CITY OF TUCSON

MEMORANDUM

DATE: October 29, 2003

Carol West

TO: Mayor and Council Members
James Keene, City Manager
County Board of Supervisors
Chuck Huckelberry, County Administrator
Larry Hecker, Chair Pima County Bond Oversight Committee

FROM: Carol West
Council Member-Ward 2

SUBJECT: Ward 2 **Revised** Recommended Projects for the Pima County Open Space Bond Election

Below is a list of the recommended projects from the Ward 2 City Council Office for the Pima County Open Space Bond Election:

1. Acquisition of the parcels between the confluence of the Agua Caliente Wash and the Tanque Verde Wash and west of the intersection of Tanque Verde Road and Houghton Road. This area contains the last woodland riparian habitat within city limits. A technical memorandum on the biological significance of this area by SWCA, Inc. to Pima County Floodplain Management Division indicates the following special interest species that are known to occur or have the potential to occur include:

    - Tumamoc Globeberry
    - Lowland Leopard Frog
    - Giant Spotted Whiptail
    - Cactus Ferruginous Pygmy Owl
    - Burrowing Owl
    - Rufous-winged Sparrow
    - Abert's Towhee
    - Bell's Vireo
    - California Leaf-nosed Bat
    - Lesser Long-nosed Bat
    - Pale Townsend's Big-eared Bat
    - Western Yellow Bat
    - Western Red Bat
    - Merriam's Mouse

A copy of the above-mentioned memorandum is attached.

There are several publicly-owned parcels in the area: Pima County's Isabella Lee Parcel (Parcel 133-03-2860), Pima County Parcel 133-03-285B, and the City of Tucson Parcel 13303-301A. The addition of the following parcels as open space or a natural park would protect the degradation of the condition of the sensitive riparian plant communities and decrease the potential for flooding of adjacent properties.

Listed below are the parcels desired for acquisition:

Parcel 13303281A
Parcel 133033320
Parcel 13303283E
Parcel 13303282M
Parcel 133033070
Parcel 13303304C
Parcel 13303303C
Parcel 13303303F
Parcel 133033060
Parcel 133033050
Parcel 13303311A
Parcel 13303314B

2. Acquisition of the Adkins Property – Historic property in the Old Ft. Lowell Neighborhood. This property is located at the southwest corner of Ft. Lowell Road and Craycroft Road.

3. Completion of river park trail system along the Rillito River, Pantano Wash, Santa Cruz River, Julian Wash, and the Houghton Greenway.

4. Ft. Lowell Park – Historic preservation of the ruins at park.

5. Kino and 36th Street – Acquisition of land for protection of natural open space and creation of a natural resource park.

6. 36th St. Open Space Corridor – Acquisition of land for open space corridor connecting Tucson Mountain Park and the Santa Cruz River basin.

Attachment

April 15, 2003

TECHNICAL MEMORANDUM

To: Julia Fonseca, Program Manager
Pima County Floodplain Management Division
Department of Transportation and Flood Control District
201 North Stone Avenue, 4th Floor
Tucson, Arizona 85701

From: Priscilla Titus, Project Ecologist
SWCA Inc., Environmental Consultants

INTRODUCTION AND METHODS

This narrative summarizes the biological significance of the landscape in the area where Tanque Verde Creek and Agua Caliente Wash converge. The subject area includes lands west of Houghton Road between Tanque Verde Road and Speedway Boulevard to just west of the confluence Agua Caliente Wash and Tanque Verde Creek (Figure 1). Several publicly-owned parcels are present in the subject area: Pima County owned parcel 133-03-2860 (commonly referred to as the Isabella Lee Parcel), Pima County owned parcel 133-03-285B, and City of Tucson owned parcel # 13303-301A. The subject area is located within the City of Tucson, Arizona and encompasses all of Section 2 of Township 14 South, Range 15 E.

The information presented herein was obtained through review of existing resources including aerial photography and maps produced in support of the Sonoran Desert Conservation Plan and related reports. Detailed field studies have not been conducted within the subject lands.

