



MEMORANDUM

Date: October 21, 1998

To: The Honorable Chairman and Members
Pima County Board of Supervisors

From: C.H. Huckelberry
County Administrator 

Re: **Sonoran Desert Conservation Plan**

Introduction

The Board has instructed staff, over a number of meetings, to develop and improve strategies to deal with rapid urban growth in Eastern Pima County. These activities have varied from a general Study Session discussion of growth on February 24, 1998 to specific Board initiatives on May 19, 1998, leading to the adoption of various alterations to the County Zoning and Land Use Codes. To date the Board has been very active in addressing matters of growth, quality of life, and the environment.

The attached draft report, entitled Sonoran Desert Conservation Plan, results from Board direction to develop a comprehensive environmental based response to urban growth pressures. The draft plan itself is the merger of active citizen discussion regarding growth with the Coalition for the Sonoran Desert Protection Plan and others, along with integration of a number of past and present County activities that are natural resource protection oriented.

Development of this plan has been in response to the policies and visions stated by the Board in discussing urban growth issues in Pima County and the need to balance economic, environmental, and human interest.

The report is being transmitted for your initial review and comment before being finalized. In this memorandum I will have a number of recommendations regarding further actions requiring Board direction.

Indicators of Need to Act

As identified in the attached report, Pima County's population has increased dramatically and is expected to reach 1.2 million by the year 2020, as compared to the 800,000 people who live in Pima County today. Distributing this population by jurisdiction, the unincorporated area is expected to increase 65 percent over its present population. Given present housing trends and to accommodate increased regional population, the urbanized area will increase by approximately 160 square miles, which is roughly equal to the present size of the City of Tucson.

Given that today only 18 percent of the land in the State of Arizona is private, one could think that we will soon run out of land to urbanize in Arizona. However, if you look at where rapid urban growth is occurring, such as Eastern Pima County, 31 percent of the land is now privately held and 33 percent is State Trust land. Therefore, 64 percent of the land area in Eastern Pima County is or can be developed. The large availability of land that can be developed, as well as rapid population growth, make action on natural resource protection, preservation, and conservation essential now.

Merging Past, Present and Future Actions

The draft Sonoran Desert Conservation Plan identifies six elements, all integrated to comprise one single natural resource protection plan for Pima County. While this is the first time that we have articulated how these elements combine to form one plan, past Pima County actions have pursued independently and often at different paces, implementation of all plan elements. In fact, enumerated in the plan report is the fact that over \$48 million of the May 1997 bond issue is dedicated to implementing various projects within one or more elements of the plan. In addition, successfully completing our Federal legislative agenda will secure almost \$55 million in Federal funding. Also, the County's own land use regulatory action, through development of the Starr Pass Environmental Enhancement Fee, has provided an additional \$18 million for Tucson Mountain Park expansion. In the near future we may have the opportunity to secure another \$40 million to \$60 million of funding if Proposition 303 is approved at the November general election.

Full implementation of the Sonoran Desert Conservation Plan as outlined in the attached report will take significantly more funding than is now available. It will also take time. However, it must be remembered that when some of the very first past accomplishments of this plan were undertaken in 1987 by helping conserve the Empire and Cienega ranches, none of the previously discussed funding was available.

Compatibility with Comprehensive Plan Update

The Comprehensive Plan adopted by Pima County in 1992 was scheduled for a major update in 1997. Due to issues primarily related to the incorporation of new cities and towns, this update was postponed. Given the ongoing litigation both in State and Federal courts, it is likely that the issue of incorporation may not be solved for another two years. Therefore, the Board may wish to consider advancing an update of the Comprehensive Plan for next fiscal year. In the meantime, the Sonoran Desert Conservation Plan as outlined herein forms the basis of a natural and cultural resources element of the Comprehensive Plan. With the simple addition of air and water elements, the Sonoran Desert Conservation Plan becomes the environmental element of the Comprehensive Plan. By advancing the environmental element of the Comprehensive Plan update, the long-term urban form of Pima County begins to solidify, something that has not been well-defined to date.

Endangered Species Act Compliance

One of the fundamental duties of government is to protect those who cannot protect themselves. This concept applies to our more vulnerable human population but also applies to enforcement of the Endangered Species Act.

In the 19 months that have passed since the United States Fish and Wildlife Service listed the Cactus Ferruginous Pygmy Owl as endangered, we have seen growing conflict related to land use decisions, but a shortage of community-defined solutions. Three realities must be acknowledged in order to move toward the formulation of meaningful solutions. First, the problems associated with the pygmy owl listing are enormous from an environmental perspective; second, the listing has serious economic implications; and third, the ethical decisions before the community as it balances environmental values with economic values and the health and safety needs of residents will be difficult and will require a new level of commitment to demonstrating respect for diverse interests.

Most elements of this draft plan involve preservation of natural habitat that is important for endangered species survival. However, the elements of biological corridors and sensitive and critical habitats directly relate to endangered species protection.

A preliminary work plan for interim and long-term endangered species and habitat protection has been created with the assistance of members of the environmental community, individuals who have voiced concerns over protection of private property rights, representatives of the business community, and other interested parties.

The work plan will open the door to the broad formal public process necessary to undertake regional endangered species planning and program implementation with Federal natural resource agency partners. Perhaps more importantly, it will enable the local community to accept responsibility for our endangered species compliance obligations and adopt a proactive role in defining balanced and rational solutions. To date, community options have been defined primarily by conflict and a winner-take-all approach. Now the Board can reverse this trend by establishing a process that will frame the choices available to the community in terms of consensus-building and an approach that honors multiple obligations. Through this process, we will have greater opportunity to protect the pygmy owl, achieve lasting conservation goals on an ecosystem and multi-species level, and foster acceptance of, and pride in, environmental values that can be upheld across the community.

Recommendations

Recommendations are broken down into three categories: first, recommendations that require general review and comment that could take place over a period of time; second, recommendations on actions the Board may wish to take in the near term providing policy direction; and third, actions that should be taken to demonstrate the County's commitment to compromise and to comply with the Endangered Species Act.

Review and Comment Recommendations

1. It is requested the Board review and comment on the six elements of the draft Sonoran Desert Conservation Plan. Appropriate direction would include Board priorities regarding the elements and specific present and future projects identified in each element within the plan.
2. Where the elements identify specific geographic boundaries, such as in riparian corridor protection or mountain parks, the Board should provide direction regarding the adequacy of the boundaries identified by staff.
3. The Board should provide direction regarding what type of jurisdictional and/or regional review and comment is desired on the draft plan.

Policy Recommendations

4. Given the significant amount of State Trust land identified for conservation and preservation (103,000 acres), the Board should direct staff to file Arizona Preserve Initiative applications on the State lands identified within riparian protection corridors and mountain parks. State lands within these same areas would also be priority acquisitions should Proposition 303 be successful in the November general election.
5. The Board should review the Land Use Policy modifications suggested on pages 31, 32 and 33 of the draft plan and provide direction to staff on implementation.

Action Recommendations

6. Direct staff to initiate an appropriate Truth in Bonding Ordinance amendment that would delete the Arthur Pack Regional Park location for the Northwest YMCA and Community Center as it has been determined that natural habitat preservation in Arthur Pack Regional Park may be essential for the Cactus Ferruginous Pygmy Owl.
7. Authorize the County Administrator to communicate with the Chancellor of Pima Community College to indicate that the alternative that would locate a northwest Pima Community College campus at Arthur Pack Regional Park should be withdrawn from further consideration.
8. In light of significant human safety issues, notify the United States Fish and Wildlife Service of the County's intent to proceed with transportation improvements on Thornydale Road from Ina to Linda Vista, and seek appropriate review and comment from the United States Fish and Wildlife Service and other interested parties regarding impacts and mitigation measures that can be taken to reduce potential disturbance and the loss of habitat that may be associated with roadway widening. Important human safety issues make this project unlike the decision related to the Northwest YMCA and Pima Community College use of Arthur Pack Regional Park.

9. Pursue a cooperative agreement to enter into a federally recognized planning process that will establish a public process open to stakeholders, expedite development of a scope of work, and allow work to begin on a biological assessment for the interim and long-term multi-species habitat conservation plan.
10. Advertise in a newspaper of general circulation within the County that Pima County is interested in receiving letters of interest from those who would like to participate in a steering committee related to development of a multi-species habitat conservation plan. All Federal and State land managers in the region will be invited to participate in the steering committee. The letters of interest received from the public, along with recommendations related to the structure and function of the steering committee, will be forwarded to the Board for review and approval.
11. Invite the Native American Tribes within Pima County and all cities and towns to join in the previously referenced cooperative agreement and provide support and funding for developing the interim, as well as long-term, conservation plan for threatened or endangered species.
12. Actively pursue a scientific study funding request that had previously been made to the Department of the Interior.

CHH/jj

Attachment

Sonoran Desert Conservation Plan

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Sonoran Desert Conservation Plan

I. Introduction

The following report will detail the six elements of a Sonoran Desert Conservation Plan for Pima County. This plan is necessary to preserve and protect those lands in Pima County that are of environmental, cultural, or historic importance. Given Pima County's and Arizona's rapid growth rate, it is essential that steps be taken to preserve these lands now. In the past the County has played a major role in preserving and protecting our historic, cultural, and environmental heritage. We must continue to do so. If fully implemented, the proposed plan will dramatically effect regional urban form, arrest urban sprawl, and protect those lands that contain the highest quantity and quality of regional resources. It is likely that the plan will take decades to implement. Patience and perseverance are necessary. For example, Tucson Mountain Park continues to be expanded today, even though the first acquisitions occurred in 1929.

II. Historic and Future Urban Growth and Population Expansion

Pima County has been one of the fastest growing regions in the United States over the last three decades and will remain a fast growing metropolitan region. The combination of climate, natural beauty and economic opportunity has contributed to past sustained population growth. Table 1 shows population statistics for Tucson, Pima County and Arizona from 1950.

Table 1

Population Statistics for Tucson, Pima County, and Arizona

<u>Year</u>	<u>City of Tucson</u>	<u>Pima County</u>	<u>State of Arizona</u>	<u>Pima as a Percent of State</u>
1997 Estimate	455,085	799,375	4,595,375	17.4
1990 Census	405,390	666,880	3,665,228	18.2
1980 Census	330,537	531,443	2,718,425	19.6
1970 Census	262,933	351,667	1,775,399	14.8
1960 Census	212,892	265,660	1,302,161	20.4
1950 Census	45,454	141,216	749,587	18.8

Population growth has urbanized most, if not all, of the original Tucson Valley, bounded on the north by the Santa Catalina Mountains, on the east by the Rincon Mountains and on the west by the Tucson Mountains. Figure 1 graphically depicts the urban expansion of metropolitan Tucson from 1940 to the present. Urban growth has consumed significant land areas in the past and will continue to do so in the future.

Future population projections indicate that most urban growth will occur in the undeveloped areas of the County rather than through the redevelopment of existing urban areas or substantial infill development. Table 2 lists past population growth and projected future growth in all of Pima County and the City of Tucson, as well as the unincorporated area. Continued population growth will occur in Pima County, generally in undeveloped or under-developed areas.

Regardless of the shift in population between cities and towns and the unincorporated area, Pima County will play a major role in implementing regional conservation measures. Implementation of conservation measures will encourage "in-fill" in incorporated areas, curtail sprawl, and provide more balance to where growth is distributed.

Table 2

Past and Projected Future Growth by Location

<u>Year</u>	<u>Pima County</u>	<u>City of Tucson</u>	<u>Unincorporated Area</u>	<u>Unincorporated Percent</u>
1960	265,660	212,892	45,764	17.2
1970	351,667	262,933	82,514	23.5
1980	536,100	330,537	193,230	36.0
1985	582,600	369,007	202,913	34.8
1990	666,800	405,390	247,540	37.1
2000	854,329	474,467	328,192	38.4
2020	1,206,224	589,899	462,689	38.4

III. Future Urban Expansion

Given population growth identified in the previous section, the number of housing units to accommodate this population growth will also increase. In addition to housing unit expansion, there will also be a need to accommodate new commercial centers and job locations. Development patterns in Pima County have been classified as at the low end of typical urban densities. For example, population density has declined over the last few decades from approximately 5,200 persons per square mile in 1953 to 2,400 persons per square mile today. Given this trend, and the market desirability of low density urban development, it is likely that large land areas will be consumed by increasing population expansion and urbanization.

Table 3 describes the housing unit count for each jurisdiction in 1990, as well as 1997, based on present jurisdictional boundaries. Housing units that will be necessary to accommodate the year 2020 population are also shown.

Table 3

Housing and Jurisdictions in Pima County

<u>Jurisdiction</u>	<u>Housing Units by Present Jurisdiction</u>		
	<u>1990</u>	<u>1997</u>	<u>2020</u> ¹
Tucson	183,338	197,060	256,500
Oro Valley	3,576	11,055	28,300
Marana	850	2,402	23,900
South Tucson	1,870	2,070	2,600
Sahuarita	584	894	4,100
Unincorporated Pima County	<u>107,989</u>	<u>128,851</u>	<u>192,800</u>
Total Pima County	298,207	342,332	508,200

Footnote 1: Assumes constant jurisdictional boundary.

As can be seen, the current regional population of approximately 790,000 people is located in about 342,000 housing units. Since 1990, the region grew by approximately 121,500 new residents and 44,000 new housing units. This translates into approximately 17,000 new residents each year, and approximately 7,000 new units annually. Given continuing low urban density and considering streets and other support services, 7,000 new residential units per year will consume approximately 7.2 square miles of land each year.

If present low residential density trends continue, approximately 160 square miles of urban area and 180,000 new housing units will be needed to accommodate this population growth by 2020. This area is equal to five times the present size of Tucson Mountain Park, or the approximate same present size of the City of Tucson.

IV. Ownership of Land in Eastern Pima County

During this period of population expansion, specific lands were set aside by Federal, State and local governments for resource conservation, open space, and natural park preservation. Figure 2 indicates the historical development of significant land reservations in Eastern Pima County, beginning in 1872 and continuing to the present. These past reservations established a framework for future land preservation.

In western states with large national forests, Indian and military reservations, national monuments, and other Federal land ownership, concern has been expressed over continued governmental acquisition of private lands. In Pima County, Federal, State, and local governments own significant amounts of land. Table 4 lists land area ownership for Pima County in its entirety, and for Eastern Pima County, which is defined as all lands in Pima County east of the Tohono O'odham Indian Nation. For comparison with Pima County, a similar breakdown of ownership is provided for Maricopa County and the State of Arizona.

Table 4

Land Ownership Comparison: Pima, Maricopa, State of Arizona

	<u>Eastern</u>		<u>Pima County</u>		<u>Maricopa County</u>		<u>State of Arizona</u>	
	<u>Pima County</u>							
	%	Sq.Mi.	%	Sq.Mi.	%	Sq.Mi.	%	Sq.Mi.
Federal	28	1,103	29	2,661	53	4,924	42	47,571
Indian	9	336	42	3,868	5	422	28	31,404
State	33	1,280	15	1,383	13	1,202	13	14,958
Private	31	1,214	14	1,271	29	2,668	18	20,015

In reviewing Table 4 it would appear that governments own a majority of the land in Pima County, as well as in Eastern Pima County. However, State Trust lands are held in trust for specific public institutional beneficiaries. Because of the State Land Department's mandate to maximize revenue for its beneficiaries, many State Trust lands will eventually be sold or leased for private purposes. State land in Eastern Pima County will be urbanized in the future, but some State lands should also be preserved and protected for park or open space purposes.

Some have argued in the past that governmental action to conserve lands only decreases the amount of taxable private land and should be avoided when only 18 percent of the land in Arizona is private. However, in Eastern Pima County, where 64 percent of the land is either developable private or State Trust land, significant conservation measures can be taken without affecting the tax base. In rapidly growing Eastern Pima County, where a majority (64 percent) of the land can be developed, conservation efforts are needed now.

V. Importance of State Land to Future Pima County Urban Form

Given that 33 percent of the land area in Eastern Pima County is State Trust land, it is obvious that the State, through the State Land Department, will play a major role in any future urban growth of Pima County. The State will also be instrumental in assisting with the preservation and protection of lands threatened by urbanization that are of significant environmental, cultural, or historic resource value. Figure 3 is a map of Eastern Pima County that identifies private, Federal, and State Trust lands.

Numerous planning efforts over the years have indicated the importance of State Trust lands in open space planning. Pima County's first open space bond issue focused primarily on the acquisition of private and State Trust lands in what was then known as Rancho Romero, which created Catalina State Park. In the 1986 bond issue, funding was provided to acquire State land surrounding Colossal Cave Mountain Park.

A significant opportunity to preserve State Trust lands for open space will occur in the November 1998 general election, when Proposition 303 will be before the voters of Arizona. This proposition, if passed, will provide approximately \$220 million to purchase State lands that are threatened by urbanization and contain significant or unique environmental, cultural, or historic resources. This plan will identify those State lands in Eastern Pima County that could be preserved. It is likely that the number of State lands identified for preservation will exceed the funds allocated. Early identification of State land acquisition priorities should assist the voters of Pima County in understanding what State lands should be preserved if the proposition passes, as well as provide guidance to the State Land Department regarding Pima County's priorities for State land protection. In total, this plan calls for the protection or preservation of 103,072 acres of State Trust land in mountain parks or riparian preserves. Acquisition of this amount of State land will take many years and perhaps several different initiatives. In the interim period, conservation compatible land uses should be promoted on these State lands.

By linking the County Geographic Information System computer database with the Assessor's evaluation parcel base, it is possible to estimate the average assessed value of private lands in the vicinity of State lands in each of the mountain parks or riparian corridors. While the actual acquisition of State lands will require individual appraisals on each parcel, this method of estimating the value is sufficient for conceptual planning purposes. Actual appraisal value will vary depending on market conditions at the time, as well as site specific conditions of each parcel of property such as floodplain involvement, etc. Present values of State Trust land range from as low as \$100 per acre to as high as \$4,000 per acre.

VI. The Plan

The Sonoran Desert Conservation Plan combines short-term actions to protect and enhance the natural environment with long-range planning to ensure that our natural and urban environments not only coexist but develop an interdependent relationship, where one enhances the other. The action plan will also guide already approved public bond investment and conservation and preservation actions, establish Federal program and funding priorities, and establish our region's preference for the expenditure of State funds to preserve and protect State Trust lands threatened by urbanization.

The Sonoran Desert Conservation Plan will contain the following six elements: 1) ranch conservation, 2) historic and cultural preservation, 3) riparian restoration, 4) mountain parks, 5) habitat, biological and ecological corridor conservation, and 6) critical and sensitive habitat preservation. Under each element will be listed Past, Present and Future Projects. The word projects has been carefully chosen over the word program since accomplishing a project leads to a tangible physical asset or improvement that can be easily seen and explained to the public or taxpayer.

1. Ranch Conservation - Where possible, operating western ranches should be conserved. Through their conservation, the metropolitan urban boundary is better defined and the heritage and culture of the West preserved. Pima County has participated in a number of ranch conservation efforts, including the Empire, Cienega, Empirita and Posta Quemada ranches.

Urban development of these ranches has now been precluded; all are examples of successful ranch conservation efforts. The greatest threats to existing ranches are fragmentation and urbanization. Many ranches faced with rising land prices, changing livestock markets, climatic variability, and increasing political uncertainty over access to public grazing lands are forced to, or choose to, sell their private land holdings to developers.

While becoming more vulnerable to development pressures, nearly 1,240,000 acres of land in Eastern Pima County are classified as ranching and public grazing lands. These are comprised of nearly 240,000 acres of private lands and approximately 813,000 acres of State-owned lands and 185,000 acres of Bureau of Land Management lands providing public rangeland. Figure 4 indicates present properties that are classified for property tax purposes as either ranch or agricultural. Ranching continues to be an important traditional industry that has shaped the County's rural landscape since the cattle boom of the 1870s. Many of these ranches are now threatened with urban development or fragmentation.

Past Projects

A. Empire/Cienega Ranch - In 1987, Pima County proposed to purchase the Empire/Cienega Ranch in order to prevent development of the Empire community plan within the Cienega Valley. The plan allowed for up to 100,000 residences to be constructed within the Cienega watershed. Concern over urban sprawl and groundwater depletion led the Board at that time to propose acquisition and increase the Flood Control District tax levy in anticipation of ranch acquisition. The County's interest in ranch acquisition heightened awareness of the need for conservation efforts and, in cooperation with the Bureau of Land Management, the ranch was purchased and is now part of a Federal conservation area. In total, the land area preserved is larger than the present corporate boundary of the City of Tucson. This ranch acquisition and preservation, along with the acquisition of Rancho Romero and creation of Catalina State Park, were the first major efforts of the County to halt urban sprawl.

B. Posta Quemada Ranch - This historic ranch was also acquired initially for its watershed and quality riparian woodland values. Named after the nearby 1858 Butterfield Stage Station that was burned in the early 1860s during the Civil War and later rebuilt and burned again by the Apaches, this ranch today comprises 469 deeded acres and almost 8,000 acres of State grazing leased lands that were turned over to the Pima County Parklands Foundation to manage. This unique practice has provided on-site management and protection of sensitive riparian areas, while continuing to support local ranching. The ranching element also provides an educational experience for the public to view, experience, and understand the traditional practices of a working ranch.

C. Empirita - First established as the Kane and Siemond ranches, the Empirita Ranch was purchased by the Pima County Flood Control District in 1990. While this land was originally purchased for its riparian and flood storage values, it was quickly realized that this rich upland environment has significant environmental, open space, and cultural resource values that would require additional close management. With the support and expertise of the Parsons family, a local southern Arizona rancher who had adjoining grazing leases, the Flood Control District entered into a management agreement with the Parsons family to manage the 360 deeded acres for its resource value, while permitting limited grazing on those portions of the

ranch that could sustain such use. Although sensitive resource areas were closed to grazing, this managed approach allows the historic ranch to continue as a working cattle ranch retaining the traditional land use and economic viability of this industry and preserving open space and other important values.

Of strategic significance, acquisition and conservation of the Empire, Cienega, Posta Quemada and Empirita ranches effectively block urban sprawl from following the interstate corridor between Tucson and Benson, as well as preserve the Cienega watershed, a source of groundwater subflow into the Tucson Basin.

Present Projects

D. Canoa Ranch - Canoa Ranch comprises a very significant historic site in Pima County. Because of the availability of permanent water at its springs, Canoa was always a focal location along the middle Santa Cruz Valley, attracting human settlement from prehistoric times to the present. It is one of the oldest ranches in the Santa Cruz River Valley, originally established as the 17,000 acre San Ignacio de la Canoa Spanish land grant in 1820. Its historical values reflect native Piman settlement, early Spanish exploration, and its continuous use as a working cattle ranch from 1820 to the 1970s. At its peak, the ranch controlled more than 100,000 acres and provided housing and a school for 35 to 40 ranch workers and their families. Between 1912 and 1951, Canoa Ranch operated as a small village and had become the social and economic hub of the middle Santa Cruz Valley.

Following the sale of the ranch holdings by the Manning family, the ownership of the Canoa land grant changed numerous times until the most recent purchase of 6,400 acres by Fairfield Homes at a cost of approximately \$1,000 per acre. The Fairfield Canoa Ranch Specific Plan currently under review calls for development of a master-planned retirement community that includes more than 6,000 dwelling units, as well as commercial development, golf courses, and other features. Should development plans fail, for whatever reason, action to preserve all or part of the ranch should be taken.

Identified as "an important natural landmark that is significant for its important riparian areas and its scenic and historic values," the Pima County Open Space Committee in 1988, and again in 1997, recommended acquisition of the Canoa Ranch to preserve these unique qualities.

E. Bellota Ranch - A working ranch since the 1870s, the historic Bellota Ranch has received increasing development pressure. Over the last several years, portions of Buehman Canyon, a riparian stream within the ranch, have been subject to mining exploration. Bellota Ranch management became concerned about the long-term protection of what they recognized as a natural jewel. The ranch owner, Riley West, Inc., sought the nomination of Buehman Canyon for a "Unique Waters" designation by the Arizona Department of Environmental Quality. The Unique waters program safeguards streams with exceptional water quality of outstanding ecological significance. Through the combined efforts of a number of people and conservation organizations, the Arizona Department of Environmental Quality named Buehman Canyon as one of only ten Unique Waters in the state.

F. Carpenter Ranch - The Carpenter Ranch, dating to the 1930s, is located in Pinal County in the vicinity of Tortolita Mountain Park. At present, negotiations are in progress with the property owners to acquire the Carpenter Ranch for inclusion in the Tortolita Mountain Park expansion area. The ranch is comprised of 200 deeded acres and adjoins State and Federal lands. The property contains several sources of spring water and perhaps the only permanent water source in the Tortolita Mountains.

