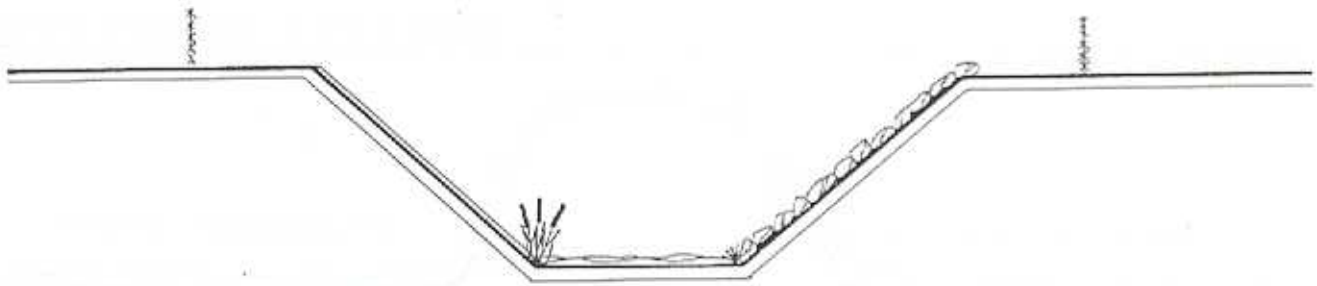
Botanical Resources: The vegetation is limited to pockets of aquatic plants growing at the end of the culvert, such as watercress, sedges and rushes.

Wildlife Resources: Limited wildlife value; potential nesting habitat for swallows and black phoebe at entrance/exit of culvert with natural stream.

Fisheries Resources: A stream channel placed into an underground culvert precludes its use to fish. Culverts present a barrier and can block fish movement up and/or down in a stream system, both for resident populations and migrating steelhead or salmon.

Sensitive Species: None

MODIFIED CONCRETE / ROCK CHANNEL



MANAGEMENT CONCERNS

- Lack of native riparian vegetation limits use of area by riparian-dependent wildlife. Lack of vegetation at toe of channel reduces value of stream for aquatic resources (e.g., aquatic invertebrates, fish, amphibians).
- Opportunities are available for riparian restoration, where consistent with flood control constraints.
- Lack of woody vegetation near adjacent land uses precludes screening or visual buffer between stream and adjacent land use activities.
- Presence of invasive, non-native plant species (e.g., giant reed, pampas grass) may spread into adjacent natural riparian areas, adversely effecting habitat and wildlife values.
- Opportunities for recreational trails may be available along levees.
- Alteration of jurisdictional wetlands (e.g., streambed and adjacent areas) may be subject to Corps of Engineers Section 404 permit.
- Deposition of household and/or industrial debris (e.g., yard clippings, garbage, other debris) may affect quality and distribution of riparian habitat.
- Non-point discharge of urban runoff, household and/or industrial wastes may affect water quality of stream and aquatic habitat.

EXAMPLES

1. Greystone Creek - Trinidad Drive to Almaden Road - Map 141.
2. Berryessa Creek - Morrill Avenue to Montague Expressway - Map 36.

Environmental Features: A modified concrete or rock-lined channel is a channel that has been manipulated by man, usually for flood control or erosion control purposes. To meet hydraulic design capacity, and provide flood protection, the channels are maintained by the SCVWD and native riparian vegetation is sparse; woody vegetation is periodically removed. The hydraulics of the channel may be altered from historical patterns (e.g., a widened channel bottom) and/or artificially managed. In some areas, the channel bed and lower slopes have been modified, yet the riparian forest community has been retained along the upper banks.

Botanical Resources: Generally, this channel type is devoid of vegetation; however, occasional riparian trees may occur along the top of bank or scattered at the water's edge. Some channels contain freshwater marsh vegetation where sediments have deposited on the concrete bottom.

Wildlife Resources: Concrete and rock-lined channels provide limited wildlife value, particularly for riparian-associated species. Rip-rap may provide cover and den sites for rodents and reptiles. Friable soils are absent, thus limiting use by burrowing animals.

Fisheries Resources: The concrete or rock-lined channel precludes the establishment of vegetation and, as such, limits its value to fisheries. These areas may be used during winter by migrating steelhead or salmon (e.g., portions of Los Gatos Creek, and Coyote Creek).

Sensitive Species: None

BARE / RUDERAL

MANAGEMENT CONCERNS

- Lack of native riparian vegetation limits use of area by riparian-dependent wildlife. Lack of vegetation at toe of channel reduces value of stream for aquatic resources (e.g., aquatic invertebrates, fish, amphibians).
- Opportunities are available for riparian restoration, where consistent with flood control constraints (i.e., maintaining hydraulic channel capacity). Opportunities for recreational trails may be available along banks.
- Lack of woody vegetation near adjacent land uses precludes screening or visual buffer between stream and adjacent land use activities (e.g., intensive recreational uses, agricultural equipment use, noise, light).
- Presence of invasive, non-native plant species (e.g., giant reed, pampas grass, acacia, black locust, tree-of-heaven) that may be scattered through the ruderal areas may spread into adjacent natural riparian areas, adversely affecting riparian habitat.
- Deposition of household and/or industrial debris (e.g., yard clippings, garbage, other debris) may affect quality and distribution of riparian habitat.
- Non-point discharge of urban runoff, household and/or industrial wastes may affect water quality of stream and aquatic habitat.

EXAMPLES

1. Sierra Creek - Sierra Road to Skyview Drive - Map 37.
2. Fowler Creek - Littleworth Way to Amos Way - Map 101.

Environmental Features: Streambanks that are bare or inhabited with ruderal vegetation (e.g., herbaceous weeds) are indicative of areas that have been disturbed and the native vegetation has been removed. Ruderal areas can be small disturbed areas within a forested corridor or banks of modified earthen channels. These areas are often dominated by non-native plants, including several invasive species of management concern.

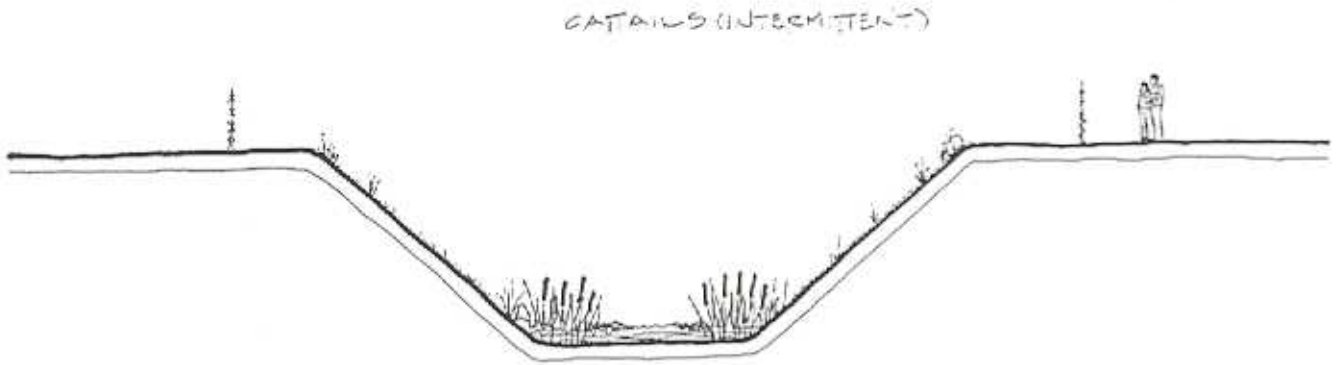
Botanical Resources: The vegetation can vary from open grassy slopes to a mixture of herbaceous plants and scattered shrubs. Typical species include yellow sweet clover, yellow star thistle, wild oat, poison hemlock, fennel and an occasional shrub of coyote brush. In some locations, remnant riparian trees, such as Fremont cottonwood, are present.

Wildlife Resources: The wildlife species occurring in this habitat are typical of urban environments. This habitat possesses little value to riparian-dependent wildlife, especially birds. Ruderal forbs and seed-producing plants can provide foraging habitat for seed-eating birds and rodents, such as white-crowned sparrow, lesser goldfinch, mourning dove, pocket gopher, western harvest mouse and house mouse. The dense vegetation and the abundance of prey also provide habitat for reptiles such as western fence lizard, southern alligator lizard and western terrestrial garter snake.

Fisheries Resources: The limited amount of vegetation results in warm water conditions that may be acceptable to a variety of warm-water fish. Depending upon stream conditions, such as pools, riffles, and submerged logs and trees limbs, the stream may provide good habitat for such fish.

Sensitive Species: Salmon and steelhead during winter.

MODIFIED EARTHEN CHANNEL



MANAGEMENT CONCERNS

- Lack of native riparian vegetation limits use of area by riparian-dependent wildlife. Lack of vegetation at toe of channel reduces value of stream for aquatic resources (e.g., aquatic invertebrates, fish, amphibians).
- Opportunities are available for riparian restoration, where consistent with flood control constraints.
- Lack of woody vegetation between stream and adjacent land uses precludes screening or visual buffer from adjacent land use activities (e.g., recreational uses, agricultural equipment use, noise, night lighting).
- Presence of invasive, non-native plant species (e.g., giant reed, pampas grass, acacia, black locust, tree-of-heaven) may spread into adjacent natural riparian areas, adversely effecting habitat and wildlife values.
- Opportunities for recreational trails, as well as other recreational facilities, may be available along levees.
- Deposition of household and/or industrial debris (e.g., yard clippings, garbage, other debris) may affect quality and distribution of riparian habitat.
- Non-point discharge of urban runoff, household and/or industrial wastes may affect water quality of stream and aquatic habitat.

EXAMPLES

1. Fisher Creek - Santa Teresa Boulevard to Bailey Road - Maps 144 and 157.
2. Randol Creek - Scarsdale Place to Rajkovich Way - Maps 142 and 155.
3. Ross Creek - Almaden Expressway to Los Gatos-Almaden Road - Maps 114, 127 and 128.
4. Canoas Creek - Nightingale Drive to Cottle Road - Maps 114, 115, 129 and 130.

Environmental Features: A modified earthen channel is a channel that has been manipulated by man, usually for flood control purposes. To meet hydraulic design capacity, and provide flood protection, the channels are usually periodically maintained and native riparian vegetation is sparse. In some instances, freshwater marsh and some woody growth is retained. The hydraulics of the channel may be altered from historical patterns (e.g., the formation of a widened channel bottom) and/or artificially managed. In some areas, the channel bed and lower slopes have been modified, yet the riparian forest community has been retained along the upper banks.

Botanical Resources: This channel type supports freshwater marsh and/or ruderal vegetation. Remnant riparian forest trees may also occur on the banks. Typical species include cattail, smartweed, sweet clover and willow.

Wildlife Resources: The modified channel typically has limited wildlife value, particularly riparian-associated species. The compacted slopes are inhospitable for burrowing wildlife; however, where friable soil exists, species such as the ground squirrel and burrowing owl may exist. Ground squirrels provide prey for hawks and burrows for the owls.

Fisheries Resources: If marsh vegetation is present, the channel may provide some cover and shade for fish. The lack of woody overstory along these streams results in warm summer water temperatures that preclude resident trout. Depending upon stream conditions, such as pools, riffles, and submerged logs and trees limbs, the stream may provide some habitat for warmwater fish.

Sensitive Species: Burrowing owl.

CHAPTER 3. RIPARIAN CORRIDOR DEVELOPMENT GUIDELINES

BACKGROUND

Different types of urban activity have different effects on vegetation and wildlife in the riparian corridor. In addition, since urban creeks provide an important water quality and flood control function, encroachment of urban development may have adverse effects on public safety. Generally, the intensity, proximity, and duration of human activity adjacent to the riparian corridor determines how vegetation and wildlife, and creek hydrology and water quality, will be affected.

For many populations of wildlife, riparian vegetation is a very important habitat type. Since riparian zones are primarily linear, they provide a high edge-to-area ratio and, as such, maximize the interface between riparian vegetation and adjacent habitat. Adjacent habitat can include upland grasslands, oak woodlands, agricultural lands, well-vegetated residential backyards, as well as the aquatic environment of flowing water. This "edge effect" tends to yield both a higher density and diversity of wildlife species than many other habitat types. Undeveloped areas adjacent to riparian habitat also provide supplemental foraging resources and are important corridors for wildlife moving to and from the stream. For relatively arid areas, such as the central coast of California, access to water sources is critical to wildlife populations.

An example of the negative effects of urban encroachment along riparian corridors is exemplified by the activities of the brown headed cowbird. The cowbird is a non-native bird that frequents developed urban areas. When urban development is adjacent to a riparian corridor, the cowbird often invades the outer edges of the corridor and parasitizes the nests of native songbirds. When corridors are narrow, cowbird activity can permeate the entire corridor width. The extent of this parasitism is expanding such that biologists fear many songbird species may be subject to endangerment in the near future. If this occurs, activities affecting these songbirds and their associated riparian habitat may be subject to regulatory authority under the Endangered Species Act.

GOALS OF THE DESIGN GUIDELINES

These riparian corridor development guidelines are intended to help protect riparian habitat and minimize impacts to riparian resources. Riparian resources include, but are not limited to, open space, wildlife habitat, cultural resources, water quality, urban forest resources, and recreational opportunities. These guidelines are not designed to specifically address issues related to wetlands and endangered species preservation or to public street bridges. The presence of wetlands or one or more endangered species may require mitigation measures different than any treatment identified in this document. Bridges designed to provide crossings of public streets and roads possess their own set of issues and regulations which are not incorporated into this document. These guidelines are designed to:

- Provide a framework for protecting valuable riparian resources without unreasonably limiting the economic and recreational use of adjacent lands.
- Provide the City of San Jose with a tool to evaluate proposed development within and adjacent to riparian corridors.
- Serve as design guidelines for use by planners, engineers, architects, landscape architects, property owners and public agencies in preparing development plans.
- Provide guidance to City Planning, Public Works and other City department staffs when reviewing proposed development projects within or adjacent to riparian corridors.