FINDINGS

The subject lands are located in the northeastern extreme of the City of Tucson. Unincorporated Pima County lands are located west and north of the subject area. Land use in the subject area consists of low- and high-density housing, a few scattered commercial businesses, an equestrian center, and vacant lands. Throughout the Tucson Valley, a wide variety of land-use changes including residential, industrial, and agricultural developments have altered the distribution and composition of the Tucson Valley's biological resources. The subject area is identified as a Biological Core Area in the Middle Santa Cruz Planning Subarea under the draft Sonoran Desert Conservation Plan. It encompasses valuable vestigial elements of the wealth of natural resources the Tucson Valley once supported. These elements are described in greater detail below.

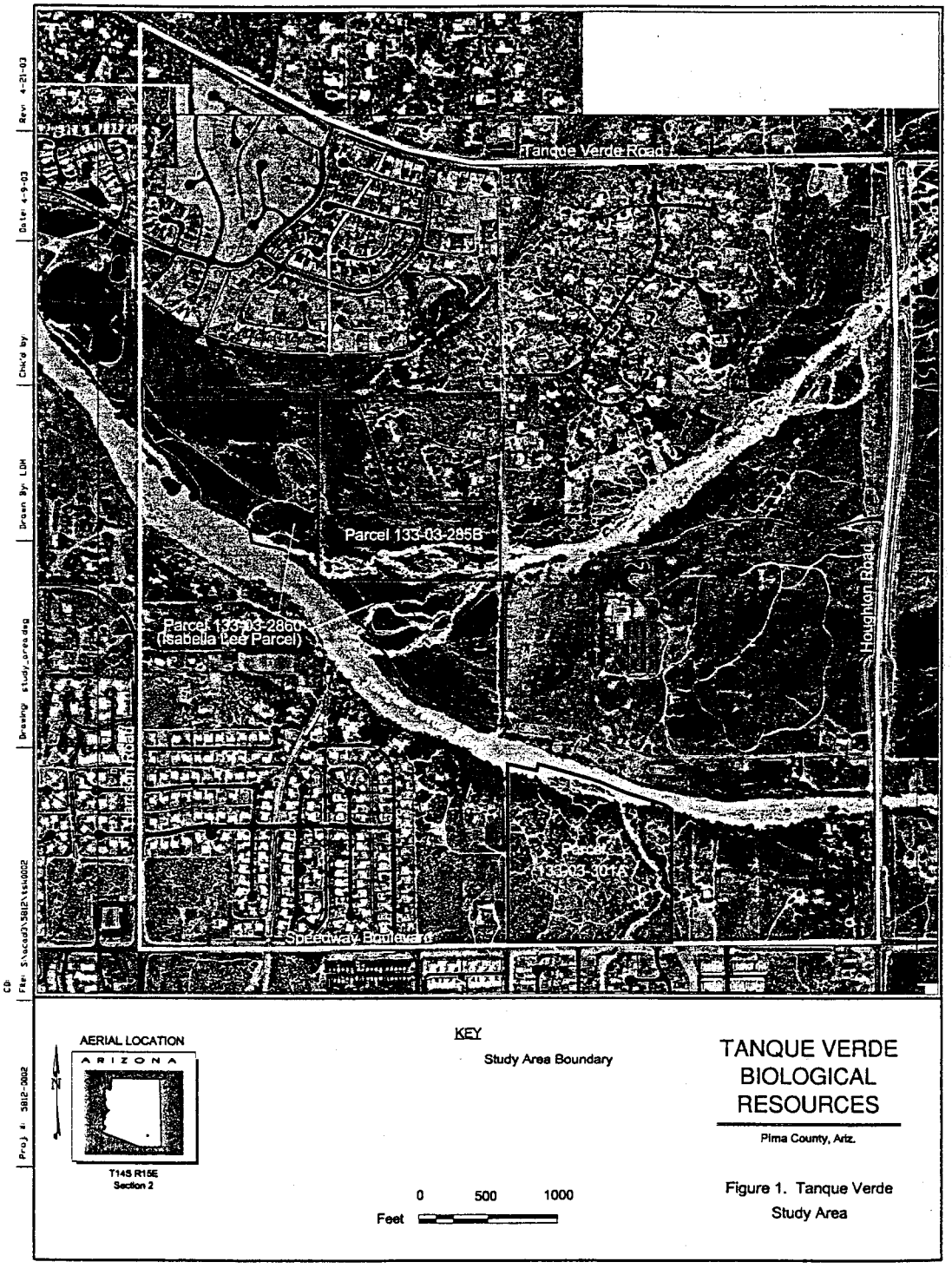

Figure 1. Tanque Verde Study Area

VEGETATION

Pima County Flood Control District recognizes five major classes of riparian habitat communities, and a map of these community types is available at the PCFCD offices and on their website at (http://www.dot.co.pima.az.us/gis/maps/mapguide/hmtest.mwf). The Pima County maps indicate that Hydroriparian and Mesoriparian vegetation types are present along both banks of Tanque Verde Creek and Agua Caliente Wash. In addition, Xeroriparian Type B vegetation is present along smaller, unnamed tributaries to Tanque Verde Creek.

According to the PCFCD definition, Hydroriparian areas are ecosystems associated with perennial watercourses characterized by dense coverage of wetland plant species. Cottonwood and willow are commonly found in Hydroriparian areas. Mesoriparian habitat areas are supported by perennial or intermittent streams, or areas of shallow groundwater. They are similar to Hydroriparian habitats but with less dense plant communities. Typical species in this class include mesquite, ash, netleaf hackberry and sycamore-ash associations.

