

## CELEBRATION AND RESTORATION OF A NEIGHBORHOOD PARK

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## San Juan Park

#### "A" Mountain Community

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The Drachman Institute is a research and public service unit of the College of Architecture and Landscape Architecture at the University of Arizona dedicated to the environmentally sensitive and resource-conscious development of neighborhoods and communities. The Drachman Institute, in particular, focuses its research and outreach activities on the proposition that housing is the building block of neighborhoods and neighborhoods are the building blocks of communities. The work of the Drachman Institute therefore facilitates the development of demographically diverse neighborhoods, rich in environmental amenities and built from goodquality, well-designed, regionally-appropriate housing that conserves land, energy, and water.

> The Drachman Institute College of Architecture and Landscape Architecture The University of Arizona Tucson, Arizona

> > December 2007

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# CHAPTER 1 INTRODUCTION



#### Who We Are

The University of Arizona's Landscape Architecture graduate program partnered with the residents of Tucson's "A" Mountain Neighborhood to create a plan for San Juan Park.

The neighborhood has a long-established and positive relationship with the University's Drachman Institute, specifically with Corky Poster, the Institutes' director. This partnership has remained strong over the past two decades, resulting, among other things, in the 1984 construction of the Archer Center at San Juan Park.

Dr.. Poster worked with the graduate program's Landscape Analysis course to create a plan for the preservation and maintenance of the thirty acres of open undeveloped land on San Juan Park. The class divided into four groups to create unique plans for the "A" Mountain Community's San Juan Park. This plan is the product of one of these four groups.

We are four graduate students from three different disciplines: Landscape Architecture, Architecture, and Planning.

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First-year graduate student in the Landscape Architecture Program	First-year graduate student in the Landscape Architecture Program	Second-year graduate student in the Planning Degree Program	First-year graduate student in the Architecture Program
BS in Biology, BA in Environmental Sciences and Policy from Duke University	BA in Community and Environmental Planning and BA in Sociology from the University of Montana	BA in American Studies from the University of California at Santa Cruz	B. Arch from University of Pune, India
Home town: Richmond, Virginia Interests: Public Transportation;	Hometown: Lewistown, Montana	Hometown: Sacramento, California Interests: Community Development;	Hometown: Pune, India
Recreational Spaces; Botany.	Interests: Stream Rehabilitation; Small Town Revitalization; Healthcare Facility Grounds Design.	Neighborhood Organizations; Multi- Modal and Livable Communities.	Interests: Sustainable Design

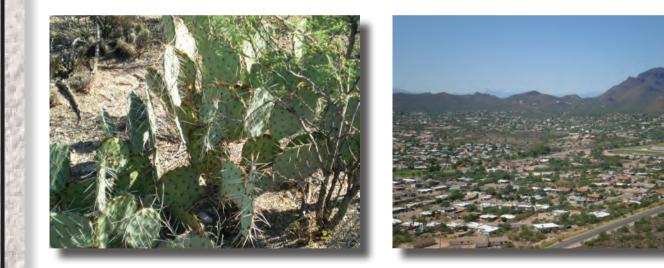
Working Together

To most effectively benefit the residents of the "A" Mountain neighborhood, this plan represents the synthesis of our own unique perspectives, view points, and backgrounds, with guidance from Professor Beth Scott and Dr.. Corky Poster.

Our goal has been to produce the most comprehensive, useful plan for the "A" Mountain Neighborhood and the community of the Fred Archer Neighborhood Center and San Juan Park.







Special thanks to the dedicated citizens of Tucson's "A" Mountain community for granting us the opportunity to utilize our skills, enthusiasm, and creativity to help create the type of community we strive for: healthy, safe, and vibrant with a pronounced sense of place and a strong sense of pride.

#### How San Juan Park Was Created

San Juan Park, located in the "A" Mountain Neighborhood of Tucson, is a forty-acre parcel of land south of Tumamoc Hill and "A" Mountain.

The land was a generous gift deeded from Helen d'Autremont to the City of Tucson. d'Autremont envisioned this land having a positive impact on the community at large. Therefore, within the deed, she requested for it to remain community-based and community-oriented.