Future Projects

While much has been done to preserve open space in Pima County, population growth, proposed development, urban sprawl, and economic and political pressures will continue to threaten rural areas and the ranching tradition of southern Arizona. Future efforts to conserve the traditional use of ranch lands and the public lands that support this industry will require significant citizen and intergovernmental cooperation. There is a growing movement in Arizona and the Southwest that understands that sustainable ranching is a key component in conserving rural ecosystems and open space, and in preserving a traditional lifestyle and economic pursuit. Working with groups like the Altar Valley Conservation Alliance, the Arivaca Watershed Educational Task Force, the Arizona Common Ground Roundtable, the Southern Arizona Cattle Growers Protective Association, and others will provide needed input for how best to achieve ranch land conservation from those directly involved in ranching. Public concern has been voiced over several ranches in Pima County that are currently threatened by development.

G. Sopori Ranch - Like Canoa Ranch, this large historic ranch dates to the Spanish Colonial period and is referenced in Spanish documents from the 1700s. Comprised of 13,000 deeded acres and 46,000 acres of public grazing lands, this ranch falls in both Pima and Santa Cruz counties. It was purchased a few years ago by an Illinois investor, John Croll, who changed the name of the historic Sopori Ranch to Inscription Canyon Ranch. This is also the same name he gave to a ranch in the Verde Valley that he purchased in 1991 and subdivided for residential development. While still a working ranch, it appears that the Sopori Ranch has been purchased as an investment for future development.

H. Marley Ranch - Located in Pima County north of the Arivaca Road, the Marley Ranch adjoins the Sopori Ranch to the south. This extensive ranch is even greater in size than the Sopori with significant private holdings of approximately 19,900 deeded acres in Pima County and 320 acres in Santa Cruz County. Adjoining State grazing leases appear to significantly exceed the Sopori leases. The Marley Ranch is clearly one of the largest working cattle ranches left in southern Arizona, and when combined with the adjoining Sopori holdings, these ranch lands together easily exceed 100,000 acres in extent. While not currently threatened by development, increased urbanization of the Green Valley area to the north may make the Marley Ranch susceptible to fragmentation and development in the future.

I. Amado Ranch - Although small in comparison to the Sopori and Marley ranches, the Amado Ranch is located to the east of the Sopori and Marley ranches and immediately south of the Canoa Ranch. Although not immediately threatened by development, encroaching urbanization from the Green Valley area to the north may affect its viability as an operating ranch in the future.

J. Rancho Seco and the Santa Lucia Ranch - These ranches, located in the Arivaca vicinity, continue as working cattle ranches, but are reported to be somewhat vulnerable to fragmentation, sale, and development.

K. Altar Valley Ranches - Both the Arivaca area and Altar Valley remain one of the most significant traditional ranching areas in Eastern Pima County. Here, unbroken ranch lands extend from the Coronado National Forest south of Arivaca and the Mexican border at Sasabe north to the Tohono O'odham Nation "Garcia Strip." The Buenos Aires Wildlife Refuge established in the 1980s north of Sasabe reduced available grazing and ranch lands, impacting local ranchers.

North of the Arivaca area, a number of traditional ranches continue in operation. Some of these include Rancho Seco and the Santa Lucia Ranch located along the Arivaca Road. While these continue as working ranches, they may become more susceptible to fragmentation and development should the large Sopori Ranch be subdivided and developed as appears to be planned. Farther south in the Arivaca area, there are also a number of traditional working ranches, some of which include the Arivaca, Chilton, and Honnas Ranches.

Ranching in the Altar Valley has been a traditional and continuous way of life since the valley was first settled in the 1800s. Like the Arivaca area, Altar Valley represents some of the most important ranch lands in Eastern Pima County. Some of these traditional ranches include the King, Elkhorn, Santa Margarita and Agua Dulce ranches, among others.

Figure 5 shows all of the Ranch Conservation locations in Pima County.

2. Historic and Cultural Preservation - Pima County is rich in history, culture, regional character, and diversity, all of which contribute greatly to our collective cultural heritage and community identity. This heritage may be viewed as a mosaic of its ethnic diversity, archaeological past, history, architecture, technology, art, and traditions that is expressed in archaeological and historic sites and districts, buildings, structures, and objects significant to Pima County's cultural and economic history. In fact, Pima County has a long and complex multi-cultural heritage, beginning about 10,000 B.C., which has left us a rich legacy of cultural and historic sites and buildings, many of which qualify for listing on the National Register of Historic Places. However, urban development and vandalism threaten these non-renewable cultural resources.

Past Projects

A. Romero Ruin - Located in Catalina State Park, this large prehistoric village site was continuously occupied by Hohokam Indians from about 550 to 1450 A.D., and later homesteaded by Francisco Romero in approximately 1850, who built his house within the walls of the prehistoric compound. For many years, locals mistook the compound and its ruins as the site of the lost Spanish Mission of Ciru, said to have contained a fortune in gold. More recently threatened by development, the Romero Ruin is now a protected historic site, which has been made accessible to the public with trails and interpretive signage.

B. Saguaro National Park East - Numerous prehistoric and historic sites are preserved and protected in the Rincon Mountain Foothills National Register Archaeological District, located in Saguaro National Park.

C. Empire Ranch - This important historic ranch complex once threatened by development is now listed on the National Register of Historic Places. Now managed as part of the 45,000 acre Empire/Cienega Resource Conservation Area by the Bureau of Land Management, the Empire Ranch was easily one of the most significant ranching operations in southern Arizona.

D. San Xavier Mission - San Xavier Mission, first established by Father Kino in the 1690s, is today a National Historic Landmark. There is no other historic property in Pima County that is so visible and so defining of our community's identity and sense of place as the current Mission dating to 1797. Efforts to restore the priceless interior artwork and exterior architectural features of this world-class historic property are currently underway by the Patronato San Xavier with overwhelming support from the citizens of Pima County.

E. Arivaca Schoolhouse - Reported to be the oldest remaining schoolhouse in Arizona, the Arivaca Schoolhouse dates to 1879. Although no longer used as a school, the building continued to be used as a community building by Arivaca residents. Faced with necessary repairs to the more than 100 year old adobe structure, Pima County obtained a Community Development Block Grant for the necessary stabilization and rehabilitation of the historic building. Its repairs complete, the building now continues in service to the Arivaca community.

Present Projects

F. Colossal Cave - Restoration and rehabilitation efforts are planned for the historic buildings used by the public at Colossal Cave owned by Pima County. This site is listed on the National Register of Historic Places. Restoration involves removing inappropriate modifications to buildings, reconstruction of roofs to correct structural deficiencies, and restoration of architectural design integrity. The Cave may also play a role in endangered species protection in the future.

G. Agua Caliente Ranch - Restoration and rehabilitation of the historic ranch buildings owned by Pima County is planned. This site has been determined to be eligible for the National Register of Historic Places, and restoration is planned to allow for adaptive reuse for public programs such as classes, park orientation, lectures, and other special events. Restoration will benefit the public by allowing continued use of original historic buildings for educational and park uses.

H. Empirita Ranch - The original ranch buildings owned by Pima County may be eligible for the National Register of Historic Places. Building assessments and restoration of buildings are planned to allow preservation and continued use of historic structures by the public.

I. Robles Ranch - Residents from Robles Junction have requested that this original building that literally began the settlement of Robles Junction in 1883 be obtained and restored as a community building for the residents in this rural area. The restored ranch buildings would function as a community center, Sheriff's substation, offices for various social services, and as a meeting and recreation center for the community. This historic ranch has been determined eligible for the National Register of Historic Places.

J. Mission San Agustín - Acquisition of the "Birthplace of Tucson" is planned. This site at the base of "A" Mountain has been occupied since prehistoric times and first noted by Father Kino in the 1690s as San Cosme de Tucson, the site of an historic Piman village known as "stjukshon," which gave Tucson its name. Ruins of the San Agustín Mission, Convento, and Mission Gardens dating from the 1700s remain, as well as prehistoric features. The site has been determined eligible for the National Register of Historic Places, and a public park commemorating the historic beginnings of Tucson is planned.

K. Canoa Ranch - Restoration and rehabilitation of the historic Canoa Ranch complex is planned for public use following acquisition through donation or purchase. The ranch complex is comprised of twelve buildings and other structures that were built in the period from about 1880 to 1930. The complex includes two compounds enclosing a number of residences, a bunkhouse and smaller quarters, a former school house, stables, corrals, and other outbuildings. The ranch buildings would be restored for public use and enjoyment to preserve and showcase an important historic property in the middle Santa Cruz Valley.

L. Anza National Trail & Campsites - The Anza National Trail extends for 1,200 miles from the Mexico border to San Francisco. Acquisition and interpretation is planned for public access and enjoyment of approximately 60 miles of the Anza National Trail and six campsite locations along the Santa Cruz River.

M. Tumamoc Hill - Acquisition of this significant and extensive prehistoric dry-farming site comprised of 320 acres on the western slopes of Tumamoc Hill is planned to preserve this National Historic Landmark as open space and to protect its natural and cultural values.

N. Los Morteros - Acquisition and interpretation of this Hohokam ballcourt village site along the north end of the Tucson Mountains is planned for public enjoyment and protection of this important site. This site is not only important for its extensive Hohokam village but also for the 1775 campsite known as "Llano del Azotado" of the Anza Expedition and the 1858 "Point of the Mountain" Butterfield Stage Station. Creation of Los Morteros Park is planned to commemorate and protect these locations.

O. Valencia Site - Through acquisition and interpretation, this significant Hohokam ballcourt community in the southern Tucson Basin along the Santa Cruz River could be preserved and protected for future public appreciation. This site represents some 500 years of Hohokam occupation, and there is evidence for earlier Archaic settlement here as well. The Valencia site is listed on the National Register of Historic Places, and creation of the Valencia Site Archaeological Park is planned.

P. Pantano Townsite - Through acquisition of this parcel located along Cienega Creek, the ghost town of Pantano could be preserved for public interpretation. Pantano was once a substantial railroad community along the Southern Pacific Railroad between 1887 to the 1950s when it was abandoned. Only foundations and the town cemetery remain. Incorporation of the parcel into the Cienega Creek Preserve is planned together with stabilization and public interpretation.

Future Projects

Q. **Fort Lowell Park** - Acquisition of a parcel comprising the southwest portion of the original fort complex would serve to expand Fort Lowell Park for the public benefit and protect some of the best-preserved original buildings. The City of Tucson is negotiating with property owners to purchase.

R. **Tucson Presidio** - The Tucson Presidio once protected this Spanish Colonial mission and settlement. Today, the Presidio area is bounded by Church, Washington, Main, and Pennington. Only one undeveloped parcel remains at the corner of Church and Washington, which contains the northeast corner of the Tucson Presidio. Commemoration and interpretation of the Presidio for the benefit and enjoyment of the public are planned. The City of Tucson and the Tucson Presidio Trust for Historic Preservation are developing plans in conjunction with downtown urban revitalization efforts.

S. **Drachman School** - This historic school building located adjacent to Barrio Historico was originally built in 1902. Additions and modifications in 1927, 1935, 1936, and 1949 significantly changed the building, but it remains an important historic landmark to the neighborhood. Following a catastrophic fire in 1948, which destroyed the roof and all of the later additions, the facility was rebuilt using the original foundations and exterior walls. Plans are being developed to reconstruct the building to its pre-1948 appearance and to restore the building for use as affordable elderly housing.

Figure 6 shows all of the Historic and Cultural Preservation locations in Pima County.

3. **Riparian Restoration** - Historical accounts of Tucson indicate that the Santa Cruz River flowed year-round at San Xavier del Bac and near downtown Tucson. Rillito Creek and portions of Tanque Verde Creek, Sabino Creek, and even Pantano Wash were also perennial at that time. High water tables along parts of the Santa Cruz River, Tanque Verde Creek, Cañada del Oro Wash, and Agua Caliente Wash supported extensive riparian forests of mesquite, cottonwood, and willow. Beavers swam in Tanque Verde Creek. Stream flow disappearance due to groundwater pumping, floodplain development, and habitat loss due to erosion have significantly altered the biologically rich and diverse riparian corridors of Eastern Pima County. Today, there are new opportunities to recreate our watercourses as a gathering place for people and wildlife.

Pima County now actively promotes riparian restoration of our river corridors and floodplains. Key techniques to accomplish this include floodprone land acquisition to prevent future development, and restoring the aquifers that once supported free-flowing streams. Opportunities exist to reintroduce CAP and reclaimed water to the major river systems of the Santa Cruz, Pantano, Rillito, and Tanque Verde Creek. Artificial water sources should not be introduced to streams such as Sabino Creek and Cienega Creek, which still retain native fish populations. In these areas, restoration efforts can target retirement of wells or surface water diversions through substitution of renewable water sources or conservation measures. Reducing or eliminating livestock and off-road vehicle impacts, deliberate plantings of native trees, shrubs and grasses, and erosion control measures are other techniques Pima County is using to restore riparian areas. In many cases riparian restoration will occur through actual environmental reconstruction of the watercourse.

The watercourses in the Tucson area today serve as an important community commons and vital recreational links. Pima County is creating a regional, multi-use trail system along the major washes. The river park system will link the business and residential areas with parks, sports fields, and restored riparian zones along a continuous trail network.

Past Projects

A. River Parks - Over 23 miles of river parks have been constructed along the Santa Cruz River, Rillito Creek and Tucson Diversion Channel within the present urban area. These parks are used by thousands of people each week to relax and exercise. The channel bottoms offer one of the few locations for horse use in a growing urban area. Riparian vegetation is allowed to regrow in the channel bottom, making the watercourse an important future biological corridor linking open space and public lands.

B. Cienega Creek Natural Preserve - Nearly 4,000 acres along a 12 mile reach of the Cienega Creek have been acquired to preserve one of the region's few remaining perennial streams. Establishment of the Preserve in 1986 marked Pima County's first major flood control effort that included riparian habitat preservation. In response to eliminating grazing and off-road vehicle activity, the density of cottonwoods, willows and other trees and shrubs along the stream has increased dramatically and channel erosion has decreased.

C. "Pantano Jungle" Restoration - This newly completed project re-establishes vegetation typical of mesquite woodland and riparian grassland. Formerly known as the "Jungle," the site was cleared in 1974 for pasture. Plantings of native trees and grasses are now being used to improve the nature of land for wildlife use. Volunteers have installed check dams and other measures to reduce erosion. The project is funded by the United States Fish and Wildlife Service and the Arizona Game and Fish Department.

D. Bingham Cienega Natural Preserve - In 1989, the Pima County Flood Control District acquired lands along the San Pedro River to preserve a natural spring-fed marsh known as Bingham Cienega. Because of the site's remote location and sensitive environment, the District entered into a long-term agreement with The Nature Conservancy to manage the property. Conservancy volunteers fenced out livestock and, once vegetation began to fill in drainage channels, the marsh began to spread. The District has installed a small check dam that has successfully arrested erosion that threatened the marsh.

Present Projects

E. Paseo de las Iglesias - Paseo de las Iglesias (Walk of the Churches) is the name given to the recent plan to restore the Santa Cruz River between the San Xavier Mission, the San Agustín Mission, and the Convento site at the base of Sentinel Peak. The project provides potential recharge opportunities for CAP water, native farming restoration opportunities on the Tohono O'odham Reservation, preservation of an area rich in history and culture, and completion of missing trail links along the Santa Cruz River Park. The Juan Bautista de Anza National Trail, along the traditional route of the Camino Real, closely follows the western edge of the river. Paseo de las Iglesias will provide low-flow bank protection for erosion threatened neighborhoods along the Santa Cruz River. The implementation of this type of flood control will allow for the restoration of the riparian habitat that once existed along the river.

F. Rillito Recharge and Habitat Restoration - The proposed project helps restore a higher water table along the Rillito Creek, which will benefit existing riparian areas along the Rillito River, Tanque Verde Creek, and lower Pantano Wash. Wetlands and riparian habitat will be restored along the south bank of the Rillito River west of Swan Road. A park will be constructed on the north bank of the River. Water supply for the project will consist of reclaimed treated wastewater transported from the Roger Road Treatment Plant. The water will be obtained from a reclaimed water pipeline that will be constructed along the Alamo Wash from the City of Tucson's reclaimed water distribution system to the wetland areas. This water will cycle through wetlands before being recharged in the riverbed. On-site stormwater runoff will be directed to the wetlands as well as vegetated areas around them. In addition, Pima County is cooperating with the City of Tucson on two other projects just upstream: a pilot recharge project and a wildlife habitat project, both of which would be located on County land east of Swan Road.

G. Tucson/Ajo Detention Basin Environmental Restoration - The Tucson/Ajo Detention Basin Project will restore 27 acres of wetlands and riparian habitat to a 120-acre flood control basin. The project will also extend the Tucson Diversion Channel, or Julian Wash River Park. In the final phase, the wetlands will be surrounded by an 18-hole golf course. The Tucson/Ajo Detention Basin is located just north of Ajo Way and west of Country Club Road. The basin partially surrounds Sam Lena Park. The Kino Sports Complex has been developed to the south and is the winter home of the Arizona Diamondbacks and the Chicago White Sox. A state-of-the-art stadium, Tucson Electric Park, opened earlier this year. Now, Pima County, in cooperation with the United States Army Corps of Engineers, is bringing another phase of this project to fruition with the restoration of the Tucson/Ajo Detention Basin. The project will capture normally lost urban stormwater within the project water features and will use this water for turf irrigation, thereby becoming an important water conservation project.

H. Bingham Riparian Restoration - In the summer of 1998, Pima County and The Nature Conservancy began a three-year project to restore sacaton grasslands, willow forests and mesquite woodland at Bingham Cienega Natural Preserve. With help from volunteers and a wide variety of State, Federal and private funders, 50 acres of former farm fields have been or will be returned to native vegetation.

I. Marana High Plains Effluent Recharge - This project is located along the Santa Cruz River, approximately one-quarter mile upstream of the Sanders Road bridge in Marana. The project will protect and enhance an existing riparian area via operation of a groundwater recharge facility utilizing treated wastewater from the Santa Cruz River. Additional benefits include education through descriptive literature and interpretive signage and development of a pedestrian trail system. The project is funded by the United States Bureau of Reclamation and Arizona Water Protection Fund.

J. Park Avenue Detention Basins Habitat Restoration and Recreation - The existing Arroyo Chico alignment is one of the few urban wildlife sanctuaries remaining in the metropolitan area. Use of this alignment to convey the 100-year storm could require significant modifications to the arroyo if standard bank protection and channelization measures were used. To maintain the arroyo's environmental resource value, the project will retain the watercourse's natural alignment and restore associated vegetation after construction. The detention complex

consists of five flood control basins located between the Del Urich Golf Course to the east and downtown Tucson to the west. The Park Avenue Detention Basins and Habitat Restoration Project will reduce flood damage caused by the Tucson Arroyo/Arroyo Chico and its tributaries by eliminating over-bank flooding in its drainage area. Cooperators include Pima County, the City of Tucson, the United States Army Corps of Engineers, and the Tucson Unified School District.

K. Cienega Creek Streamflow Restoration - One to five miles of streamflow could be restored by acquiring a one-acre inholding within the Cienega Creek Natural Preserve, transforming what is now an ephemeral stream into a lush riparian area similar to other reaches within the Preserve. The inholding contains two key features, a surface-water diversion dam and a well, as well as a streamflow gaging station used by the United States Geological Survey and Pima County Flood Control District. By acquiring the inholding and the associated water right, the stream can be made whole again. To do this, the Vail Water Company will need a replacement source of water for its development, either groundwater pumped from outside the Preserve, effluent, or CAP.

L. Riparian Corridor Protection - Most of the previous projects dealt with restoring previous riparian areas. A number of classic riparian areas need protection so that their environmental benefits can be maintained. In the long run it is much more costly to restore riparian areas rather than protect them. Below are listed riparian areas that should be protected through acquisition or other means.

<u>Riparian Corridors</u>	<u>Land Area Acquisitions (Acres)</u>			<u>Figure</u>
	<u>State</u>	<u>Federal</u>	<u>Private</u>	
Cienega Creek Natural Preserve	6,767	160	366	7
Davidson Canyon Natural Preserve	3,343	3	2,845	8
Buehman-Bingham Natural Preserve	2,478	7	5,004	9
Peñitas Wash	2,947	0	246	10
Mescal Arroyo	<u>1,795</u>	<u>0</u>	<u>61</u>	11
Total	17,330	170	8,522	

Pima County will work with landowners to protect riparian areas from future development through conservation easements and acquisitions. Using bonds approved by voters in 1997, lands along the Sabino Creek, Honey Bee Wash, Bear Canyon, Tanque Verde Wash, San Pedro River, and Agua Caliente Wash will be preserved. Pima County will encourage the State Land Department to set aside State Trust land along significant corridors such as Cienega Creek, Mescal Arroyo, Davidson Canyon, and Peñitas Wash, among others.

Future Projects

M. Cañada Del Oro (CDO) Recharge - A pipeline to deliver raw CAP water from a CAP Canal turnout near Moore Road could be constructed to release water into Big Wash. The release of water into recharge basins and the low-flow channel downstream of the basins is expected to provide benefits such as direct recharge to the regional aquifer, environmental enhancement of the existing riparian corridors of Big Wash and CDO Wash, and recreational opportunities associated with trail and equestrian development and bird watching.

N. River Parks - New river parks are planned along the east bank of Pantano Wash between Tanque Verde and Golf Links Roads, Rillito Creek from Campbell Avenue to Craycroft Road and west from La Cholla Boulevard, Tanque Verde Creek between Sabino Canyon and Tanque Verde Roads, Santa Cruz River from Irvington to Valencia Roads, and Cañada del Oro Wash between Thornydale and Magee Roads.

O. Rincon Creek Restoration - The Rincon Creek Restoration Project is located south of Saguaro National Park's Rincon Mountain unit. This project will restore a 600-foot wide riparian-woodland corridor along two miles of the creek using a combination of private and public funding. A non-profit organization known as the Rincon Institute has been established to assist the developer in preparing a restoration plan. Most of the native trees and shrubs have been removed and the stream channel has been destabilized due to farming and grazing. The developer's plan will control flood water and related erosion without the use of visually or physically intrusive structures. Other restoration components include planting, groundwater monitoring, and removing livestock. A multi-use trail system within the restored floodplain will provide access to Saguaro National Park.

Figure 12 shows all of the Riparian Restoration locations in Pima County.

4. Mountain Parks - Tucson Mountain Park, Pima County's first mountain park, was established in 1929, and is one of the County's oldest and most popular public attractions. The establishment and enhancement of County mountain parks serves to protect our invaluable natural, cultural and scenic resources, as well as provide critical wildlife habitat and migration corridors. Since Tucson Mountain Park was established, Colossal Cave (1992) and Tortolita Mountain (1986) Parks have also been established. Sierrita, Cerro Colorado, Santa Rita and Waterman-Roskrige Mountain Parks await creation. By creating and expanding mountain parks, unique ecotonal natural areas are preserved, urban boundary definition becomes clearer and sharper, scenic vistas are protected, and community gateways are defined by eliminating monotonous, never-ending corridors of urbanization.

Past Projects

A. Tucson Mountain Park - Pima County originally established Tucson Mountain Park in 1929. A number of important additions have been made to Tucson Mountain Park over the years, including a 215 acre parcel along Gates Pass Road this year. Expansion and new acquisitions will continue into the future, funded by a combination of sources. However, one perpetual funding source, the Starr Pass Environmental Enhancement Fee, is expected to make approximately \$18 million available to Pima County for continued expansion of Tucson Mountain Park.

B. Tortolita Mountain Park - Tortolita Mountain Park was first acquired and established after the voters authorized bonds in 1986. A master plan for the park was prepared and adopted in 1997, and its implementation is underway. Tortolita Mountain Park will continue to be expanded and may become the second largest mountain park in the County, connected to Catalina State Park on the east and to the Central Arizona Project on the west.

C. Colossal Cave Mountain Park - Colossal Cave Mountain Park was established in 1992 with the initial acquisition of the Posta Quemada Ranch. Subsequent State land acquisitions have expanded Colossal Cave Mountain Park to its present 1,800 acres. Expansion will also continue in the future.

Present Projects

The expansion of Pima County's existing mountain parks, and the creation of new parks, has been a topic of interest in the community for many years. Several new parks were proposed by the Open Space Committee in 1988, and others have been identified by County staff. These mountain parks need to be established and formally integrated into Pima County's Mountain Park and Natural Preserve System, which was drafted by the Pima County Parks and Recreation Commission on May 20, 1998. The table below establishes a number of expanded and/or new mountain parks. While the proposed mountain park expansion program is ambitious, the parks, once established, will protect unique and irreplaceable environmental resource lands, as well as protect the scenic views and vistas that make Tucson and Pima County unique.

		Land Area Acquisition (Acres)			
<u>County Park</u>		<u>State</u>	<u>Federal</u>	<u>Private</u>	<u>Figure</u>
D	Tortolita Mountain Park	28,147	2,204	3,505	13
E	Tucson Mountain Park	100	1,055	2,460	14
F	Colossal Cave Mountain Park	3,319	18	1,477	15
G	Catalina State Park Expansion	2,479	76	243	16
H	Santa Rita Mountain Park	8,876	1	1,826	17
I	Cerro Colorado Mountain Park	10,863	1,980	1,411	18
J	Waterman-Roskrige Mountain Park	12,460	40,560	3,011	19
K	Sierrita Mountain Park	10,904	5,870	4,348	20
L	Anza/Helvetia Grasslands Conservation Area	<u>8,594</u>	<u>0</u>	<u>326</u>	21
Total		85,742	51,764	18,607	

These expanded and future mountain parks are shown in a regional context on Figure 22.

