

Appendix A

Public Land Investments

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for

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Appendix A: Public Land Investments

Public Lands in the Greater Tucson Region

The greater Tucson Region occupies an area of approximately 5,000 square miles defined by, and encompassing several surrounding mountain ranges; the Catalina Mountains (north), the Santa Rita Mountains (south), the Rincon-Whetstone-Huachuca Mountains complex (east) and the Tucson-Sierrita-Tumacacori Mountains complex (west). As shown in Figure 1, this area includes a major portion of the Coronado National Forest (under jurisdiction of the US Forest Service contained within the US Department of Agriculture), including three entire Management Units -- Santa Catalina, Santa Rita and Whetstone, and portions of two other units – Tumacacori and Huachuca. Saguaro National Park (east and west units) is situated wholly within the region as well. The region also contains Sovereign Lands belonging to the Tohono O’Odham Nation, extensive Arizona State Trust lands under the jurisdiction of the Arizona Land Department, and the Las Cienegas National Conservation Area (and adjoining lands) under the jurisdiction of the US Bureau of Land Management. In addition, there are numerous parklands and protected ranchlands¹ under the jurisdiction of various state and local governments within the region.

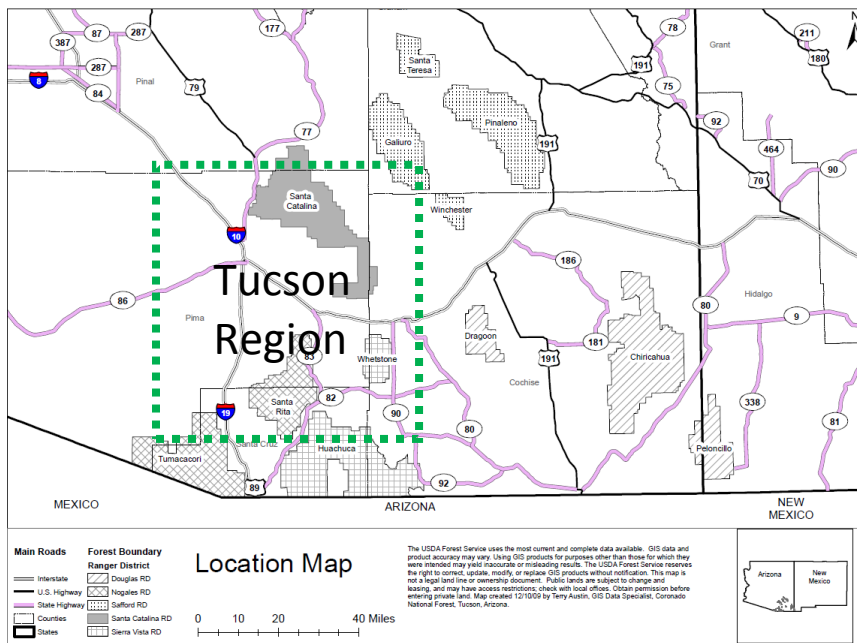


Figure 1: Location of Tucson Region within Southern Arizona

Source: Coronado National Forest; Draft Forest Plan, March 2010.

In the aggregate, these public lands constitute nearly 57 percent of the land area within the greater Tucson Region, and thus represent a major public investment. In addition to their high scenic value,

¹ Pima County has both fee simple ownership as well as conservation easements on a substantial acreage of ranchland within the region.