Pima County defines Xeroriparian areas as those habitats associated with intermittent water supplies that may include species from adjoining upland areas. Typical species include paloverde and mesquite, along with occasional Mesoriparian species. The Xeroriparian B Subclass has a vegetative volume between 0.675 and 0.850 m^3/m^2.

Throughout the Tucson Valley, degradation of these plant associations and related degradation of other biological values was already evident by the middle of the 19th century as a result of intensive cattle grazing and overutilization of riparian resources including woodcutting. During the 20th and 21st centuries, these community types were all but eliminated from the Tucson basin as a result of agriculture, development, and surface water diversions and groundwater withdrawals.

Both the City-owned parcel and the Isabella Lee parcel contain significant representatives of the extensive stands of cottonwoods, willows, ash, sycamore, and mesquite trees that once characterized major watercourses in the Tucson Valley (Figure 2). Understory species include a dense shrub community including desert hackberry, acacia, elderberry, wolfberry, and graythorn. The groundcover is a lush and diverse association of grasses and forbs that may not be widely represented elsewhere (Figure 3). The seeds of many annuals lie dormant for years and germinate and survive only when conditions are suitable.

Areas farther removed from the drainage channels are vegetated by Sonoran desertscrub. This community is typified by paloverde trees and saguaros and includes mesquite, chainfruit cholla, prickly pear, hedgehog cactus, barrel cactus, triangle bursage, and brittlebush, and a wide variety of grasses and forbs.