Future Projects

Future Pima County mountain park development efforts will principally concentrate on linking the parks through biological corridors to other public lands, but may also include the consideration of the projects listed below. In addition, it is important that safe and convenient public access be secured for each park, and that park management work to protect the environmental resources that make each park unique.

M. Empire Mountain Park - A Pima County mountain park encompassing the Empire mountain range was first proposed for this area more than 15 years ago. This park is not presently identified for implementation for two reasons: first, because the Bureau of Land Management is already active in the area and is committed to acquiring additional land in the range for the

purpose of natural resource conservation, making near-term County action unnecessary, and second, because the range contains a large quantity of private property that will likely be difficult to acquire. The creation of a County mountain park in the Empires should be considered if conditions change.

N. Tortolita Mountain Park - Pinal Segment - A considerable amount of the Tortolita mountain range is located in Pinal County. Pima County should encourage and work cooperatively with Pinal County to define and develop the segment of Tortolita Mountain Park within its jurisdiction.

O. Silverbell Mountain Park - The large quantity of land controlled by public entities in the Silverbell Mountains, particularly BLM lands, makes the creation of a new mountain park in this range a strong possibility for the future. The high quality of the desert habitat in this area argues for the kind of enduring protection that a county mountain park could provide.

Figure 23 shows all of the Mountain Park locations in Pima County.

5. Habitat, Biological, and Ecological Corridor Conservation - To maintain rich and diverse plant and animal populations, it is essential that habitats not become isolated or fragmented and that areas of public land reserved as either national forests, parks, or monuments, as well as mountain parks and riparian areas, be interconnected and linked. Establishing biological corridors to prevent habitat fragmentation and interconnecting public lands integrates the urban and natural environment, essential for the community that promotes environmental well-being as a contribution to its economic future.

Past and Current Projects

A. Agua Verde Creek - The planned acquisition of segments of the Agua Verde Wash corridor will connect Colossal Cave Mountain Park with the Cienega Creek Natural Preserve. The protection of additional segments of Agua Verde, such as the east-west trending section located in the southern foothills of the Rincon Mountains below the Coronado National Forest boundary should also be considered.

B. Buehman/Bingham Corridor - Connecting the Coronado National Forest to the San Pedro River corridor via Nature Conservancy, State Trust, and private land would provide an important biological linkage between these units.

C. Canoa Ranch Links East - The Madera Wash links Canoa Ranch and the Santa Cruz River Corridor to the Nogales Ranger District of the Coronado National Forest. The Wash crosses private and State Trust land.

D. Canoa Ranch Links West - The Demetrie and Esperanza Washes link Canoa Ranch to the Sierrita Mountains. Both cross a considerable amount of private property, including property owned by mining companies and the Caterpillar proving grounds facility, as well as Arizona State Trust land. In addition, the Esperanza Wash crosses Bureau of Land Management land into the Sierritas.

E. Los Robles/Brawley/Altar Wash Complex -Taken together, these watercourses stretch more than 50 miles in a north-south fashion across Avra Valley in Pima County, and link the Buenos Aires National Wildlife Refuge to Tucson Mountain Park, Saguaro National Park West, the proposed Waterman-Roskrige Mountain Park, and ultimately the Santa Cruz River in Pinal County. If the proposed corridor between the Silverbell/Waterman/Roskrige Mountains and the Tucson Mountains is established as described above, this corridor would provide a key linkage between these public lands and the Buenos Aires Refuge and Santa Cruz River corridor.

F. Silverbell/Waterman/Roskrige Mountains to Tucson Mountains Linkage - A broad-based link between the Silverbell, Waterman and Roskrige mountain ranges and the Tucson Mountains could be assembled utilizing the proposed Waterman-Roskrige Mountain Park, Tucson Water land, the Bureau of Reclamation's CAP Wildlife Mitigation Corridor, Tucson Mountain Park, and Saguaro National Park West, as well as a relatively small amount of Arizona State Trust land and private property in Avra Valley. The property controlled by Tucson Water provides a critical link that helps make this biological corridor feasible. Besides connecting four mountain ranges, the proposed corridor would also provide a linkage to Brawley Wash and the Tohono O'odham Indian Reservation.

G. Sutherland Wash/Sutherland Basin -The Sutherland Wash links Catalina State Park to the Santa Catalina Ranger District of the Coronado National Forest. Most of the wash is located on Federal land, but two sections, one that crosses State Trust land and one that crosses a block of private property, are not protected. Approximately 3.5 sections of State Trust land are located immediately west of the Wash. Preserving these lands would facilitate the protection and buffering of the Sutherland Wash, enhance the connection between the State Park and the Forest, and help preserve the Sutherland Basin, an area with strong natural, cultural, and scenic values.

H. Tucson Mountain Park Links to the Santa Cruz River Corridor - Linking Tucson Mountain Park to the Santa Cruz River corridor and other nearby natural areas such as Tumamoc Hill will help preserve biological integrity and diversity in an urban setting. Appropriate opportunities to make these links are now being pursued, as evidenced by the Starr Pass Resort Hotel project, which includes a plan to protect and enhance biological corridors that will link Tucson Mountain Park and Tumamoc Hill. Two additional corridor opportunities have been identified, one from Trails End to Greasewood Park and another from Ajo Way to Manzanita Park.

Future Projects

I. Cerro Colorado Mountain Park to Buenos Aires National Wildlife Refuge (Peñitas Wash) - A cross-country link between the proposed Sierrita Mountain Park and the Buenos Aires Wildlife Refuge is possible through the strategic acquisition of Bureau of Land Management lands presently identified for disposal, State Trust land, and a few select parcels of private property.

J. Colossal Cave to Coronado National Forest - Connecting Colossal Cave Mountain Park to the Santa Catalina Ranger District of the Coronado National Forest will require the acquisition of several parcels of private property located between the two jurisdictions.

K. Rincon Creek -The Rincon Creek connects the Pantano Wash to Saguaro National Park and the Coronado National Forest as it crosses the Rincon Valley, and is an important biological corridor. The segment of the Creek that crosses the Rocking K Ranch was protected by Pima County through the development process. Protecting other segments of the Creek that cross private property in the Valley should be a priority in the future.

Figure 24 shows all of the Habitat, Biological, and Ecological Corridor Conservation locations in Pima County.

6. **Critical and Sensitive Habitat** - The Sonoran Desert is a unique and fragile environment. A number of plant and animal species are threatened with extinction. Maintaining bio-diversity and eliminating the threat of extinction to certain species are complex and complicated tasks. To date, limited success has been achieved in resolving the challenge that resource development poses to threatened and endangered species. In fact, planning for the protection and recovery of one species may endanger another.

A more comprehensive approach to resource protection and environmental planning is necessary. Ecosystem plant and animal associations require identification and understanding of the interactions between individual species and determination of how conservation and protection of these ecosystem associations can help the recovery of threatened and endangered species.

This section summarizes a preliminary work plan that describes the elements of interim and long-term endangered species protection planning. It also reviews habitat and existing wildlife associations that have been the subject of prior studies conducted by Pima County in conjunction with the University of Arizona and by the State Game and Fish Department. Past studies and future planning will establish a solid foundation for a regional ecosystem-based multiple-species protection program.

Future planning and program implementation will be on a broader geographic scale than prior studies. The proposed ecosystem-based regional conservation plan will address compliance issues at the same time it achieves conservation goals and creates more certainty for the development community.

Past Projects

A. **Critical and Sensitive Wildlife Habitat Project** - One of the first comprehensive habitat maps of Eastern Pima County was produced in 1986 by the University of Arizona School of Renewable Natural Resources as part of a study conducted for the Pima County Department of Transportation and Flood Control, the Department of Planning and Development Services, the Pima County Urban Design Commission, and the Open Space Committee. The Critical and Sensitive Wildlife Habitats map is still acknowledged as a landmark by those in the Pima County environmental community because it enabled readers to see at one glance eight delineations of habitat and it described the types of wildlife that depended on each. Class I Habitats included: deciduous riparian woodland, mesquite bosque, important wildlife movement corridors, major extensions of riparian habitat from protected areas, lakes, ponds and wetlands with adjacent plant cover. Class II Habitats included: major segments of riparian habitat not linked with protected areas, the palo verde-saguaro community, and the unique ironwood plant community.

B. Pima County Riparian Habitat Definition and Classification Project - In 1992 the Department of Transportation and Flood Control District undertook a study to develop a definition and classification system of riparian habitat within the County. The study results were considered as part of later ordinance drafting. The classification system of riparian habitat encompassed vegetation types/species, densities, habitat conditions, and wildlife habitat values.

C. Wildlife Habitat Inventory Pilot Study (WHIPS) - Under a Heritage grant from the State Game and Fish Department, a 1996 study created a method for associating land cover categories to aerial photographs and made recommendations for interpreting information about land cover into wildlife habitat values within urban and suburban areas. A subsequent phase of the study applied this method to Eastern Pima County by developing a land cover classification system and mapping the study area, determining vegetative attributes for each land cover, creating a Geographic Information System (GIS) based model for mapping wildlife habitat values, and developing recommendations for guidelines that integrate conservation of wildlife habitat with development and urban growth.

Current and Future Projects

D. Research Element of an Interim Strategy for the Pygmy Owl - The Cactus Ferruginous Pygmy Owl (pygmy owl) was listed as endangered in March of 1997. At the time of listing, there were 12 known pygmy owls within Pima County. Currently there are between 30 and 40 known individuals. On September 25, 1998, a request for funding interim studies was made to the Secretary of the Interior based on recommendations from meetings of biologists, agency staff recommendations, and comments from community members. Five types of studies were identified, including:

1) Initiate More Comprehensive Surveys - These studies would further our knowledge of how many pygmy owls there are, and where they are located. Surveys need to be conducted at two levels: (A) survey for individual owls at a cost of \$1,500 per survey (\$4,500 per year or \$9,000 for two years on average for a 160 acre plot), and (B) survey of habitat. The estimated total cost is \$275,000 to \$750,000.

2) Telemetry Studies - The study effort would provide information necessary to tailoring recovery and conservation plans to protect the owl and the economy. Questions that would be addressed include: Where do pygmy owls go upon dispersal? How far do they travel? Is there exchange with other populations? Are they residents of specific areas, rather than migratory? How tolerant are they of various urban occurrences? How adaptable are they? The method of study would involve placing transmitters on a number of birds from the Arizona population assuming more owls are located. To study owls with a transmitter tracked 24 hours per day for 12 weeks would cost approximately \$10,000 per bird.

3) Habitat Assessment - Basic questions underlying these studies are: Can we describe the habitat that pygmy owls need? Can we prescribe the habitat where pygmy owls could breed, nest, feed and rest? What are the characteristics of that habitat in terms of density, height, breadth, etc? Using sites discovered through surveys and telemetry studies,

performing on-the-ground data gathering (cost of maps plus time for on-the-ground gathering) and statistical analysis is estimated to cost a minimum of \$150,000 for 60 sites.

4) Population Viability Analysis - These studies answer questions such as: What number of owls is necessary to have a viable population? How can the length of the recovery period be predicted based on reproduction/survival rates? Using habitat and behavioral information, develop a model based on meta-population methods of the Southern Arizona population of pygmy owls. Studies will rely partially on Texas data and other data gleaned from studies mentioned here to create statistically significant findings. The total cost is estimated to be between \$100,000 and \$250,000.

5) Genetic Research - These studies would begin to answer the question of whether the Arizona population is related to the population in Mexico or elsewhere. Through analysis of feathers or blood samples these studies would compare 30 Arizona pygmy owls (assuming more owls will be located with greater survey efforts) to 30 non-Arizona (Mexico based) pygmy owls. Studies would involve 60 to 120 genetic tests at a cost of approximately \$1,000 each. The estimated total cost is \$60,000 to \$120,000.

E. Interim Land Use Strategy for the Protection of Existing Populations of Pygmy Owls - A second element of an interim protection strategy for the pygmy owl involves land use decision making. Thus far, County staff has examined the possibility of proposing changes in our own land use plans to accommodate the interim protection needs of the pygmy owl. Pima County has two potential projects planned for development on the Arthur Pack Park site in Northwest Tucson: a YMCA Community Center and a Pima Community College Campus.

Members of the Coalition for the Sonoran Desert Protection Plan, along with members of the Northwest Coalition for Responsible Development, expressed concerns that developing the Arthur Pack Park site as planned would remove an important area of prime pygmy owl habitat from the Ironwood vegetation community. These groups were invited to work on an ad hoc basis to advise the County about the impacts of planned development on the site, and the availability of alternatives. Mapping of the Northwest area shows the importance of the Arthur Pack Park site in terms of the relation of patches of habitat owned by the County, the State and other public entities; linkage between patches of habitat via washes and undeveloped land parcels; the density of development to the south of Arthur Pack Park; vegetation communities; and the important location of State land.

In viewing these relations, one step in working to ensure the long-term survivability of the pygmy owl is to actively preserve habitat on Arthur Pack Park. Plans for State land and other public land within the Ironwood vegetation community preserve could be formulated to provide interim protection for the pygmy owl. However, it is important to understand that such a preserve will probably not be sufficient to support the recovery effort for pygmy owls. That effort will likely require actions across western Pima County. However, as an interim measure, protection of existing populations in the Northwest area is critical, and the large block of County land that Arthur Pack Park represents, along with some amount of other public land and land owned by the State, are necessary components of an interim plan.

It is important that these conservation achievements, along with other similar interim measures, are acknowledged by the United States Fish and Wildlife Service as a contribution to the larger regional planning process.

F. Long Term Ecosystem Based Conservation Planning Process - Discussion of endangered species and habitat protection planning began last Spring with the Board's support for the Sonoran Desert Protection Plan. In late August of 1998, the Coalition for the Sonoran Desert Protection Plan decided to expand their original innovative concept and the group has worked constructively with the County to develop the framework of an expanded proposal which is described below. There are concerns among environmental advocates based on the low number of known owls. Members of the business community, development industry and real estate profession have expressed apprehension about the potential economic impact of the listing. Landowners and private property interests also have asked to know more about how their own land use decisions might be affected. The expanded proposal addresses the concerns of the entire range of stakeholders and includes: 1) a larger planning area; 2) more partners; 3) expanded public process; 4) a more comprehensive approach; and 5) greater scientific oversight and peer review. Without compromising environmental goals, the Coalition has broadened the basic concept of its plan to honor a range of values within the community.

Under Section 10 of the Endangered Species Act, a level of "take" (harass, harm, kill) may be permitted if it is incidental to otherwise lawful activity and a habitat conservation plan is accepted by the United States Fish and Wildlife Service. A long-term solution to ensure Endangered Species Act compliance is to develop a multi-species habitat conservation plan with high standards regarding the issue of take. This high standard and the availability of public land in Pima County will allow this community to uphold the viability of both the environment and the local economy. All stakeholders to the process must have a role in refining the work as it is developed by the County. Initial development has started on the biological scope of work with the assistance of science experts who will not compete for any contract for full plan development. A formal process must be established to safeguard the work product and expedite release of the first request for proposals so that work can begin on the biological assessment by January of 1999.

Figure 25 shows presently mapped Critical and Sensitive Habitat locations in Pima County.

VII. Funding and Implementation Options

No estimate has been made of the cost to implement each element of the plan described previously. It is likely that progress on individual elements will be incremental and sometimes opportunistic. For example, today the best opportunity to significantly expand mountain park preservation is in State land acquisition through possible passage of Proposition 303. Listed below by element are the funding options, program, or implementation strategies that will be used for each element.

In implementing one or more elements of the plan, other elements may be satisfied. For example, implementing the Tortolita Mountain Park expansion as identified in this plan will also satisfy or benefit the biological corridor and critical and sensitive habitat elements of this plan. In addition, implementing riparian protection also promotes biological corridors. Therefore, in many instances these elements are interrelated and implementation of one will help with implementation of the other. Likewise, implementation or funding strategies under one element may also apply to the other. For example, the Heritage Fund, while limited in

monetary value, could be used to implement the ranch conservation, historic and cultural preservation, mountain park, riparian restoration, or biological corridor elements of the plan.

In total, approximately \$48 million of general obligation bonds, \$57 million of Federal funding, and between \$40 million and \$60 million of State funding should be available in the short run (next five years) for plan implementation. These funds, along with \$18.6 million in Starr Pass Environmental Enhancement Fees, mean that approximately \$174 million is available for Plan implementation.

1. Ranch Conservation

- 1997 General Obligation Bonds

Canoa Ranch	\$2,000,000
Bellota Ranch	<u>1,000,000</u>
Total	\$3,000,000

- Public/Private Partnerships - In the past, public/private partnerships have also been important in helping conserve ranches, particularly those with unique historical value or irreplaceable environmental resources. The Nature Conservancy has been and will continue to be instrumental in such public/private partnerships. In fact, the preferred initial strategy for ranch conservation will be to enter into such public/private partnerships with the ranch owner, private and non-profit groups such as the Nature Conservancy, and others.
- Intergovernmental Cooperation - Previous ranch conservation efforts have depended heavily on intergovernmental cooperation, particularly with the Federal government. The Bureau of Land Management has been instrumental in ranch conservation efforts in the past. It is likely they will continue to be influential in this area. Therefore, an important implementation strategy concerning future ranch conservation efforts will involve Federal agencies, in particular the Bureau of Land Management. In addition, the Arizona State Land Department will be an important cooperating agency in ranch conservation since most ranches contain State Trust land leased for grazing purposes. Very often these lands are as important as the ranch fee lands for preservation.

2. Historic and Cultural Preservation

- 1997 General Obligation Bonds

Colossal Cave Rehabilitation	\$ 400,000
Agua Caliente Ranch Buildings Rehabilitation	350,000
Empirita Ranch Buildings Rehabilitation	200,000
Robles Ranch House Rehabilitation	500,000
Mission San Agustín	500,000
Canoa Ranch Buildings Rehabilitation	1,500,000
Anza National Trail and Campsites	750,000
Tumamoc Hill	500,000
Los Morteros	730,000
Valencia Site	900,000
Pantano Townsite	<u>100,000</u>
Total	\$6,430,000

- Arizona Heritage Fund Historic Preservation Grants - The Heritage Fund Historic Preservation Grants program administered by Arizona State Parks and the State Historic Preservation Office offer \$1.7 million annually in competitive grants for a variety of historic preservation activities. Eligible projects include acquisition/easements, building assessment reports, stabilization, rehabilitation, reconstruction, archaeological park development, education and preservation program development, interpretation, maintenance, and nominations to the National Register of Historic Places. Other Heritage Fund grant programs such as the Trails Heritage Fund, for example, could assist in the development of public heritage sites such as the Juan Bautista de Anza National Trail.
- Arizona State Land Department - With the recent passage of the Arizona Preserve Initiative (API), State Trust Lands that are environmentally and culturally sensitive may be reclassified for "conservation" purposes, provided they meet certain criteria. Following reclassification approval, the applicant has up to eight years to raise sufficient funds to either lease or purchase the reclassified lands. Tumamoc Hill is an example of an API reclassification, and another is the Valencia Site, which will be preserved and interpreted as an archaeological park. Fortunately, where open space is preserved, historic and cultural sites are also preserved, and it is anticipated that other open space acquisitions will achieve historic preservation objectives as well.
- Federal Assistance - Federal funding sources for elements of this plan will typically provide some source of funding for the inventory and treatment of archaeological, historical, and cultural sites associated with the project. Funding for historic preservation, interpretation, and education is often available when these sites are incorporated into project planning and development. Potential sources of Federal funding for project related historic preservation efforts include the United States Army Corps of Engineers and the Bureau of Reclamation.

3. Riparian Restoration

- 1997 General Obligation Bonds

Agua Caliente Creek	\$1,200,000
Agua Verde Creek	1,200,000
Cienega Creek	1,400,000
Upper Honeybee Canyon	1,000,000
Sabino Canyon	1,500,000
Tanque Verde Creek	2,000,000
Rillito River Park, La Cholla to Interstate-10	2,400,000
Rillito River Park, Campbell to Alvernon	2,400,000
Rillito Park at Columbus Boulevard District Park	1,500,000
Rillito Park at River Bend	1,000,000
Oro Valley Cañada del Oro River Park	1,000,000
Santa Cruz Flood Control and River Park Irvington to Valencia	4,200,000
Santa Cruz River Community Park	<u>850,000</u>
Total	\$21,650,000

- State Assistance

- State funding discussions have occurred regarding the Rio Salado Project in Phoenix, which is a Salt River redevelopment project. Similar funding, if made for Rio Salado, should also be made for watercourse redevelopment within Pima County, primarily the Santa Cruz River Paseo de las Iglesias project from Congress to Valencia Road.
- The Central Arizona Water Conservation District (CAWCD) operates the Central Arizona Project in Arizona. In addition, the District also operates the replenishment program and, finally, the State Water Banking Authority is charged with recharging and storing Central Arizona Project water. The introduction of Central Arizona Project water into riverine corridors to re-establish the environmental benefits of traditional riparian vegetation as well as recharge the underground aquifer, are actions that are consistent with the goals of each of these State agencies. Therefore, they could also play a vital role in riparian restoration.
- Two State grant programs are also likely to provide significant funding: the Heritage Program and the Arizona Water Protection Fund. The Heritage Fund was established in 1990 with monies from the State lottery. Sixty percent of the monies must be spent on the identification, acquisition, protection and management of sensitive areas for wildlife. The Arizona Game and Fish Department administers the program, and can provide technical assistance as well as funding. The Arizona Water Protection Fund was established in 1994 specifically to restore and protect rivers and riparian areas.

- Federal Assistance

- Corps of Engineers - The Corps of Engineers has been the primary Federal cooperative agency with Pima County regarding riparian or environmental restoration projects associated with Corps of Engineers flood control projects in Pima County. Significant additional funding opportunities will exist for participation with Pima County, primarily the Ajo Detention Basin and Environmental Restoration Project, the Paseo de las Iglesias Santa Cruz River Project, Tucson Arroyo/Arroyo Chico, and the Rillito/Swan Wetlands Ecosystem Restoration Project. To date, approximately \$6 million of Federal funds have been committed to the study and/or actual project development for Corps sponsored environmental restoration or riparian restoration projects. The Water Resources Development Act of 1998 now pending in Congress, which would fund the Corps of Engineers Challenge 21 Program, provides excellent opportunities for funding the four premiere environmental and riparian restoration projects of Paseo de las Iglesias, Ajo Detention Basin and Environmental Restoration, Tucson Arroyo/Arroyo Chico, and Rillito/Swan Wetlands Ecosystem Restoration, totaling approximately \$55 million.
- Bureau of Reclamation - Given the primary desire to reintroduce dependable water sources into riverine corridors, the Bureau of Reclamation, the Federal agency that developed the Central Arizona Project, may be instrumental in providing surface

waters to reintroduce into riparian environments primarily for the purpose of recharging the underground aquifer. It is hopeful that the Bureau of Reclamation will play an important role in providing surface waters for the Paseo de las Iglesias Project.

- Other Federal Programs - The United States Fish and Wildlife Service and the United States Natural Resource Conservation Service also provide funding for riparian restoration work. The Land and Water Conservation Fund can be used to acquire land or water rights for conservation purposes.
- Public/Private Partnerships - The Nature Conservancy provides expertise and funding for key projects. They already hold conservation easements along Sabino Creek and the San Pedro River, and have attracted several private donations for management of Bingham Cienega on behalf of Pima County. Volunteers with the Nature Conservancy and many local community groups have already been and will continue to be instrumental in stream restoration projects.

4. Mountain Parks

- 1997 General Obligation Bonds

Tucson Mountain Park - General	\$ 3,000,000
Tucson Mountain Park - Painted Hills	1,800,000
Tucson Mountain Park - Robles Pass	1,750,000
Tucson Mountain Park - Los Morteros	500,000
Tortolita Mountain Park	3,000,000
Tortolita Ironwood Forest	3,000,000
Catalina State Park - Expansion	1,000,000
Tumamoc Hill	<u>1,400,000</u>
Total	\$15,450,000

- Arizona Heritage Fund Land Acquisition Grants - Heritage Fund grant programs administered by Arizona State Parks and the Arizona Game and Fish Department offer potential funding sources that can be used for mountain park lands. Arizona State Parks manages two grant programs capable of funding land purchases: the Local, Regional and State Parks Heritage Fund and the Trails Heritage Fund. The Local, Regional and State Parks program makes approximately \$3.5 million available annually on a competitive basis for recreation-related land acquisition and park development, but no more than 20 percent of the fund can go to one applying entity. The Trails Heritage Fund provides grants for trail corridor acquisition and trail development. The Arizona Game and Fish Department administers a Heritage Fund grant program that can fund land acquisition in several categories, including Identification, Inventory, Acquisition, Protection and Management of Sensitive Habitat; Public Access; and Urban Wildlife/Urban Wildlife Habitat.