To make d'Autremont's vision a reality, three major phases were created by the City of Tucson to establish San Juan Park as a functioning place for the greater Tucson community. The first two phases, now complete, resulted in The Fred Archer Center - a treasured and greatly utilized neighborhood center. The remaining third phase concerns the open desert areas of the park. The deed requests the land be preserved as native desert, while providing accommodations for:

Bicycle use,

Jogging paths,

Picnic areas, and

Overall outdoor community activities.

The deed requests that thirty of the forty acres remain as native desert vegetation. The majority of the developable allotment of land (10 acres) is currently utilized by the Archer Center, located in the west-central portion of the forty-acres.



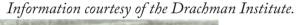
## History of San Juan Park

San Juan Park is a civic center and the source of great community pride. The park is framed by San Marcos Boulevard to the north, La Cholla Boulevard to the west, San Juan Trail to the south, and backyards of private residential homes to the east.

The Archer Center became a physical reality through equal funding from the Federal Model Cities Program, Pima County, and the City of Tucson.

In the mid 1960's, well before the inception of the Archer Center, the "A" Mountain Neighborhood was experiencing significant economic struggles. At the time, sixty-five percent of the households were living below federal poverty standards. Due largely to these startling figures, the neighborhood qualified to become an improvement site by the War on Poverty Area Council. With community action, interventions, and granted monies, the neighborhood's economy gradually improved. Though small pockets of poverty still remain today, the neighborhood has shown considerable triumphs and is no longer experiencing the same economic devastation as in the 60's.

The "A" Mountain Neighborhood is historically recognized as being predominantly African American in demographic makeup. Population statistics, however, demonstrate a shift since the inception of the neighborhood. Most recent trends of "A" Mountain Neighborhood indicate that 67% of residents are Hispanic, 17% are White/Caucasian, 11% are African American, and roughly 5% are Asian, making it one of the more diverse neighborhoods in the city.





A historical view of the "A" Mountain Neighborhood looking south from "A" mountain.

The Fred Archer Neighborhood Center, located on the westcentral portion of San Juan Park, is a hub of recreational and educational activities for a wide range of users and abilities.



#### Archer Center Amenities: (information courtesy of www.tucsonaz.gov)

#### Indoor

- Weight room
- Craft room
- Game room
- Pool table
- Vending machines
- Multi-purpose room
- Lounge/TV area
- Computer Lab
- Foosball table

#### Outdoor

- Covered basketball court
- \*Year-round swimming pool
- 6 concrete picnic tables
- Playground area
- Shaded patio
- Parking spaces; 4 handicap
- Portable volleyball setup
- Covered ramadas
- \*Walking path to Vista Del Pueblo Park

\*Year-round Swimming Pool: adult lap swim; recreational swim; diving board; water slide; wading pool; and classes

\*Vista Del Pueblo Park, a 3.71-acre neighborhood park, connects to San Juan Park's northeast corner and includes a grassy area with picnic tables, drinking fountains, basketball court, and public rest rooms.

#### **Archer Center Activities**

#### **Youth Programs**

- Kid Kreation: ages 3-5
- Educational and social activities
- KIDCO: ages 5-11
- After-school program
- Games, sports, crafts, field trips

#### **Teen Programs**

- In-Betweener's Club: ages 11-14
- Arts and crafts, cooking, community service projects, outings and special events.

#### Senior Club for 50+

- Scrabble, Bingo, arts and crafts, field trips, movies, pot lucks, guest speakers, educational sessions, card game day, aquatic classes, weight room use
- Lunch is provided daily to all members 60+ (Senior Club annual membership is free) in cooperation with the Pima Council on Aging Senior Nutrition Program

#### Human Service Programs

- Henry Ryan Early Learning Center Day Care: ages 3-12
- Pima County Health Department (W.I.C.)
- Food Plus Program
- Community Food Bank Supplemental Food Boxes
- Southwest Midwifery Services