- Coordinate uses of the corridor relating to recreational facilities and storm water drainage.
- Minimize damage to riparian resources from all sources of pollution including non-point source pollutants.

APPLICABILITY OF DESIGN GUIDELINES

Diverse land uses may result in different impacts when located adjacent to or within riparian corridors. Guidelines have been developed for the following broad categories of land uses.

- existing urban infill areas
- new residential development
- new industrial development
- new commercial/institutional/professional development
- streets and roads
- recreation facilities
- agricultural and horticultural activities
- flood control activities

Riparian habitat types found within the City of San Jose have different levels of environmental sensitivity to various levels of development impacts. Guidelines have been developed for the following riparian habitat types in both natural and modified channels.

- oak-sycamore riparian forest
- cottonwood-willow riparian forest
- grassland-ruderal
- freshwater marsh and salt-brackish marsh
- ornamental landscaping-urban forest
- herbaceous riparian

These guidelines generally do not apply to bare modified earthen channels, modified concrete-rock channels, or modified channels-underground culverts when these channels contain little or nothing of riparian value. These guidelines do apply, however, to modified earthen channels where they are not so constrained and confined by existing long term development that there is little or no potential for the establishment of effective, continuous riparian corridors along them.

Should a riparian restoration project be planned or implemented, these guidelines should be observed consistent with the level of protection required by the restored riparian area.

These development guidelines are intended for application to development proposed adjacent to those riparian corridors identified in Figure 1 on page 5 and Table 1 on page 14.

The following guidelines are intended to be interpreted consistent with all other goals, objectives, policies and standards of the City of San Jose. In cases where adopted detailed area plans or landscape master plans have established the nexus for setbacks and/or buffers that differ from these guidelines, the provisions of the applicable detailed plan shall prevail.

1. SITE DESIGN

Background: Riparian corridors provide a community with valuable visual/aesthetic resources, flood control functions, water quality protection, recreational resources, and unique opportunities to promote environmental education and to preserve natural habitat for native fish and wildlife. Historically, development adjacent to the City's riparian corridors has often ignored these values and provided limited protection of biotic resources and little opportunity for appreciation of riparian areas. In more recent years, however, care has been taken to incorporate the visual, aesthetic and natural resource qualities of riparian corridors into projects and/or to preserve them for the enjoyment of the community. This has been achieved through: alternative street designs for residential and commercial development that fronts rivers and creeks; the preservation of riparian corridors through park land acquisition (e.g., Coyote Creek Park Chain); riparian preservation through dedication for flood control purposes; and other approaches which avoid direct or indirect damage to riparian resources.

Adverse impacts to urban creeks and their associated vegetation and wildlife vary with the type of human activities found within and adjacent to the riparian corridor. Some land use activities, such as passive recreation, are more or less compatible with protection of the riparian corridor. By establishing guidelines for sensitive site-planning of new urban development adjacent to the riparian corridor, the integrity of this resource will be protected.

Guideline 1A: Orientation

In all new urban development areas, residences and other occupiable buildings, public use areas, and street patterns should be oriented to provide views of the corridor for visibility, for habitat protection and for public safety (Figure 12). Street ends and roadway segments should be maintained open to the corridor for public viewing, access and visibility for safety and protection of the corridor environment.

Frontage roads are the preferred interface between new development and riparian corridors; buildings and structures should not back up to riparian corridors. If it is infeasible to avoid a back up relationship for single-family or two- family residential development, lots as well as buildings and structures should be set back from the corridor consistent with Guideline 1C.

Site activities should be oriented to draw activity away from the riparian corridor, for example, entrances, loading and delivery areas, noise generating activities and equipment, and activities requiring night lighting should be oriented toward non-riparian property edges. In particular, sites should be designed so that the portions of parking lots with minimum setbacks from the riparian edge are the least in demand, e.g., furthest from entrances. If these portions of the parking lots are not in demand for nighttime use, for example, lighting can be avoided in proximity to the corridor.

Circulation and maneuvering areas serving loading docks and other similar major activity areas should be oriented away from the riparian setback area or should be separated from the setback area by a minimum 7 foot high fence and a buffer area thickly planted with native specifies appropriate to the nearest riparian habitat type.

Guideline 1B: Incompatible Land Uses

Incompatible operations and activities are discouraged within and adjacent to riparian setback areas to protect the health of existing vegetation and wildlife, reduce adverse cumulative impacts to water quality, and protect the quality of recreation uses in the corridor. Incompatible land uses include the following: land uses which typically generate littering and/or dumping; off-road vehicle use; removal of native vegetation; and those uses that create noxious odors, or use, store or create toxic materials (including fertilizers, herbicides and pesticides), or generate high volumes of vehicular traffic.

Adverse impacts associated with public services and utility facilities should be avoided by ensuring that new maintenance roads are located outside the riparian corridor. Any subsurface disturbance, including for grading activities and underground utility lines, should be located to minimize damage to root systems of healthy riparian trees. A field check for special conditions may be required.

Utility equipment, sub-stations, pumps and similar facilities should be screened from any riparian corridor trail or recreational, educational, or interpretive facility within the riparian corridor.

Maintenance roads should be incorporated along existing levees wherever possible combining maintenance for flood control with maintenance for utilities and/or park management. Wherever possible, underground utilities should occur in disturbed areas including levees constructed for flood control.

Guideline 1C: Setback Areas

Background: Development adjacent to riparian habitats generally should be set back 100 feet from the outside edge of the riparian habitat (or top of bank, whichever is greater) to reduce anticipated impacts to riparian biotic communities and hydrologic regimes. ***The "riparian edge" is the outer boundary of existing riparian vegetation; for trees the dripline is the outer boundary.***

Riparian habitat values can be reduced when buildings, impervious surfaces and ornamental landscape areas are located directly adjacent to the corridor. Impacts may include: loss of groundwater recharge, reduced stormwater detention and filtration, disturbance to wildlife breeding and/or foraging from excessive noise and/or night lighting, loss of edge habitat that reduces value of the corridor for many wildlife species and the introduction of non-native plant and animal species that reduce riparian habitat quality.

The establishment of an appropriate riparian setback area between the corridor and urban development can prevent these impacts and preserve the continuity of the City's riparian environments. Setback areas, or buffer zones, also provide visual transition from developed areas to stream corridors; they allow trails and other recreational uses to occur outside high impact stream channel and riparian zones; and they can protect cultural resource sites which often occur adjacent to stream corridors.

The following setback guidelines are intended to provide basic site design guidance for new development adjacent to a riparian corridor. Setback distances for individual sites may vary if consultation with the City and a qualified biologist, or other appropriate means, indicates that a smaller or larger setback is more appropriate for consistency with riparian preservation objectives.

Specific setbacks may also vary depending upon site-specific agency requirements, such as the SCVWD standard easement/dedication requirements for flood control purposes or the U.S. Army Corps of Engineer's application of the Clean Water Act and protection of wetlands. The setbacks described in Guideline 1C and listed in Table 3 are generally minimums; greater protection may be needed depending upon site-specific analysis of habitat conditions and the proposed development.

Riparian Setback Area: The riparian setback area is intended to protect riparian habitat values from direct and indirect human - induced impacts. The setback area should be sufficient to preserve/create the "edge effect" attribute of the habitat, buffer the impacts of adjacent human activities, and provide avenues for wildlife dispersal. General guidelines for minimum setback depths depending upon the proposed land use, are discussed below and listed in Table 3. Where the exact edge of the riparian corridor is not evident and/or the nature or condition of the habitat is not clear to public agency and private planners, architects, engineers, etc., a qualified biologist should be consulted to establish the location of the riparian edge and/or to advise on a more appropriate setback treatment. For private development projects, the developer should be responsible for costs associated with the work of the biologist.

Riparian Setback Dimensions. All buildings, other structures (with the exception of bridges and minor interpretative node structures), impervious surfaces, outdoor activity areas (except for passive or intermittent activities) and ornamental landscaped areas should be separated a minimum of **100 feet** from the edge of the riparian corridor (or top of bank, whichever is greater).

Setback Exceptions: Exceptions to the 100 foot setback may be considered in some limited circumstances as long as basic riparian habitat protection objectives are achieved. Circumstances which may warrant consideration of setbacks less than 100 feet include:

- Locations in or near Downtown San Jose.
- Urban infill locations where most properties are already developed and parcels are generally small (one acre or less).
- Sites adjacent to small lower order tributaries whose riparian influence does not extend to 100 feet.
- Sites with unusual geometric characteristics and/or disproportionately long riparian frontages.
- Pre-existing one or two family lots, or usable yard areas, but only where a frontage road is infeasible and the building setbacks are consistent with all riparian setback requirements.
- Sites which are being redeveloped with uses that are similar to the existing use or are more compatible with the riparian corridor than the existing use and the intensity of the new development will have significantly less impact on the corridor than the existing development. "Impact" should be measured by relative compatibility of use as well as setback, height, site coverage, mass, activity, noise, etc.
- Instances where implementation of the project includes measures which can protect and enhance the riparian value of the corridor more than could a 100-foot setback.
- Recreation facilities deemed to be a critical need and for which alternative site locations are limited.
- Utility or equipment installations, or replacement of existing ones, which involve no significant disturbance to the riparian corridor during construction and operation, and generate only incidental human activity.

If one or more of the above circumstances is present, a reduced setback may be considered if:

- There is no reasonable alternative which avoids or reduces the encroachment into the setback area.
- The reduced setback will not significantly reduce or adversely impact the riparian corridor.
- Uses are not fundamentally incompatible with riparian habitats (see Section IB in Compatible Land Uses.)
- There is no evidence of stream bank erosion or previous attempts to stabilize the stream banks which could be negatively affected by the proposed development.
- The granting of the exception will not be detrimental or injurious to adjacent and/or downstream properties.
- A qualified biologist, stream hydrologist and/or other appropriate professional has confirmed in writing the above conditions as well as a program to achieve the objectives below.

Habitat Protection Objectives: Building, paving and activity setbacks, including reduced setbacks, should in all cases be sufficient to avoid property damage from floods and flood-related erosion and be sufficient to protect habitat values and water quality as follows:

- Habitat Value: In a stream environment, the shade canopy provided by the trees and bushes is one of the most critical elements of riparian quality. No infringement should be allowed on such habitat.

  - New development or activities will not interrupt or threaten the continuity of the riparian habitat and will not preclude restoration of vegetation along a creek channel where upstream and downstream habitats are of good quality.
  - The setbacks are sufficient to protect sensitive species and their habitat from the impacts of human and urban activity. (noise, lights and human traffic).
  - Any encroachment will not significantly reduce the amount of moisture streamside vegetation

receives from natural drainage which percolates down from the uplands. On lands adjacent to streams, the vegetation needs rainfall runoff along the banks in order to maintain moist conditions.

- The ground and vegetation within the riparian corridor remain undisturbed unless disturbance is necessary for resource protection or enhancement purposes or to accommodate a crossing consistent with these guidelines.

- Protection from Erosion and Stream Meander: private property adjacent to or downstream from an eroding and meandering stream channel should be protected from damage due to erosion and sedimentation.

  - Buildings and impermeable surfaces should not be constructed where they may be affected by increased flood flows or shifting channels.
  - Buildings and impermeable surfaces should not be constructed where they may increase the rate and amount of storm water runoff, erosion and sedimentation. Therefore, it is particularly important that construction of buildings and impermeable surfaces should not occur in areas which exceed 15% slope and are within 100 feet of a riparian edge.

- Water quality: Water quality and groundwater recharge should be protected by incorporating conditions which promote:

  - Prevention and control of erosion and sedimentation.
  - Preservation of natural drainage systems.
  - Protection of wetlands.
  - Avoidance of impermeable surfaces on areas mapped by the SCVWD as recharge areas.
  - Control of site runoff to avoid drainage of toxic or other incompatible substances into the stream and to minimize potential erosion.

Mitigations and Conditions: Projects with setbacks less than 100 feet should be conditioned to any measures necessary to ensure compliance with the purpose of these guidelines:

- Minimum reduced setbacks should be no less than 50 feet or, in urban infill areas, no less than 30 feet or no less than the average of existing setbacks on adjacent properties, whichever is greater.
- Minimum reduced setbacks for those limited redevelopment sites described under the Setback Exceptions section above should represent some significant improvement over the existing setback conditions and should never be less than 30 feet.
- Reduced setbacks for pre-existing one or two family lots should be measured from property lines, or if necessary, from fencing that separates the usable yard from the setback area which should remain unused and undisturbed except for the addition of riparian plantings.
- Surface treatment to prevent erosion or slope instabilities where indicated.
- Installation and maintenance of drainage and retention facilities on site if necessary.
- Seeding or planting of bare soil
- Site plan designed to draw activity away from the riparian corridor, e.g., entrances, loading and delivery areas, noise generating activities and equipment, and activities requiring night lighting should be located on the far side of buildings, and as far as possible, from the riparian edge.
- Any other measure reasonably necessary to achieve riparian protection.

Streets and Roads. Streets and roads should maintain a 100-foot separation from the

edge of the riparian habitat or top of bank whichever is greater.

If it is infeasible to maintain the alignment of the road at the required minimum setback at all points, then any reduced setback areas should be compensated by equivalent larger setbacks at other points. At no point, should a street right-of-way be separated from the riparian habitat or top of bank by less than 75 feet. Smaller setbacks should not be approved adjacent to high quality riparian corridors.

Streetlights should be installed only on the street side opposite a riparian corridor. If lighting on the corridor side is necessary, lights should be shaded to avoid direct lighting of the corridor.

The setback area (between curb or sidewalk and riparian corridor) should be planted with native plant species. If a trail is designated along the corridor, the sidewalk and trail functions should be combined in one facility. Sidewalks should generally be omitted if not absolutely necessary.

Flood Control Maintenance Roads. Maintenance roads required by the SCVWD for maintenance of flood control facilities should be located outside the riparian corridor but need not be setback from it.