- Arizona State Land Department Assistance - In recent years, the State Land Department has begun to provide tools capable of assisting with mountain park development. These include:
 - Arizona Preserve Initiative - In 1996 the Arizona Legislature passed the Arizona Preserve Initiative, or "API," a mechanism that allows State Trust lands to be leased or purchased for conservation purposes for the first time. The API Program allows Trust lands that meet certain criteria to be reclassified as "conservation lands" for up to eight years while funding is sought to lease or purchase designated lands. Pima County will make extensive use of the API Program to reserve certain high-resource value State Trust lands in Eastern Pima County for preservation.
 - Growing Smarter Initiative - If Proposition 303, the "Growing Smarter" program, is approved by the voters in November, \$220 million in funding will be made available by the State of Arizona over the next 11 years to facilitate the acquisition of certain high resource-value State Trust lands. The funds, which will be administered through Arizona State Parks, will require an equal local match. The Growing Smarter funds will serve the same purpose as the API Conservation Fund, which was created by House Bill 2303 in 1997 but never funded by the Legislature.
 - Federal Land Exchanges - Efforts to restore the ability of the State Land Department to exchange property with other entities has failed in 1990, 1992 and 1994. Hopefully new attempts to modify exchange language should be undertaken. If allowed, the State Land Department could trade lands with the United States Bureau of Land Management to help create new mountain parks and preserves.
- Federal Assistance
 - Land and Water Conservation Fund (LWCF) - Since 1965, the LWCF has collected revenues from Federal off-shore oil leases for the purpose of protecting natural and cultural resources. Appropriation of these funds slowed to a trickle in the early 1980s, and the \$11 billion that has accumulated in the fund is presently being used for deficit reduction. However, a national effort is presently underway to restart the disbursement of these funds, and a portion may eventually become available to Pima County for land acquisition through the State of Arizona.
 - Cooperative Management Agreements (CMA) - The CMA is a long-term legal agreement that could be used to inexpensively create new County mountain parks. Land owned by the Bureau of Land Management would be incorporated into a new mountain park unit, and jointly managed by Pima County and the Bureau of Land Management to serve certain agreed-upon purposes. Pinal County's San Tan Mountains Regional Park was created in this manner, and this mechanism would be used to establish the proposed Waterman-Roskruge Mountain Park.
- Public Private Partnerships - The Pima County Parklands Foundation has been instrumental in the expansion of Colossal Cave Mountain Park. They will also be of key assistance in the expansion of Tucson Mountain Park through the collection and

dispersal of the Starr Pass Environmental Enhancement Fee. Expanding the Foundation role to assist in the development and expansion of other mountain parks should be explored and encouraged. Approximately \$18.6 million will be available for Tucson Mountain Park preservation through the Starr Pass Environmental Enhancement Fee.

5. Habitat, Biological and Ecological Corridor Conservation

- 1997 General Obligation Bonds

 - Trails \$2,000,000

- Multi-Species Conservation Planning - The County has begun initial planning on a multi-species habitat conservation plan to comply with the Endangered Species Act. This habitat conservation planning process will include multiple species that are threatened or endangered and will likely result in strategies to establish biological corridors that can be used as pathways for endangered or threatened species, including migration to and from larger publicly conserved habitats.
- Land Use Regulation - It is likely that land use regulation will be an important strategy in preserving habitats within biological corridors, while at the same time allowing zoned uses of private property within said corridors. It is critical that appropriate scientifically-based analyses be conducted and concluded that define the best strategies and preserve and protect habitat deemed critical for threatened and endangered species survival.

6. Critical and Sensitive Habitat Preservation

- Federal Assistance -

 - Department of the Interior - In September of 1998, a request for funding pygmy owl related studies was made to the Secretary of the Interior based on recommendations from meetings of biologists, agency staff recommendations, and comments from community members. Five types of studies were identified, including more comprehensive surveys, telemetry studies, habitat assessments, population viability analysis, and genetic research, costing in the range of \$1.6 million to \$2.3 million.
 - Land and Water Conservation Fund (LWCF) - Land and Water Conservation Funds, as described in the Mountain Parks subsection, will be requested in the event that compliance with the Endangered Species Act requires land acquisition. Likewise, strategies are currently being formulated to seek planning and acquisition funds from other Federal funding sources and foundations.

 - Intergovernmental Cooperative Agreement - In July of 1998 a letter was sent to the Department of the Interior requesting advice about whether the Department would support an ecosystem based conservation plan. There has been a positive response to the idea of framing a regional conservation plan in terms of ecosystem protection.

Federal and State natural resource agencies also indicate that there is support for a regional planning process if the County enters into a cooperative agreement, establishes a steering committee, and engages in a recognized conservation planning process under Section 10 of the Endangered Species Act. Upon receiving Board approval to pursue a formal cooperative agreement, all local governmental entities within Pima County will be asked to participate in a regional conservation planning initiative, as well as the Tribes within the regional planning area of the Pima County boundaries and other interested parties. There has been significant progress in building interest with and among private property rights advocates, environmental advocates, and developers. The cooperative agreement would seek consistency in planning among jurisdictions and with Recovery Team efforts. Additional funding will be sought from interested governmental entities so that the cooperative agreement is followed by a cost sharing agreement.

- Arizona State Land Department Assistance - Growing Smarter Initiative - Portions of the Ironwood vegetation community, which is currently believed to be critical habitat for the endangered pygmy owl, exist within areas of State land. If Proposition 303 is approved, some of these areas should receive high priority consideration since conservation of such would begin to address Federal compliance issues.
- County Funding - The Board of Supervisors has approved an expenditure of \$300,000 this fiscal year for a biological assessment related to the Sonoran Desert Protection Plan. Additional funds will be needed to conduct a full assessment and complete the work necessary for a regional conservation plan. These funds can be pursued in part through intergovernmental efforts.
- Incentives and Public/Private Partnerships - It is typically not possible to achieve all conservation goals solely with the tools to acquisition and regulation. Incentive based conservation tools will have to be researched in anticipation of adoption in a future regional ecosystem based multi-species conservation program. Incentives used in other jurisdictions include preferential tax treatment, transferable development rights, clustering density bonuses, grants and loans, and non-fee simple acquisitions such as conservation easements and purchase of development rights.
- Land Use Regulations - The components of the regional conservation planning process involve both a biological assessment and an economic impact assessment. Ideally many conservation goals can be achieved on existing public or protected land and through acquisition or other means which minimize regulatory options. Pima County has more opportunity to balance environmental and economic community values than most regions due to the presence of public land. The assessment of high resource value land will help refine strategies to protect habitat so that any regulatory measures adopted are actually achieving a defined purpose and working in concert with other conservation program implementation strategies.

VIII. Land Use Policy

Various elements of this plan call for the preservation and protection of lands that contain unique or significant environmental, historic, or cultural resources. As discussed previously, one technique to ensure preservation and protection is acquisition. Another is through land use regulation. There are certain uses of land that will be compatible with elements of this plan. Those should be encouraged. Other uses will be incompatible and should be prohibited when possible. While the Legislature has recently passed legislation prohibiting counties from imposing land use restrictions more stringent than are presently allowed on lands within the unincorporated area of a county, there is nothing that prohibits a county from refusing to intensify allowable land uses or upzone property that falls within a future mountain park or natural preserve, or contains unique or significant environmental, cultural, or historic resources.

The following land use policies should be considered for adoption by the Board of Supervisors:

1. **No Upzoning in Environmentally Sensitive or Historic Areas** - All lands within designated mountain parks, riparian corridors or ranches designated for conservation should not be rezoned to uses greater than what is now permitted. Note that even these land use designations would allow cluster options and allow a property owner to request a rezoning to Major Resort zone (MR). A special area policy could also be considered if these two development options are deemed to be incompatible with designated conservation areas.
2. **Enhance Review Criteria on Zoning Plan Waiver of Subdivision Platting Requirements** - The Agua Caliente-Sabino Creek, Catalina Foothills zoning plans allow SR property to be rezoned to CR-1 by filing a subdivision plat. Today most property owners within these zoning plans petition the Board to waive the platting requirements. On most occasions these requests are granted. For property within a designated mountain park, riparian corridor, or any area designated as a biological corridor, the Board may want to enhance its review criteria. For requests of more than three lots the Board can request a subdivision plat as a higher standard of urban design and a process providing a fuller review under our plant preservation standards. For requests of three or less lots, the Board may require as standard criterion a site plan layout showing the maximum use of set-aside areas as natural open space before approving a request to waive subdivision platting before allowing increased density as permitted by a zoning plan.
3. **Enhance Conditional Use Permit Criteria to be More Sensitive to Conservation Areas** - Currently, a conditional use permit must meet the standard that the use "will not be in serious conflict with the objectives of the general land use plan." In order to add greater protection to natural resources on land designated as a mountain park, riparian corridor, or biological corridor, the conditional use permit standard should be amended to specify that conditional uses shall not have a detrimental effect on an area designated as being environmentally sensitive. This enhanced standard would allow the County to deny those uses deemed inappropriate adjacent to a conservation area or require enhanced design standards to make the use more compatible.
4. **Create an Environmentally Compatible Standard for Rezoning Time Extensions** - For any property within a designated mountain park, riparian corridor, ranch to be conserved, or biological corridor, time extensions should be reviewed in the context of whether the rezoning,

as measured against the designation of environmentally sensitive land, is still an appropriate land use in such an area. The Board may decide when reviewing a time extension against an environmental standard that it is or is not an appropriate use and should revert to its previous zoning or be subject to additional standards.

5. **Comprehensive Plan Amendments to Resource Conservation** - Initiate Comprehensive Plan Amendments to designate the future land uses of all lands within designated mountain parks or riparian corridors, or the fee simple lands of ranches to be conserved as resource conservation as now defined in the Zoning Code.

6. **Continue to Improve Habitat Linkages through Land Use Regulations and Policies** - Recent County efforts in creating a Native Plant Preservation Ordinance and revising hillside development zone, buffer overlay zone, and riparian habitat regulations will strengthen the County's ability to encourage conservation principles in land use planning. The next step is to review these ordinances, including grading and landscape standards, to ensure the sum effect is a consistent, seamless implementation of the regulations and compatibility with our efforts in open space acquisition, park expansion, and creation of a multi-species conservation plan. A seamless fit of several environmentally sensitive land regulations needs to be stated as a specific Comprehensive Plan policy to demonstrate how the linkages of private land development adjacent to public preserves and our compliance with the Endangered Species Act respond to the conservation of the desert environment while encouraging responsible urban development.

7. **Transferable Development Rights** - An appropriate ordinance transferring development rights from private properties within designated mountain parks, river corridors, biological corridors or ranch properties designated for ranch conservation to other property should be developed. The purpose of the transferable development rights ordinance would be to create a mechanism where private lands within these areas could be conserved, however, the economic benefits of development could be received by the present owners and transferred to property that should be developed to accommodate future growth. Such a process should substantially assist in encouraging in-fill development.

8. **Ranch Conservation Zoning Classification** - A ranch conservation zoning classification should be developed that would allow owners to voluntarily downzone properties to accommodate less intense uses. Ranch zoning classifications of 10, 20, 40 and 160 acres per residential dwelling unit should be available to allow private land owners with similar conservation ethics to downzone the property to protect economic and historic value.

9. **Infrastructure Investment Guidance** - Create appropriate policies to ensure that infrastructure expansion and/or investment does not create unique or unusual economic forces that would undermine the principles of conserving lands within mountain parks, riparian corridors, biological corridors, or designated for ranch conservation.

10. **Environmental Enhancement Fee** - The Environmental Enhancement Fee, equivalent to two percent of all sales, should be assessed as a special condition of approval of any major or minor resort or destination hotel approved through a rezoning or specific plan on lands within the Buffer Overlay Zone and adjacent to a public preserve. The Environmental

Enhancement Fee shall be used to maintain and expand the public preserve adjacent to the particular major or minor resort or destination hotel. Such a requirement is similar to and patterned after the Starr Pass Environmental Enhancement Fee. Requiring such of all future major or minor resorts or destination hotels located in the County is a viable means of providing funding to expand and protect public preserves that are often a key component of a marketing plan or tourism attraction for the particular resort or destination hotel.

11. **Environmental Banking Authority** - In the past the State Legislature has placed fees on the use of State resources. The best example is groundwater withdrawal fees imposed in groundwater management areas. While it is State policy to preserve our groundwater, it should also be State policy to protect our natural environment. Similar to the assessment of groundwater withdrawal fees it should be possible to assess fees for the removal of natural habitat or the reduction in environmental resources caused by urbanization. These fees would be deposited with an Environmental Banking Authority to purchase unique natural lands and place them in permanent open space. Presently 4,500 acres of property are consumed by annual urbanization. If a fee of \$100 per acre was assessed, \$450,000 would be available each year for preservation.

IX. **Regional Cooperation**

Implementation of this plan will require not only significant allocations of resources, but also unprecedented regional cooperation. No individual jurisdictional view on any subject will prevail without compromise. Consensus will be required to achieve a balance that provides the greatest success in advancing this draft plan.

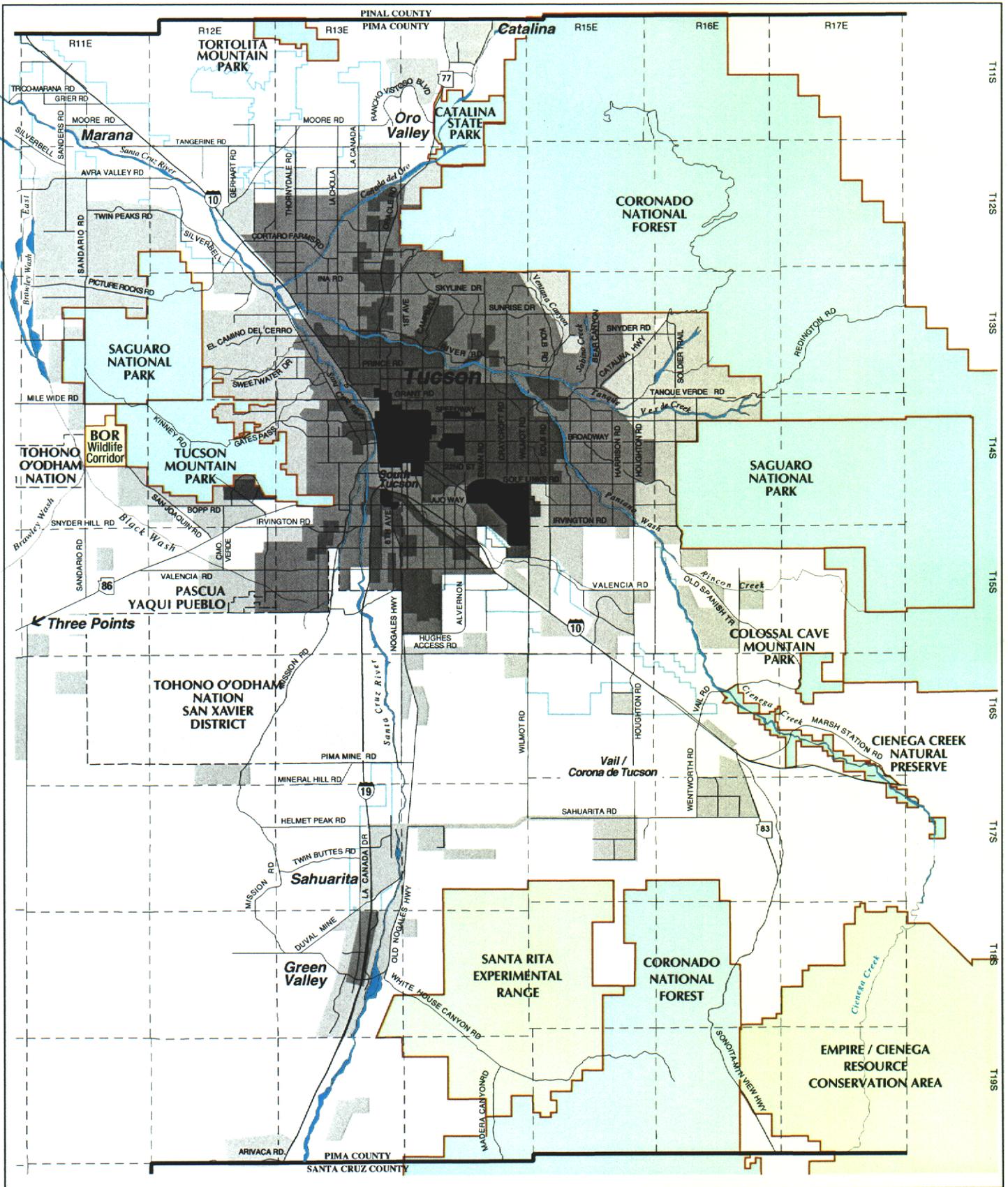
Regional cooperation begins by:

1. Asking each local jurisdiction within Pima County to review, comment and hopefully endorse the concepts contained in this draft plan.
2. Asking for comment and assistance of the Arizona State Land Department in conserving State lands contained in the draft plan.
3. Asking the Bureau of Land Management to rapidly pursue cooperative management agreements for new and expanded mountain parks.
4. Asking each local jurisdiction, the State Land Department, and the Arizona Game and Fish Department to join with Pima County in developing a multi-species conservation plan in accordance with the Federal Endangered Species Act. Importantly, cooperation includes funding commitments.
5. Asking each local jurisdiction to review their general land use or comprehensive plan and include in same site specific conservation elements consistent with this plan.

Some mechanism, both citizen and institutional, should be developed to guide regional consensus building for long-term plan implementation and success.

Figures

1. **Urban Expansion in the Metropolitan Tucson Area**
2. **Reserved Public Lands in Eastern Pima County**
3. **Eastern Pima County State and Federal Lands**
4. **Ranch and Agricultural Land Use with State and Federal Land**
5. **Ranch Conservation**
6. **Historical and Cultural Preservation**
7. **Cienega Creek Natural Preserve**
8. **Davidson Canyon Natural Preserve**
9. **Buehman-Bingham Natural Preserve**
10. **Peñitas Wash**
11. **Mescal Arroyo**
12. **Riparian Restoration**
13. **Tortolita Mountain Park**
14. **Tucson Mountain Park**
15. **Colossal Cave Mountain Park**
16. **Catalina State Park Expansion**
17. **Santa Rita Mountain Park and Davidson Canyon Natural Preserve**
18. **Cerro Colorado Mountain Park**
19. **Waterman-Roskruge Mountain Park**
20. **Sierrita Mountain Park**
21. **Anza Helvetia Grasslands Conservation Area**
22. **Pima County Mountain Park and Natural Preserve System**
23. **Pima County Mountain Park System and Riparian Corridors**
24. **Biological Corridors and Links**
25. **Critical and Sensitive Habitat**

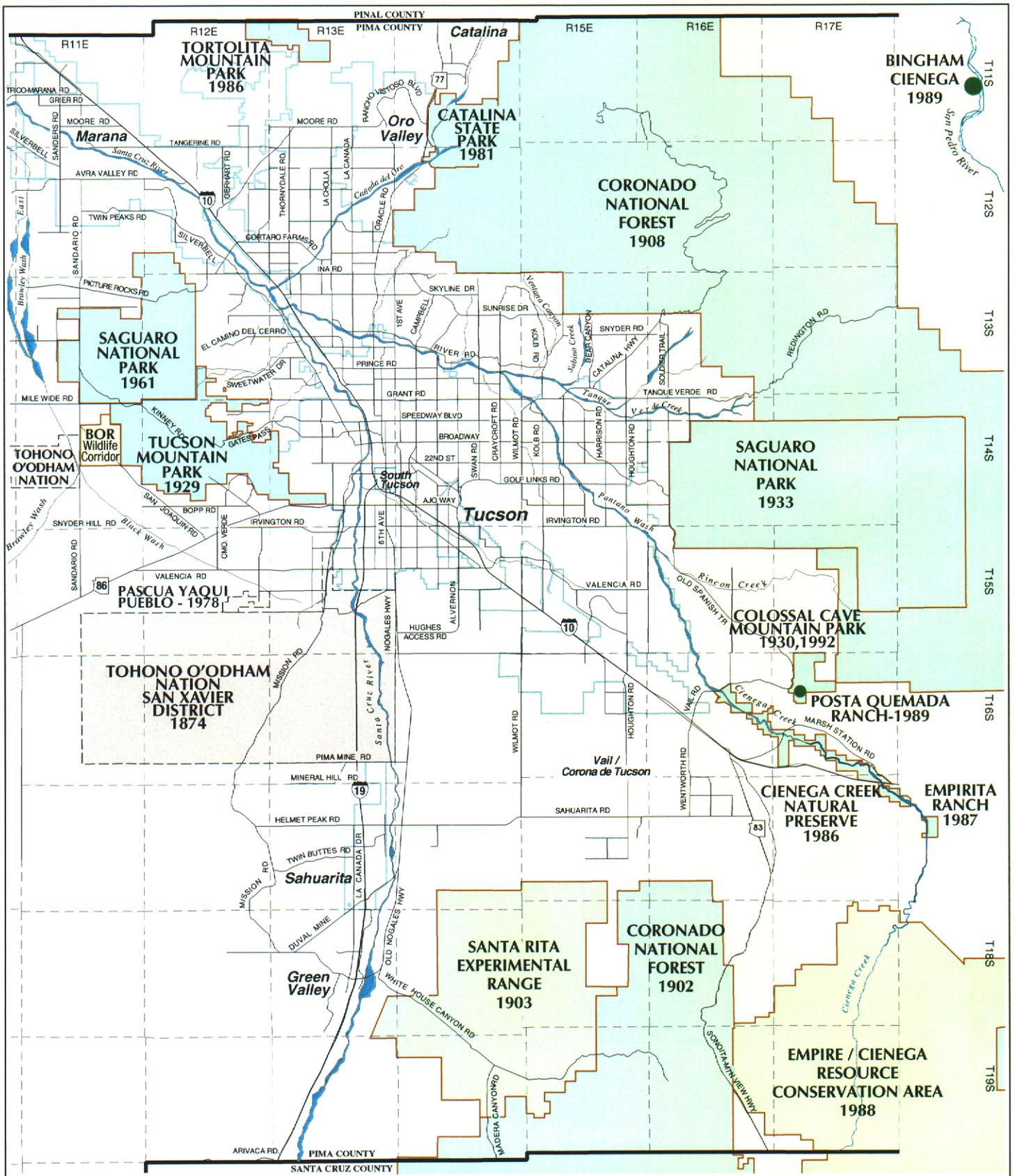


Pima County Illustration 10/98

Urban Expansion in the Metropolitan Tucson Area



Figure 1



Pima County Illustration 10/98

Reserved Public Lands in Eastern Pima County with Date of Establishment

- National Forests and Monuments, State and Regional Parks
- Restricted Use Areas
- Bureau of Reclamation Wildlife Corridor
- Indian Nations

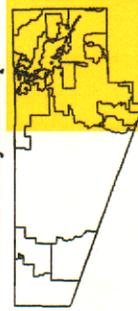
Figure 2

Eastern Pima County State and Federal Lands

-  Administrative Boundaries
-  Major Streets
-  Private/County Land
-  State Trust Land
-  BLM Land