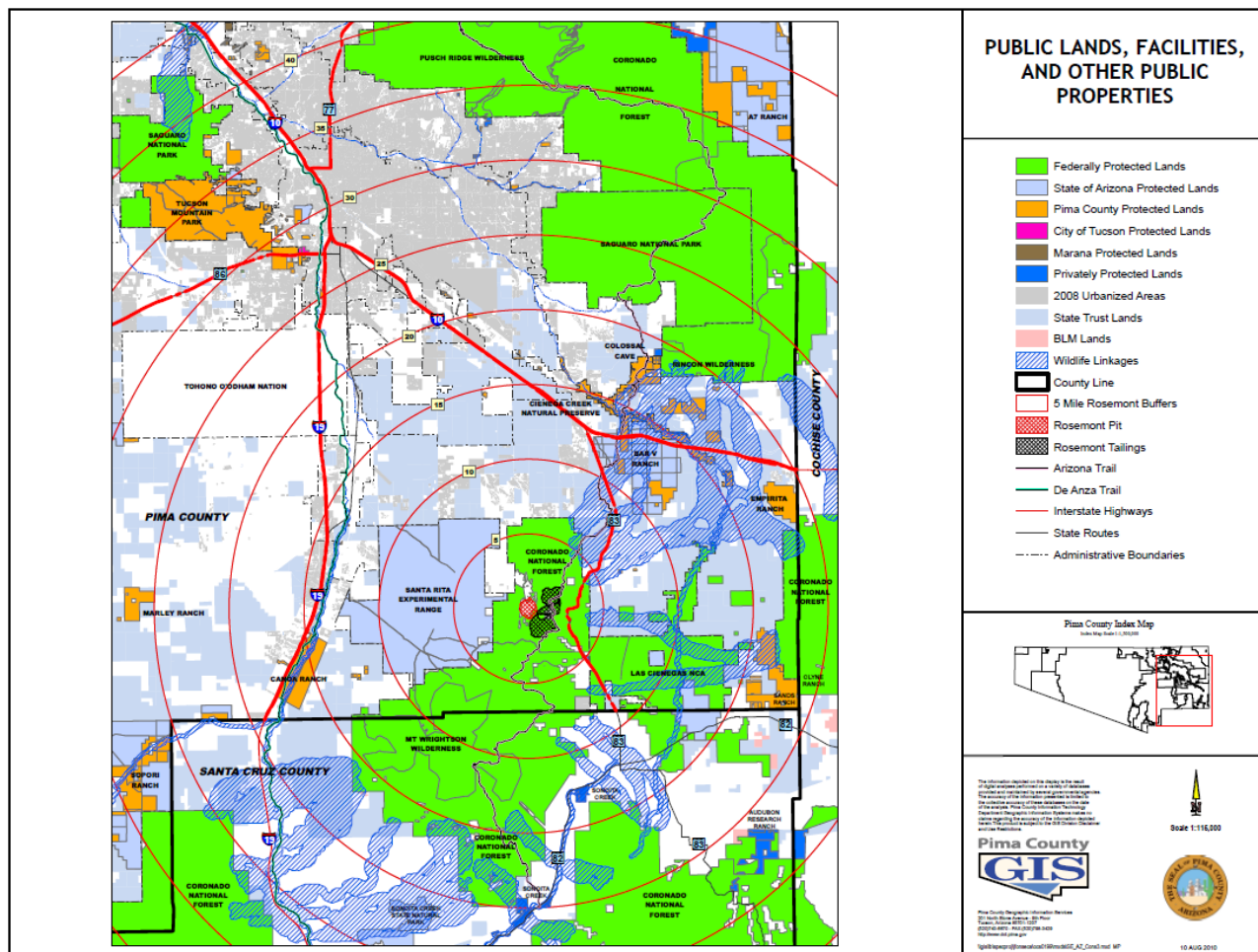
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these public lands provide important open space for a wide range of active and passive outdoor activities, significant wildlife habitat, watershed protection, and a host of other essential “ecosystem services” which are critical to the region. As a result of these “amenities” and “services” this public investment also adds significant value to the residents of the urbanized areas within this vast complex of protected/conservation lands, as well as to their property values. Moreover, tourism and visitor-serving industries constitute a significant share of the regional economy (1 in 10 workers are employed in these industries) and rely on the many visitors who are attracted to the Tucson area, in no small measure due to the high amenity value of the surrounding high-desert and mountain landscape. In brief, then, these extensive public land holdings constitute a substantial economic asset to the greater Tucson region.

Detailed Analyses of Public Lands

Figure 2 below, contains a more detailed map of a significant portion of the greater Tucson Area. The study area defined in this figure contains over 2,000,000 acres, approximately 3,200 square miles.

Figure 2: Public Lands and Facilities in Greater Tucson Study Area



Source: Pima County GIS Department, 2010

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The data and analyses that follow are based on the geographic area (herein “study area”) shown in Figure 1. Since the purpose of this document is to provide important information for use in determining the adverse impacts of the proposed Rosemont Mine on public lands, this figure also identifies the location and size of the open pit copper mine proposed by Rosemont Copper/Augusta Resources. The pit is shown as a solid red circle; mine tailings and waste rock are shown as a dark gray polygon immediately east (to the right) of the pit. The radiating red circles constitute concentric 5-mile increments (centered on the pit location) used in the analyses. The first ring represents a 5-mile radius, the second ring a 10-mile radius, then 15, 20, 25 ... radii, the furthest of which is 50 miles at the northern boundary of the study area.

Appendix A contains a table displaying detailed data on the public lands shown in Figure 2. Table 1 below, excerpted from the data in Appendix A, presents summary data on the primary public lands and facilities in the Greater Tucson study area.

Table 1: Principal Public Lands in Greater Tucson Area

Jurisdiction	Area(sq mi)	Percent of Public Lands	Percent of Study Area
Coronado National Forest	834.6	42.2 %	25.9 %
<i>General Forest Areas</i>	667.2	33.7 %	21.3 %
<i>Wilderness Areas</i>	167.4	8.5 %	5.3 %
Arizona State Trust Lands	594.8	30.0 %	19.0 %
Pima County Parks & Protected Lands	162.0	8.7 %	5.6 %
Saguaro National Park	141.8	7.2 %	4.5 %
Santa Rita Experimental Range	78.8	4.0 %	2.5 %
Las Cienegas National Conservation Area	77.2	3.9 %	2.5 %
BLM (and DOD?)	55.1	2.8 %	1.8 %
Other	38.1	2.0 %	1.2 %
Total	1,982.4	63.2 %	

Source: Pima County, AZ 2010

In the aggregate there are over 1,268,000 acres (1,900 square miles) of public lands within the study area. These public lands constitute 63.2 percent of the total land area within the study area. Federal lands constitute the largest single ownership: 717,516 acres (1,121.12 square miles), 35.7 percent of the area, of which US Department of Agriculture, Forest Service, has jurisdiction over the largest area 534,189 acres (834.6 square miles), 25.9 percent of the total study area.