Landscaping in Setback Areas. Riparian setback areas should be planted with native trees, shrubs and groundcovers and/or plants compatible with the particular adjacent riparian corridor classification. If the area within the riparian corridor has been graded or otherwise disturbed, it should be revegetated with native trees, shrubs, and/or herbaceous plants. Refer to Guidelines 3A and 6A and Appendices B and D for revegetation guidelines.

Structures under 3 feet in height (e.g., benches and similar structures) may be permitted within the setback area.

Fencing. If any part of a setback or adjacent area is to be the location of private outdoor activity (rear yards, recreation, parking, outdoor dining, private pedestrian paths, etc.) a minimum 3 foot high open work fence should be installed along the activity (preferable) or habitat edge. In the rare instance when single family rear yards back on to a habitat area, the property line fence may be solid.

If loading dock areas (dock and maneuvering area) or outdoor storage areas cannot be oriented away from the riparian corridors, such use areas should be screened from the riparian corridor by 7 foot high solid or semi-solid fencing plus a vegetation buffer.

Parking, Equipment Storage and Loading Areas - Commercial and Residential. Parking, equipment storage and loading areas should be screened by a 25-foot-wide native vegetation buffer (within the setback area) that contains plants of heights, density, and foliage characteristics to visually screen parking, equipment storage and loading areas from the corridor. Equipment storage and loading should be additionally screened by solid or semi-solid fencing. Parking lots may be screened by a combination of berms and vegetation. Paved areas should be designed to drain away from riparian corridors.

Agriculture/Horticultural. Crop and horticultural growing areas and farm roads and turn around areas should be set back at least 25 feet from the edge of the riparian vegetation (or top of bank, whichever is greater), and the area vegetated with native vegetation. Equipment and chemical storage areas should be set back at least 300 feet from the edge of the riparian corridor. Storage and transportation of hazardous materials and other potential pollutants should be in compliance with all local and state regulations. Grazing activities should be fenced and separated from riparian areas by 10 feet to avoid soil compaction and to protect the riparian corridors from direct access by livestock. (Although these guidelines for agricultural land uses are included, it is recognized that

Table 3. Guidelines Summary of Riparian Setback Requirements by Land Use

These setback and buffer widths are intended to provide general guidelines for site design. For actual setback and buffer dimensions, the specific setback section of this chapter should be consulted.

Land Use	Minimum Setback[1]	Comments
New Buildings in Existing Urban Infill Areas	100'	Exceptions may be considered.
New Residential Development		
- Residential Buildings	100'	Includes single family and two family buildings as well as attached unit buildings.
Commercial/Institutional Buildings	100'	Loading docks and other major activity areas should be oriented away from the riparian corridor.
Parking Facilities	100'	Paved areas should not drain directly to creeks; storm drain systems and parking surfaces should be cleaned and maintained regularly
Roads		
- 2 Lanes	100'	
- 2 Lane Collectors or Arterials	100'	
- 4 Lanes and Greater	100'	
New and Existing Agriculture/Horticultural		
- Crop and Horticultural	25'	Herbicide, pesticide and fertilizer use should not be allowed to impact water quality and wildlife
- Equipment/Chemical Storage	300'	Storage areas should not drain to creeks
- Grazing Activities	10'	Fence riparian corridor
Public Recreation		
- Multi-Use Trails [2] [on natural channels]	10'	Set trails back where opportunities exist (e.g. parks, new developments)
- Multi-Use Trails [2] [on flood control channels]	-	Maintenance road along top of bank should be used
- Pedestrian-only Trail	0'	Trails may enter corridor where necessary for continuity
- Passive Recreational Uses	0'	
- Active Recreation (sports fields, recreation centers)	100'	Night lighted facilities should have larger setback - 200' to 300' preferred
- Golf Course (public and private) Fairways, Greens and Tees	100'	Should be designed to collect and treat their own run off.
- Interpretive Nodes/Riparian Corridor/Stream Crossings	-	>500' intervals
Hazardous Material, Herbicide, Pesticide, Fertilizer Use and Storage	100'	Toxic substances should be stored and used to avoid drainage or drift to riparian habitats.

[1] Setback is measured from the outside dripline of the riparian corridor vegetation (dripline of trees) or the top-of-bank, whichever is greater.