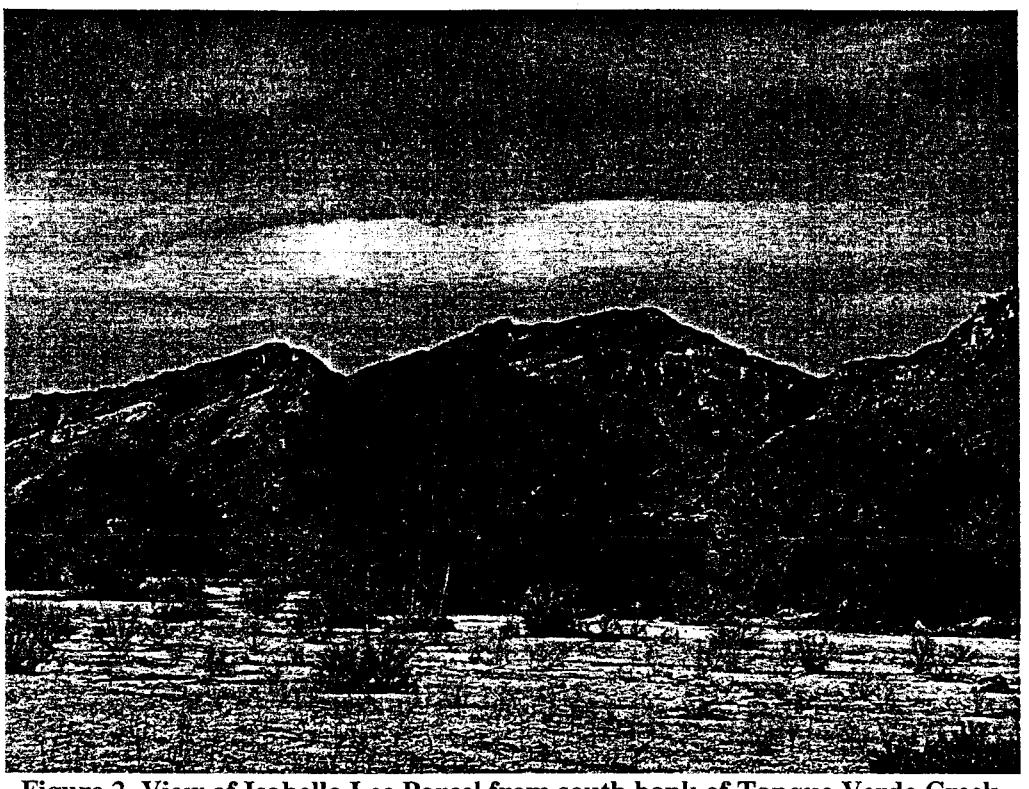

Figure 2. View of Isabella Lee Parcel from south bank of Tanque Verde Creek.

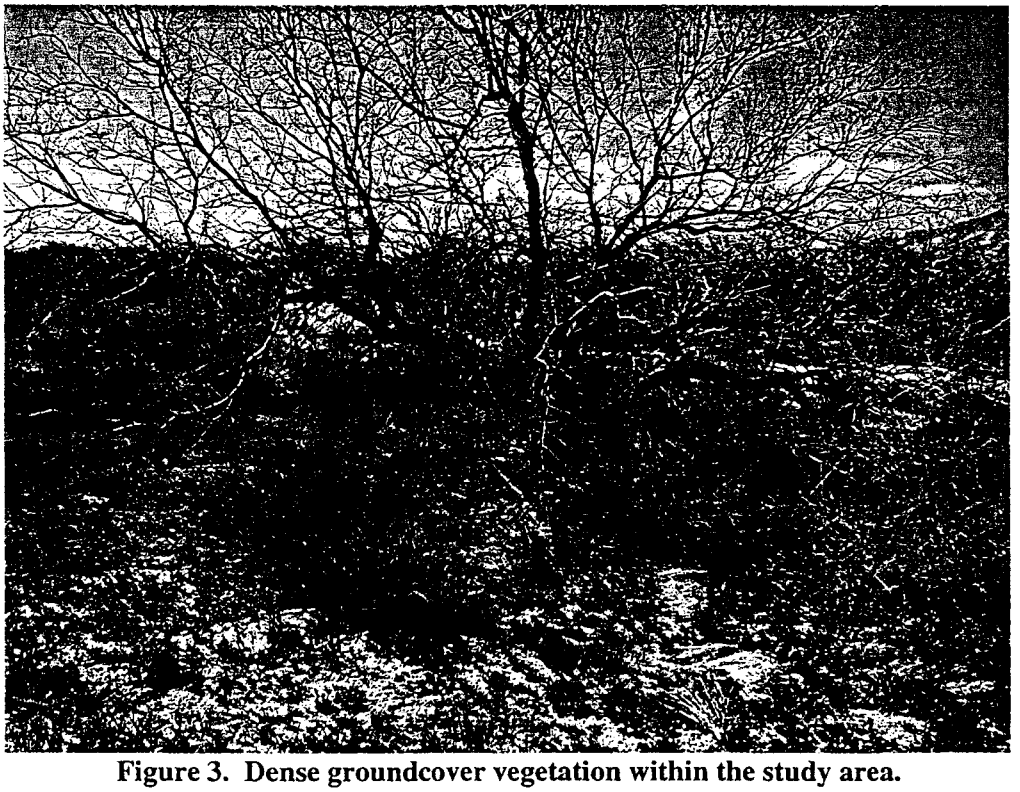

Figure 3. Dense groundcover vegetation within the study area.