FIGURE 3

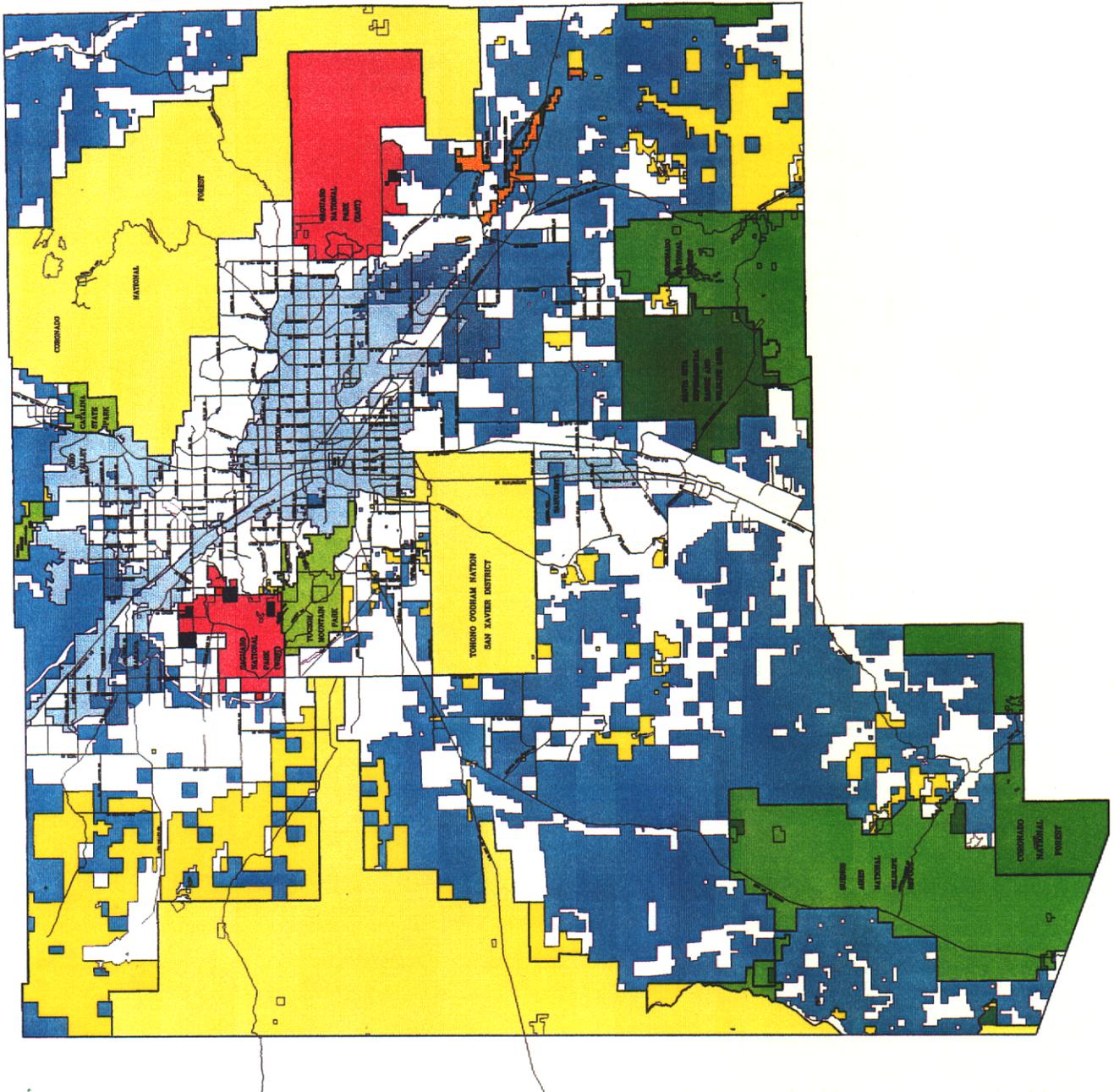
Pima County Index Map

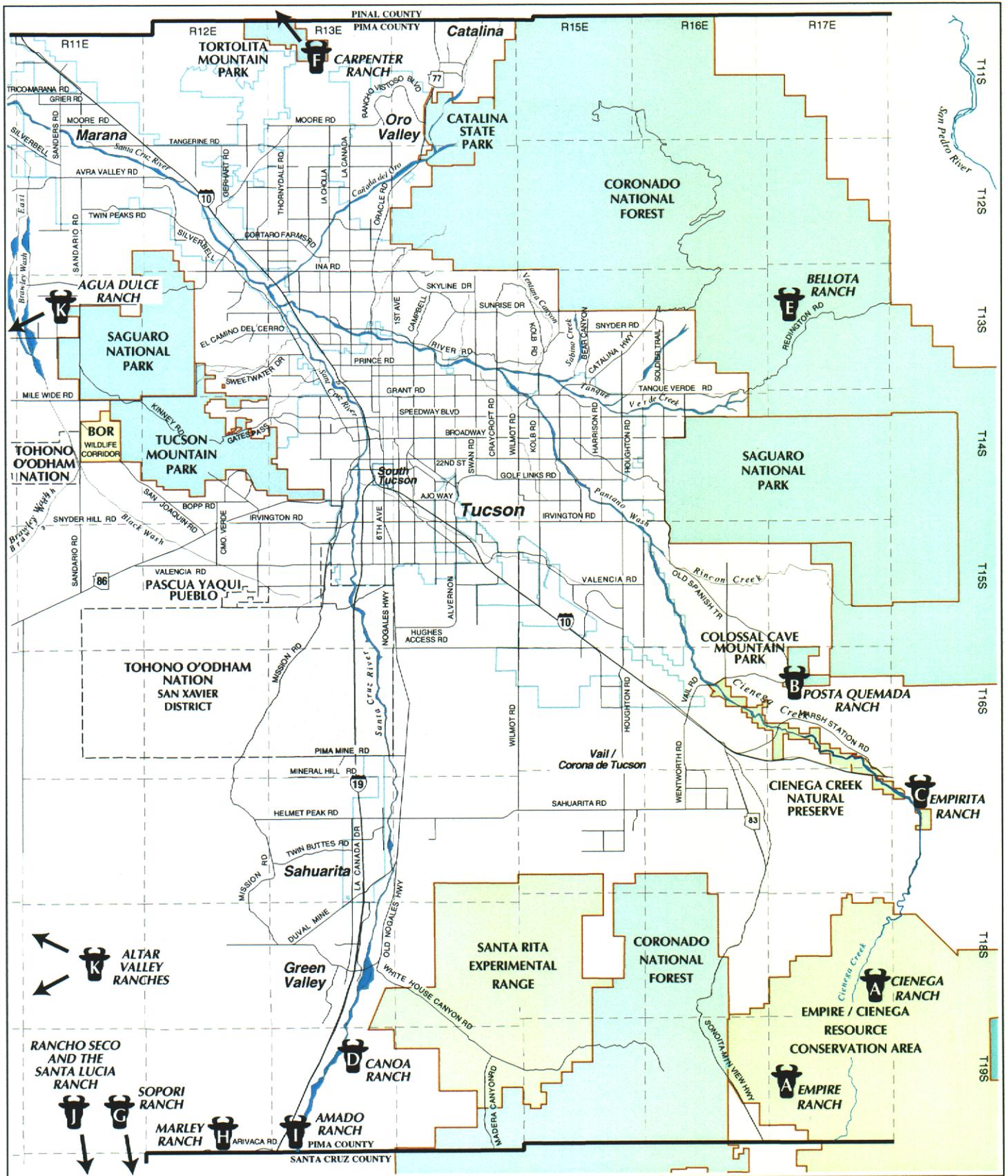


Index Map scale 1:1,000,000

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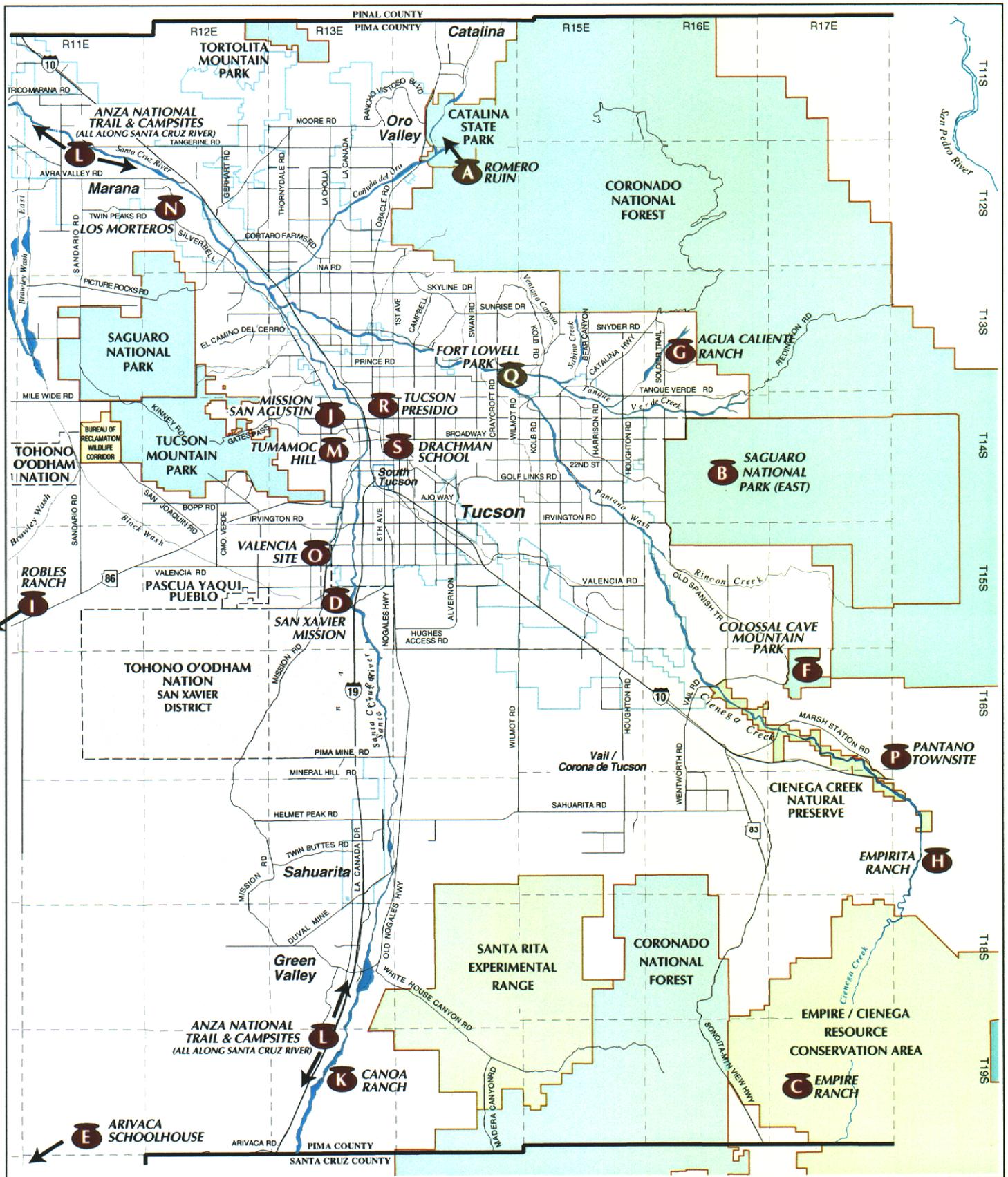
Ranch Conservation

- A. Empire/Cienega Ranch
- B. Posta Quemada Ranch
- C. Empirita Ranch
- D. Canoa Ranch

- E. Bellota Ranch
- F. Carpenter Ranch
- G. Sopori Ranch
- H. Marley Ranch

- I. Amado Ranch
- J. Rancho Seco and the Santa Lucia Ranch
- K. Altar Valley Ranches

Figure 5



Pima County Illustration 10/98

Historic and Cultural Preservation

- | | | | | |
|-------------------------------|------------------------|------------------------------------|---------------------|---------------------|
| A. Romero Ruin | E. Arivaca Schoolhouse | I. Robles Ranch | M. Tumamoc Hill | Q. Fort Lowell Park |
| B. Saguaro National Park East | F. Colossal Cave | J. Mission San Agustín | N. Los Morteros | R. Tucson Presidio |
| C. Empire Ranch | G. Agua Caliente Ranch | K. Canoa Ranch | O. Valencia Site | S. Drachman School |
| D. San Xavier Mission | H. Empirita Ranch | L. Anza National Trail & Campsites | P. Pantano Townsite | |

Figure 6

Cienega Creek Natural Preserve

- Contour Lines
- Parcel Base And Streets
- Township And Range Lines
- Section Lines
- Washes
- Administrative Boundaries
- Proposed Park Boundaries
- Trails
- Proposed Mountain Parks
- Proposed Pima County Natural Preserves
- Riparian Habitat/Wildlife Corridor Links
- Bureau Of Land Management (BLM)
- Existing Pima County
- National Forest Land
- Private Lands
- State Trust Lands

CIENEGA CREEK NATURAL PRESERVE:
 State: 6,767 Acres
 Federal: 160 Acres
 Private: 366 Acres

FIGURE 7

Pima County Index Map



Index Map scale: 1:24,000

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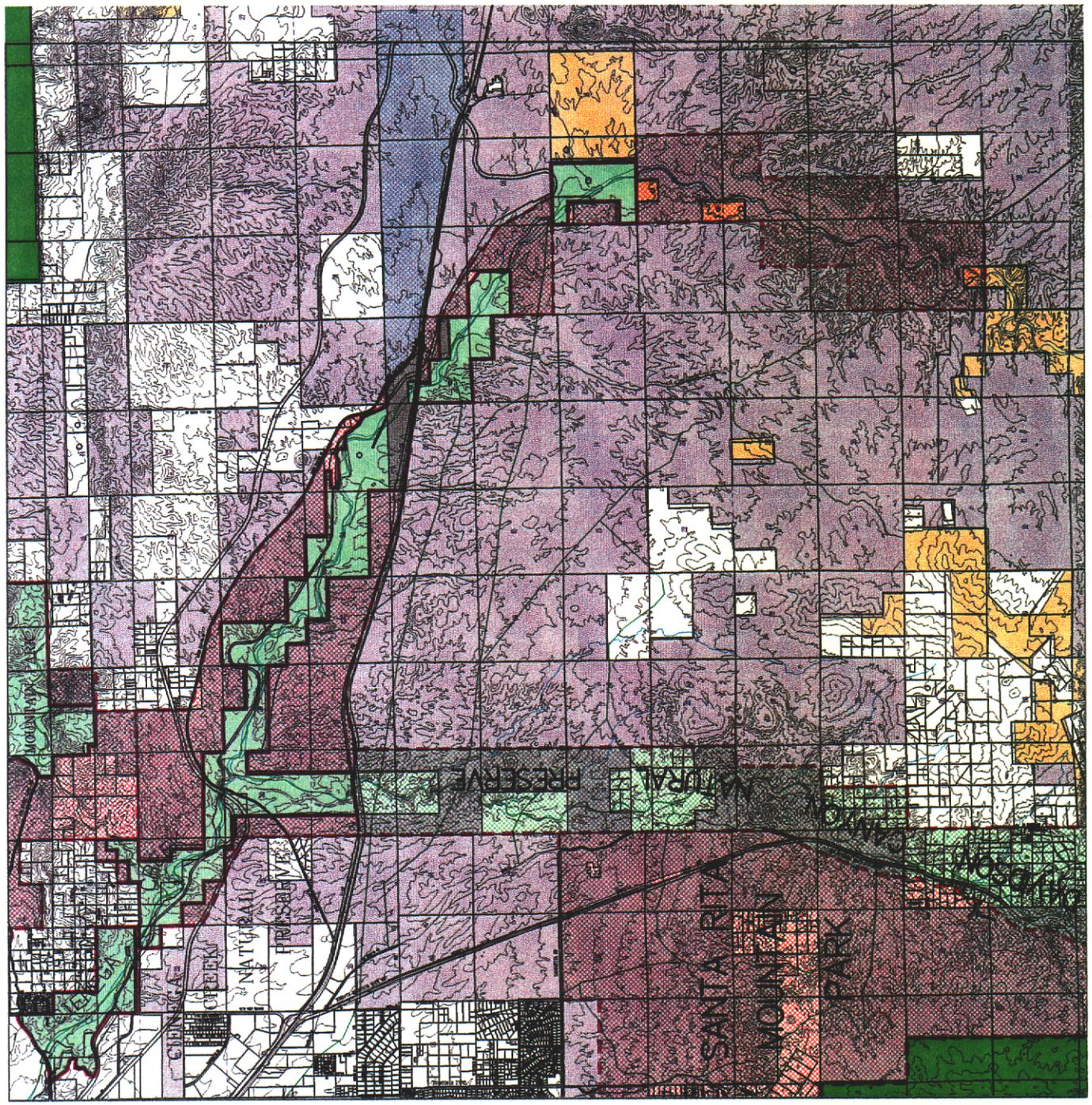
R17E

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Davidson Canyon Natural Preserve

- Contour Lines
- Parcel Base And Streets
- Township And Range Lines
- Section Lines
- Washes
- Administrative Boundaries
- Proposed Park Boundaries
- Trails
- Proposed Mountain Parks
- Proposed Pima County Natural Preserves
- Helvetia Grasslands Conservation Area
- Bureau Of Land Management (BLM)
- Existing Pima County
- National Forest Land
- Private Lands
- State Trust Lands

DAVIDSON CANYON NATURAL PRESERVE:
 State: 3,343 Acres
 Federal: 2,79 Acres
 Private: 2,845 Acres

FIGURE 8

Pima County Index Map



Scale: 1:27,000



Scale 1: 27,000



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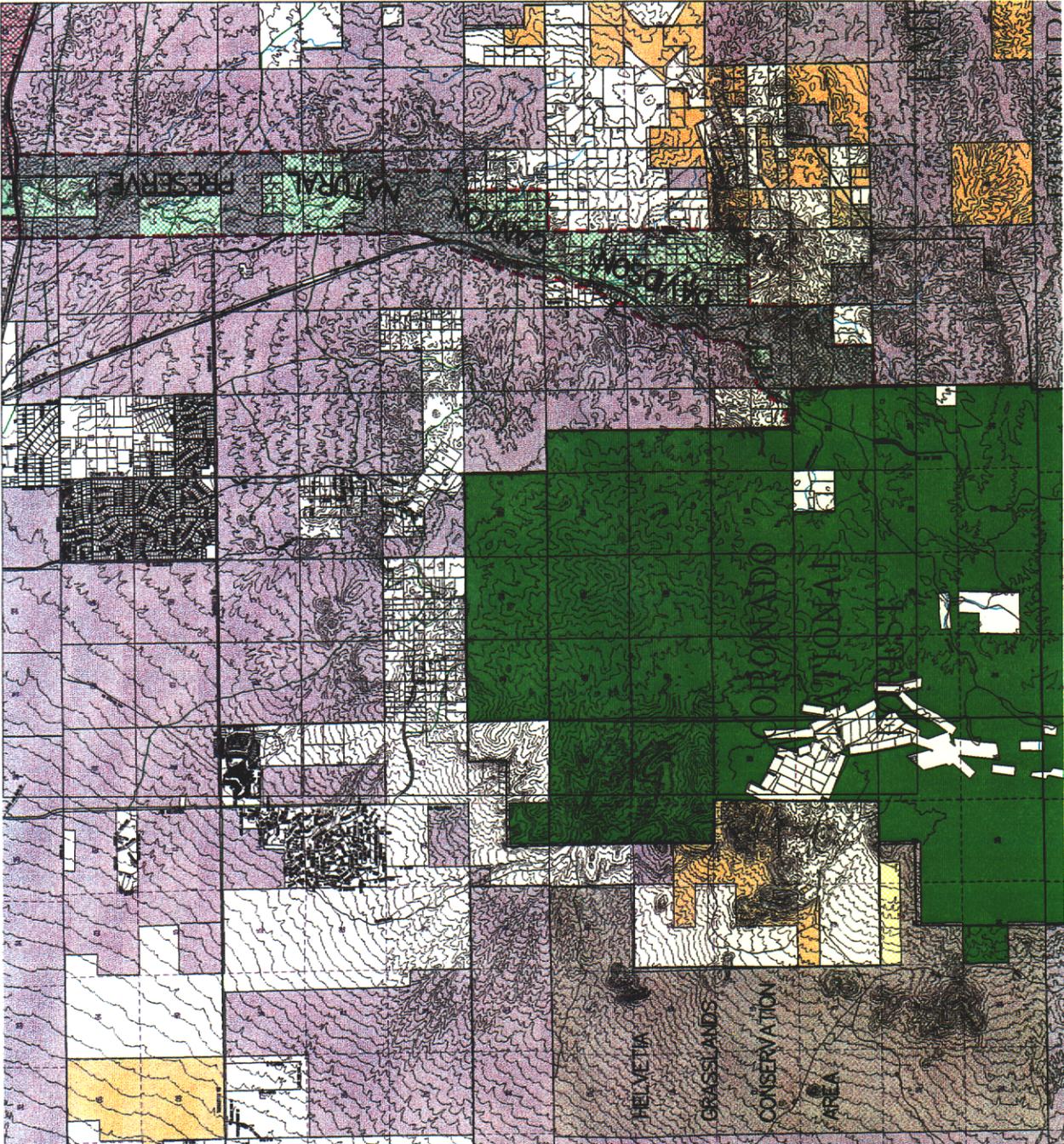
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T18S



HELVETIA
 GRASSLANDS
 CONSERVATION
 AREA

CRONADO
 NATIONAL
 FOREST

Buehman-Bingham Natural Preserve

- Contour Lines
- Parcel Base And Streets
- Township And Range Lines
- Section Lines
- Washes
- Administrative Boundaries
- Proposed Park Boundaries
- Trails
- Proposed Pima County Natural Preserves
- Private Lands
- State Trust Lands

BUEHMAN-BINGHAM NATURAL PRESERVE:
 State: 2,478 Acres
 Federal: 7 Acres
 Private: 5,004 Acres

FIGURE 9

Pima County Index Map



Index Map Scale 1:100,000

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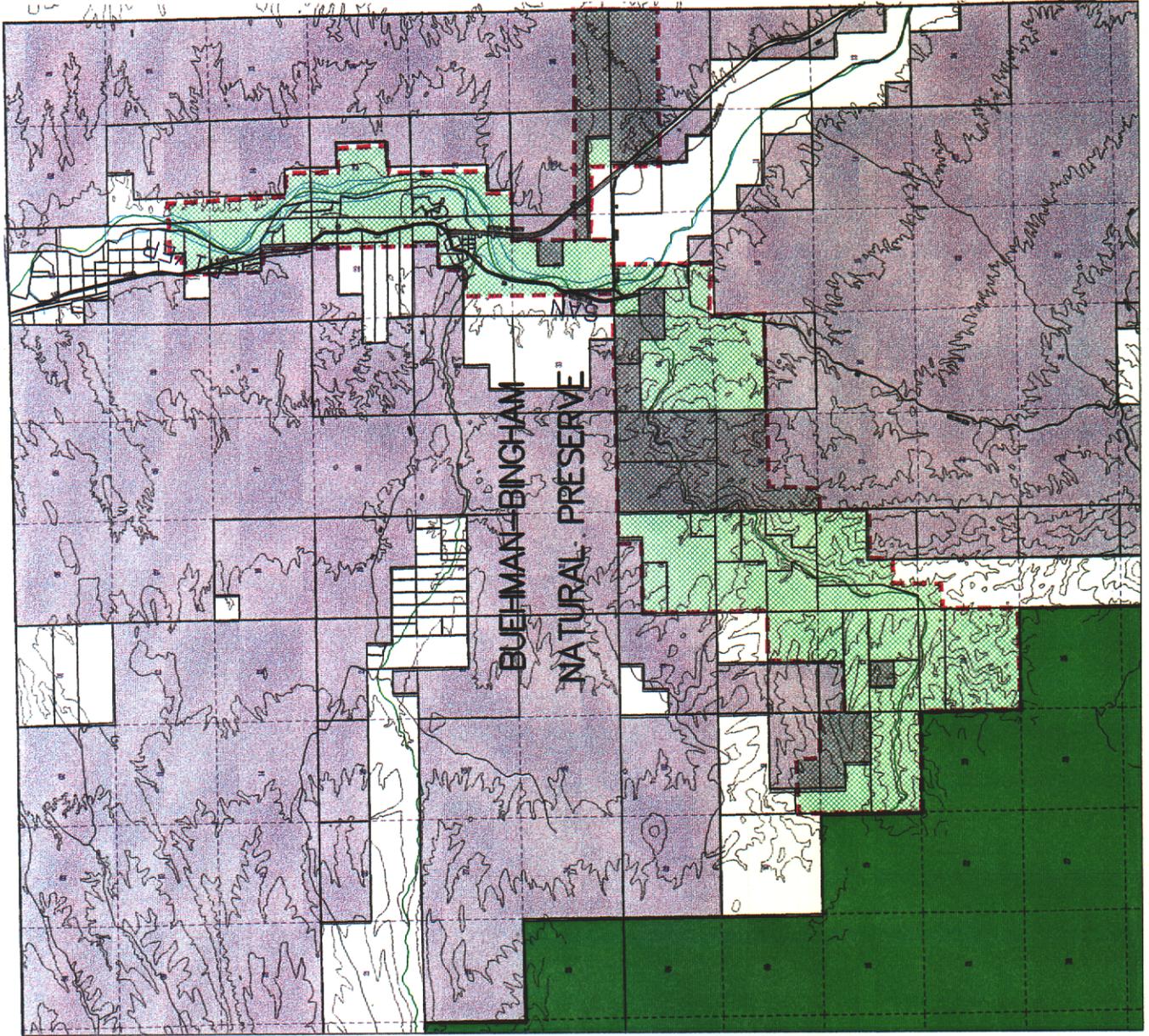
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BUEHMAN-BINGHAM
NATURAL PRESERVE



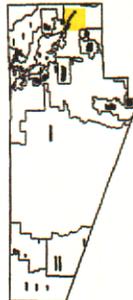
Mescal Arroyo

- Contour Lines
- Parcel Base And Streets
- Township And Range Lines
- Section Lines
- Washes
- Administrative Boundaries
- Proposed Park Boundaries
- Trails
- Proposed Mountain Parks
- Mescal Arroyo
- Bureau Of Land Management (BLM)
- Existing Pima County
- National Forest Land
- Private Lands
- State Trust Lands