[2] Pedestrian/Equestrian/Bicycle Trail

SITE PLANNING GUIDELINES

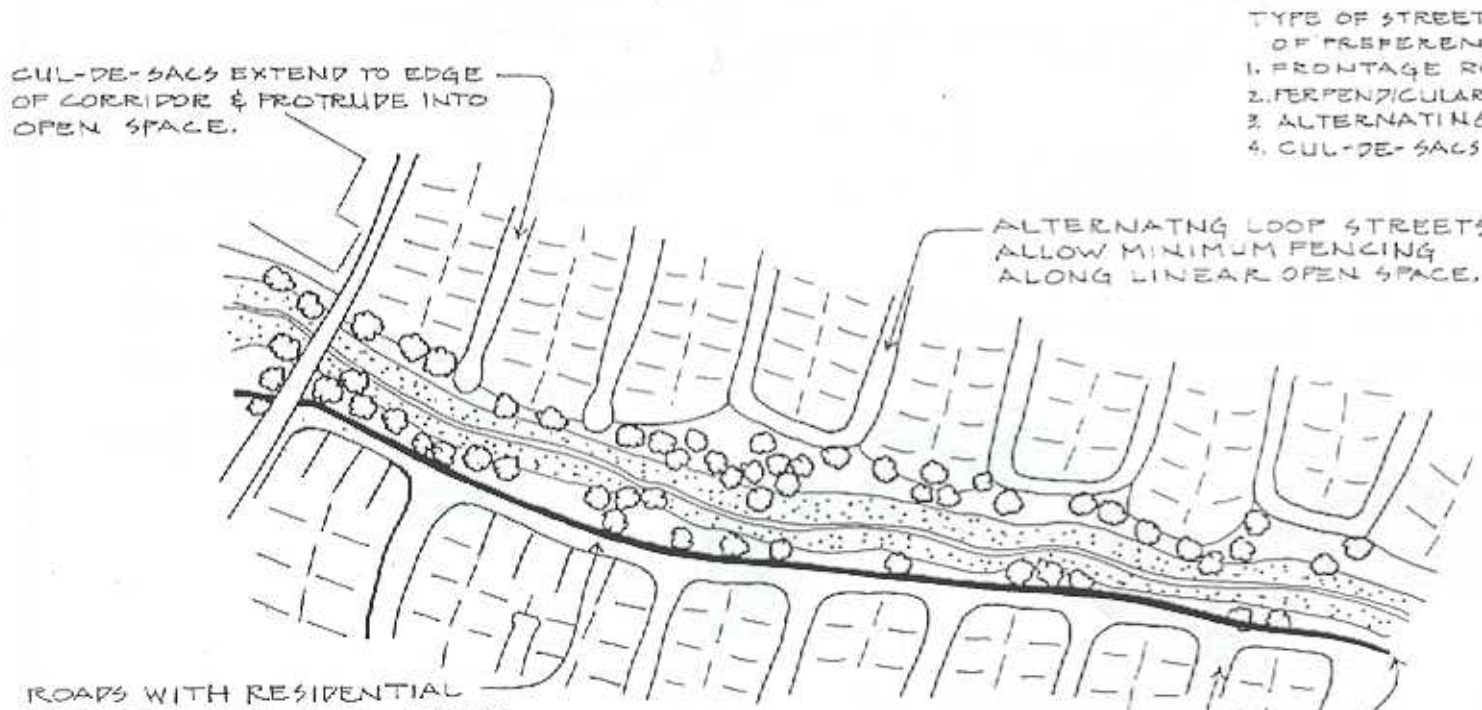


Fig. 12

GUIDELINE 1C - SETBACKS

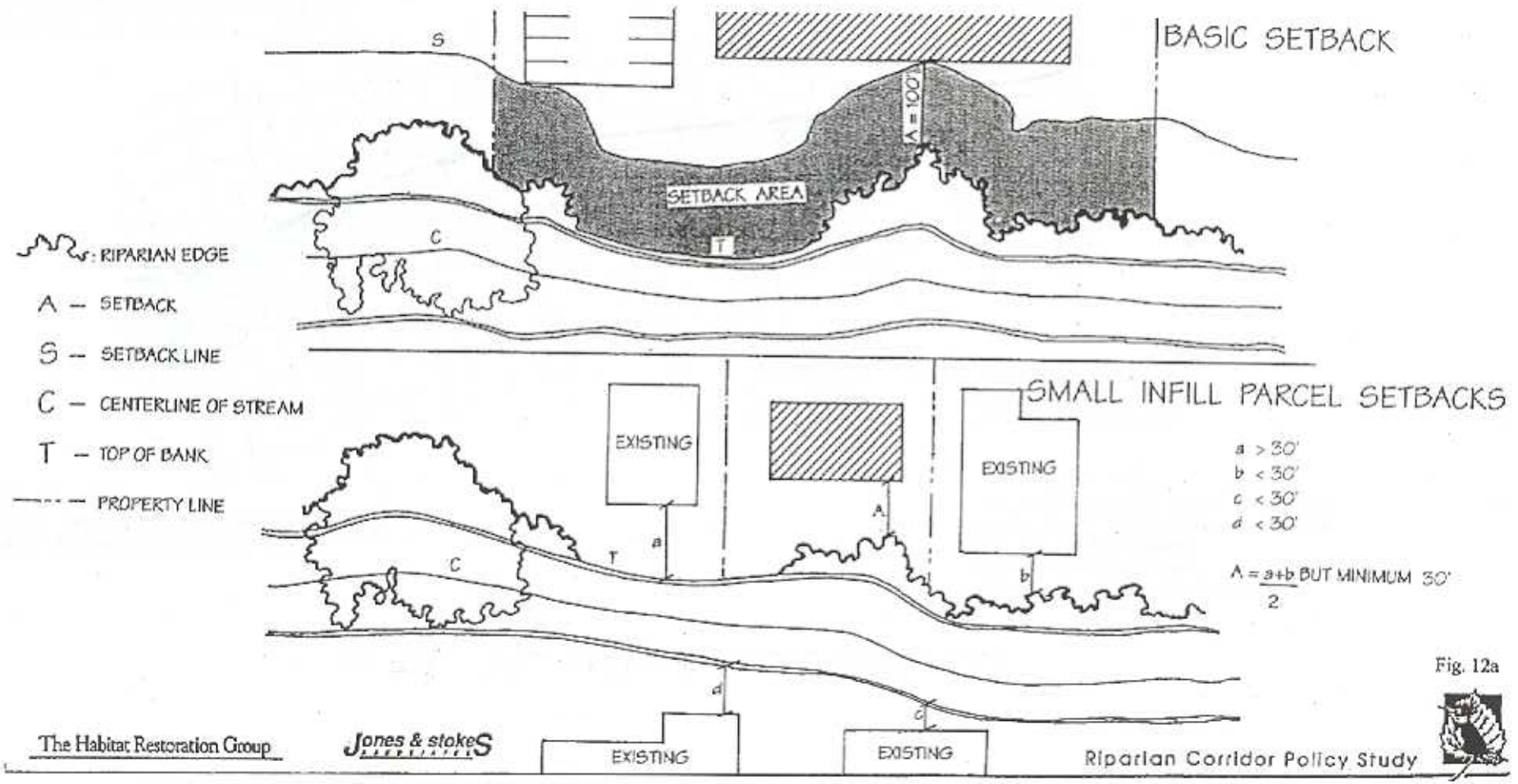


Fig. 12a

SETBACKS FOR NEW RESIDENTIAL DEVELOPMENT

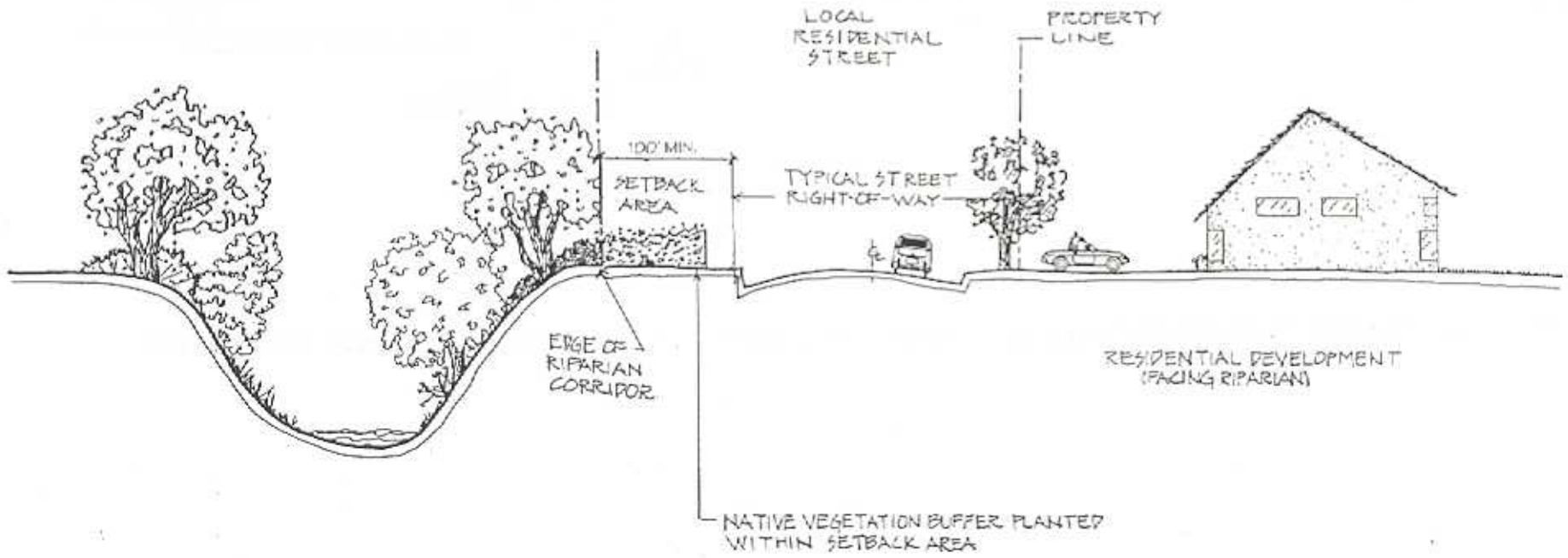


Fig. 13

SETBACKS FOR COMMERCIAL / INSTITUTIONAL & PROFESSIONAL DEVELOPMENT

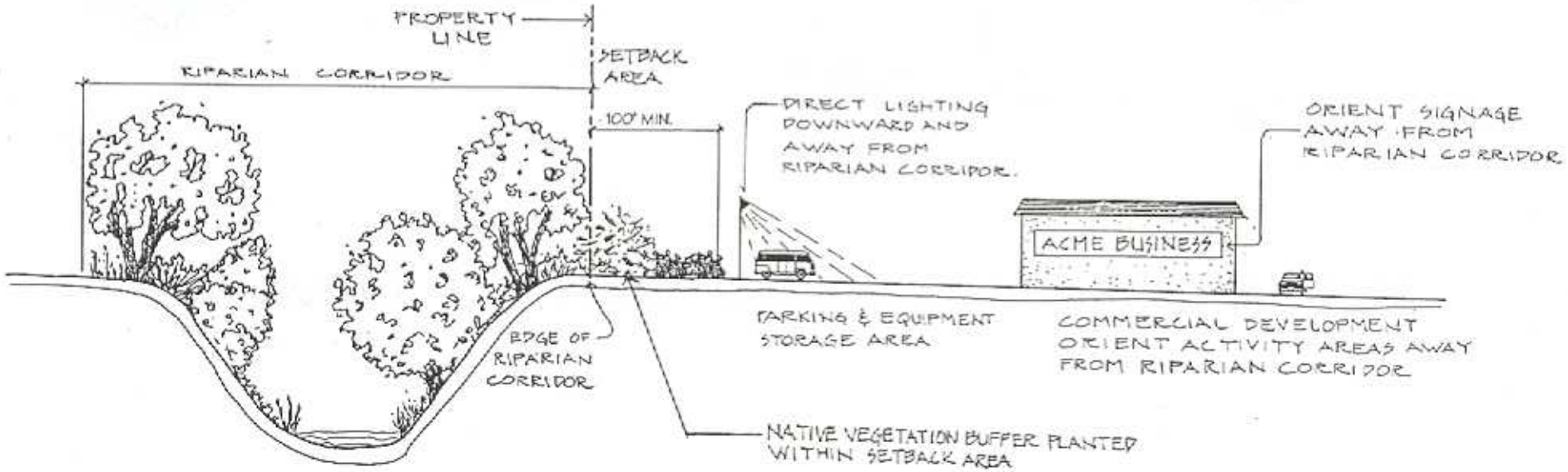


Fig. 14

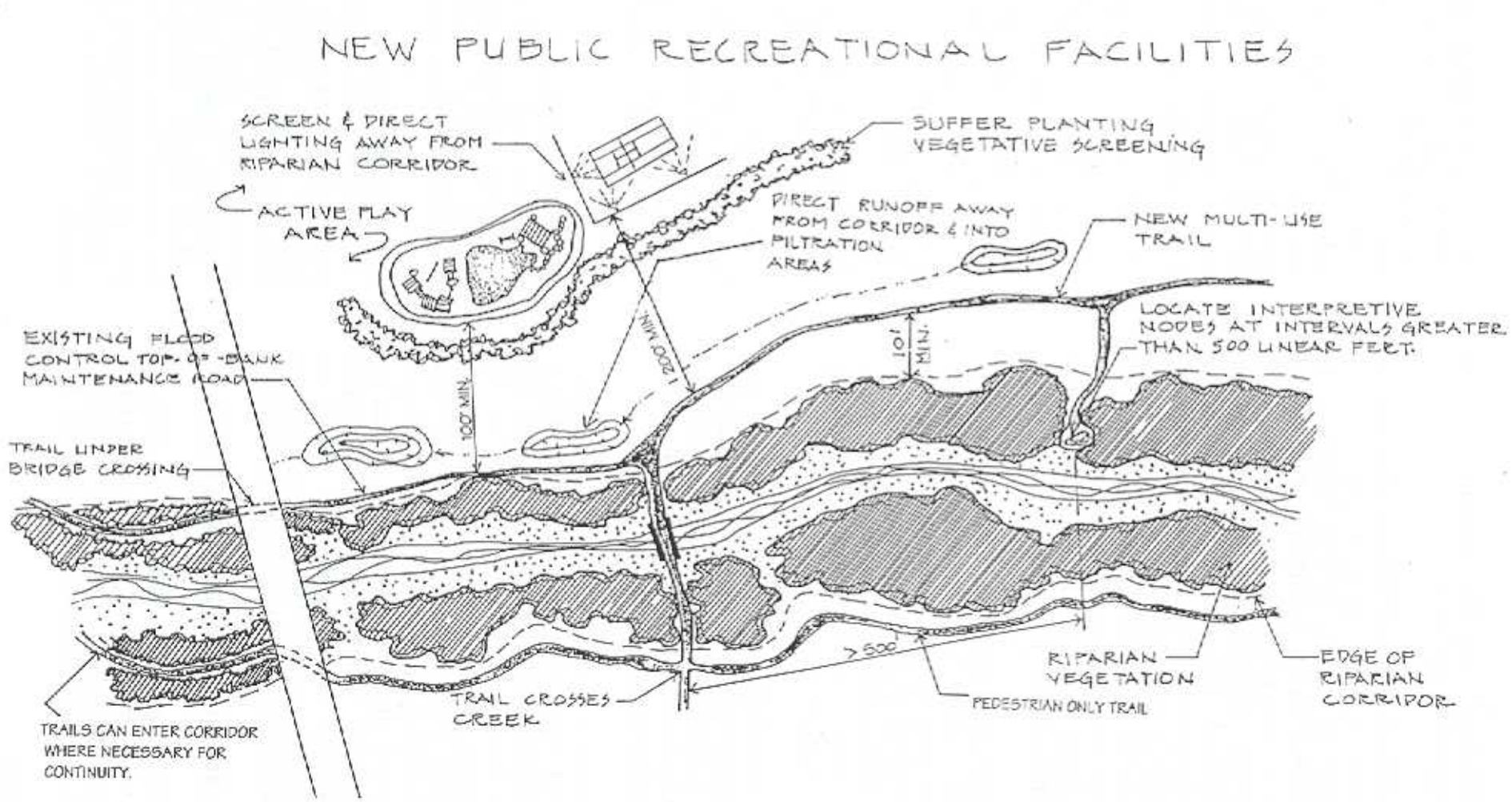

NEW PUBLIC RECREATIONAL FACILITIES
SCREEN & DIRECT LIGHTING AWAY FROM RIPARIAN CORRIDOR
BUFFER PLANTING VEGETATIVE SCREENING
ACTIVE PLAY AREA
DIRECT RUNOFF AWAY FROM CORRIDOR & INTO FILTRATION AREAS
NEW MULTI-USE TRAIL
LOCATE INTERPRETIVE NODES AT INTERVALS GREATER THAN 500 LINEAR FEET.
EXISTING FLOOD CONTROL TOP-OF-BANK MAINTENANCE ROAD
100' MIN.
200' MIN.
10' MIN.
TRAIL UNDER BRIDGE CROSSING
>500'
RIPARIAN VEGETATION
EDGE OF RIPARIAN CORRIDOR
TRAIL CROSSES CREEK
PEDESTRIAN ONLY TRAIL
TRAILS CAN ENTER CORRIDOR WHERE NECESSARY FOR CONTINUITY.

Fig. 15

agricultural activities typically are not regulated by the City.)

Chemical Use and Storage. Any chemical which might be expected to have an adverse effect on riparian corridors should not be stored or used within 100 feet of the riparian edge. Storage and use should be designed to prevent drainage and drift to riparian corridors, 100-foot setback areas and storm drain systems. Substances such as fertilizers used to maintain permitted planting areas may be used within the 100 feet setback area but only in conjunction with a mitigation program designed to avoid any negative impacts on the riparian corridor.

Recreation Facilities. Active play areas (e.g., sports fields, recreation centers, tot lots, play equipment, multi-use courts, etc.) should be located a minimum of 100 feet from the edge of riparian vegetation. Multi-use trails should be located 10 feet from the riparian edge if feasible.

If night lighting is proposed (e.g., lighted ball fields) a larger setback (at least 200 feet) is recommended; the exact distance may need to be determined by a site-specific analysis in consultation with a qualified biologist.

Passive use areas (e.g., sitting and picnic areas, interpretive features, etc.) and similar intermittently used recreation facilities, may be located immediately adjacent to the riparian corridor, subject to site-specific design considerations, in consultation with the City and a qualified biologist. If open lawn or other non-riparian planting areas are permitted within 100 feet of riparian corridors, mitigation measures should be designed to prevent fertilizers, pesticides and herbicides from draining into the corridors.

2. BUILDING AND FIXTURES DESIGN

Background: The orientation and design of developments adjacent to riparian corridors can affect both visual and aesthetic values of the corridor as well as biotic resources. The use of night lighting, glare from building surfaces and development landscaping can significantly impact wildlife habitat values of the adjacent riparian corridor, depending upon the type of materials utilized. Development projects can be designed to minimize potential impacts to adjacent riparian habitat through the use of environmentally sensitive construction materials/activities, specialized lighting features and native landscape materials.

The following general guidelines are intended to encourage environmentally sensitive building structure and hard scape design, and not to limit development design options. Building design and appearance should be considered on an individual site-specific basis. Site-specific area plans such as downtown redevelopment goals, may supersede these guidelines.

Guideline 2A: Building Appearance

In riparian forest settings located in more rural or suburban areas of the city, building facades should blend visually with the surrounding natural landscape. The colors of buildings should generally be of darker earth tones (e.g., brown, tan, grey, or greens); the use of bright colors and glossy finishes are discouraged.

Guideline 2B: Glare

Building materials should not produce glare that would adversely impact the riparian corridor. Windows should not be mirrored but otherwise their use is not limited.

Guideline 2C: Visual

The adverse visual impact of existing or unavoidable incompatible uses such as parking areas, loading zones, trash enclosures, mechanical devices, and similar accessory uses should be minimized by landscaping, hedging, berming, low walls and site design. Rooftop equipment should be screened from view from any riparian corridor trail or recreational, educational, or interpretive facilities within the riparian corridor.

Guideline 2D: Signs

Signs associated with land uses that are adjacent to the riparian corridor and that are not related to complementary recreational or public safety services should be oriented away from the riparian corridor to avoid impacting recreational users of the corridor, or attracting otherwise unnecessary access and activity.

Guideline 2E: Lighting

All trail corridors, except for the Guadalupe River Downtown, are closed after sunset, and as such do not have lighting (except for security lighting at bridge under crossings). For all other developments, lighting within the corridor and setback areas should be avoided. Lighting on development sites should be designed and sited to avoid light and glare impacts to wildlife within the riparian corridor, consistent with public safety considerations. Any lighting located adjacent to riparian areas should be as low as feasible in height (bollard lighting is preferred) and must be directed downward with light sources not visible from riparian areas.

Parking lot lighting near a riparian edge (e.g., with minimum setbacks from the corridor) should be avoided if nighttime use of that portion of the parking lot is unlikely.

Guideline 2F: Noise

The operation of mechanical equipment within or adjacent to riparian corridors (e.g., compressors, street/parking area sweepers) should not exceed noise levels for open space as specified in the Noise Element of the City of San Jose's General Plan or exceed background noise levels. Noise-producing stationary mechanical equipment should be located as far as necessary from riparian corridors to preclude exceeding the ambient noise level in the corridors.

3. LANDSCAPING

Guideline 3A: Development Landscaping

Landscaping of areas adjacent to the riparian corridor should generally utilize plant species native to central California and appropriate to the riparian habitat type of the corridor. In some areas, remnant riparian species (e.g., remnant sycamore, valley oak trees) exist outside the mapped riparian corridor. These species should be retained in the development plan. Non-native species may not be planted within the riparian corridor, and invasive exotics should not be used in landscaping within 100' of a riparian corridor. Refer to Appendix B for lists of plant species suitable and unsuitable for revegetation within riparian corridors and in riparian setback areas. Refer also to any applicable master landscape plans for landscape requirements.

Guideline 3B: Irrigation

Irrigation systems within 100 feet of riparian areas should be designed to avoid negative impacts to riparian environmental conditions.

4. PUBLIC RECREATION FACILITIES

The City of San Jose recognizes the opportunities for recreation along its riparian corridors. Policies within the General Plan recommend streamside trails along several rivers and creeks. Public access is anticipated to trails and other recreation facilities within City and County parks, to flood control project areas and other public spaces adjacent to commercial and/or professional development. Depending on the user group and location of the trail or other facility, there may be impacts to riparian resources (e.g., disturbance to sensitive wildlife species, inadvertent trampling of native vegetation, illegal fishing). Advanced planning, interpretive signs, appropriate setback distance areas and barrier plantings can minimize these impacts.

Guideline 4A: Recreation Facilities.

Active play and sports areas (e.g., sports fields, golf courses, recreation centers, tot lots, play equipment, multi-use courts, etc.) should be located a minimum of 100 feet from the edge of riparian vegetation. Multi-use trails should be located 10 feet from the riparian edge if feasible, but in no case should this guideline be used to preclude the development of continuous trail access along riparian corridors.

If night lighting is proposed (e.g., lighted ballfields), a larger setback (at least 200 feet) is preferred; the exact distance should be determined by a site-specific analysis in consultation with a qualified biologist.

Passive or intermittent use areas (e.g., sitting and small picnic areas, interpretive features and golf course roughs) may be located immediately adjacent to the riparian corridor, subject to site-specific design considerations, in consultation with the City and a qualified biologist.

Golf courses should be designed with fairways near riparian corridors oriented parallel to or away from (greens at far end) the corridor. Fairways, greens, tees and driving ranges should be set back 100 feet from riparian corridors. Driving ranges should be oriented away from the corridor or set back a sufficient distance to keep balls from entering the corridor. For lighted driving ranges see discussion of lighted facilities below.