Recently, a bi-national team representing the United States and Mexico was assembled to come up with a science-based approach for identifying a network of Conservation Sites throughout the Sonoran Desert Ecoregion (Marshall *et al.* 2000). With proper management, this network would theoretically ensure the long-term persistence of the Ecoregion's biodiversity including rare and common species, native vegetation communities, and the ecological processes needed to maintain these elements of biodiversity. The effort identified 100 large landscapes and 79 small, localized areas as Conservation Sites where conservation opportunities should be pursued (*ibid.*). One of these, the East Tucson Riparian Conservation Site, encompasses the study area addressed herein. The Tanque Verde study area supports three vegetation communities for which the Conservation Criteria designated by the plan are not presently met: Mesquite Woodland; Desert Riparian Woodland; and Stream, Seeps, and Sinks. The plan further emphasized that the need for restoration of riparian systems in the Sonoran Desert is critical.

WILDLIFE

The subject area offers three essential components of wildlife habitat: food, cover and water. The relative complexity of the vegetation communities in the study area, especially along the drainage edges, offers abundant food and cover in an increasingly fragmented and destitute landscape. These assemblages reflect the potential natural diversity of plant communities not present in landscaped or highly groomed areas. Many of the plants produce berries, seeds, or fruits that are valued by wildlife and the dense structure of the understory offers secure nesting and shady resting locations. Multiple canopy layers offer important habitat and niches, and snags are utilized by birds, bats and small mammals. A lush herbaceous understory, seldom present in desert landscapes, offers additional resources for wildlife that varies in composition with changing seasons. Water is available within several artificial impoundments and within the drainages during and shortly after precipitation events.

The subject area is located where two major drainages converge. Agua Caliente Wash originates in Molino Canyon, located within the southern range of the Santa Catalina Mountains, whereas the headwaters of Tanque Verde Creek are located in the northern foothills of the Rincon Mountains. The convergence of these two drainages forms an important travel corridor for a wide array of Sonoran Desert wildlife species. Wildlife use of the area includes both resident and transient populations that use the drainages and associated riparian habitat for daily travel and seasonal migration. Furthermore, the corridor serves to connect neighboring populations and allows gene flow to occur between neighboring mountain ranges, and potentially, the San Pedro River Valley.

The location of Sonoran Desertscrub in close proximity to the riparian corridor further increases its value. Some species such as the rufous-winged sparrow, which is a Priority Vulnerable Species (PVS), need both habitats in order to survive and flourish. A variety of land-use changes, including residential, industrial, and agricultural developments have altered the Tucson Valley's wildlife populations and composition.

Historically, the area likely supported the endangered cactus ferruginous pygmy-owl, which was documented along the Rillito River by Bendire in 1888. The potential value of the area is further evidenced by its current consideration as a monitoring site under the Arizona Important Bird Areas Avian Science Initiative (S. Wilbor, Tucson Audubon Society, personal communication with J. Fonseca, Pima County Flood Control District). Yellow-billed cuckoos, a PVS, have been observed in the area in recent years, though nesting has not been confirmed (J. Fonseca, PCFCD, personal communication with P. Titus, SWCA).

Wildlife species that are currently expected to use the area include javalena, coyote, bobcat, black-tailed jackrabbit, rock squirrel, round-tailed ground squirrel, spadefoot toad, desert spiny lizard, western whiptail, tree lizard, and a wide variety of birds including raptors. Species that are of special-interest that are known to use the area or have potential to occur within the area are summarized in Table 1.

Table 1. Special Interest Species That Are Known To Occur Or Have Potential To Occur in the Tanque Verde Subject Area.