MESCAL ARROYO:
 State: 1,795 Acres
 Federal: 0 Acres
 Private: 61 Acres

FIGURE 11

Pima County Index Map



Index Map Scale: 1:10,000

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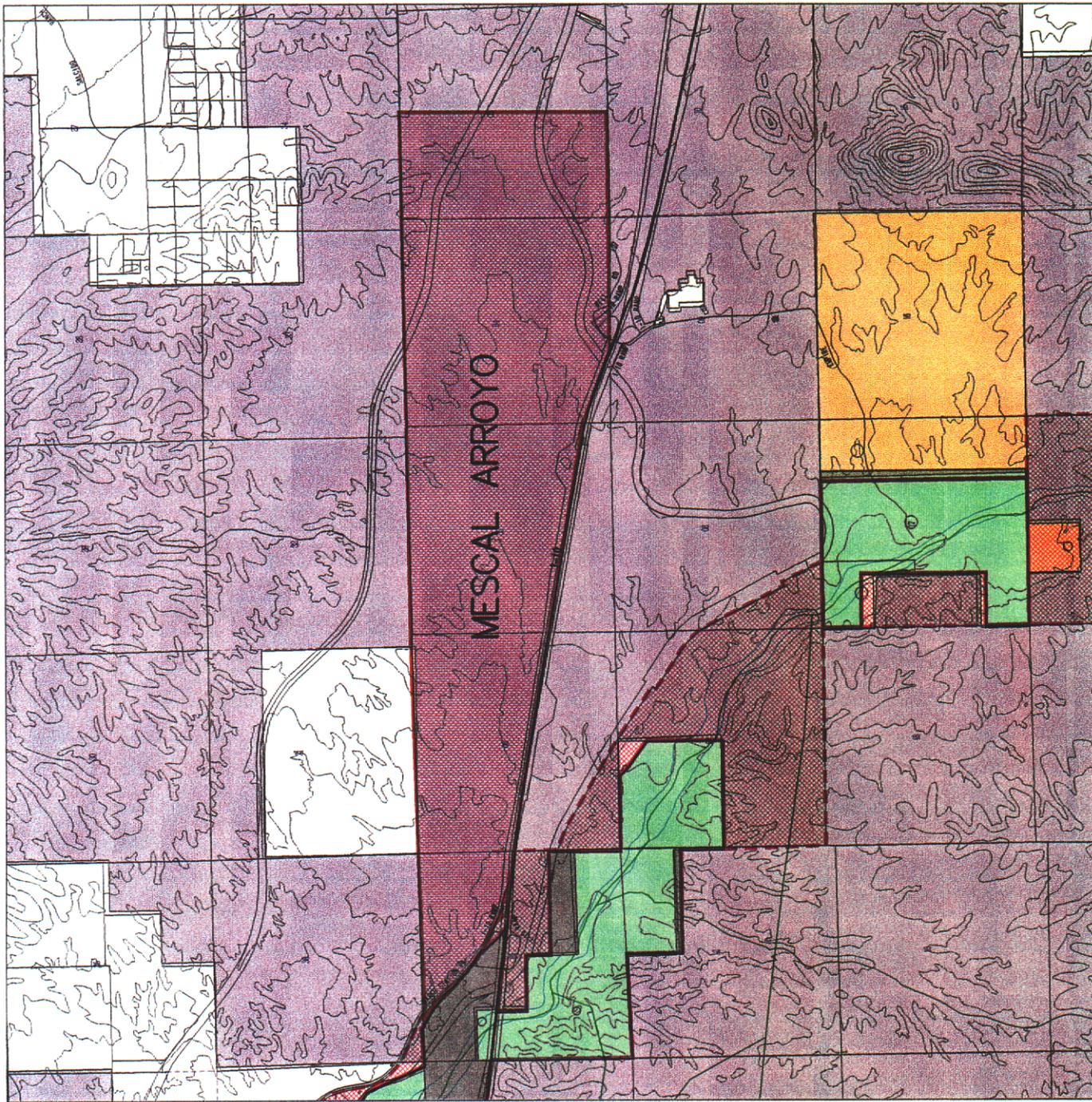
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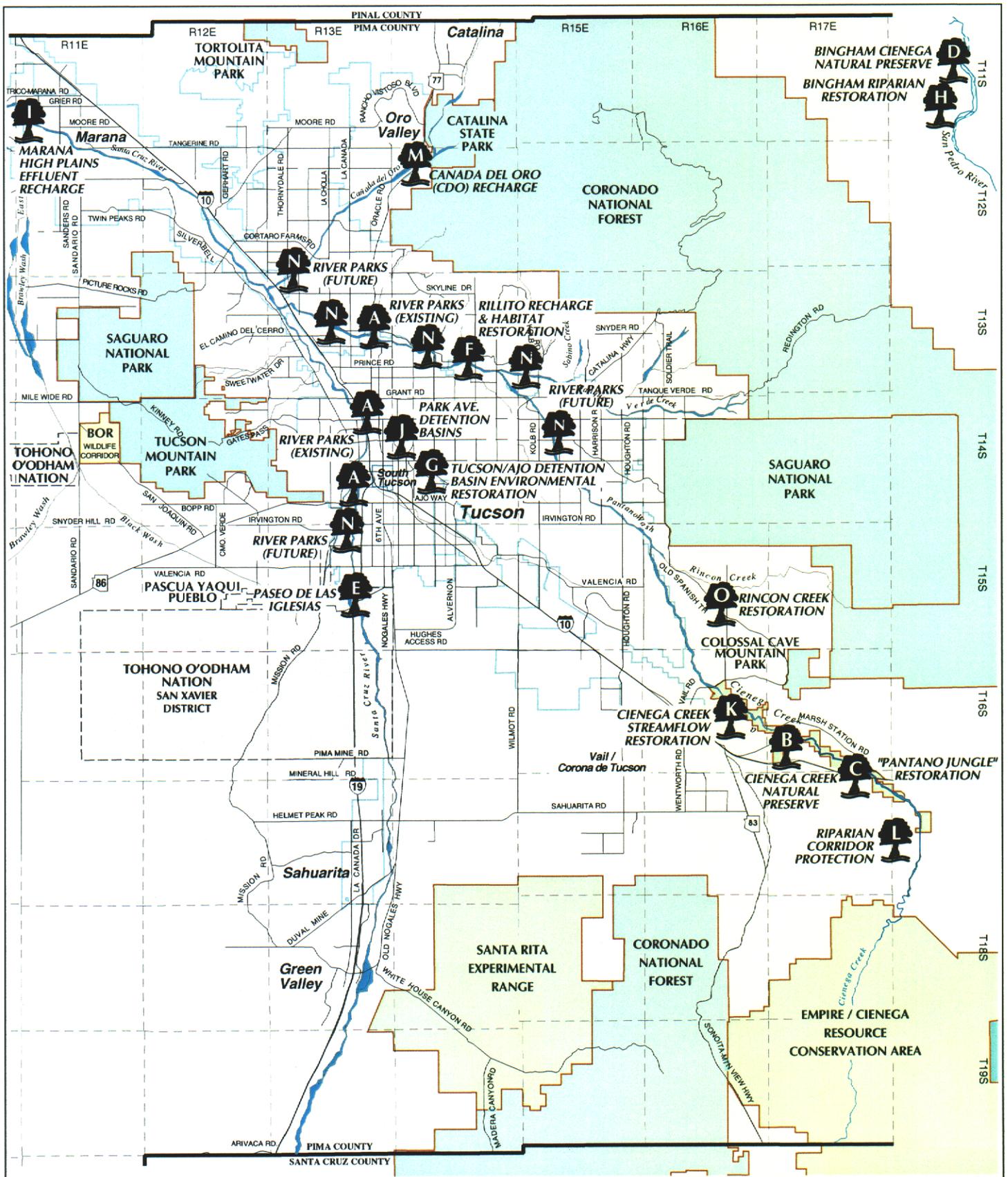
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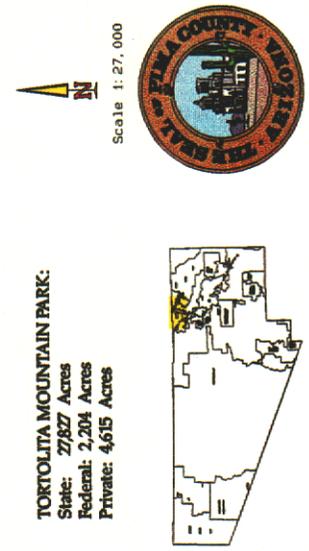
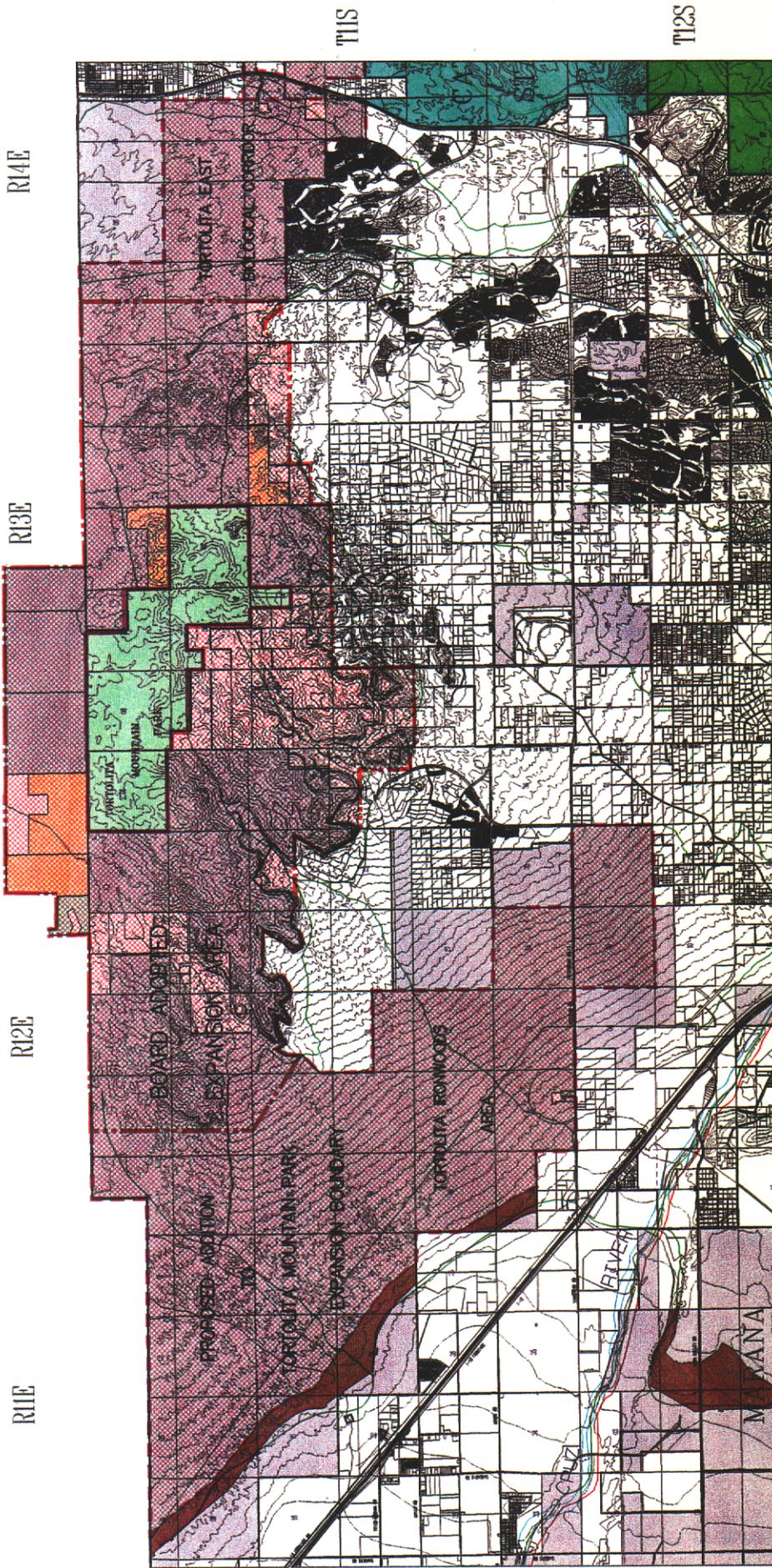
Pima County Illustration rev. 10/22/98

Riparian Restoration

- | | | | |
|-------------------------------------|---|--|----------------------------------|
| A. River Parks | E. Paseo de las Iglesias | I. Marana High Plains Effluent Recharge | M. Canada Del Oro (CDO) Recharge |
| B. Cienega Creek Natural Preserve | F. Rillito Recharge and Habitat Restoration | J. Park Ave. Detention Basins Habitat Restoration and Recreation | N. River Parks |
| C. "Pantano Jungle" Restoration | G. Tucson/Ajo Detention Basin Environmental Restoration | K. Cienega Creek Streamflow Restoration | O. Rincon Creek Restoration |
| D. Bingham Cienega Natural Preserve | H. Bingham Riparian Restoration | L. Riparian Corridor Protection | |

Figure 12

Tortolita Mountain Park



TORTOLITA MOUNTAIN PARK:
 State: 27,827 Acres
 Federal: 2,204 Acres
 Private: 4,615 Acres

Scale 1: 27,000



Pima County Index Map

PROJECT: 10/20/98

FIGURE 13

- | | | | |
|--|---------------------------|--|---------------------------------|
| | Contour Lines | | Proposed Park Boundaries |
| | Parcel Base And Streets | | Present Master Plan Boundary |
| | Township And Range Lines | | Proposed Mountain Parks |
| | Section Lines | | Bureau Of Land Management (BLM) |
| | Washes | | Bureau Of Reclamation |
| | Trails | | Catalina State Park |
| | Administrative Boundaries | | Existing Pima County |
| | Existing Park Boundaries | | National Forest Land |
| | | | Private Lands |
| | | | State Trust Lands |

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Tucson Mountain Park

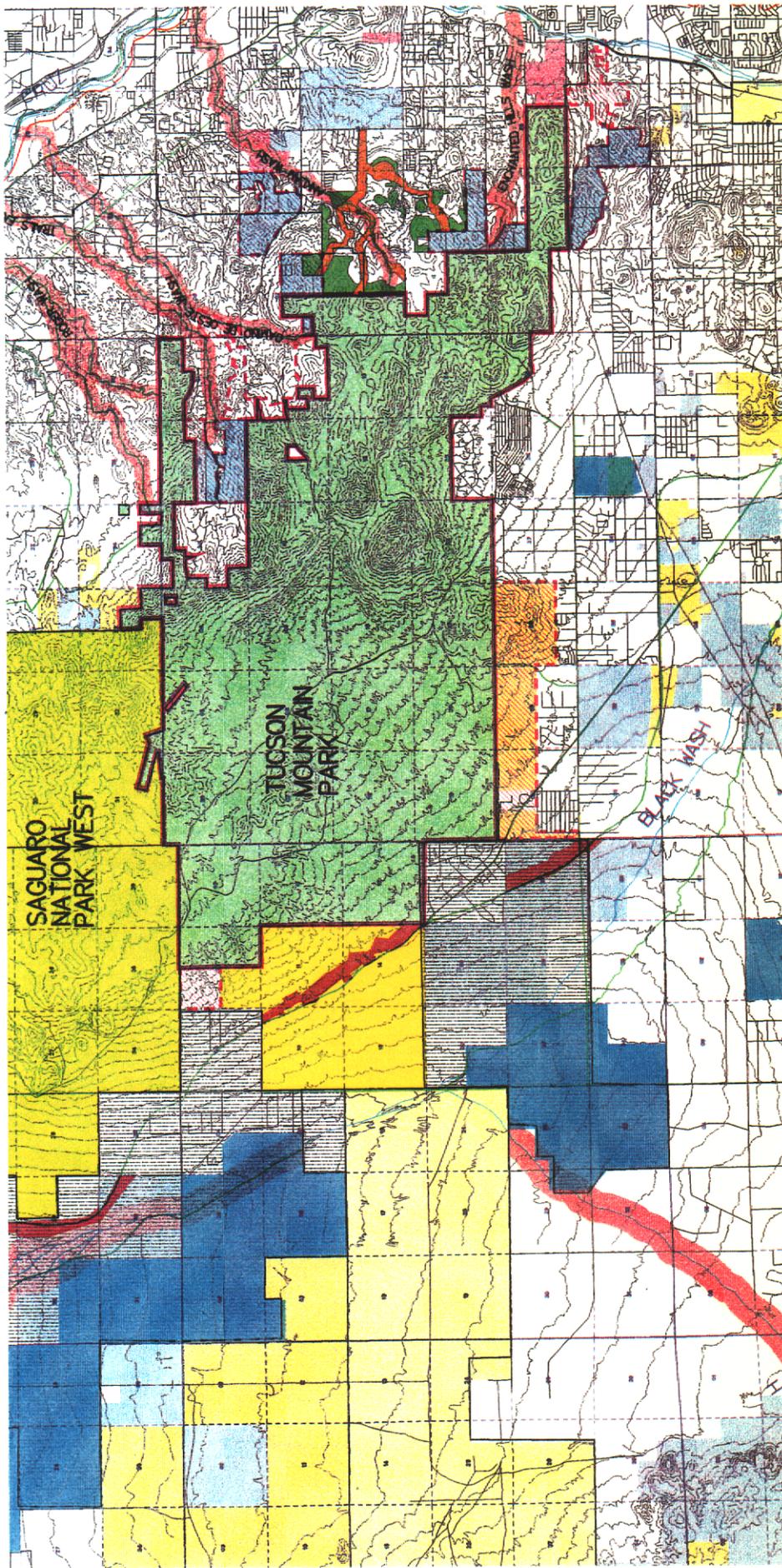
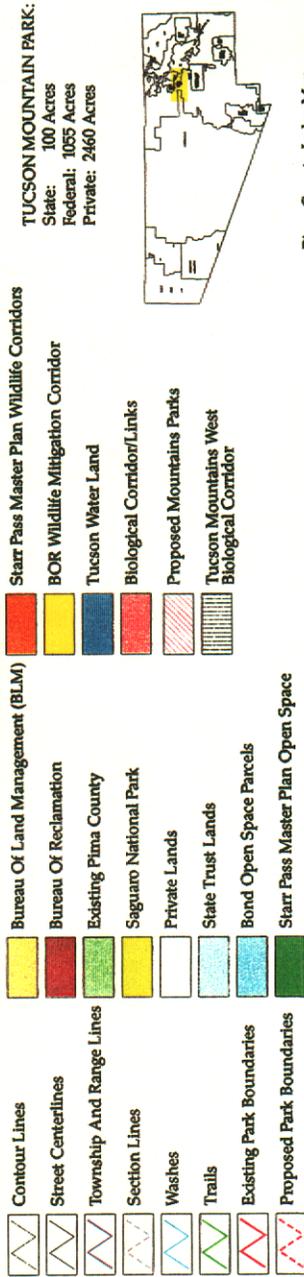


FIGURE 14

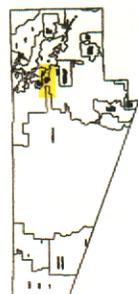


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Pima County Index Map

Plotted: 10/9/99

Colossal Cave Mountain Park

- Contour Lines
- Parcel Base And Streets
- Township And Range Lines
- Section Lines
- Washes
- Administrative Boundaries
- Proposed Park Boundaries
- Trails
- Proposed Mountain Parks
- Existing Pima County
- National Forest Land
- National Parks And Monuments
- Private Lands
- State Trust Lands

COLOSSAL CAVE:
 State: 3,319 Acres
 Federal: 18 Acres
 Private: 1,877 Acres

FIGURE 15

Pima County Index Map



Index Map Scale: 1:100,000



Scale 1:13,500



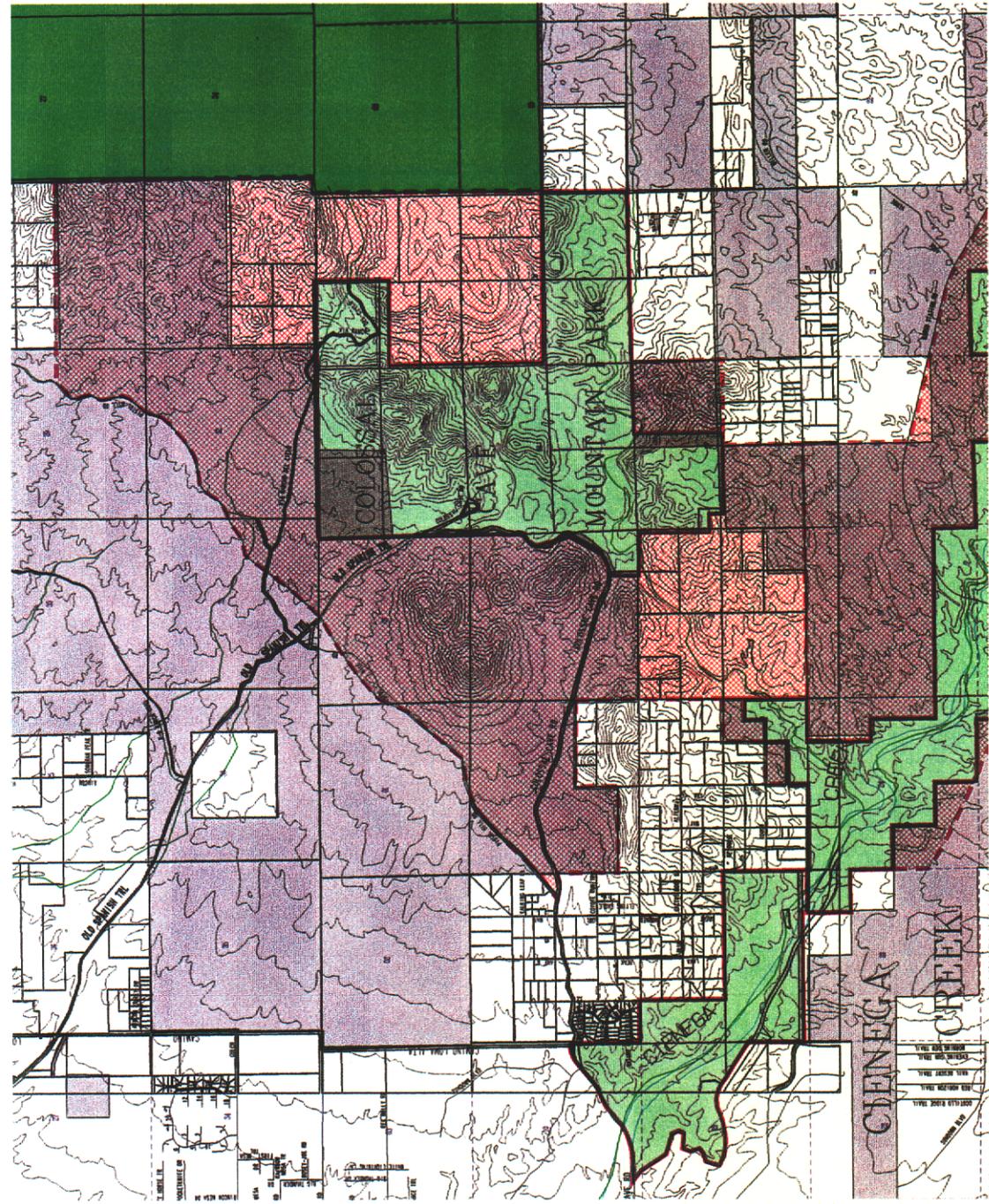
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R16E

R17E

T16S

T16S



Catalina State Park Expansion

- Contour Lines
- Parcel Base And Streets
- Township And Range Lines
- Section Lines
- Washes
- Administrative Boundaries
- Existing Park Boundaries
- Proposed Park Boundaries
- Trails
- Proposed Mountain Parks
- Bureau Of Land Management (BLM)
- Catalina State Park
- National Forest Land
- Private Lands
- State Trust Lands