Recreation related buildings, parking, equipment, etc. are subject to the same setback, screening and mitigation requirements as are other such structures and facilities. Minor buildings and structures which generate little or no human or animal activity may be located within the 100-foot setback area consistent with the Habitat Protection Objectives in Guideline 1C.

Guideline 4B: Recreation Facility Lighting and Noise

All lighting and mechanical noise-generating sources for active recreational facilities (e.g., ball play fields, tennis courts, multi-use courts, recreational centers, etc.) should be located a minimum of 200 feet from the corridor and screened from the corridor where feasible with berms, fences, vegetation, or other screening materials to minimize impacts to the corridor (Figure 15). The light source of any nighttime lighting should not be visible from the riparian corridor. Noise levels should not exceed General Plan standards for parks and open spaces. The exact dimension of a setback may require a site-specific analysis in consultation with a qualified biologist. However, opportunities to ensure visibility into the corridor for safety and security purposes should not be precluded.

Guideline 4C: Trails

Trails should be limited to one side of the corridor in sensitive riparian areas where such a limitation would protect the integrity of important botanical and wildlife resources. In areas where wildlife and vegetation values are limited and their restoration is unlikely, or where the trail segment is required for continuity or carrying capacity, trails may be developed on both sides of the creek corridor. Trails should use existing top-of-bank flood control maintenance roads where these are available and the uses are compatible. For streams without maintenance roads, multi-use trails should be set back 10 feet from the edge of the riparian corridor (Figure 15). Pedestrian only trails may be located along the edge of the riparian corridor. Trails may enter the corridor if necessary to maintain continuity. Where there are road overpasses, trails may enter the riparian corridor so as to provide trail access beneath the road crossing. Where night lighting of trails is proposed, a larger setback is encouraged. Exact setback distances should be determined by site-specific analysis in consultation with a qualified biologist.

Trail Design and Construction. Trails should be designed to minimize cut and fill and vegetation disturbance. Trails should be designed and constructed to direct drainage away from direct entry to the creek. Surface drainage infiltration areas, consisting of coarse gravel beds should be created to drain trail surfaces away from the creek.

Trail Design and Layout. Trails should be carefully aligned to minimize negative impacts to the corridor while providing a rewarding experience for the user.

1. Trail systems should be designed so that:

    a. Main (high use) trails are up out of the channel and set back from the edge of the top of bank.

    b. Minor or lateral (lower use) trails only parallel the edge of the creek (i.e., at the toe of the bank) for a short distance.

2. Trails should be carefully sited to avoid sensitive riparian habitat areas and areas which support significant wildlife uses (e.g., a heron rookery).

3. Trails should be constructed according to standards which are sensitive to the type of riparian resources they are bisecting (e.g., elevated catwalks across wetland areas, narrower trail tread on steep side slopes).

4. Trails should be routed directly through areas of disturbed habitat and non-native vegetation. At the same time undertake a program to restore the surrounding area to the native habitat (e.g., construct trail tread through undesirable invasive non-native [exotic] plant species, such as giant reed).

5. Specially designed trails and viewpoints should provide controlled opportunities for people to view, enjoy, experience and learn about stream and riparian systems.

Guideline 4D: Interpretive Nodes and Paths

Interpretive nodes and paths may penetrate riparian areas at intervals not to exceed an average of one every 500 linear feet of riparian corridor. This guideline allows for paths to cross creeks at sufficient intervals and provides opportunities for trail users and others to experience the creek environs while minimizing impacts to biotic resources. As depicted on Figure 1 and listed in Table 3, the majority of trails will be placed outside, and parallel to the riparian corridor. This guideline does not apply to public trails necessarily aligned within the riparian corridor.

Creek crossings also may be required for access between both sides of a streamside park or golf course. Creek access points, where appropriate, should be designed to accommodate fishing and small boat access (small boats are human powered and can be hand carried). Small parking areas, or street parking capacity, is encouraged near creek access points suitable for fishing or boating or which provide access to an extensive trail system.

Guideline 4E: Sanitation Facilities

To reduce human waste disposal in the corridor, public restroom facilities should be provided at key entry points to the corridor and at parks and staging areas, consistent with public safety and security considerations. Very small restroom buildings (up to three toilets) should be set back from the corridor at least 25 feet. Larger restroom buildings should be set back 100 feet.

Guideline 4F: Fences and Walls

Fences should be used only to protect important riparian areas from unauthorized public and domestic pet access (e.g., sensitive riparian areas adjacent to heavily used areas). Fences should be designed to ensure visibility for security purposes, and discourage domestic pet or vehicle access. Walls should not be used within or adjacent to the riparian corridor. Fences should not hinder wildlife movement along the corridor and should generally be no higher than 3 or 4 feet.

Guideline 4G: Barrier Plantings

Vegetation intended to function as a barrier should be locally-native species and serve the functions of providing wildlife habitat and discouraging human and domestic pet access. Appropriate plants would include species such as native blackberry and wild rose. Barrier plantings may be included as part of the native vegetation buffer areas.

Guideline 4H: Signs

Informational and interpretive signs should be posted at intervals along fences, walls, and other protective barriers that control access to riparian areas. Signs should describe possible use restrictions (i.e., trail user groups, seasonal closures) and explain the reasons for the restrictions (e.g., nesting birds, nature reserve).

Guideline 4I: Recreational Visitor Use

Recreation facilities can be designed and operated to minimize negative impacts on a riparian corridor by directing the activities of visitors, for instance:

1. Designate appropriate and inappropriate types of recreational use for different parts of the riparian corridor (e.g., prohibit the use of off-road recreational vehicles and limit use of mountain bikes to designated trails).

2. Restrict visitor access to sensitive resource areas.

3. Limit the intensity of recreational use in areas of sensitive wildlife habitat.

4. Control the seasonality of visitor use (e.g., seasonal closure of important wildlife breeding areas).

5. Teach visitors about the significance and sensitivity of riparian and stream resources through the use of signage, educational leaflets, self-guided trails and interpretive programs.

6. Emphasize passive, low intensity, resource-dependent recreational uses that will not adversely affect the long-term viability of the habitat.

5. FIRE MANAGEMENT

Emergency fire access to the riparian corridor is essential for areas with recreational use or other permitted human occupancy. A fire break should be established between or within the riparian setback area and the proposed development. The fire break should parallel the riparian corridor boundary with emergency access nodes established at strategic locations to permit access to emergency vehicles.

The use of highly flammable roofing or other materials should be prohibited for all development adjacent to riparian corridors.

6. VEGETATION/HABITAT CONTINUITY

Background: Riparian corridors in urban areas are often narrow, constrained by residential and commercial development, and have significant gaps where riparian vegetation is absent. Gaps may be due to direct causes (e.g., road crossings, flood control/bank stabilization projects, and other vegetation removal) as well as indirect causes (e.g., incompatible human activities, domestic pets and the presence of non-native plants). Many riparian-associated wildlife species are unable to coexist with such direct and indirect gaps in the corridor, resulting in

population decline or extirpation from the stream system.

Alterations of the plant species composition and structure in the riparian habitat may also significantly affect its value to riparian-dependent wildlife, thus leaving "gaps" in essential habitat features. This may occur as a result of the removal of mature trees and snags from a riparian area. Approximately 40% of all birds in the riparian forest nest in tree cavities; mature trees and snags (i.e., dead trees and tree limbs) are primary resources where tree cavities are found. The removal of snags from an area may significantly limit the density of cavity-nesting birds. The presence of significant infestations of invasive, non-native plant species may also significantly reduce biotic resource values. As they spread and exclude native plants from the riparian habitat, they may also reduce native plant diversity through allelopathic (i.e., chemical) and physical (e.g., shading) effects.

Guideline 6A: Grading

The integrity of riparian corridors, in terms of width, linear continuity and native plant species composition, should be preserved. All riparian habitat should be preserved, unless no other alternative exists (e.g., creek crossing). No grading should be allowed within the riparian corridor except for approved construction projects for trails, bridges, interpretive facilities, recreation facilities, slope stabilization, flood improvements, or habitat improvements.

Guideline 6B: Vegetation Removal

Vegetation removal in riparian areas should be performed only for necessary floodway maintenance (Guidelines 6F and 6G) or to remove undesirable exotic plants as part of native habitat vegetation management. Vegetation control should be timed to minimize disturbance to breeding birds. Manual and mechanical methods should be emphasized for vegetation removal. Mowing is preferable to discing because discing results in sedimentation of creeks and possible root damage to larger riparian shrubs and trees. Herbicides should only be used where manual and mechanical methods are infeasible.

If riparian vegetation removal is required as part of project design (i.e., bridges, utility lines), the applicant should consult with the California Department of Fish and Game and/or U.S. Army Corps of Engineers regarding regulatory permits such as Streambed Alteration Agreements and Section 404 permits. Tree removals should be reviewed with the City Arborist. In general, a 3:1 habitat replacement ratio should be achieved by the revegetation of riparian plant species. Revegetation plans (Appendix D) should be prepared and submitted to the City for review and approval as part of the development application process. Plans should be reviewed and approved by the applicable regulatory agency(s).

Guideline 6C: Snag Preservation

Snags and downed trees/limbs provide significant wildlife habitat and should remain unless determined by the Santa Clara Valley Water District to present a flood flow obstruction or represent a substantial hazard to the public. Trees should be retained along the top of bank.

Guideline 6D: Herbicides

The use of herbicides within and adjacent to riparian corridors to control exotic, noxious and weedy species should be limited to herbicides specifically labelled for use adjacent to water courses (e.g., Rodeo™). Direct hand application (not broadcast) is the preferred method of herbicide treatment.

Guideline 6E: Non-native Plant Removal

Invasive, non-native plants should be removed and immediately replaced with native plants in the portion of the riparian corridor adjacent to the property to be developed. Where certain existing non-native plants provide valuable wildlife functions (e.g., vertical structure for nesting or perching, shade for fish habitat, or important

foraging opportunities), non-native trees or large shrubs may be permitted to remain as determined by the City Arborist or a qualified biologist. All eucalyptus trees with a diameter of 10 inches or less should be removed and replaced with trees native to the riparian corridor at time of development.

Guideline 6F: Flood Control Channel Maintenance

Vegetation removal in improved and/or constructed flood control channels should be in accordance with an approved operations and management plan (sometimes referred to as a management and monitoring manual) for the flood control project area.

Guideline 6G: Maintenance of Natural Channels

In general, the streambed and stream banks of natural channels (i.e., those stream channels which have not had their cross section altered for flood control purposes) should be allowed to remain undisturbed. The channel bank vegetation (especially riparian trees and shrubs rooted at the toe of the bank slope and on the lower bank) should be preserved. The removal of streambank vegetation within natural channels to increase channel capacity should be limited to specific fallen trees, root wads, and trees rooted on the channel bottom which clearly present an obstruction to natural streamflow and/or could significantly increase the likelihood of bank erosion.

7. EROSION CONTROL, FLOOD CONTROL, WATER QUALITY AND PROTECTION FROM CONSTRUCTION

Background: Rivers and streams provide a source of water for both the human and biotic communities of the City and lower South San Francisco Bay. The amount and quality of this water is a concern for both user groups and human activities can greatly affect these resources. Urbanization, through the creation of impermeable surfaces, can increase runoff volumes and rates and reduce the quality of water which flows into the rivers and streams. Well-vegetated riparian corridors serve to filter pollutants from urban run-off, reduce erosion and sedimentation within streams by stabilizing streambanks and shade water to increase levels of dissolved oxygen and reduce algal growth.

Guideline 7A: Erosion Control/Slope Protection

In areas where the creek channel is deeply incised and banks are unstable, actively eroding, or identified as hazardous to public safety, banks should be stabilized/protected using biotechnical bank protection measures (e.g., riparian plantings, vegetated gabions or vegetated crib walls), consistent with flood control concerns (Figure 16). The use of hard bank structures, such as concrete walls/slopes, sackcrete and unvegetated rip-rap or gabions is discouraged.

Guideline 7B: Water Quality/Drainage and Runoff

The direct discharge of industrial effluent into the riparian channel, corridor or flood-plain is prohibited. Impervious surfaces, such as parking lots and roads should be graded to drain away from an adjacent riparian corridor to protect water quality and to minimize erosion potential.

Direct surface drainage from all new development should be directed away from the riparian corridor and applicable NPS pollution control Best Management Practices (BMP's) used to control water quality. Existing drainage outfalls in riparian corridors should be fitted with energy dissipators or otherwise retrofitted to reduce bank erosion.

Runoff from parking, car washing, and other commercial and industrial uses should be directed away from direct entry to the riparian corridor. Where runoff from new development must enter the riparian corridor, structured BMP's should be provided and permanently maintained. On-site runoff retention areas that are designed to treat the "first flush" of runoff generated on-site

should be created as part of project designs where possible. Retention areas may perform multiple use functions such as providing passive or active play opportunities. Retention areas should be sited at least 25 feet from the edge of riparian areas.

Guideline 7C. Flood Control

Where gabions, flood walls, and other armoring materials and techniques are necessary for flood protection and slope protection, planting pockets and terraces should be created as an integral part of the structures. Native vegetation should be established and maintained in the planting pockets and terraces.

Bypass channels or culverts are the preferred methods to improve flood flows and channel capacity. Bypass channels/culverts should be designed to preserve riparian areas on both sides of the existing channel (Figure 17). Diversion of natural water flows into pipe systems for any purpose should not be allowed to damage or degrade the natural channel or native plant or animal species.

Where bypass channels are not feasible, flood control projects may consider designs that widen channel areas, preferably on one side only, and create terraced benches for riparian plant establishment where sufficient land is available for this type of project. While these channel modifications will require the removal of substantial quantities of earth, and revegetation of terraces using locally-native riparian plant species (Figure 18), as much natural vegetation as possible should be preserved.

Maintenance roads should be incorporated along existing levees wherever possible combining maintenance for flood control with maintenance for utilities and/or park management. Wherever possible, underground utilities should occur in disturbed areas including levees constructed for flood control.