Tumamoc Globeberry (*Tumamoca macdougalii*)	SDCP-PVS	The range of this plant covers some 31,000 square miles of Sonoran Desert from Sonora, Mexico to Tucson, Arizona, west to Organ Pipe Cactus National Monument and north to Pinal County, Arizona. In Tucson, the species occurs dry, south-facing basalt slopes and along desert washes. The largest known population is found in creosote bush desertscrub on gravelly loams primarily derived from weathered granites.	May occur. The proposed project area contains appropriate habitat for this species.
Lowland Leopard Frog (*Rana yavapaiensis*)	USFWS-SOC AGFD-WSCA SDCP-PVS	Occurs in south-central, central, west-central, and extreme northwestern Arizona, south and west of the Mogollon Rim. Recently found in 5 canyons in the Rincon Mountain District of Saguaro National Park in Pima County. Known from 10-20 sites in eastern Pima County.	May occur. PVS maps of modeled habitat potential for this species indicate the subject area is a Priority Conservation Area due to its critical landscape linkage and potential for restoration or enhancement. Current threats in the subject area include the potential presence of non-native species that prey on native amphibians within artificial impoundments in the area.
Giant Spotted Whiptail (*Cnemidophorus burti stictogrammus*)	USFWS-SOC SDCP-PVS	In Pima County, this species has been recorded in the Santa Catalina, Santa Rita, and Baboquivari Mountains. Formerly common in Sabino Canyon. Extirpated from most of the Santa Cruz River valley. Inhabits mountain canyons, arroyos, and mesas, entering lowland desert along stream courses and riparian areas.	May occur. PVS maps of modeled habitat potential for this species indicate that the subject area has low habitat potential for this species and is just southeast of a Priority Conservation Area that would be of value to the reserve system for this species.
Cactus Ferruginous Pygmy-owl (*Glaucidium brasilianum cactorum*)	USFWS-E AGFD-WSCA SDCP-PVS	Historically, the primary habitat of this owl in central and southern Arizona was apparently cottonwood-willow forests, mesquite bosques, and Sonoran Desertscrub vegetation communities. Currently, it is known in Arizona only from the following two vegetation communities: (1) Sonoran Desertscrub in braided-wash systems with paloverde, ironwood, and mesquite; and (2) Semidesert Grassland with drainages containing mesquite, hackberry, and ash.	May occur. PVS maps of modeled habitat potential for this species indicate the subject area lies within a Priority Conservation Area surrounding a population that must be within the reserve system, and known locations are relatively close to the subject area.
Southwestern Willow Flycatcher (*Empidonax traillii extimus*)	USFWS-E AGFD-WSCA SDCP-PVS	Occurs in dense riparian habitats along streams, rivers, and other wetlands with cottonwood, willow, boxelder, buttonbush, and arrowweed.	Unlikely to occur. PVS maps of modeled habitat potential for this species indicate low to medium habitat potential within the subject area. Although the subject area is not currently suitable for breeding habitat for this species, it may serve as a migratory corridor.
Burrowing Owl (*Athene cunicularia*)	SDCP-PVS	Considered rare in Pima County, this species inhabits grasslands, open areas of desert-scrub, and disturbed areas. Recent reliable observations include the agricultural fields near Pinal Air Park, along the airstrip at Davis Monthan Air Force Base, and along the Santa Cruz River near 29th Street. Inhabits grasslands, pastures, desertscrub, and edges of agricultural fields, golf courses, vacant lots, and road embankments.	May occur. PVS maps of modeled habitat potential for this species indicate medium habitat potential within the subject area.

Table 1. Special Interest Species That Are Known To Occur Or Have Potential To Occur in the Tanque Verde Subject Area.