Primary Public Lands

Coronado National Forest

In addition to the five management units within the Tucson region referenced above, Coronado National Forest consists of seven additional units. In the aggregate, Coronado National Forest (herein “Forest” or “Coronado”) covers 1,780,000 acres of southeastern Arizona and southwestern New Mexico. That portion of the Coronado situated within the Tucson Region study area constitutes 30.0 percent of the

total Forest. The characteristic “basin and range” topography and landforms of the region reflect twelve widely scattered and isolated mountain ranges or "sky islands" that rise dramatically from the desert floor. Topography within the Forest ranges in elevation from 3000 feet to 10,720 feet. Ecological conditions within these sky islands support plant communities as biologically diverse as those encountered on transect from Mexico to Canada.

Historically the Coronado has provided a wide range of important goods and services, primarily in terms of grazing and a wide range of recreation activities. Of equal importance is the Forest’s recognized capacity to capture the infrequent precipitation that recharges aquifers supplying domestic water sources to surrounding cities and towns. The current management emphasis as reflected in the Forest’s mission and vision statements emphasizes sustaining the unique biodiversity of these sky island ecosystems and providing a variety of high quality visitor opportunities and services. Further emphasis is placed on enhancing visitor understanding and enjoyment of the Forest’s special natural and cultural resources through collaboration with rural communities and urban residents.²

Saguaro National Park

Saguaro National Park is contiguous to the City of Tucson, and the Rincon Unit (east) is less than 20 miles north of the Rosemont Valley. In the aggregate, the Eastern and Western Units of the park occupy over 141 square miles, 4.52 percent of the study area. The Eastern Unit contains 66,865 acres (104.48 square miles), and the unit’s backcountry and wilderness area have sweeping views over the site for the proposed Rosemont Mine and its huge open pit and expansive waste rock and tailings disposal areas.

Both the eastern and western units conserve outstanding tracts of the Sonoran Desert, including foot hills grading into significant mountain ranges. The park is named for the Saguaro Cactus, perhaps the most striking and picturesque of the native cactus of the region, and the icon of the Southwest. The landscape consists of a rich mosaic of Sonoran Desert vegetation with striking changes in vegetation composition as the topography gains elevation from the desert floor to the mountain peaks. The park also contains an abundance of native wildlife; one threatened species, the Mexican Spotted Owl, lives in the park, and an endangered species, the Lesser Long-nosed Bat, is in residence during its migration. The park was established as Saguaro National Monument in 1933, and changed to National Park status in on October 1994. Saguaro National Park is the single most popular visitor destination in the greater Tucson area, with 2,738,772 visitors in 2008. In 2009, Saguaro National Park was identified as one of the 25 National Parks most at threat from climate change.³ The park is one of the most unique properties within the National Park System since the park has a major U.S. city right in the middle of it. The population of the greater Tucson area is nearly 1 million persons.

Las Cienegas National Conservation Area

The 77-square mile Las Cienegas National Conservation Area (herein “Las Cienegas” and “NCA”) is situated immediately to the east of the proposed mine site. Managed by the Bureau of Land Management (BLM), the Las Cienegas contains 49,376 acres (2.46 percent of the study area) of outstanding Sonoran Desert grasslands, and not surprisingly, has served as the headquarters location for the Empire Ranch, one of the premier cattle ranching operations in Southern Arizona. The ranch

² Coronado National Forest, Draft Forest Plan, 2010.

³ http://www.rockymountainclimate.org/programs_6.htm

headquarters adobe structures, listed on the National Register of Historic Places, are located seven miles from the proposed mine, and according to a professional structural evaluation, are at risk from the impacts of blasting described in the Mine Plan of Operation for the proposed Rosemont Mine.

In 2000 Congress created the Las Cienegas as the first property designated as a National Conservation Area. At that time the Empire and Cienega Ranches, along with portions of the Rose Tree and Vera Earl Ranches faced an uncertain future that almost certainly included housing and commercial development. Thanks to a concerted effort by local governments, federal officials, and members of the public, more than 45,000 acres of rolling grasslands and woodlands in Arizona's Pima and Santa Cruz counties were permanently protected. This magnificent landscape with its rolling grasslands and oak-studded hills that connect several "sky island" mountain ranges", along with the riparian corridors are irresistible to both people and wildlife. Cienega Creek, with its perennial flow and lush riparian corridor, forms the lifeblood of the NCA and supports a diverse plant and animal community. Cienega Creek is also a tributary in the Rilito Creek Drainage that provides a portion of the domestic water supply for the City of Tucson. The Las Cienegas is managed by BLM under the principles of multiple-use and ecosystem management for future generations to use and enjoy. The BLM has formed an important partnership with the Empire Ranch Foundation, a nonprofit organization which is dedicated to preserving the historic buildings and surrounding landscapes.

Santa Rita Experimental Range and Wildlife Area

Located two miles due west of the proposed Rosemont Mine, the Santa Rita Experimental Range and Wildlife Area (SRER) has been a principal facility for conducting pioneer research on the improvement and management of semiarid grasslands in the Southwest. The 50,440-acre facility (78.81 square miles – 2.51 percent of the study area) was founded in 1903, and for decades was the oldest research area maintained by the US Department of Agriculture/Forest Service. In 1987 the facility was transferred to the University of Arizona, College of Agriculture in 1987. This important outdoor laboratory has provided a critical location for long-term ecological research, the results of which have direct applicability to the semiarid rangelands of the Southwestern United States, as well as another 20 million acres in Northern Mexico. The SRER is generally viewed as a world-class facility because of the long-term historical and biological data bases that have been maintained since its creation. Over the past century, the range has undergone major vegetation changes due to natural plant processes and management practices.