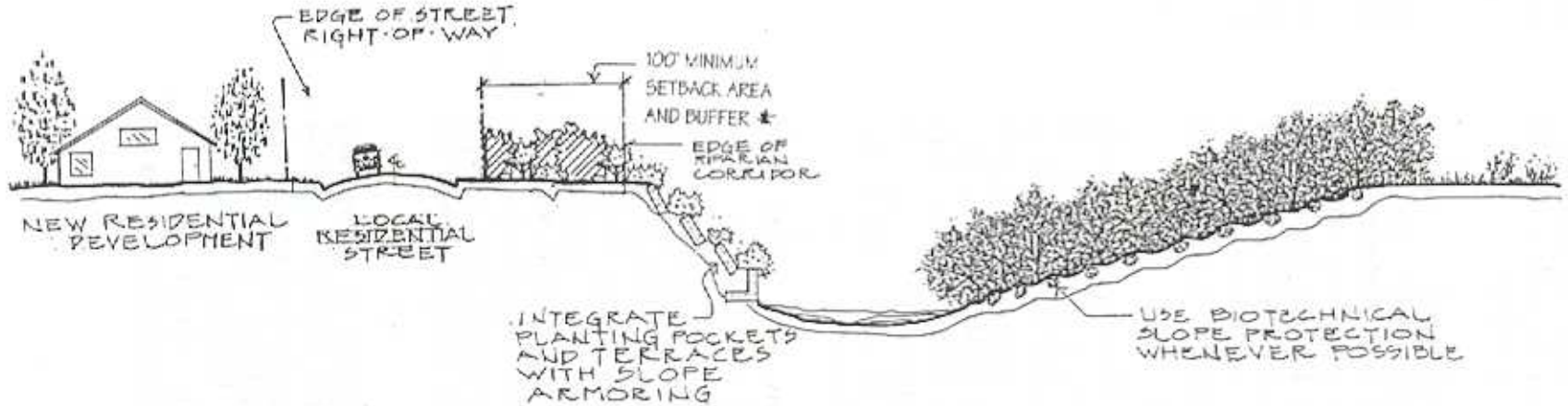
Guideline 7D: Agricultural/Horticultural Runoff

Surface drainage from growing areas should not be permitted to run directly into the corridor; runoff from these areas should be directed to retention areas for infiltration and settlement prior to entry to the corridor.

Guideline 7E: Protection From Construction

During construction on sites adjacent to riparian corridors, temporary fencing or solid barriers should be placed outside the riparian habitat area to protect it from damage due to construction activity. Any other applicable NPS construction BMP's should also be used.

SLOPE ARMORING & BIOTECHNICAL SLOPE PROTECTION



* SETBACK SHOULD BE MINIMUM 100' FOR STREETS

Fig. 16

BYPASS CHANNELS

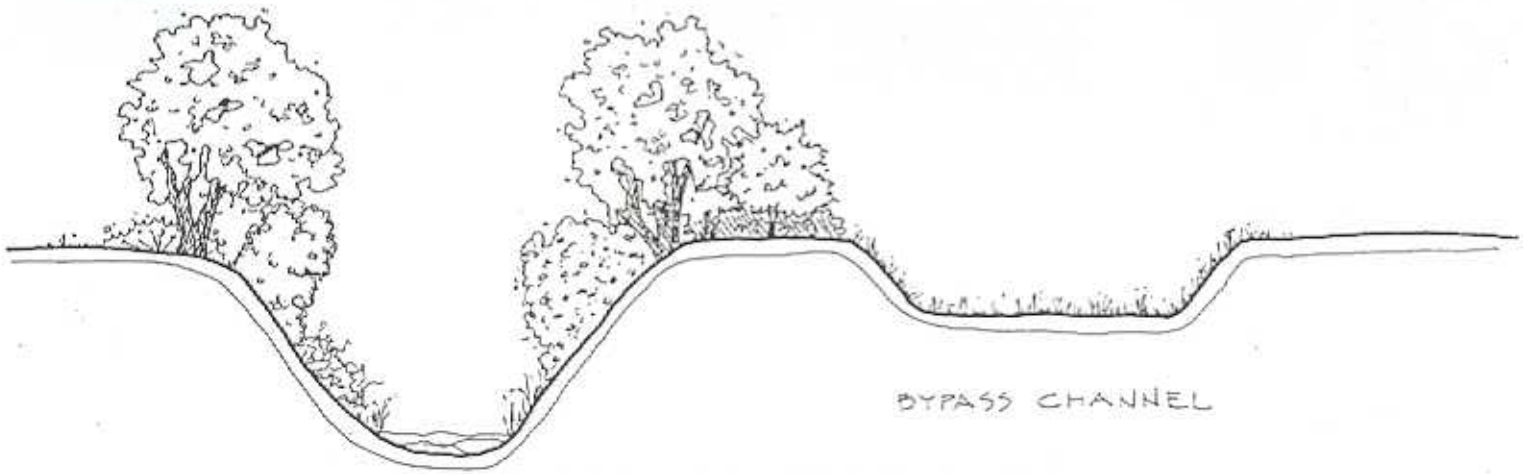


Fig. 17

HABITAT IMPROVEMENTS

Fig. 18

CHAPTER 4. HABITAT RESTORATION AND ENHANCEMENT

Background: Over 90 percent of the riparian habitat within California has been lost due to development, agriculture, channel modification, and other land uses. Because riparian corridors are of critical significance to the maintenance of water quality and to both local and migrating wildlife (i.e., birds, mammals and fish), restoration of degraded riparian corridors within its City limits is a firm goal of the City of San Jose. Habitat restoration, enhancement, and management should be the responsibility of every landowner within the corridor, but the City of San Jose is committed to assuming a leadership role by actively encouraging and facilitating riparian restoration.

Riparian habitat restoration activities may include the removal of invasive non-native plant species, revegetation of degraded areas with native plant species, debris clean-up, sedimentation and/or erosion control measures, restrictions on camping and other human habitation, reconfiguration and revegetation of modified channels (where consistent with flood control capacity), and enhancement of aquatic resources (e.g., fishery resources, amphibian breeding habitat).

Riparian Habitat Restoration. If habitat degradation (e.g., riparian vegetation removed/absent, channels modified, streambanks eroded, or corridor threatened by presence of invasive non-native species) has occurred on a development site, riparian habitat restoration (e.g., revegetation, bank stabilization, removal of invasive non-native plant species, and other habitat enhancement measures) may be a condition of any project approval. Any related restoration activities on adjacent off-site land is strongly encouraged. Refer to Appendix B for a list of plant species suitable for revegetation within and adjacent to riparian corridors. New tree species for revegetation should be selected for maximum support for area wildlife. Key invasive non-native plant species of management concern include pampas grass, giant reed, acacia, black locust, periwinkle, German and English ivy, and French broom.

Aquatic Habitat Management/ Enhancement. To improve fish habitat, shading of creek bottom areas should be maximized through maintaining and planting native trees, shrubs and emergent vegetation wherever possible while maintaining flood conveyance. At least 75 percent of water surface area should be shaded at any given time.

Existing in-stream barriers to fish movement (e.g., drop structures) should be redesigned and rebuilt to allow passage of adult and juvenile salmonids as well as resident warm-water species. Any proposed modifications to barriers should be reviewed by a fisheries biologist and will require review by California Department of Fish and Game, USFWS, and National Marine Fisheries Service.

Mosquito control should emphasize biological control methods over use of pesticides; however, a site-specific plan should be developed if mosquito control is proposed (e.g., introduction of mosquito fish may adversely impact populations of red-legged frog, a species of special concern).

Riparian Corridor Restoration and Enhancement Program. The City should consider developing a comprehensive riparian corridor restoration and enhancement program to actively promote habitat restoration through: development guidelines; public restoration projects; the participation of interested citizens in creek clean-up programs and creek restoration activities; and environmental interpretation and education services. Joint restoration activities with the City, Santa Clara Valley Water District, local schools, local organizations (e.g., California

Native Plant Society, Audubon Society, Urban Creeks Council) and other programs (e.g., Children's Discovery Museum) could be encouraged. Grant funding for such projects should be pursued (e.g., Department of Water Resources Urban Streams Program and California Department of Fish and Game grants).

The City should also consider developing educational brochures for all land/homeowners bordering a City creek. The brochure should explain the biotic resource values, land use planning objectives, and restoration/ enhancement opportunities of riparian habitat.

APPENDIX A
SPECIES OF CONCERN WITHIN THE RIPARIAN CORRIDORS, CITY OF SAN JOSE

WILDLIFE SPECIES OF CONCERN

San Francisco Forktail Damselfly

The San Francisco fork-tailed damselfly is proposed for listing as endangered by the U.S. Fish and Wildlife Service (FWS). This species is known to occur from Marin to Santa Cruz County. The fork-tailed damselfly is associated with seepages, shallow ponds and backwaters in streams. Adults are found perched in sunlit areas on low emergent vegetation or nearby upland grasses. The larval stage of the fork-tailed is aquatic. Adults breed continuously through the breeding season at permanent breeding sites; while possibly producing only one generation at seasonal sites (R. Arnold, pers. comm.). The flight period for this species extends from early March to mid-November (Garrison 1981).

The CNDDB contains a record of this species from Coyote Creek. Potential habitat for this species occurs along creeks with slow flowing waters and pools in open canopy habitat.

Ricksecker's Water Scavenger Beetle

The Ricksecker's water scavenger beetle is a FWS Candidate 2 species for listing as threatened or endangered. Very little is known of the natural history of this species. It is known only from a few widely scattered localities in the San Francisco Bay area, including Livermore Valley, the East Bay and from San Mateo County (R. Arnold, pers. comm.). Only twelve specimens of this species have been collected, primarily from pond situations. In general, water scavenger beetles are found in quiet waters of stagnant ponds, littoral areas of lakes and shallow margins of streams supporting an abundance of aquatic vegetation (Arnett 1963). Larvae are highly predaceous. Pupation occurs in mud cells near the shore.

The creeks in the city appear to provide potential habitat for this species.

California Tiger Salamander

The California tiger salamander is a state species of special concern and a FWS Category 2 candidate for listing as threatened or endangered. Tiger salamanders primarily occur in valley floor and foothill grasslands, and open oak woodland and savannah. Adults utilize rodent burrows for refuge during the non-breeding season. They use aquatic habitat for reproduction, migrating to breeding sites during the rainy season from November to January (Stebbins 1985). Tiger salamanders move overland up to one-half mile to quiet water of ponds, reservoirs, lakes, temporary rain pools, and occasionally streams. The larvae take 3-4 months to transform into adults, thus the species requires reliable sources of water. The reasons for this species' decline in California include loss of habitat, the introduction of predatory non-native fishes, and the use of larval forms as fishing bait (Stebbins *ibid.*).

Historical populations of tiger salamanders were known to occur on Guadalupe Creek, Coyote Creek and at Calero Reservoir. However, tiger salamander upland habitat has been greatly diminished due to urbanization. Extant populations in the city proper are not known to exist. Although, aquatic and upland habitat in the foothill regions of the city may support this species.

California Red-legged Frog

The California red-legged frog is a state species of special concern and FWS Candidate 2 species for listing. The red-legged frog occurs west of the Sierra Nevada-Cascade crest and in the Coast Ranges along the entire length of the state. Red-legged frogs are found in quiet pools along streams, in marshes, and ponds. They are closely tied to

an aquatic environment, and favor intermittent streams which include: areas with water at least 0.7 meters deep, emergent or shoreline vegetation, and a lack of introduced bullfrogs (*Rana catesbeiana*) and predatory non-native fishes. Red-legged frogs are generally found on streams having a small drainage area and low gradient (Hayes and Jennings 1988). Ponds with suitable vegetative cover are also used by this species. This species' reproductive season spans January to March (Stebbins 1962). Females deposit 2000 to 4000 eggs on submerged vegetation at or near the surface.

Much of this species' habitat has undergone significant alterations in recent years, leading to extirpation of many populations. Other factors contributing to its decline include its former exploitation as food, water pollution, and predation and competition by the introduced bullfrog and green sunfish (Moyle 1973, Hayes and Jennings, *ibid.*).

This species has been recorded on Silver Creek, Penitencia Creek, San Tomas Aquino Creek, Guadalupe Creek, Los Gatos Creek, Calaveras Reservoir and Calero Reservoir.

Foothill Yellow-legged Frog

The foothill yellow-legged frog is a state species of special concern. It occurs in the Coast Ranges from Oregon south to the Transverse Ranges and west of the Sierra Nevada-Cascade crest. It is found in or near rocky streams in a variety of habitats, including valley foothill hardwood, valley-foothill riparian, coastal scrub, mixed conifer, mixed chaparral, and wet meadows. This species is very closely tied to its aquatic habitat, and is rarely found far from perennial or intermittent streams. Foothill yellow-legged frogs are typically found in shallow water of partly shaded streams. They prefer sites with riffles and at least cobble-sized substrates. Adults seek moving but usually not swiftly flowing water. Pools are used on intermittent streams during the dry season. The female attaches egg clusters to gravel or rocks in moving water near stream margins.

Potential habitat for this species occurs along forested riparian corridors with perennial water and cobbly substrates.

Southwestern Pond Turtle

The southwestern pond turtle is a FWS Candidate 2 species for endangered status and a state species of special concern. The pond turtle occurs in permanent freshwater ponds, lakes, marshes, and rivers. Pond turtles are aquatic, but often bask in the sun on a partially submerged log or rock, or along the shoreline. Their populations are threatened with habitat alteration or loss due to urban and agricultural development.

Potential habitat for this species occurs along all riparian corridors throughout the city. Pond turtles are known to occur along Coyote Creek.