Rufous-winged Sparrow *(Aimophila carpalis)*	SDCP-PVS	In Pima County, this species is fairly widespread in appropriate habitat. Specific locations include Saguaro National Park (east) and the Tucson area. Inhabits flat or gently hilly Sonoran Desertscrub vegetation with scattered trees and shrubs.	May occur. PVS maps of modeled habitat potential for this species indicate low to medium habitat potential within the subject area, and an area delineated around a Priority Conservation Area with populations that must be within the reserve system is located just north and west of the subject area. Vegetation encompassed by the subject area is similar to habitats that this species occupies.
Abert's Towhee *(Pipilo aberti)*	SDCP-PVS	In Pima County, this species is relatively common along brushy washes and the effluent-dominated riparian woodland portion of the Santa Cruz River; also present in urban backyards especially those that are along washes.	Known to occur. PVS maps of modeled habitat potential for this species indicate low to medium habitat potential within the subject area. Species was observed during site visit and vegetation encompassed by the subject area is similar to habitats that this species occupies. Priority Conservation Area with populations that must be contained within the SDCP reserve system; vegetation along the washes that many of the project sites encompass is similar to habitats that this species occupies.
Bell's Vireo *(Vireo belli)*	SDCP-PVS	In Pima County, this species is a common summer resident in dense shrubs and trees of lower canyons, generally below the oak zone, and along desert streams and washes in dense riparian vegetation.	May occur. PVS maps of modeled habitat potential for this species indicate the subject area lies within a Priority Conservation Area surrounding a population that must be within the reserve system, and known locations are relatively close to the subject area.
California leaf-nosed bat *(Macrotus californicus)*	SDCP-PVS	Known to inhabit caves, mines, and rock shelters, mainly in Sonoran Desertscrub. Forages on flying insects.	May occur. PVS maps of modeled habitat potential for this species indicate low to medium habitat potential within the subject area.
Lesser Long-nosed Bat *(Leptonycteris curasoae yerbabuenae)*	USFWS-E AGFD-WSCA SDCP-PVS	Day roosts are in caves, abandoned tunnels, and unoccupied buildings. Forages on nectar, pollen, and fruits of paniculate agaves and columnar cacti.	May occur. PVS maps of modeled habitat potential for this species indicate the subject area lies within a Priority Conservation Area surrounding a population that must be within the reserve system, and known locations are relatively close to the subject area.
Pale Townsend's big-eared bat *(Plecotus townsendii pallescens)*	SDCP-PVS	Known to inhabit caves, mines, and building through a wide range of elevations and vegetation types. Forages on flying insects.	May occur. PVS maps of modeled habitat potential for this species indicate low to medium habitat potential within the subject area. Known locations are present several miles southeast of the subject area.
Western Yellow Bat *(Lasiurus xanthinus)*	AGFD-WSCA SDCP-PVS	Most known records of yellow bats from Arizona are from urban Tucson and Phoenix where they are associated with planted fan palms. This bat roosts in palm trees and riparian deciduous trees.	May occur. PVS maps of modeled habitat potential for this species indicate the subject area lies within a Priority Conservation Area that would be of value to and records of this species occurrence including pregnant females are relatively close to the subject area.
Western Red Bat *(Lasiurus blossevillii)*	AGFD-WSCA SDCP-PVS	In Pima County, this species occurs along riparian corridors with oaks, sycamores, and cottonwoods.	May occur. PVS maps of modeled habitat potential for this species indicate low to medium habitat potential within the subject area; however, potential habitat is present within the subject area, and records of this species occurrence, including pregnant females, are relatively close to the subject area.
Merriam's Mouse *(Peromyscus merriami)*	SDCP-PVS	This species is known primarily from dense, forest-like stands of mesquite (bosques), and is also found in thick stands of mesquite, cholla, prickly pear, paloverde, and grasses.	May occur. PVS maps of modeled habitat potential for this species indicate the subject area lies within a Priority Conservation Area surrounding a population that must be within the reserve system, and known locations are relatively close to the subject area.

FLOOD CONTROL AND WATER RESOURCE VALUES

Both Agua Caliente Wash and Tanque Verde Creek are watercourses with favorable hydrogeologic conditions that include reaches that possess an extensive low-permeability layer at shallow depths that could be used to restore localized aquifers (Pima County 1999). Unfortunately, Tanque Verde Creek has been identified as one of several Tucson streams with the highest annual reported groundwater pumping within one mile of the watercourse. Tanque Verde Creek was also identified as one of the most imperiled river systems, where habitat losses are high and continued or increased groundwater pumping impairs streamflows and shallow groundwater conditions (*ibid.*). Because water availability is one of the most significant factors in determining the condition and distribution of riparian plant communities, these issues furthermore affect the structure of the vegetation within the study area and its ability to support native wildlife assemblages.