Close proximity of SRER to the proposed Rosemont Mine places the facility at risk from a variety of mining activities including, but not limited to toxic dust and other airborne chemicals deposited on vegetation throughout the facility, impacts on water supply within the drainages and aquifer on the western side of the Santa Rita Mountains, and adverse impacts on wildlife within the northern Santa Rita Mountains.

Arizona State Trust Lands

The State of Arizona is the second largest public lands jurisdiction, with 41,856 acres (690.4 square miles), 22.01 percent of the area, the vast majority of which are Arizona State Trust Lands – 380,653 acres (594.77 square miles), some 18.57 percent of the study area total. These State Trust Lands are distributed throughout the State of Arizona, including throughout the Tucson region study area.

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At the time of statehood, nearly all the land in Arizona was under the jurisdiction of the federal government, and more than half of the state is still under some form of federal ownership. To assist the new state, at the time of statehood the federal government generously gave Arizona roughly 11 million acres of land. Except for Alaska, no state received so much federal land upon statehood. In order to prohibit or at least limit the State's quick sale of these land at corruptly low prices like previous states had done, the Enabling Act of 1910 imposed unprecedented restrictions on how this land was to be used. Arizona agreed to abide by the restrictions in its Constitution: (1) Most of the land (roughly 87%) must be managed for the economic benefit of K-12 public schools; (2) all land sales and leases over 10 years can only be sold or leased at a public auction to the highest bidder; and (3) no land can be sold for less than its appraised market value. Arizona still owns most of the original school trust land—roughly 8 million acres. Although this land was not particularly valuable in 1910, it is today—especially the land surrounding expanding urban areas like Tucson.

Unlike other land owned by the state, school trust land must be used in a manner that generates the most income for schools. To date, most of the land has been leased to private parties for livestock grazing, agriculture use, and mining. Many of these uses are under long-term leases. However, in recent years as population centers have expanded rapidly the State Land Department has begun selling off more parcels to developers. As such, the nearly 600 square miles of State Trust Land within the greater Tucson region represent a major, long-term public investment (see subsequent section), worthy of protecting from uses which would result in a devaluation of these lands. Unlike the Coronado National Forest, National and State Parks, the Las Cienegas National Conservation Area, and the Santa Rita Experimental Range, Arizona State Trust Lands are not in some form of permanent protection. Nonetheless, in their current “undeveloped” form, they constitute a significant portion of the open space lands which surround the City of Tucson, and which provide important open space value to the greater Tucson region.

Pima County Protected Lands

One of the most biologically diverse counties in the United States, Pima County contains a rich diversity of vegetation, ranging from cactus-studded deserts to conifer forests, and accompanied by an equally diverse complement of animals. In 1998 the Pima County Board of Supervisors initiated discussions on land use planning and conservation, fortuitously shaping the growth debate to encompass scientific principles derived from ecology and conservation biology. By undertaking land use planning and decision-making based on scientific rather than mere political considerations, Pima County moved to the forefront of conservation-based land use decision-making in the US with the formulation of the Sonoran Desert Conservation Plan. In 2001 the County adopted the Conservation Lands System as the foundation for the overall plan (www.pima.gov/cmo/sdcp/).

The Board of Supervisors recognized at the outset that success of the Sonoran Desert Conservation Plan would depend upon broad support and involvement by the people of Pima County, and made participation by relevant public agencies, organizations and interested citizens at top priority in undertaking its conservation planning effort. In so doing, Pima County has created an informed and engaged citizenry that remains fully involved in and committed to realization of the and implementation of the plan. More than 150 scientists contributed their expertise in shaping a plan grounded in sound science, and nationally recognized peer reviewers were consulted to bring additional insights and

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expertise into plan formulation. Also of note was the creation of an extensive Geographic Information System that provides the geographic scientific data base that serves as the foundation of the plan.

The plan consists of five initial elements:

- Critical Habitat and Biological Corridors
- Riparian Restoration
- Mountain Parks
- Historical and Cultural Preservation
- Ranch Conservation

Graphic displays showing the important conservation values embodied in the five plan elements are shown on the following pages. The location of the proposed Rosemont Mine is shown as a red dot on each of the graphics in order to underscore the scope and magnitude of conflicts and significant adverse impacts the proposed industrial operation would have on the Sonoran Desert Conservation Plan. Pima County has some form of jurisdiction and/or management relationship over 5.16% of the study area, some 103,690 acres (162 square miles). The County has direct ownership of County Parks and Natural Areas containing 26,728 and 4,794 acres respectively. In addition to these County Parks and Natural Areas, Pima County holds fee simple title or conservation easements protection on over 41,000 acres of ranchlands as shown in Table 2 below. In the aggregate, these ranches occupy over 123,000 acres in Pima County. These open space lands have been protected by virtue of over \$ 116 million in Open Space Bond monies approved by Pima County voters since 2005. This active on-going program has resulting in land conservation transactions occurring in six of the past seven years.