#### Vision

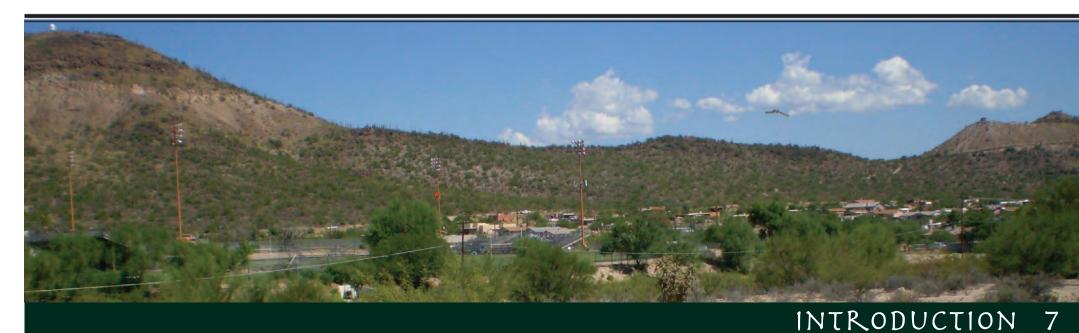
This document's focus is on the remaining third phase of the development of San Juan Park. It gives a brief overview of how to best preserve the park's native vegetation and wildlife and connect activities and uses of the park with local community wants and needs.

#### Vision Statement:

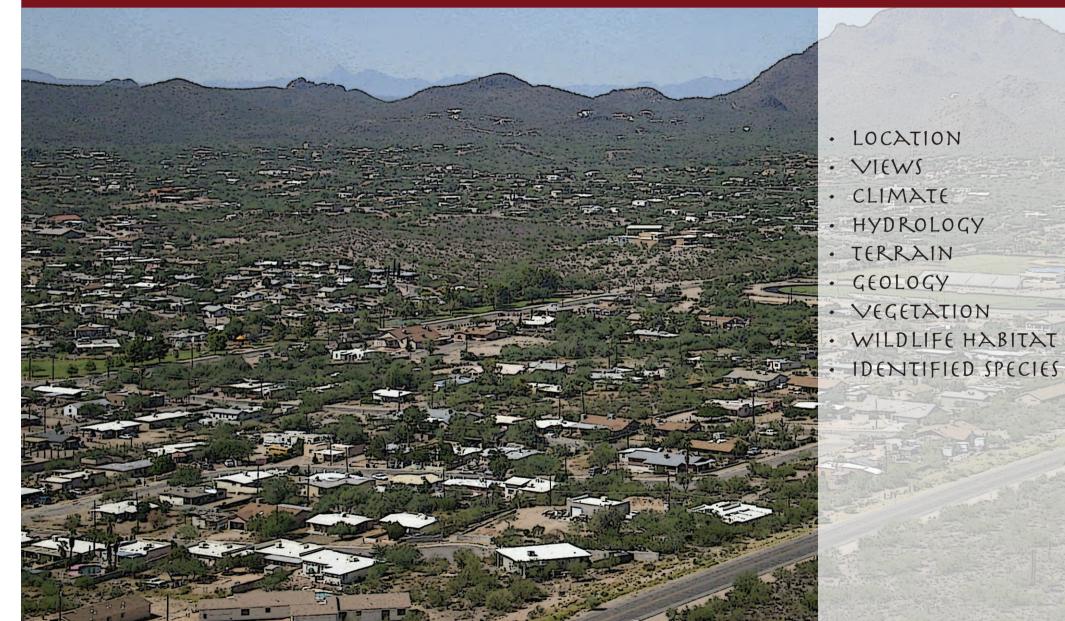
To continue the longevity of a treasured community park by providing a hub of recreation and educational activities and preserving native desert vegetation and wildlife.

## Goals and Objectives:

- Create a viable community desert park
- Rehabilitate and restore the land
- Accommodate changes in the community structure
- Employ innovative ideas and visions with cost-sensitivity
- Encourage interaction between the City of Tucson Parks and Recreation and the "A" Mountain community by creating a sense of pride for the park



## CHAPTER 2 INVENTORY



#### Location



S an Juan Park is a 40-acre parcel located in Southeast Tucson within the A-Mountain neighborhood. The first two phases of a three phase plan have been completed. The third phase, which this document addresses, is to care for the remaining 3/4ths of the property with the intention to provide and maintain a natural Sonoran desert landscape to be utilized by the greater surrounding community.