CATALINA STATE PARK:
 State: 2,679 Acres
 Federal: 76 Acres
 Private: 243 Acres

FIGURE 16

Pinna County Index Map



Source: Map made by T.S. Johnson

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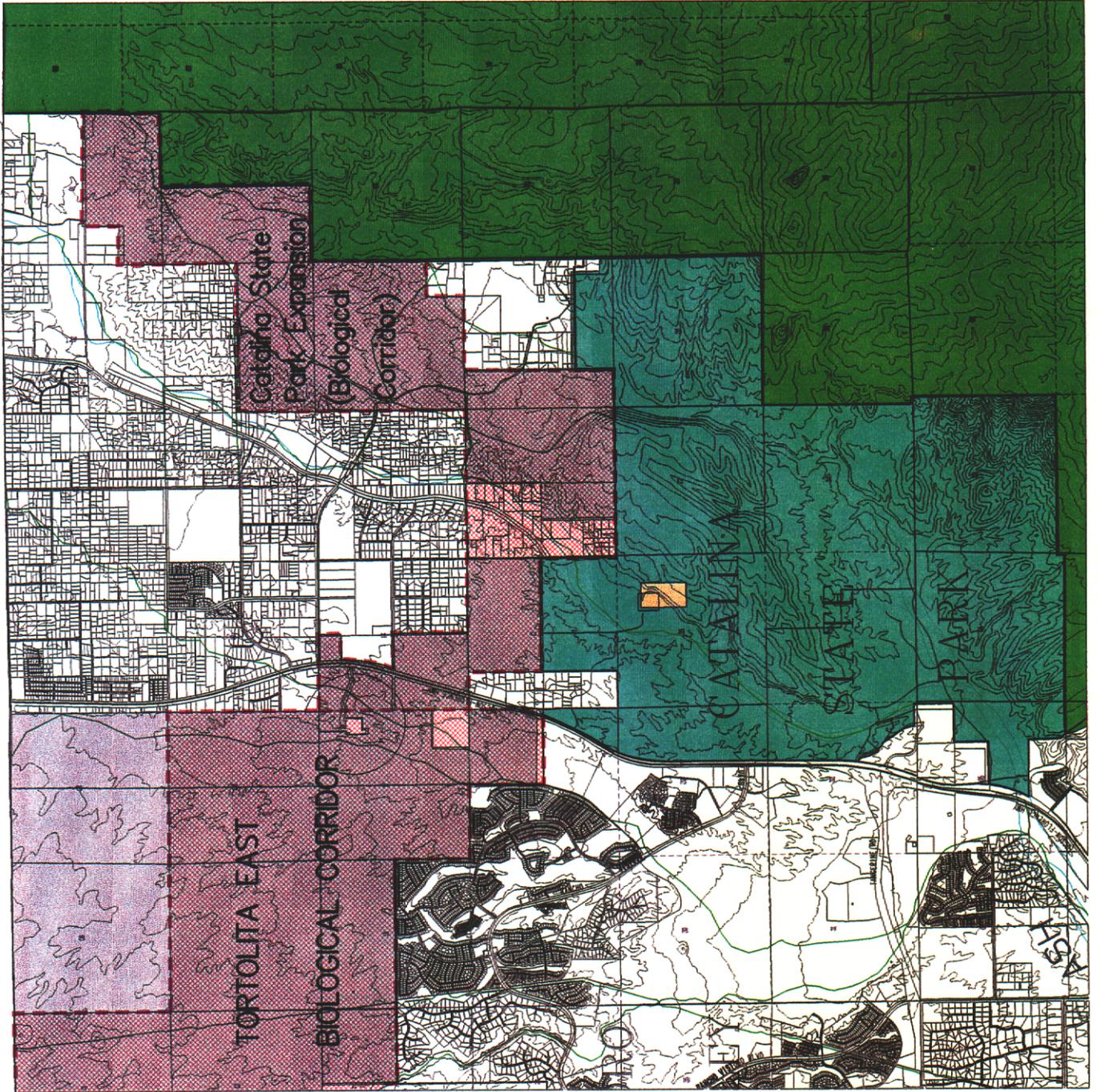
R15E

R14E

R13E

T11S

T12S



Santa Rita Mountain Park And Davidson Canyon Natural Preserve

- Contour Lines
- Parcel Base And Streets
- Township And Range Lines
- Section Lines
- Washes
- Administrative Boundaries
- Proposed Park Boundaries
- Trails
- Proposed Mountain Parks
- Proposed Pima County Natural Preserves
- Helvetia Grasslands Conservation Area
- Bureau Of Land Management (BLM)
- Existing Pima County
- National Forest Land
- Private Lands
- State Trust Lands

SANTA RITA MOUNTAIN PARK:

State: 8,876 Acres
Federal: .75 Acres
Private: 1,826 Acres

DAVIDSON CANYON NATURAL PRESERVE:

State: 3,343 Acres
Federal: 2.79 Acres
Private: 2,845 Acres

FIGURE 17

Pima County Index Map



Index Map Scale: 1:50,000

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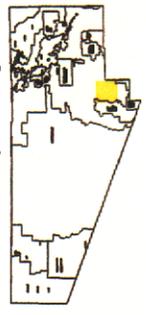
Cerro Colorado Mountain Park

- Contour Lines
- Parcel Base And Streets
- Township And Range Lines
- Section Lines
- Washes
- Administrative Boundaries
- Proposed Park Boundaries
- Trails
- Wildlife Corridor Links
- Proposed Mountain Parks
- Bureau Of Land Management (BLM)
- Private Lands
- State Trust Lands
- Buenos Aires National Wildlife Refuge
- Coronado National Forest

CERRO COLORADO MOUNTAIN PARK:
 State: 10,863 Acres
 Federal: 1,980 Acres
 Private: 1,411 Acres

FIGURE 18

Pima County Index Map



Scale 1:24,000



Scale 1:24,000



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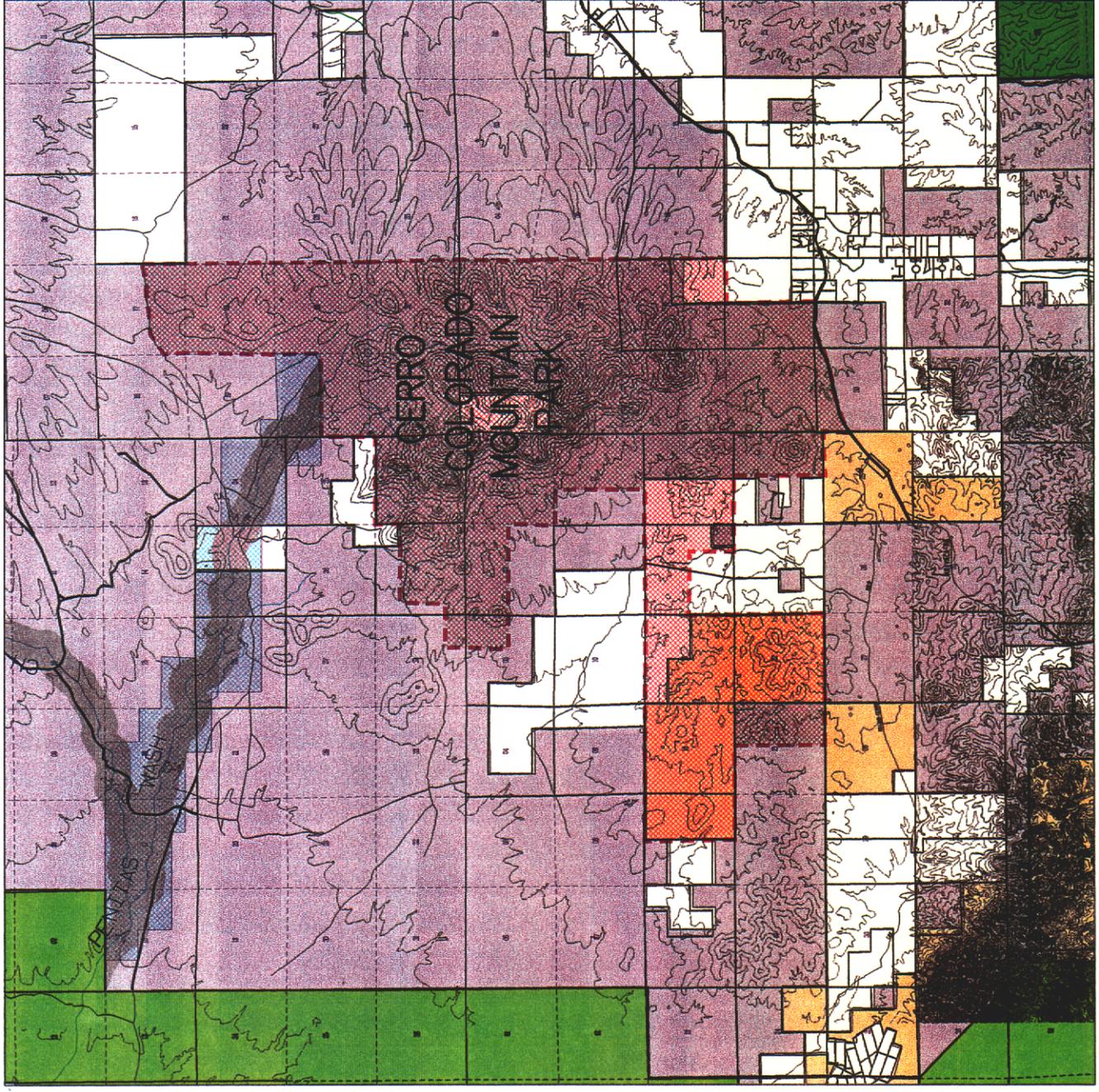
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R1E

R10E

T19S

T20S



Sierrita Mountain Park

- Contour Lines
- Parcel Base And Streets
- Township And Range Lines
- Section Lines
- Washes
- Administrative Boundaries
- Proposed Park Boundaries
- Trails
- Wildlife Corridor Links
- Proposed Mountain Parks
- Bureau Of Land Management (BLM)
- Private Lands
- State Trust Lands

SIERRITA MOUNTAIN PARK:
 State: 10,904 Acres
 Federal: 5,670 Acres
 Private: 4,348 Acres

FIGURE 20

Pinna County Index Map



Index Map Scale 1:24,000



Scale 1: 24,000



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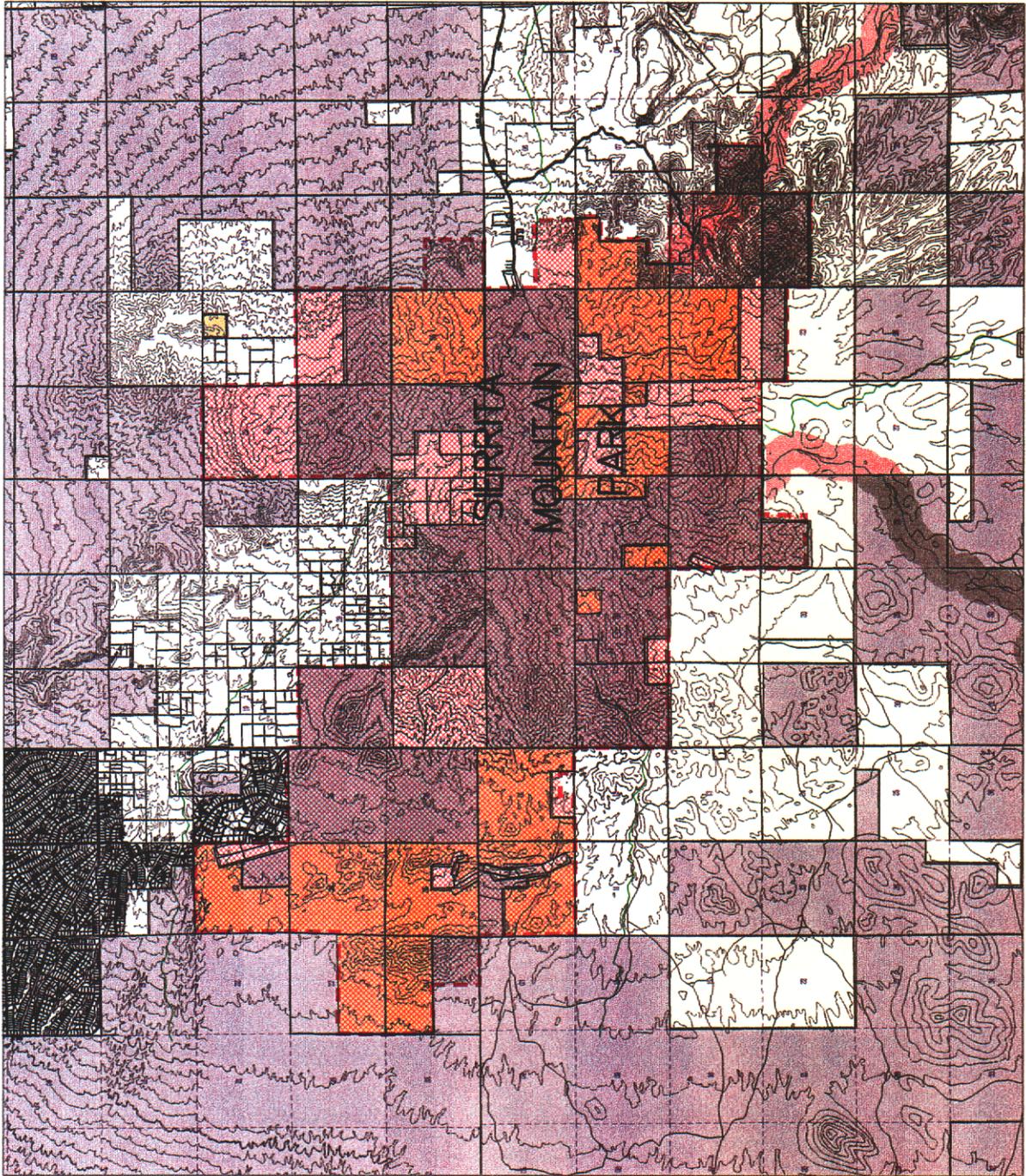
R1E

R1E

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T17S

T18S



De Anza Helvetia Grasslands Conservation Area

R13E

R14E

R15E

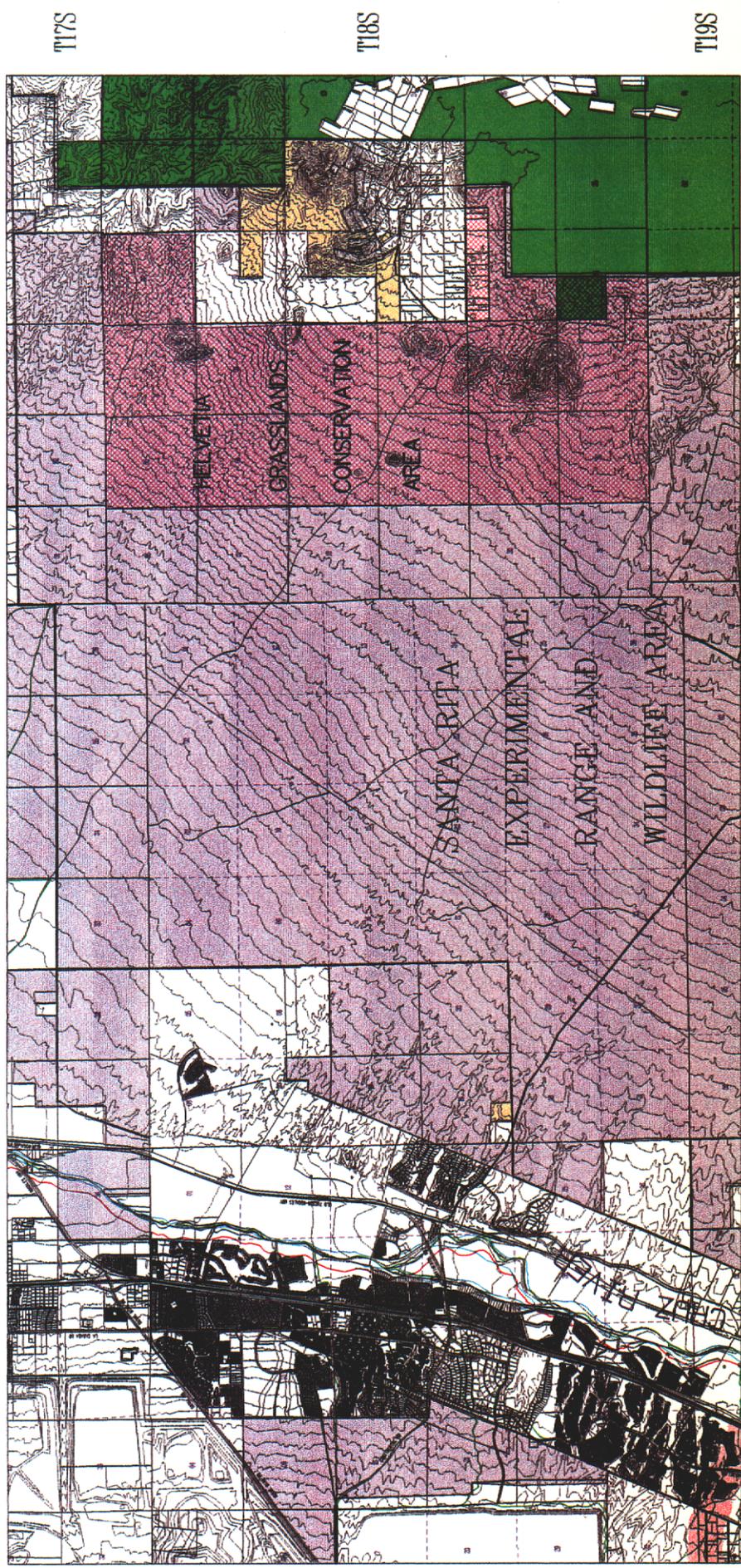


FIGURE 21

-  Contour Lines
-  Parcel Base And Streets
-  Township And Range Lines
-  Section Lines
-  Washes
-  Trails
-  De Anza National Filson: Trail
-  Administrative Boundaries
-  Wildlife Corridor Links
-  De Anza Helvetia Grasslands Conservation Area
-  Bureau Of Land Management (BLM)
-  National Forest Land
-  Private Lands
-  State Trust Lands

HELVETIA GRASSLANDS CONSERVATION AREA:
 State: 8,594 Acres
 Federal: 0 Acres
 Private: 326 Acres



Scale 1: 24,000



Pima County Index Map

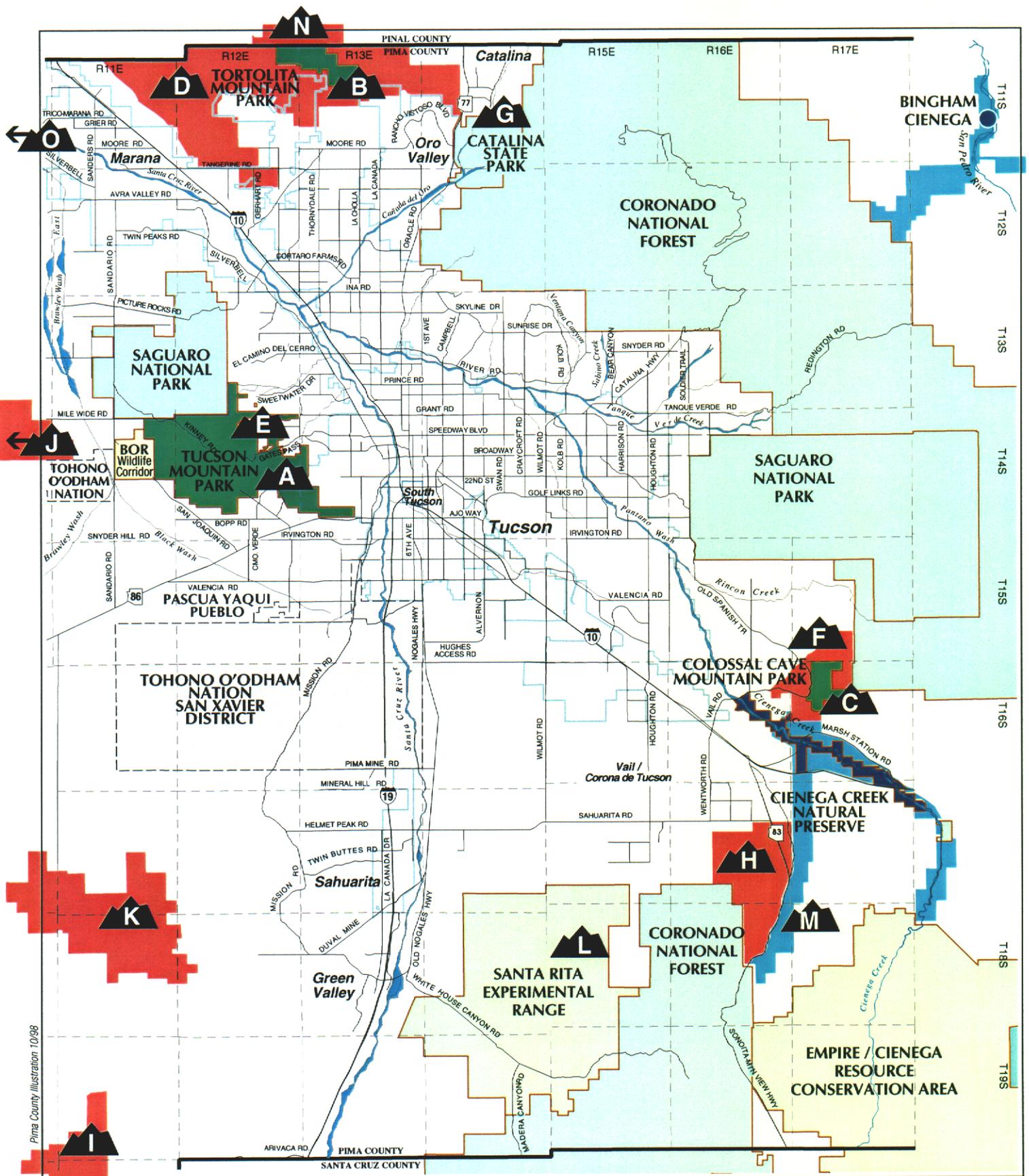
Plotted: 10/16/99

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- Existing Mountain Parks
- Proposed Mountain Parks
- Existing Natural Preserves
- Proposed Expansion of Natural Preserves / Riparian Corridors

Mountain Park System

- A. Tucson Mountain Park
- B. Tortolita Mountain Park
- C. Colossal Cave Mountain Park
- D. Tortolita Mountain Park
- E. Tucson Mountain Park
- F. Colossal Cave Mountain Park
- G. Catalina State Park Expansion
- H. Santa Rita Mountain Park
- I. Cerro Colorado Mountain Park
- J. Waterman-Roskrige Mountain Park
- K. Sierrita Mountain Park
- L. Anza/Helvetia Grasslands Conservation Area
- M. Empire Mountain Park
- N. Tortolita Mountain Park
- O. Silverbell Mountain Park

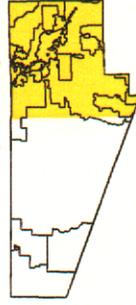
Figure 22

Pima County Mountain Park System and Riparian Corridors

-  Major Streets
-  Township And Range Lines
-  Major Washes
-  Administrative Boundaries
-  Master Plan Trails
-  Existing Mountain Park Boundaries
-  Proposed Mountain Park Boundaries
-  Catalina State Park Expansion
-  Expansion Natural Preserves
-  Existing Natural Preserves
-  Riparian Corridors

FIGURE 23

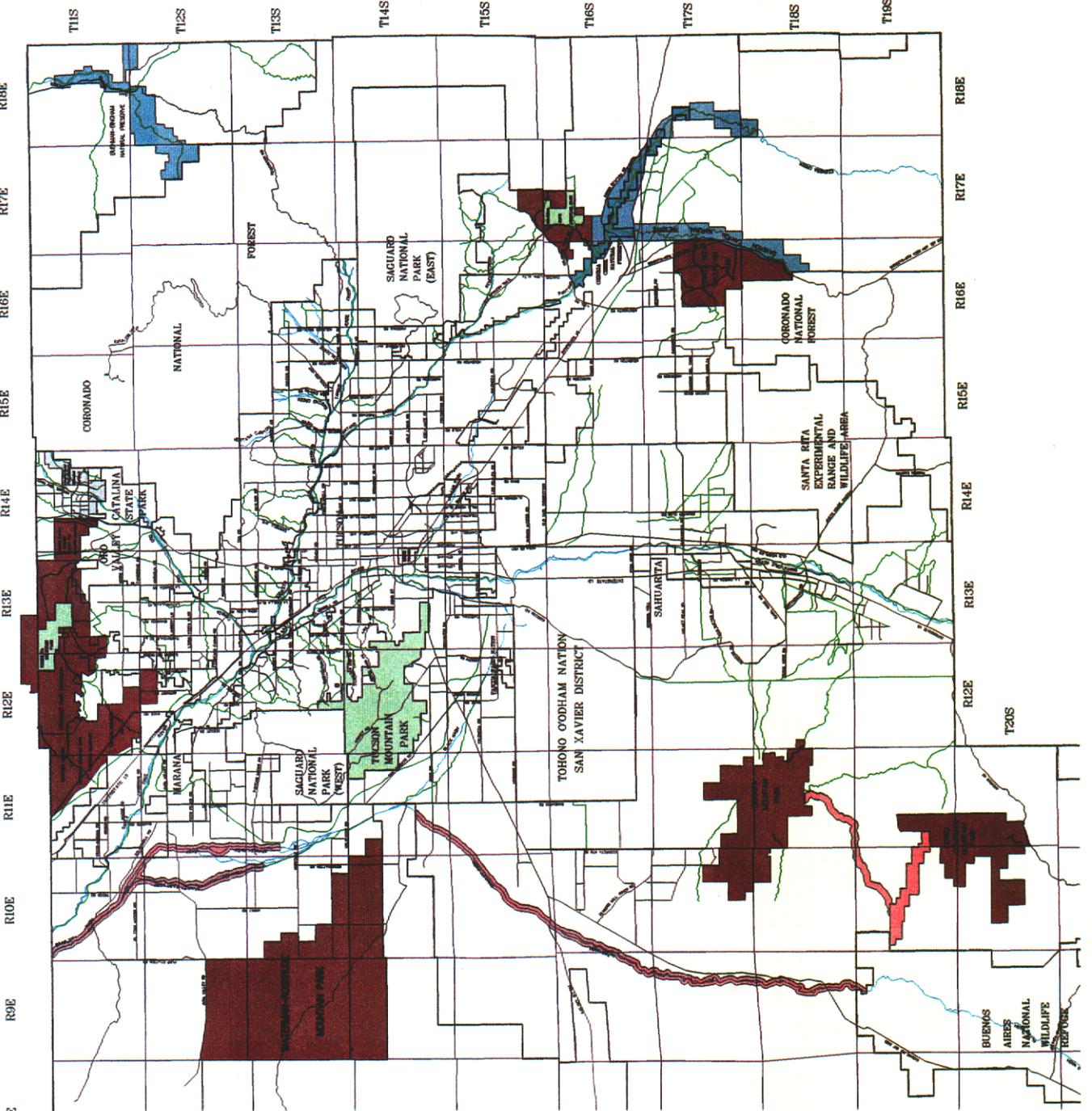
Pima County Index Map



Index Map Date: 11/20/08

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Scale 1: 125,000



**PRELIMINARY WORK PLAN TO ACHIEVE
INTERIM AND LONG TERM GOALS RELATED TO
ENDANGERED SPECIES AND HABITAT PROTECTION**

Background:

This document outlines a preliminary work plan which will begin to provide solutions on a regional scale to the environmental and economic dilemmas posed to Pima County by the listing of the Cactus Ferruginous Pygmy-Owl (pygmy-owl) as an endangered species.