Table 2: Pima County Ranchland Conservation

Unit	Acres ⁴	Cost	Year	Location ⁵	Fee Lands (acres)	Conservation Easements (acres)	Grazing Leases ⁶ (acres)
Empirita Ranch	2,714	\$ 10,835,000	2009	15-20	2,714	0	0
Sands Ranch	5,033	\$ 21,015,503	2008	15-20	5,040	200	0
Bar V Ranch	13,496	\$7,689,228	2005	10-15	1,763	0	12,000
Sopori Ranch	15,491	\$18,602,695	2009	25-30	4,135	0	10,480
Clyne Ranch	880	\$4,900,000	2010	15-20	880	90	0
A-7 Ranch	3,287	\$2,041,933	2004	35-40	6,829	0	34,275
Marley Ranch	1,896	\$20,006,112	2009	25-30	6,337	0	0
Rancho Seco	5,777	\$18,503,948	2005	30+	9,574	478	27,331
Diamond Bell Ranch	1,169	\$897,730	2008	30+	191	0	30,702
Six Bar Ranch	276	\$11,525,332	2006	40-50	3,292	40	9,000
Total⁷	50, 019	\$116,017,471			40,755	808	123,788

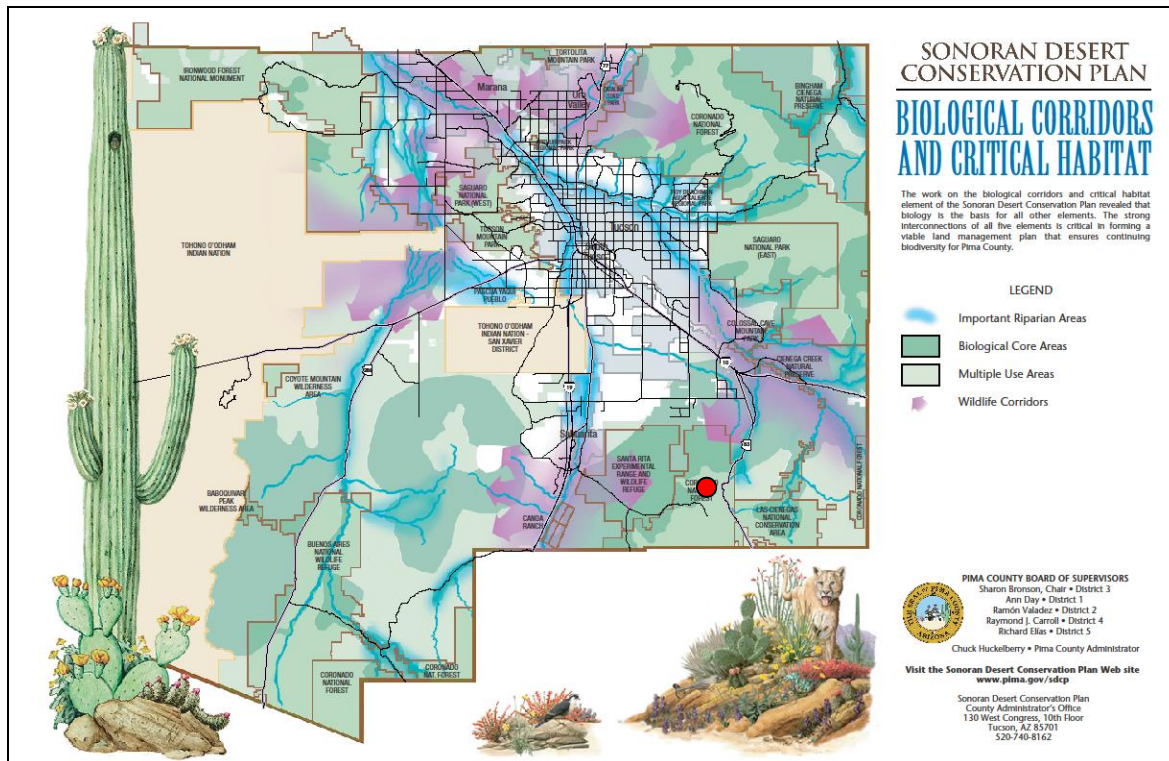
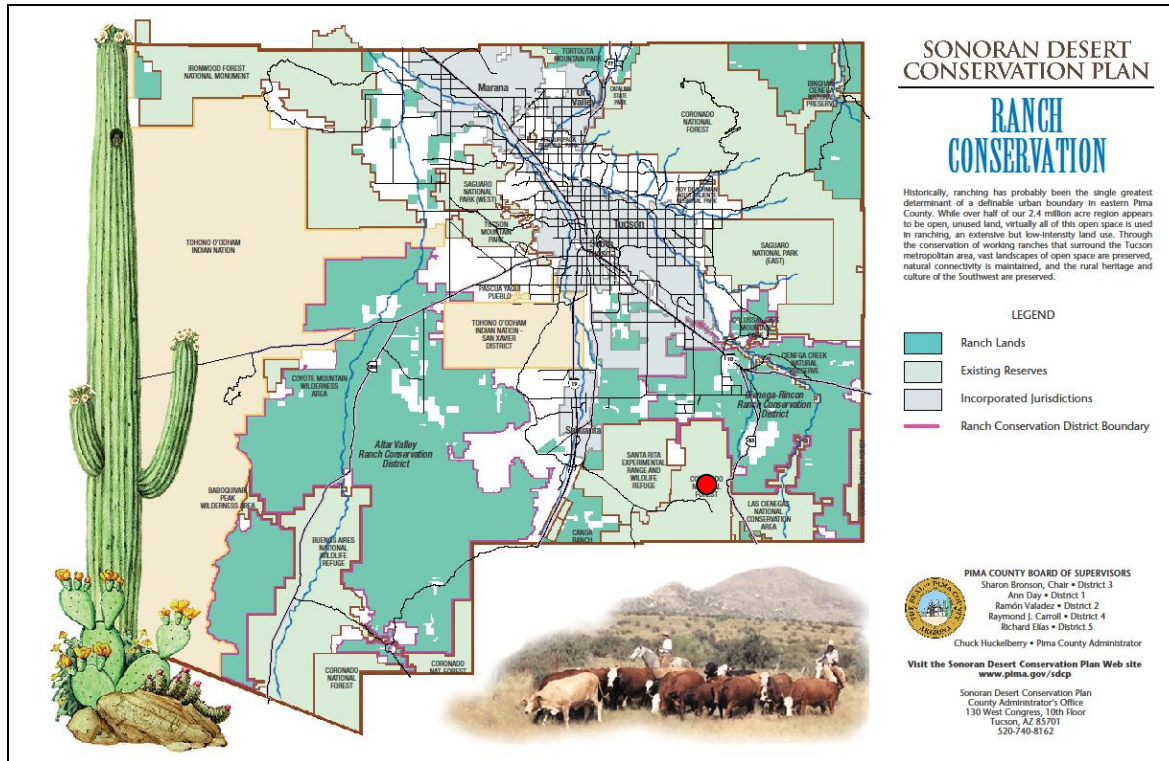
Source: Pima County, AZ 2010