California Clapper Rail

The California clapper rail is a state and federal endangered species. Primary habitat for this species consists of tidal marshes supporting pickleweed, grindelia, and cordgrass. The nesting season extends from mid-March through July. The California clapper rail is not considered to be migratory, but is known to wander far from nesting habitat during fall and early winter, occurring in bayside marshes. Historically, this species was considered abundant in tidal marshes throughout the San Francisco Bay area, with smaller populations occurring at other coastal localities in northern and central California (Gill 1979). However, currently, California clapper rails are wholly restricted to bayside marshes of the San Francisco Bay. Habitat loss, red fox predation, mercury poisoning and hunting have contributed to this species' severe decline in the state, with the foremost considered the most serious threat to this species at this time. Only 400 individuals are estimated to remain, with very few individuals from the extreme south bay, and possibly none in the city.

The tidal marshes of Guadalupe River and Coyote Creek do not support nesting clapper

rails. However, this species might occur, on occasion, in the tidal marshes of these creeks, during the non-breeding season.

Northern Harrier

The northern harrier is a state species of special concern (breeding population). Northern harriers nest in tall grassland and marsh habitats, constructing their nests on the ground. This species is threatened by destruction of marsh habitats, the spread of urban and agricultural development of grasslands, and overgrazing by livestock (Remsen *ibid.*).

The marsh habitats at the mouths of Guadalupe and Coyote Creeks provide potential breeding habitat for this species. Harriers are residents in the Alviso Slough area.

Sharp-shinned Hawk

The sharp-shinned hawk is a state species of special concern. Sharp-shinned hawks are rare breeders in forest habitats of Santa Clara County (D. Suddjian, pers. comm.). This species primarily occurs in the San Jose area as a migrant and winter visitor. Sharp-shinned hawks frequent a variety of habitats, but appear to favor forests and habitat edges. Sharp-shinned hawks feed mostly on small birds, but occasionally forage for reptiles and small mammals. This species is uncommon throughout the study region from September to early May, and rare or absent during the rest of the year.

Sharp-shinned hawks are expected to occur along forested riparian corridors in the city during migration and in winter.

Cooper's Hawk

The Cooper's hawk is a state species of special concern. In Santa Clara County, Cooper's hawks primarily nest in forest habitats of the Santa Cruz Mountains and Diablo Range. This species is not known to nest in lowland riparian in the county, but occasional pairs have nested in the urban forests (D. Suddjian, pers. comm.). Cooper's hawks usually build stick nests in conifers and oaks. The local breeding season spans April through July. Cooper's hawks are uncommon migrants and winter visitors. Cooper's hawks feed mostly on small birds, but occasionally forage for reptiles and small mammals. Migrant and wintering individuals occur in a variety of habitats, including oak woodland, conifer and mixed broadleaf forests, grasslands, residential areas, riparian woodland, and marshes. Habitat destruction and falconry practices have been attributed to this species' decline in California (Remsen *ibid.*).

A pair of Cooper's hawks have occasionally nested in the Willow Glen District between Coyote Creek and the Guadalupe River (D. Suddjian, pers. comm.). This species is a regular migrant and winter visitor in the San Jose study area, and is expected to occur along riparian corridors.

Merlin

The merlin is a state species of special concern (wintering populations). This species is not known to breed in California, but is of concern because of severe declines in the number of wintering individuals that have occurred within the last two decades (Remsen, *ibid.*). They are most numerous along the coast and in the Central Valley. Merlins forage primarily on small to medium-sized birds in a variety of habitats, including wetlands, woodlands and grasslands. Pesticide contamination (DDE) has been attributed to this species' decline in California.

In recent years, observations of merlins from September to April have increased in Santa Clara County (D. Suddjian, pers. comm.). Merlins are regular winter visitors throughout the study area at marshes, urban forests and riparian corridors.

Peregrine Falcon

The peregrine falcon is a state and federal endangered species. DDT contamination of prey has contributed to the endangered status of this species, in addition to falconry

practices (Remsen *ibid.*). Breeding habitat is typically associated with tall cliffs that provide a sanctuary from predators and human disturbances (Evans 1986). Peregrines do not build nests, but construct scrapes in caves and on ledges. Nest sites are usually located near lakes, rivers or oceans, where prey is abundant; peregrine falcons feed mostly on waterbirds and shorebirds. Peregrines do not breed in Santa Clara County. This species occurs in the study area as a migrant and winter visitor from October through May, primarily at bayside marshes.

Peregrine falcons are uncommon, regular winter visitors in the study area, and are expected to occur, on occasion, at the tidal marshes of Coyote Creek and Guadalupe River.

Burrowing Owl

The burrowing owl is a state species of special concern. Burrowing owls require generally level, open grassland habitat, with short to moderate vegetation height and cover, and areas of bare ground. This species is dependent upon the abandoned burrows of small mammals, most notably ground squirrels, for nesting and roosting. Raised areas near the nest/roost site serve as perch sites. Burrowing owls are crepuscular in habit, but are also active at night, and found perched outside of active burrows during the day. In the San Francisco Bay area, nesting burrowing populations appear to have declined by 56% over the last decade (DeSante 1992), with a 73% reduction of the Santa Clara County nesting population. In Santa Clara County, nesting burrowing owls are concentrated along the south bay and in southeast San Jose. This species has experienced a serious decline throughout the State as a result of habitat loss from agriculture and urbanization (Remsen *ibid.*).

In the study area, burrowing owls are known primarily from disturbed stream corridors, such as the Guadalupe River, downstream of Blossom Hill Road, where this species has been observed on bare levee slopes. The breeding status of burrowing owls on the river has not been determined. Owls are also known to occur on Calabazas Creek and, possibly, Coyote Creek.

Loggerhead Shrike

The loggerhead shrike is a FWS Candidate 2 species for listing as threatened or endangered. This species has been experiencing an appreciable decline throughout its range in the United States. Loggerhead shrikes occur in grasslands, wetlands and agricultural areas, where trees and shrubs are interspersed. Shrikes forage on insects, reptiles, and small birds and mammals. Prey are often impaled on thorns or barbed wire. Nests are usually built in trees and shrubs, however, structures such as telephone poles are also used. In Santa Clara County, loggerhead shrikes primarily nest in foothills and bayside marshes.

In the San Jose study area, loggerhead shrikes are a rare breeding species. A nesting pair has been observed along Coyote Creek adjacent to a large ruderal field (HRG 1989). Shrikes may also nest along other riparian corridors adjacent to open habitat, or where ruderal levee slopes are interspersed with trees and shrubs.

Willow Flycatcher

The willow flycatcher is a state endangered species. Historically, the willow flycatcher was a common breeding species in lowland willow riparian habitats throughout the state (Sanders 1988), including Santa Clara County. But habitat loss and brown-headed cowbird parasitism have contributed to this species decline in California (Remsen *ibid.*). Breeding willow flycatchers are primarily associated with willow habitats associated with surface water and meadows. Currently, breeding willow flycatchers are known only from the Sierra Nevada, and along the Kern, Santa Margarita and San Luis Rey Rivers (Sanders *ibid.*). During migration, this species occurs throughout the state, typically in riparian habitats.

Willow flycatchers are regularly recorded at the Coyote Creek Riparian Station during spring and fall migration, with most recorded during fall. This species is expected to occur along other riparian corridors in San Jose during migration.

Yellow Warbler

The yellow warbler is a state species of special concern. Yellow warblers are associated with willow riparian habitats during the breeding season, being most abundant in cottonwood-willow riparian forests. Yellow warblers occur in other habitats in migration and winter, but are most common in riparian. Riparian habitat destruction and cowbird parasitism have led to this species' decline in California (Remsen *ibid.*).

Yellow warblers are known to nest along the Guadalupe River, Penitencia Creek, Los Gatos Creek and Coyote Creek, and may nest in other riparian corridors in the city. This is one of the few neotropical migrants which still nest in selected sites in San Jose riparian. Yellow warblers also are common in riparian corridors during spring and fall migration.

Yellow-breasted Chat

The yellow-breasted chat is a state species of special concern (breeding population). This neo-tropical migrant formerly commonly nested along riparian forests throughout California, including Santa Clara County. Habitat destruction and cowbird parasitism have contributed to this species decline in California. Chat breeding populations have been extirpated throughout much of its former range, and is now an extremely rare breeder in Santa Clara County (Santa Clara County Breeding Birds Atlas). Yellow-breasted chats prefer to nest in wide riparian corridors with dense vegetation. Presently, the chat no longer nests in San Jose riparian systems.

During spring and fall migration, this species has been recorded at the Coyote Creek Riparian Station, and is expected to occur along other streams in the city, as well.

Salt Marsh Yellowthroat

The salt marsh yellowthroat is a FWS Candidate 2 species for listing as threatened or endangered. This species breeding distribution is limited to the San Francisco Bay area, and along the coast from Half Moon Bay to Pescadero (Foster 1976). Salt marsh yellowthroats occur in fresh- and brackish-water marshes during the breeding season, as well as salt marshes during the winter (Foster 1976). The breeding season of the yellowthroat extends from March through July. During fall migration and winter, this subspecies can occur as far south as San Diego County. The reduction of breeding and wintering habitat has been attributed to this species decline in California.

The salt marsh yellowthroat nests at the mouths of Guadalupe River and Coyote Creek.

Salt Marsh Harvest Mouse

The salt marsh harvest mouse is a state and federal endangered species. Primary habitat for this species consists of tidal marshes supporting pickleweed, grindelia, and cordgrass (Zetterquist 1978). Upland open habitat adjacent to occupied tidal marshes are also used, primarily as high-tide escape cover. Historically, this species was considered abundant in tidal marshes throughout the San Francisco Bay area. However, habitat loss has severely reduced salt marsh harvest populations in their former range. Salt marsh harvest mice forage on seeds and green vegetation, and are capable of drinking saline water. They build nests on the ground, which consist of a loose ball of grass.

The tidal marshes of Coyote Creek and Guadalupe River support salt marsh harvest mice.

PLANT SPECIES OF CONCERN

Mt. Hamilton Thistle

Mt. Hamilton thistle (*Cirsium campylon*) is a perennial thistle on the California Native Plant Society (CNPS) List 1B, a list of rare species that are presently threatened or endangered.

List 1B species are eligible for protection by the California Department of Fish and Game (CDFG) through regulations in Chapter 10 (Native Plant Protection), Section 1901 of the Fish and Game Code. The species is also a Federal Candidate (C2) species. Mt. Hamilton thistle is associated with seeps and springs occurring in serpentine-derived soils. The blooming period is from May though July.

Mt. Hamilton thistle has been observed along tributaries to Silver and Santa Teresa Creeks and along the hillsides east of Coyote Creek, including a drainage in Hellyer Canyon. The species also occurs in the Santa Teresa Hills, the Metcalf Canyon area and in Anderson Lake and Burnett Avenue County Parks.

Valley Oak

Valley oak (*Quercus lobata*) is a tree species on CNPS List 4, a watch list of uncommon species. Valley oak trees are abundant in California, however, the species has declined in its ability to regenerate in many habitats in the state. The species occurs in riparian forest and woodland communities.

Valley oak is common along creeks in the Santa Clara Valley, although many trees have been removed for agriculture and urbanization.

Pt. Reyes Bird's Beak

Pt. Reyes Bird's Beak (*Cordylanthus maritimus* ssp. *palustris*) is on CNPS List 1B, a list of rare species that are presently threatened or endangered. List 1B species are eligible for protection by the CDFG through regulations in Chapter 10 (Native Plant Protection), Section 1901 of the Fish and Game Code. Pt. Reyes Bird's Beak is also a Federal Candidate (C2) species. This annual species grows in the coastal salt marsh community and is known to occur in the marshes of the San Francisco Bay. The blooming period is from May through October.

Marsh Gumplant

Marsh Gumplant (*Grindelia humilis*) is on CNPS List 4, a watch list of uncommon species which are not currently threatened. Marsh gumplant grows in coastal salt marshes and occurs in the marshes along the San Francisco Bay. The blooming period of this perennial species is from August through October.

APPENDIX B
PLANT SPECIES
SUITABLE FOR USE IN AND ADJACENT TO RIPARIAN CORRIDORS, CITY OF SAN JOSE

Key: X = Suitable Planting Location

Common Name	Scientific Name	Channel Location							
		a	b	c	d	e	f	g	h
TREES									
Big-leaf Maple	*Acer macrophyllum*				X	X	X		
California Box Elder	*Acer negundo* ssp. *californicum*				X	X	X		
California Buckeye	*Aesculus californica*				X	X	X	X	X
White Alder	*Alnus rhombifolia*		X	X					
Creek Dogwood	*Cornus californica*		X	X					
Oregon Ash	*Fraxinus latifolia*				X	X	X		
California Black Walnut	*Juglans hindsii*				X	X	X	X	
Western Sycamore	*Platanus racemosa*				X	X	X	X	
Fremont Cottonwood	*Populus fremontii*			X	X	X			
Coast Live Oak	*Quercus agrifolia*					X	X	X	X
Blue Oak	*Quercus douglassii*						X	X	X
Valley Oak	*Quercus lobata*					X	X	X	
Sandbar Willow	*Salix hindsiana*	X	X						
Red Willow	*Salix laevigata*	X	X	X	X				
Pacific (Yellow) Willow	*Salix lasiandra*	X	X	X	X				
Arroyo Willow	*Salix lasiolepis*	X	X	X	X				
Blue Elderberry	*Sambucus mexicana*				X	X	X	X	
California Bay	*Umbellularia californica*				X	X	X		
SHRUBS AND WOODY GROUNDCOVERS									
Howard McMinn Manzanita[1]	*Arctostaphylos densiflora* 'Howard McMinn'					X	X	X	X
Bearberry[1]	*Arctostaphylos uva-ursi*					X	X	X	X
California Sage (Sagebrush)	*Artemesia californica*						X	X	X

[1]Species for use only in landscape plantings in setback or buffer areas; not for use within riparian corridors.