Discussion of endangered species and habitat protection planning began last Spring with the Board's support for the Sonoran Desert Protection Plan. In late August of 1998, the Coalition for the Sonoran Desert Protection Plan (Coalition) decided to expand their original concept and the group has worked constructively with the County to develop the framework of a proposal which is described below.

Interest in pygmy-owl related issues now extends across the community, as reflected by the high level of attendance and participation at the October 6, 1998 public meeting on the topic of the U.S. Fish and Wildlife Service's proposed take guidance and survey protocol. There are concerns among environmental advocates based on the low number of known owls. Members of the business community, development industry and real estate profession have expressed apprehension about the potential economic impact of the listing. Landowners and private property interests also have asked to know more about how their own land use decisions might be affected.

The expanded proposal addresses the concerns of the entire range of stakeholders and includes: (1) a larger planning area; (2) more partners; (3) expanded public process; (4) a more comprehensive approach; and (5) greater scientific oversight and peer review. Without compromising environmental goals, the Coalition has broadened the basic concept of its plan to honor a range of values within the community. In addition to this planning effort the Coalition is working in a proactive fashion with the County, assisting and advising on a site specific basis for projects planned at Arthur Pack Park.

What follows is a review of various obligations and options for Pima County. There is a description of steps that have been taken toward development of interim measures and a cooperative agreement among governmental entities. Finally the elements of a long term endangered species and habitat protection planning effort are described along with the continuing role of the Coalition and recommendations for future action.

Sorting out the Issues and the Rules:

At least three rules create grounds for interested parties to assert either environmental or property rights. These include (1) Section 9 of the Endangered Species Act, (2) Guidance issued by the U.S. Fish and Wildlife Service, and (3) the Fifth Amendment of the Constitution.

Another rule provides for a balancing of these interests: that is Section 10 of the Endangered Species Act.

Section 9 Prohibitions Under the Endangered Species Act

In March of 1997, the pygmy-owl was listed as endangered under federal law. Section 9 of the Endangered Species Act prohibits the "take" of an endangered animal. This means that it is a federal violation¹ to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect endangered fish or wildlife. It is similarly unlawful to attempt to engage in these activities.

Harm has been defined in regulations to include "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."

The absolute nature of the prohibition in Section 9 of the Endangered Species Act is not always felt since many listed species are either plants, or wildlife species that are somewhat removed from human populations.

The pygmy-owl listing is a particularly difficult situation because the number of known individuals is so low (between 30 and 40 individuals), and many of the known birds are on the urban fringe, near development.

United States Fish and Wildlife Service Guidance

On August 13, 1998, the U.S. Fish and Wildlife Service issued proposed revisions to existing Guidance for landowners. In general, the Guidance identifies potential habitat types, and specific counties which historically had owls and may still have suitable habitat. The proposed Guidance also recommends more stringent survey protocol, including six surveys for owls conducted during specified times over a two year period.

It is rare for the Service to create Guidance. Having such gives some indication of the serious nature of this listing. However, while the newly proposed Guidance brought liability issues to the attention of the community, the Guidance by itself is an insufficient tool. It will not proactively address the conservation needs of the pygmy-owl, nor will it provide regulatory assurance or greater financial predictability that the community must have.

Fifth Amendment of the Constitution

The Constitution provides that private property shall not be taken for public use without just compensation.

¹ Endangered Species Violations on Non-Federal Lands: A GAO report describes the consequences of a "take" adjudication by Fish and Wildlife. Between 1988 and 1993, there were 126 violations: 86 were criminal; 40 were civil; fines ranged from \$25 to \$50,000 and were levied in 59 cases; jail sentences from 10 to 1,170 days were given in 18 cases; convictions have been handed down for species mortality, habitat modification and simple harassment.

Section 10 Balancing Under the Endangered Species Act

Under Section 10 of the Endangered Species Act, a level of "take" may be permitted if it is incidental to otherwise lawful activity and a habitat conservation plan is accepted by the U.S. Fish and Wildlife Service. A long term solution to ensure Endangered Species Act compliance is to develop a regional ecosystem based conservation plan which covers multiple species and adopts a high environmental standard.

It is likely that the availability of public land in Pima County will allow this community to uphold the viability of both the environment and the local economy.

As a practical matter, it is unlikely that regional environmental goals -- formulated without the incentives of meeting compliance requirements and lending predictability to economic and development interests -- would be implemented. Past open space plans have been visionary but never fully implemented. A mandatory element of a conservation plan keyed to Section 10 is that funding must be identified in advance. This creates a unique opportunity in environmental and natural resource planning to establish more certainty that environmental goals will be implemented.

- Section 10 relates to the issue of Section 9 prohibitions in the following way:

There is no law or regulation except Section 10 which provides relief from Section 9 liability for Pima County and other non-federal entities. A conservation plan that is not keyed to Section 10 does not meet the basic regulatory needs of the County.

- Section 10 relates to U.S. Fish and Wildlife Service Guidance in the following way:

The Guidance has the potential to slow down project development, but it does not offer regulatory assurance to landowners in return for compliance. Further, Guidance is subject to change. Under a Section 10 permit, areas open to development are better defined, the landowner has a level of legal protection, and the rules are not subject to changes with unplanned costs falling on the local community.

- Section 10 relates to Fifth Amendment Constitutional issues in the following way:

Section 10 requires that conservation proposals present alternatives and describe the impacts of each alternative. Regional plans typically involve an economic impact analysis which allows communities to quantify their environmental goals. Under a broad regional approach there is increased opportunity to achieve many conservation goals in existing public lands, and there must be a role for landowners in the negotiation of a regional plan. Proper and sufficient public participation also creates a check against impermissible taking. This excerpt from a 1998 speech by the Secretary of Interior summarizes the balancing of environmental responsibilities and property rights.

"Now if we simply say there are endangered species, there will be no development, what do you think is going to happen? Bear in mind that private property owners are protected in some measure by the Fifth Amendment of the Constitution of the United States and you can't simply say by federal mandate, the 150,000 acres of privately owned land is off limits to development. That is an invitation to the disintegration of this whole system, because the courts will never allow us to regulate land that way, and they shouldn't. ... So the habitat conservation plan is a way of saying, in exchange for a reasonable development plan which will allow a reasonable economic return on property, you can develop X percent of it, provided you mitigate There's not enough money in this town to buy every piece of land. So that's why we have to make these tradeoffs. ... What we're trying to do is navigate a very tortuous and important path between constitutionally protected property rights and an overriding national interest in preserving habitat." (1998, Secretary Babbitt)

Applying the Rules and Identifying Options for Pima County Government and the Community

Obligations

Pima County's obligation to comply with federal protections for the pygmy-owl and other species is similar to that of the landowner who wants to build a storage shed and move some native vegetation in the process, or a large-scale developer. We will undoubtedly face endangered species dilemmas more often than other parties, though, because of the scope of our activities. Day-to-day business of Pima County government such as road repair or road widening projects, issuing certain permits, or pursuing bond projects could present endangered species compliance issues. Even if Pima County government were completely without environmental aspirations, we would have to work with United States Fish and Wildlife Service to seek compliance advice on a project-by-project or organization-wide basis; i.e., Pima County simply needs the regulatory assurance offered under Section 10 to conduct daily business.

Opportunities

At the same time, we can choose to achieve higher conservation goals than the federal law defines as the minimum. A high environmental standard of long term survivability has been and will continue to be promoted. There is also an opportunity to adopt a regional approach instead of a Pima County Government-only approach. The advantages of a regional approach include:

- The development community gains predictability once the planning process identifies where population growth and development will occur;
- A regional plan returns local land use decision making to the local level;
- In the absence of a shared community commitment to upholding conservation goals and balancing numerous values, we will see a continuation of Amphi-type litigation;

- The community has the ability to work toward long term survivability of multiple-species, since identification of a sustained revenue source is a mandatory element of a plan submitted to U.S. Fish and Wildlife;
- A regional plan can prevent the scenario under which numerous individuals will pursue Habitat Conservation permits from the federal government, leading to fragmented conservation efforts that are more costly to the community;²
- Continued population growth will lead to continuation of listings. A regional plan creates the opportunity to undertake preventive measures and provide protection for unlisted species and listed species in the plant community.

Elements of an Interim Strategy for the Pygmy-Owl:

The pygmy-owl is vulnerable, as is the local economy. While we start the planning process for a long-term and comprehensive regional plan, we must pursue interim measures to advance the science of the owl and to protect the pygmy-owl. These measures fall generally into the categories of research and land use decisions.

Research -- Interim Studies:

On September 25, 1998, a request for funding interim studies was made to the Secretary of Interior based on the recommendations from meetings of biologists, agency staff recommendations, and comments from community members.

Five types of studies were identified, including:

1. Initiate More Comprehensive Surveys

These studies would further our knowledge of how many pygmy-owls there are, and where they are located. Surveys need to be conducted at two levels: (A) survey for individual owls at a cost of \$1,500 per survey (\$4,500 per year or \$9,000 for two years on average for a 160 acre plot), and (B) survey of habitat. The estimated total cost is \$275,000 to \$750,000.

² Economic Analyses for the San Joaquin County Multi-Species & Open Space Plan: A series of economic analyses were undertaken for the 100 species, 100,240 acre comprehensive conservation plan. The cost-benefit analysis reveals that a comprehensive conservation and open space plan would cost the community \$6,371,850 less per year than a "no conservation plan" scenario. Stated another way, the lack of a comprehensive conservation will cost the community an additional \$318,592,500 (\$319 million), projected in today's dollars over the 50 years of the permit.

2. Telemetry Studies

The study effort would provide information necessary to tailoring recovery and conservation plans to protect the owl and the economy. Questions that would be addressed include: Where do pygmy-owls go upon dispersal? How far do they travel? Is there exchange with other populations? Are they residents of specific areas, rather than migratory? How tolerant are they of various urban occurrences? How adaptable are they? The method of the study would involve placing transmitters on 60 birds (30 from the Arizona population, assuming more birds will be found through surveys). To study 60 owls with a \$300 transmitter each would cost about \$18,000 for equipment (minimum). If each owl was tracked 24 hours per day by an employee making \$8 per hour, the cost per day per owl would be about \$200. Labor for 84 days (12 weeks/the life of a transmitter battery) per bird would be approximately \$16,800, or \$1,008,000 for 60 owls. The estimated total cost is up to \$1,026,000.

3. Habitat Assessments

Basic questions underlying these studies are: Can we describe the habitat that pygmy-owls need? Can we prescribe the habitat where pygmy-owls could breed, nest, feed and rest? What are the characteristics of that habitat in terms of density, height, breadth etc? Using sites discovered through surveys and telemetry studies, for 60 sites (30 Arizona; 30 non-Arizona): (A) perform on-the-ground data gathering (cost of maps plus time for on-the-ground gathering; 40 hours for 5 acres at \$15/hour) and (B) perform statistical analysis (200 hours at \$30 - \$50 per hour). The cost is estimated to be a minimum of \$150,000.

4. Population Viability Analysis

These studies answer questions such as: What number of owls is necessary to have a viable population? How can the length of the recovery period be predicted based on reproduction / survival rates? Using habitat and behavioral information, develop a model based on meta-population methods of the Southern Arizona population of pygmy-owls. Studies will rely partially on Texas data and other data gleaned from studies mentioned here to create statistically significant findings. The total cost is estimated to be between \$100,000 and \$250,000.

5. Genetic Research

These studies would begin to answer the question of whether the Arizona population is related to the population in Mexico or elsewhere. Through analysis of feathers or blood samples these studies would compare 30 Arizona pygmy-owls (assuming more owls will be located through greater survey efforts) to 30 non-Arizona (Mexico based) pygmy-owls. Studies would involve 60 to 120 genetic tests at a cost of approximately \$1000 each. The estimated total cost is \$60,000 to \$120,000.

Land Use Decisions and the Protection of Existing Populations of Pygmy-Owls:

A second element of an interim protection strategy for the pygmy-owl involves land use decision making. Thus far, the County has worked with community groups to study the possibility of proposing changes in plans for County-owned property to accommodate the interim protection needs of the pygmy-owl.

Pima County has two potential projects planned for development on the Arthur Pack Park site in Northwest Tucson: a YMCA Community Center and a Pima Community College Campus.

Members of the Coalition for the Sonoran Desert Protection Plan along with members of the Northwest Coalition for Responsible Development expressed concerns that developing the Arthur Pack Park site as planned would remove an important area of prime pygmy-owl habitat from the Ironwood vegetation community.

These groups were invited to work on an ad hoc basis to advise County staff about the impacts of planned development on the site, and the availability of alternatives. The map on the following page shows the importance of the Arthur Pack Park site through these data layers:

- the map identifies public land ownership in Northwest Tucson;
- the map shows the relation of patches of habitat owned by the county, the state and other public entities;
- the map shows linkage between patches of habitat via washes and undeveloped land parcels;
- the map shows the density of development to the south of Arthur Pack Park;
- the map shows vegetation communities and the important location of state land.

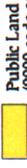
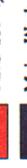
One step in working to ensure the long term survivability of the pygmy-owl is to actively preserve habitat on Arthur Pack Park.

Such a preserve will not be sufficient to support the recovery effort for pygmy-owls. That effort will likely require actions across western Pima County.

However, as an interim measure, protection of existing populations in the Northwest area is critical, and the large block of County land that Arthur Pack Park represents along with some amount of other public land and land owned by the State, are necessary components of this interim plan.

Interim conservation achievements will need to be acknowledged by the U.S. Fish and Wildlife Service as a contribution to the long term regional planning process.

Land Ownership and Pygmy Owl Habitat in Northwest Pima County

-  Parcel Lines
-  Washes
-  Corporate Limits
-  State Owned Land
-  Public Land (9000 code series-Pima County Assessor)
-  Pima County Land
-  Major Washes
-  Palo Verde Vegetation Community
-  Ironwood Vegetation Community

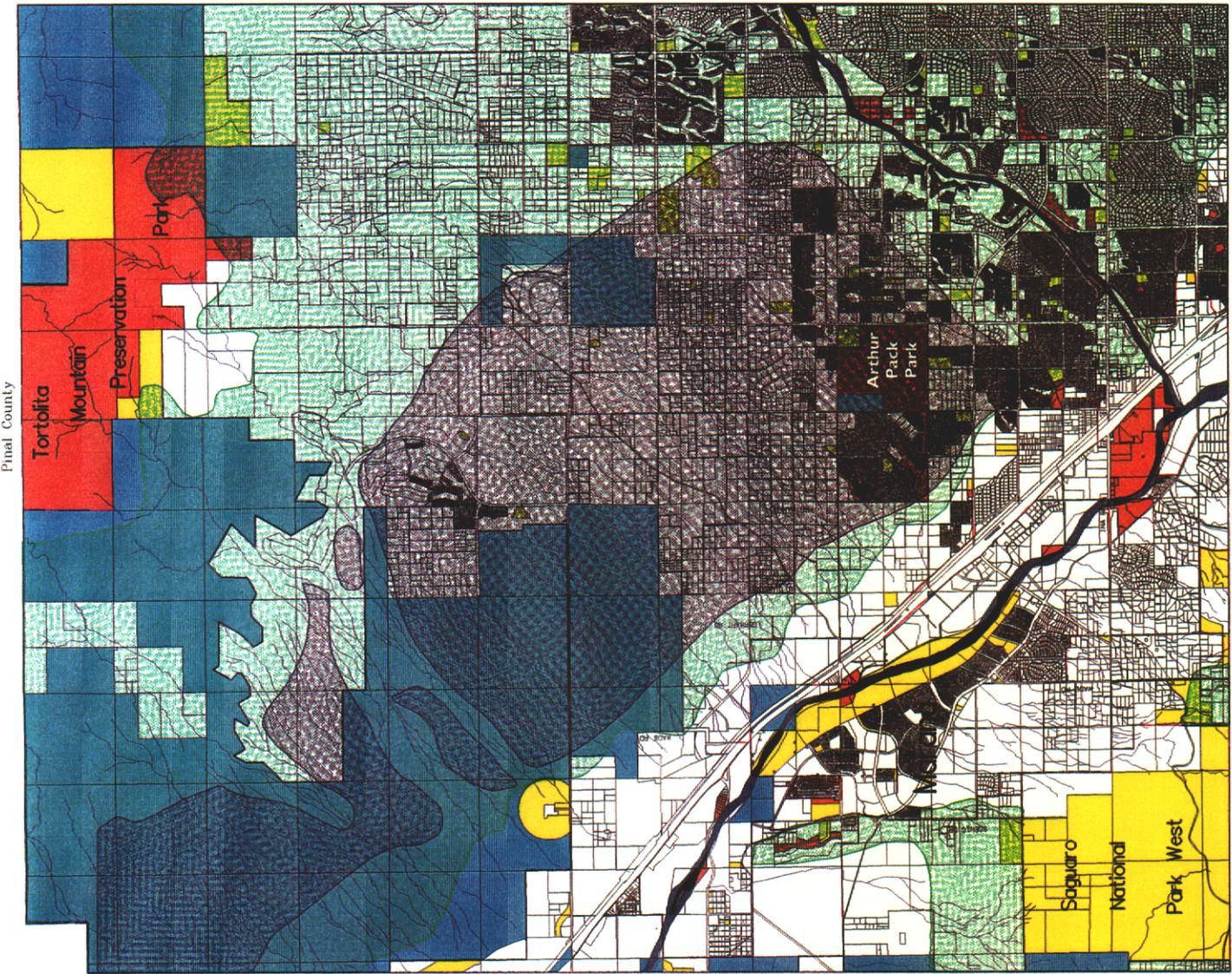
Pima County Index Map



Index Map Date: 11/20/00

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Scale 1: 25,000



Pinal County

Tortolita Mountain Preservation Park

Arthur Pack Park

Saguro National Park West

The Need for an Intergovernmental Cooperative Agreement and Steering Committee:

On July 16, 1998 a letter was sent to Department of Interior requesting advice about whether the Department would support an ecosystem based conservation plan. There was a positive response to the idea of framing a regional conservation plan in terms of ecosystem protection. Federal and state natural resource agencies also indicate that there is support for a regional planning process if the County enters into a cooperative agreement, establishes a steering committee, and engages in a recognized conservation planning process under Section 10 of the Endangered Species Act. With the help of the Coalition, there has been significant progress in building interest with and among private property rights advocates, environmental advocates, and developers. Upon receiving Board approval to pursue a formal cooperative agreement all local governmental entities within Pima County will be asked participate in a regional conservation planning initiative, as well as the Tribes within the regional planning area of the Pima County boundaries, and other interested parties.

The cooperative agreement would seek consistency in planning among jurisdictions and with Recovery Team efforts. Additional funding will be sought from interested governmental entities so that the cooperative agreement is followed by a cost sharing agreement. The cooperative agreement will also facilitate the establishment of a Steering Committee by the County. *The Endangered Species Habitat Conservation Handbook* provides the following guidelines for the structure and purpose of Steering Committees:

- "[S]teering committees are usually appointed by the permit applicant and can fulfill several roles -- they can assist the applicant in determining the scope of the habitat conservation plan (planning area, activities to include), help develop the mitigation program and other habitat conservation plan conditions, provide a forum for public discourse and reconciling conflicts, and help meet public disclosure requirements. Steering committees are particularly useful in regional conservation plans, especially those in which the prospective permittee is a state or local government agency, and are recommended for these types of efforts." (P. 3-3)
- "Ideally, a steering committee should include representatives from the applicant; state agencies with statutory authority for endangered species; state or federal agencies with responsibility for managing public lands within or near the habitat conservation plan area; tribal interests; affected industries and landowners (especially those with known or possible endangered species habitats); and other civic or non-profit groups or conservation organizations with an interest in the outcome of the habitat conservation plan process." (P. 3-3)
- "Steering committee meetings should be open to the public." (P. 3-5)
- "The composition of the steering committee will depend on the type of habitat conservation plan involved. Regional habitat conservation plans involving numerous activities and in which the applicant is a government entity ideally should include representatives from all affected interests." (P. 3-5)

Elements of a Long Term Eco-System Based Conservation Planning Process:

The original concept of the Sonoran Desert Protection Plan has been expanded to include both a biological assessment and an economic impact assessment. In general, the Coalition has worked with the County in creating a proposal which now has (1) a larger planning area; (2) more partners; (3) expanded public process; (4) a more comprehensive approach; and (5) greater scientific oversight and peer review.

1. A larger planning area which covers western Pima County will encompass more of the ecosystem, provide greater flexibility at the implementation stage, and create more opportunity to achieve consistency between the locally initiated conservation effort and the federally sponsored recovery effort.
2. Having more partners involved through a formal cooperative agreement will broaden representation in the planning process and thereby increase chances of acceptance of the program within the community, reduce the cost of the study to Pima County, increase the availability of science data through cooperative agreements (particularly with federal natural resource agency partners), and increase the chances that land acquisition proposals submitted for grant funding will be viewed favorably.
3. By expanding the public process to include additional parties early in the process, the Plan will comply with National Environmental Policy Act and thus enhance the utility of the biological assessment for future federal funding purposes, reduce tensions with landowners and other interests by addressing concerns through the process, and reduce the time that the planning process takes by conducting the federal process along a parallel track.
4. The more comprehensive approach encompasses all aspects of federally recognized conservation planning including measuring the impact of alternative conservation scenarios, and measuring economic impact.
5. Greater scientific oversight and peer review will facilitate the establishment of the best science available, ensure the independence of the scientific conclusions and insulate such from interest and advocacy influences, and eliminate duplication of past study effort by relying on the expertise within the community to confirm baseline information, identify gaps, and clarify on-going analysis.

The U.S. Fish and Wildlife Service must have a defined role in the early stages of the process to fulfill its own obligations under a conservation plan. *The Endangered Species Habitat Conservation Handbook* states: "It is now Service policy to begin integrating the section 7 and section 10 processes from the beginning of the habitat conservation plan development phase, and to regard them as concurrent and related, not independent and sequential processes. In procedural terms, this means that considerations of section 7 consultation requirements should start at the beginning of the habitat conservation plan development phase, not during the permit processing phase." [3-16]

Since a major role in the planning process for the U.S. Fish and Wildlife Service, other federal entities, and the Steering Committee is to define or refine the scope of work, a cooperative agreement should be entered into before the scope is finalized. All stakeholders to the process must have a role in refining the work as it is developed by the County. Initial development has started on the biological scope of work with the assistance of science experts who will not compete for any contract to conduct the biological assessment. A formal process must be established to safeguard the work product and expedite release of the first request for proposals so that work can begin on the biological assessment by January of 1999.

Continuing Role for the Coalition:

Establishing a Steering Committee which complies with the U.S. Fish and Wildlife Service *Handbook* will not diminish the role of the Coalition. The Coalition has set an example for other interest groups by acknowledging the importance of multiple values within the community and by participating in finding solutions as well as defining issues of concern. The County will continue to meet and consult with the Coalition and we will continue to seek cooperative solutions.

Where Do We Go From Here:

Specific recommendations are included in the accompanying memorandum. In general, it is recommended that the Board take action so that staff can:

1. Ensure that Arthur Pack Park habitat is preserved and that adopted interim conservation measures are recognized by the U.S. Fish and Wildlife Service as a contribution by Pima County to the larger regional planning process.
2. Pursue a cooperative agreement for interim and long term planning to enter into a federally recognized planning process which will establish a public process open to stakeholders, expedite development of a scope of work by stakeholders, and allow work to begin on a biological assessment by January of 1999.
3. Continue to seek the advice and participation of the Coalition.
4. Continue to develop interim solutions.
5. Continue to pursue funding sources.