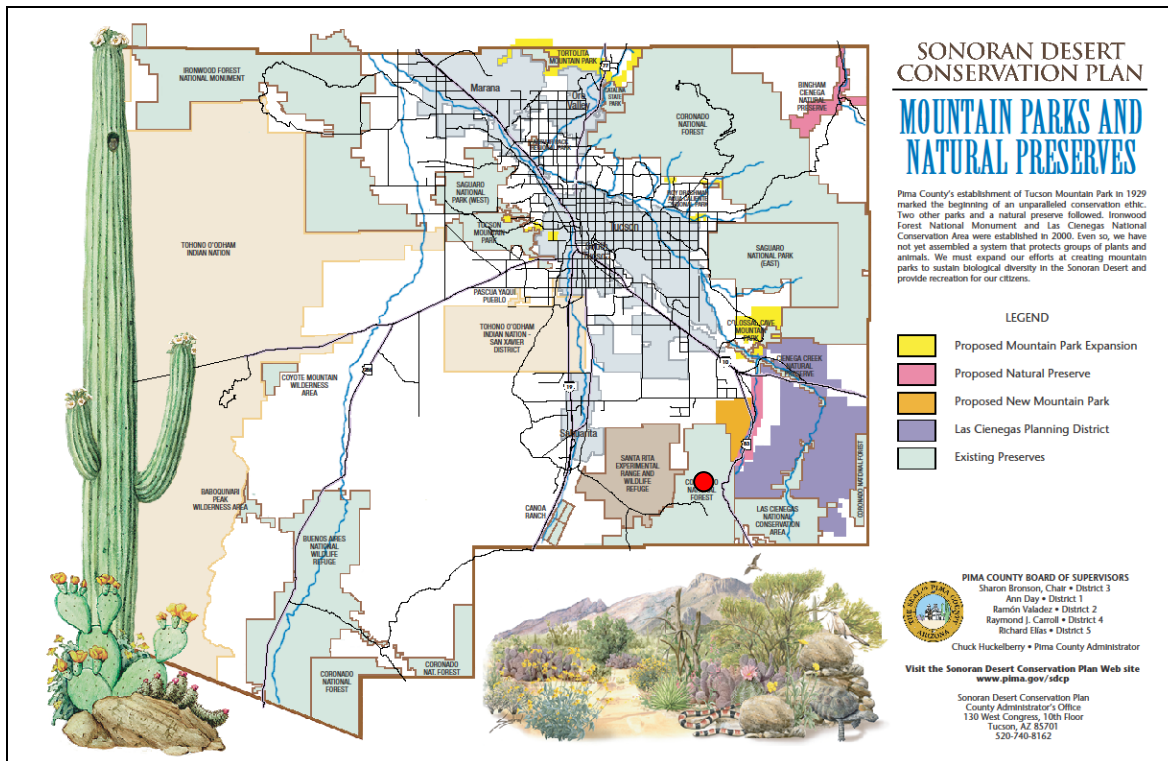
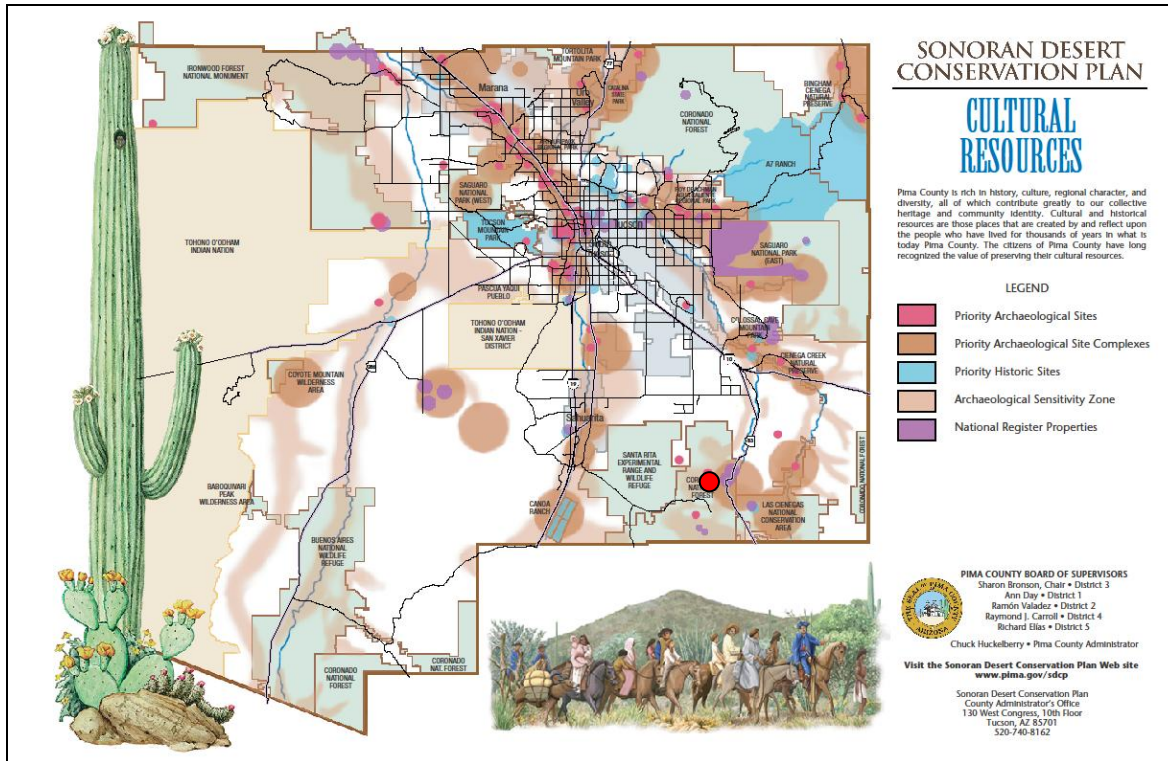
⁴ Acreages shown for lands within Study Area