The confluence of the two tributaries provides one of few such remaining features in Tucson in which natural conditions still exist. The subject portions of Tanque Verde Creek and Agua Caliente Wash have not been reinforced by bank stabilization structures or subject to channelization, and the surrounding floodplain is prone to flooding, allowing flood storage in the overbanks where it can be utilized by riparian plant communities. The City-owned parcel, the Isabella Lee parcel, and other undeveloped parcels that border these drainage bottoms serve as a riparian preserve along the banks of Tanque Verde Creek and allow infiltration and floodwater storage. The trees growing along the margins absorb and dissipate high energy associated with intense flows and offer natural bank protection and stabilization.

Artificial bank stabilization in this area would result in floodplain soil desiccation, would continue the pattern of channelization of Agua Caliente Wash and Tanque Verde Creek, and would be counterproductive to restoration efforts under development for the Rillito and Santa Cruz Rivers because channelization results in a loss of water storage capacity and increased peak flows downstream. This trend would restrict water availability for riparian plant communities and further impair the natural regeneration and development of cottonwood-willow and mesquite forests in the Tucson Basin.

RECREATIONAL USE

Recreational use of the subject lands include horseback riding, birdwatching, biking, hiking, and unauthorized off-road vehicle use and paintball competitions. Because the City-owned parcel is readily accessible from Speedway Boulevard and is surrounding by high-density housing, the biological assemblages associated with it have been more affected by recreationists than those in undeveloped parcels that are somewhat more difficult to access. Foot trails and illegal dumps sites are evident throughout many of the roadside parcels including the City-owned property. Activities such as off-road vehicle use and paintball games are particularly disruptive to wildlife populations and natural plant communities, and pose safety hazards for passive recreationists. Management of these areas, including designation of a trail system to concentrate disturbance to finite areas, and prohibition of off-road vehicle use would allow recovery of understory plant communities, and improved refuge for wildlife. In turn, these would improve the experience of passive recreationists.

CULTURAL AND HISTORIC RESOURCES

A site file check at the Arizona State Museum revealed that there are three known archaeological sites in the subject area. One of these overlaps with the City–owned parcel and the other is located immediately northwest of the Isabella Lee Property. No formal surveys of the Isabella Lee property have been completed,

as is likely true of the majority of the privately owned lands in the subject area, but the potential for additional sites within the study area is high.

A recent cultural resource survey of Agua Caliente Park, located approximately 2.5 miles northwest of the subject area discussed herein, provided additional documentation for a previously recorded site, the Whiptail Ruin. This large prehistoric village encompassed more than 40 houses, several burial and ceremonial sites, and over 400 artifact concentrations. The Tanque Verde Site, located partially within the subject area discussed herein, was excavated in the 1980s and is also a large prehistoric village. These findings underscore the importance of drainages and riparian areas to prehistoric peoples, and the high likelihood that additional undocumented sites exist.

ECONOMIC VALUES

In a recent study of home sales in northeast Tucson, Colby and Wishart (2002) found that property values increased from three to six percent for homes located within a half-mile of riparian areas proposed for protection, after accounting for the effects of lot size, home size and other factors. This premium accounted for over 103 million dollars for the 25,560 homeowners located within 1.5 mile of riparian corridors.

CONCLUSIONS AND RECOMMENDATIONS

Currently, natural resource trends in Pima County include continued fragmentation and loss of natural habitats and riparian buffers, and an increasing prevalence of disturbed, early-successional, and non-native plant and animal communities. A more comprehensive analysis of the subject area would require more data on existing habitat conditions, wildlife diversity patterns, rare species occurrences, and land-use trends. In the absence of funding for such an effort, however, it is clear that protection of these and other remaining riparian resources would allow the area to continue to provide existing functions and values including wildlife habitat, water resource protection and flood storage, cultural and historic resource protection, recreational use, and economic merits. Furthermore, protection of the resources present in the study area would preserve the integrity of the existing landscape and future options available for both planning and preservation efforts.

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