Common Name	Scientific Name	Channel Location							
		a	b	c	d	e	f	g	h
Brewer's Saltbush[1]	*Atriplex lentiformis* var. *breweri*						X	X	X
Allscale[1]	*Atriplex polycarpa*						X	X	X
Dwarf Coyote Brush[1]	*Baccharis pilularis* 'Twin Peaks'				X	X	X	X	X
Coyote Brush	*Baccharis pilularis* ssp. *consanguinea*				X	X	X	X	X
Mule Fat	*Baccharis viminea*			X	X	X			
Frosty Blue Ceanothus[1]	*Ceanothus* 'Frosty Blue'					X	X	X	X
Blue Wild Lilac	*Ceanothus* 'Joyce Coulter'					X	X	X	X
Julia Phelps Ceanothus[1]	*Ceanothus* 'Julia Phelps'					X	X	X	X
Pt. Reyes Creeper[1]	*Ceanothus gloriosus*				X	X	X	X	X
Dwarf Ceanothus[1]	*Ceanothus griseus* 'Yankee Pt'				X	X	X	X	X
Carmel Creeper[1]	*Ceanothus griseus* var. *horizontalis*				X	X	X	X	X
White Lilac	*Ceanothus rigidus* 'Snowball'					X	X	X	X
White Wild Lilac[1]	*Ceanothus thyrsiflorus* 'Snow Flurry'					X	X	X	X
Blue Wild Lilac	*Ceanothus thyrsiflorus* 'Concha'					X	X	X	X
Sticky Monkey Flower	*Diplacus aurantiacus*				X	X	X		
California Buckwheat	*Eriogonum fasciculatum*					X	X	X	X
California Buckwheat	*Eriogonum parvifolium*					X	X	X	X
Wicker Eriogonum	*Eriogonum vimineum*					X	X	X	X
Fremont Silk-Tassel Bush	*Garrya fremontii*					X	X	X	X
Toyon	*Heteromeles arbutifolia*				X	X	X	X	X
Oceanspray	*Holodiscus discolor*					X	X	X	
Pitcher Sage	*Lepechinia calycina*					X	X	X	X
Bush Lupine	*Lupinus arboreus* var. *arboreus*				X	X	X	X	X
Western Choke Cherry	*Prunus demissa*					X	X	X	X
Holly-leaved Cherry	*Prunus ilicifolia*					X	X	X	X
California Coffeeberry	*Rhamnus californica* 'Eve Case'				X	X	X	X	X
Dwarf Coffeeberry	*Rhamnus californica* 'Sea View'				X	X	X		
Red Berry (Buckthorn)	*Rhamnus crocea*					X	X	X	X
Sugar Bush	*Rhus ovata*				X	X	X		
Squaw Bush	*Rhus trilobata*					X	X	X	X

[1]Species for use only in landscape plantings in setback or buffer areas; not for use within riparian corridors.

Common Name	Scientific Name	Channel Location							
		a	b	c	d	e	f	g	h
Flowering Current	*Ribes glutinosum*				X	X	X		
Red Flowering Currant	*Ribes sanguineum* var. *sanguineum*				X	X	X		
Evergreen Current	*Ribes viburnifolium*					X	X		
California Wild Rose	*Rosa californica*			X	X	X	X		
California Blackberry	*Rubus ursinus (vitifolius)*			X	X	X	X	X	X
Black Sage	*Salvia mellifera*					X	X	X	X
Sonoma Sage	*Salvia sonomensis*					X	X	X	X
Hummingbird Sage	*Salvia spathacea*					X	X	X	X
Creeping Snowberry	*Symphoricarpos mollis*				X	X	X		
Common Snowberry	*Symphoricarpos rivularis*				X	X		X	X
Poison Oak	*Toxicodendron diversilobum*				X	X	X		
California Fuchsia	*Zauschneria californica*				X	X	X	X	X
VINES									
Virgin's Bower	*Clematis lasiantha*			X	X	X			
Hairy Honeysuckle	*Lonicera hispidula* var. *vacillans*			X	X	X			
Wild Grape	*Vitis californica*				X	X	X		
HERBACEOUS GROUNDCOVERS & GRASSES									
White Yarrow	*Achillea millefolium*				X	X	X	X	X
Bent Grass	*Agrostis hallii*				X	X	X	X	X
Pigweed	*Amaranthus* sp.		X	X					
Mugwort	*Artemisia douglasiana*			X	X	X			
Western Aster	*Aster chilensis*			X	X				
Rattlesnake Grass[1]	*Briza maxima*				X	X	X	X	X
California Brome	*Bromus carinatus*				X	X	X	X	X
Evening Primrose	*Camissonia cheiranthifolia*				X	X	X	X	X
Farewell-to-Spring	*Clarkia amoena*				X	X	X	X	X
Large Godetia	*Clarkia purpurea*				X	X	X	X	
Water Grass	*Echinochloa crusgalli*		X						
Wild Rye Grass	*Elymus glaucus*				X	X	X	X	X
Creeping Wild Rye Grass	*Elymus triticoides*				X	X	X	X	X

[1]Species for use only in landscape plantings in setback or buffer areas; not for use within riparian corridors.

Common Name	Scientific Name	Channel Location							
		a	b	c	d	e	f	g	h
Coast Buckwheat	*Eriogonum latifolium*					X	X	X	X
California Poppy	*Eschscholzia californica*				X	X	X	X	X
Red Fescue	*Festuca rubra*				X	X	X	X	X
Blue Thimble Flower	*Gilia capitata*				X	X	X		
Wild Licorice	*Glycyrrhiza lepidota*			X	X	X			
Meadow Barley	*Hordeum branchyantherum*		X	X	X				
Wild Iris	*Iris douglasiana*				X	X	X		
Deerweed	*Lotus scoparius*				X	X	X		
Annual Lupine	*Lupinus bicolor*				X	X	X	X	X
Dense-flowered Lupine	*Lupinus densiflorus*				X	X	X	X	X
Sky Lupine	*Lupinus nanus*				X	X	X	X	X
Arroyo Lupine	*Lupinus succulentus*				X	X	X	X	X
Scarlet Monkeyflower	*Mimulus cardinalis*					X	X	X	X
Baby Blue Eyes	*Nemophilia* sp.			X	X				
Dense Owls Clover	*Orthocarpus densiflorus*				X	X	X	X	X
Owls Clover	*Orthocarpus purpurascens*				X	X	X	X	X
California Blue Bell	*Phacelia campanularia*					X	X	X	X
Popcorn Flower	*Plagiobothrys* sp.				X	X	X	X	X
California Buttercup	*Ranunculus californicus*				X	X	X		
Yerba Buena	*Satureja douglasii*				X	X	X		
Blue-eyed Grass	*Sisyrinchium bellum*					X	X	X	X
Western Goldenrod	*Solidago occidentalis*				X	X	X	X	X
Purple Needlegrass	*Stipa pulchra*					X	X	X	X
Red Clover[2]	*Trifolium hirtum*			X	X	X	X	X	X
Crimson Clover[2]	*Trifolium incarnatum*			X	X	X	X	X	X
Dutch White Clover[2]	*Trifolium repens*				X	X	X	X	X
Zorro Fescue[2]	*Vulpia myuros* "Zorro"				X	X	X	X	X
AQUATIC & MARSH PLANTS									
Salt Grass	*Distichlis spicata*			X	X	X			
Needle Spike-Rush	*Eleocharis acicularis*	X	X	X					
Marsh Gum Plant	*Grindelia humilis*				X	X	X		

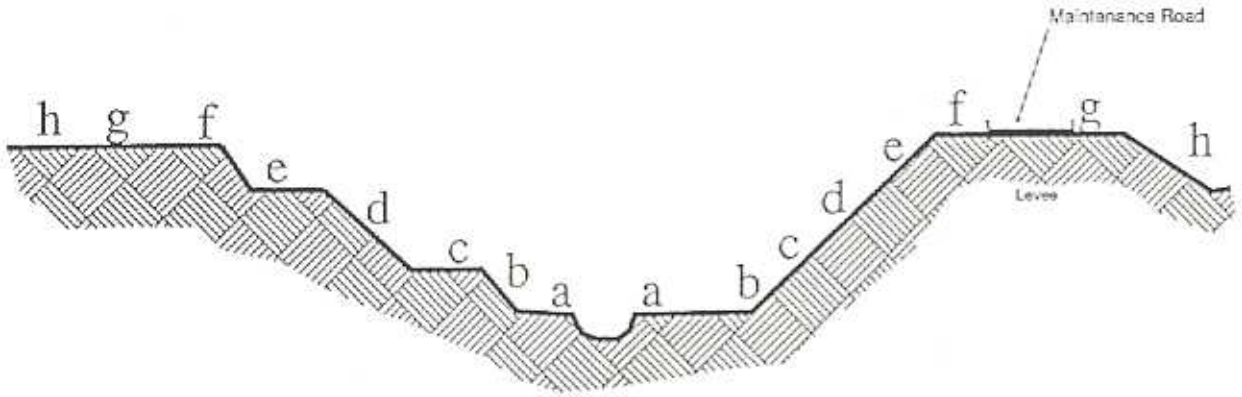
[2]Species to be used only for erosion control.

Common Name	Scientific Name	Channel Location							
		a	b	c	d	e	f	g	h
Water Smartweed	*Polygonum punctatum*	X	X						
Curly Dock	*Rumex crispus*		X	X					
Common Pickleweed	*Salicornia pacifica*		X	X					
California Bulrush	*Scirpus californicus*	X	X						
Olney's Bulrush	*Scirpus olneyii*	X	X						
Alkali Bulrush	*Scirpus robustus*	X	X						
Soft Flag Cattail	*Typha latifolia*	X	X						

PLANT SPECIES PARTICULARLY UNSUITABLE FOR USE IN AND ADJACENT TO RIPARIAN CORRIDORS

TREES
Acacia
Black locust
Tree-of-heaven
Eucalyptus
English elm
SHRUBS
French, Scotch and Spanish broom
Tamarisk
Himalaya berry
Tree tobacco
HERBACEOUS/SEMI-WOODY SPECIES
Pampas grass
Giant reed
Periwinkle
German, Algerian and English ivy
Johnson grass
Kikuyu grass
Cocklebur
Russian thistle
Bull thistle
Poison hemlock
Milk thistle
Star thistle (yellow and purple)

Channel Planting Locations



Key to Planting Locations or Localized Conditions	
a	Streambed / border of low flow channel
b	Toe of bank or at base of berm (bench) within channel
c	Lower bank slope or on berm (bench) within channel
d	Middle bank slope
e	Upper bank slope or on high bench within channel
f	Top of bank (inboard of maintenance road)
g	Level ground (outside maintenance road)
h	Outside levee slope or level ground far away from channel bank

APPENDIX C
GUIDELINES FOR RIPARIAN CORRIDOR BIOTIC ASSESSMENTS
CITY OF SAN JOSE

A riparian corridor biotic assessment should be prepared for a proposed project if, during project review and preparation of the Environmental Checklist, City planning staff determines that the project lies within or adjacent to a riparian corridor and impacts may occur as a result of a proposed project. Topics that should be addressed in the biotic assessment include:

I. INTRODUCTION

- Information as to the purpose of the report and for whom the report is prepared.

II. BIOTIC RESOURCE INVESTIGATION

- Describe riparian resources on and/or adjacent to the project site, including habitat classification, dominant and co-dominant plant species, wildlife utilization, and fishery resources.

- Map the extent of the riparian corridor, showing both the outer edge of the corridor (edge of tree dripline) and top of bank.

- Identify and map occurrences of invasive, non-native plant species.

- Identify and map existing and/or potential raptor nest sites, or other significant wildlife habitat feature (e.g., snags).

- Identify and map significant bank erosion areas.

- Assess presence of rare, threatened, or endangered species and species of special concern.

III. IMPACT ASSESSMENT AND RECOMMENDATIONS

- Discuss potential direct and indirect impacts to riparian resources from the proposed project, including the projects adherence to Riparian Corridor Design Guidelines.

- Present protective, management and enhancement measures designed to prevent or minimize impacts on riparian resources (e.g., setback area, buffer zone, removal of invasive, non-native species, special construction-related activities, habitat replacement, biotechnical slope protection measures, recommended plant species for landscaping and buffer zone vegetation).

- Address potential regulatory agency jurisdiction (i.e., California Department of Fish and Game, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, National Marine Fisheries, Santa Clara Valley Water District.

APPENDIX D
GUIDELINES FOR RIPARIAN REVEGETATION PLANS CITY OF SAN JOSE

The following outline lists the major topics to be discussed in a riparian revegetation plan. The outline is from Habitat Mitigation and Monitoring Guidelines (San Francisco District, U.S. Army Corps of Engineers, 1991) and addresses topics required for Corps Section 404 permits. The outline is useful for other riparian revegetation plans, including meeting requirements of a California Department of Fish and Game 1601/1603 Streambed Alteration Agreement. One report or mitigation plan should be prepared for submittal to City, COE and CDFG, as required. Depending upon the size and nature of the revegetation site, topics may be deleted, as applicable.

RECOMMENDED TOPICS

Project Description
- Location of Project
- Brief Summary of Overall Project
- Responsible Parties
- Jurisdictional Areas to be Filled
- Type(s), Functions, and Values of the Jurisdictional Areas
- Goal of Mitigation
- Type(s) of Habitat to Be Created
- Functions and Values of Habitat to Be Created
- Time Lapse

Final Success Criteria
- Target Functions and Values
- Target Hydrological Regime
- Target Jurisdictional Acreage to be Created

Proposed Mitigation Site
- Location and Size of Mitigation Area
- Ownership Status
- Existing Functions and Values of Mitigation Area
- Present and Proposed Uses of Mitigation Area
- Jurisdictional Delineation (if applicable)
- Present and Proposed Uses of All Adjacent Areas
- Zoning

Implementation Plan
- Rational for Expecting Implementation Success
- Responsible Parties
- Site Preparation
- Planting Plan
- Schedule
- Irrigation Plan
- As-Built Conditions

Maintenance During Monitoring Period
- Maintenance Activities
- Responsible Parties
- Schedule

Monitoring Plan
- Performance Criteria
- Monitoring Methods
- Annual Reports
- Schedule

Completion of Mitigation
- Notification of Completion
- Corps Confirmation

Contingency Measures
- Initiating Procedures
- Alternative Locations for Contingency Mitigation
- Funding Mechanism
- Responsible Parties

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