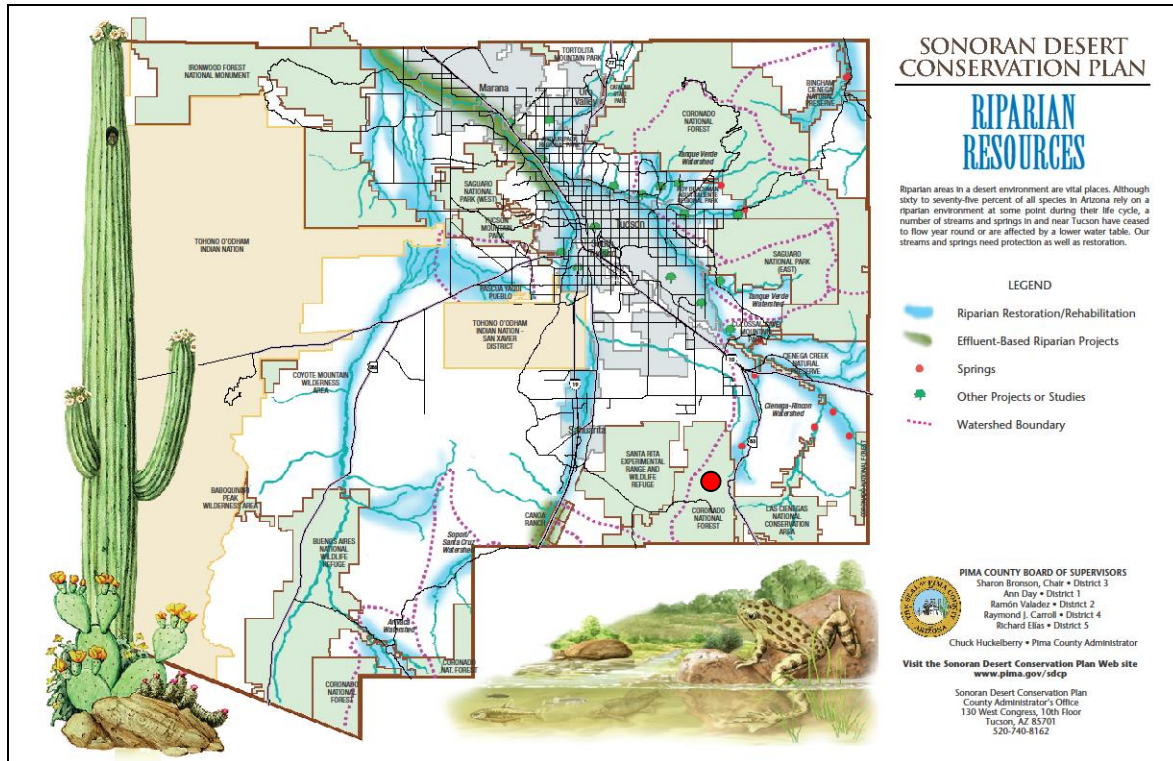
⁵ Location expressed as distance from proposed Rosemont Mine

⁶ Grazing leases on BLM or State Trust Lands

⁷ Total acreages do not sum since portions of the fee lands, easements, and leases occur beyond the Study Area







Unfortunately the site of the proposed Rosemont Mine is located in such a manner as to pose significant threats to all five elements of the Sonoran Desert Conservation Plan. Specifically, the proposed mine is in conflict with these plan elements as follows:

- Adjacent to the critical biological core area and situated within key biological corridors (see map of Critical Habitat and Biological Corridors);
- Situated in the headwaters of a stream (Davidson Creek) identified for riparian restoration and rehabilitation; it is also in the vicinity of important springs (see map of Riparian Restoration);
- Located within a strategic corridor of lands linking the Santa Rita and Rincon Mountains (containing Saguaro National Park) and proximate to a proposed New Mountain Park and a New Natural Preserve (see map of Mountain Parks);
- Situated within an area designated as an archeological sensitivity zone, as well as a Priority Archeological Complex and a Priority Archeological Site (see map of Historical and Cultural Preservation); and
- Situated proximate to a Ranch Conservation District (immediately adjacent to the Coronado) and virtually surrounded by lands identified as Ranchlands (see map of Ranch Conservation).

In sum, the proposed Rosemont Mine constitutes a significant adverse impact to the Sonoran Desert Conservation Plan; a comprehensive conservation plan years in preparation as well as supported and funded by the people of Pima County. It is thus no surprise that the Pima County Board of Supervisors is unanimous in their opposition to the proposed Rosemont Mine.

Direct Economic Value of Public Lands

Table 3, below, contains data on the value of the public lands described above. For the purpose of this analysis, the values of all lands within Pima County are expressed as “Assessor's full cash value even though there are lands that the Assessor has no authority to assess and tax, i.e., public lands, Nation lands, etc. Since the purpose of this analysis is to establish a plausible value for all public land, the use of Assessor’s full cash value provides a reasonable but conservative estimate. Where there was no full cash value for specific parcels, the following values were used:

- State Lands: \$3,737 per acre
- Coronado National Forest Lands: \$1,466 per acre
- Las Cienegas National Conservation Area Lands: \$2,020 per acre
- Private Lands: \$120,000 per acre

These values represent the average cash value per acre of other lands within the jurisdiction or category. In establishing these figures, is it useful to compare these data with actual sales data. For example, according to the Arizona State Lands website, in 2001 sales of 3,500 acres of State Trust Land produced \$148,000,000 over \$42,000 per acre, and under the Urban Preserve Initiative, sales of 1,612 acres for open space uses in urban areas produced \$ 26,000,000 at an average price in excess of \$ 16,000 per acre. Thus the Assessor’s full cash value of \$3,737 is clearly at a very conservative figure.⁸

Table 3 provides a summary of the values of the aggregate of public lands shown in Figure 2 and detailed in Appendix A. This Appendix also sets forth detailed data on “Assessor’s Full Cash Values” for the public lands in the Greater Tucson Region study area.

Table 3: “Full Cash Value” of Public Lands in Greater Tucson Region

	Distance in 5-mile Increments from Proposed Rosemont Mine										Total
	5	10	15	20	25	30	35	40	45	50	
Total Value (millions)	\$ 92.3	\$ 575.8	\$ 681.0	\$ 713.8	\$ 638.7	\$ 1,050.5	\$ 494.0	\$ 388.7	\$ 84.6	\$ 13.8	\$ 4,733.2
Aggregate Value (millions)	\$ 668.0		\$ 1,394.9			\$ 1,689.2					\$ 3,752.0
Aggregate Percent	14.1%		29.5%			35.7%					79.3 %
Aggregate Value (millions)	\$ 2,062.9										
Aggregate Percent	43.6 %										
Total Acres within Study area (millions)											2.007
Average Value per Acre											\$ 2,358

Source: Pima County, AZ 2010

⁸ A discussion of State Trust Lands can be found at <http://www.land.state.az.us/news/atagance.htm> .

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As shown in Table 3, the current total “full cash value” of all public lands in the study area is approximately 2.73 billion dollars (\$4,733,173,889), an average of \$ 2,358 per acre. In terms of public lands in proximity to the proposed Rosemont Mine; 14.0 % of the overall value -- \$ 668,000,000 is within the 10-mile radius; 43.6% of the value – \$ 2,062,871,142 is within the 20-mile radius; and 79.3% of the total value – \$ 3,752,074,738 is within the 30-mile radius.

Even very modest diminution in value of these public lands results in a significant loss in value. The economic analyses contained in the Draft Environmental Impact Statement on the proposed Rosemont Mine should address the diminution in value of all public (as well as private) lands adversely impacts by the proposed project.