Approximate site location

# Zoning Districts

Zoned R-1 (Residence zone): "This zone provides for urban, low density, single-family, residential development, together with schools, parks, and other public services necessary for a satisfactory urban residential environment." (Tucson City Code)

Site Address: 1665 S. La Cholla Blvd. A.P.N.118-05-002A Taxpayer: City of Tucson



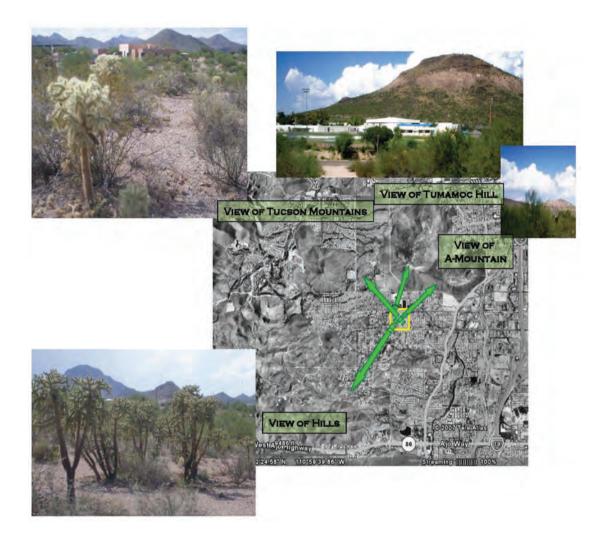




#### LEGEND

- PROJECT BOUNDARIES
- MAJOR ROADS
- SECONDARY ROADS
- SERVICE ROADS
- TRAILS
- ARCHER CENTER
- PARK AND RIDE
- MAINTAINED VEGETATION
- **RIPARIAN**
- UPLANDS

#### Views



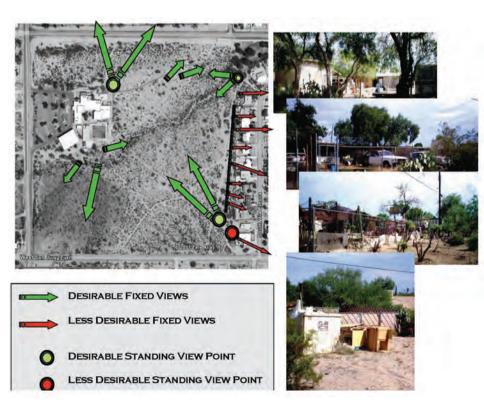
Less desirable views are not as prevalent, existing largely on eastern portions of the site.

On the eastern boundary of the site are many chain-link fences, allowing clear visibility into private property and side yards. If chosen to remedy, effort can be simple and inexpensive.

Due largely to San Juan Park's surrounding elevated landforms, desirable daytime view points can found from all locations of the site. Looking north and northeast are both Tumamoc Hill and A-Mountain.

Looking west and northwest is the Tucson Mountain Range. Looking south are yet more elevated landforms offering additional views.

In addition to daytime views, magnificent sunsets shadowing the western Tucson Mountain Range along with a distinct northeastern glow of downtown Tucson provide great views well after the sun has set.



#### Climate

Tucson is a five season arid desert, meaning the air is almost always parched. This extreme aridity quickly evaporates any exposed water, and damages sensitive plant and animal tissue. In response to this lack of water and bare soil, plants and animals in this region have adapted to prevent water loss.

Deserts are more specifically classified areas where potential evapotranspiration (the potential combined evaporation from plants and soil) is much greater than precipitation (rain, etc.) Potential evapotranspiration can be estimated by measuring how much water evaporates from a wide pan and multiplying by 60% to account for the difference between open water and water in the soil. A pan in Tucson will evaporate 100" of water over the course of a year; Tucson, on average, only receives 12" of rain. This results in a ratio of 60" of potential evapotranspiration to 12" of precipitation, or an aridity index of 5.

Tucson lies on the upper elevation ecotone (2548' at the airport) of the Sonoran desert and the semi-desert grassland, which appears at approximately 3500'. The city also lies hundreds of miles away from bodies of water that serve as meteorological moisture sources. While the city receives the majority of its monsoonal action from weather patterns off of the Gulf of Mexico when regional pressure systems bring air from the so<del>utheast, winter</del> and early spring rains often emanate from the relatively cold Pacific Ocean off the coast of California, and the slightly warmer Sea of Cortez to the southwest. The lower temperatures of these bodies of water results in less evaporation and less humid air, which accounts for the relative mild manner of the storms Tucson experiences during this time of the year.

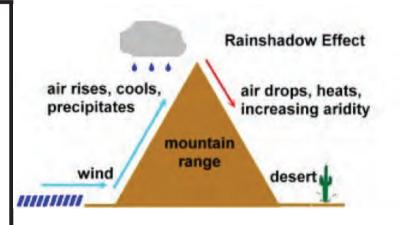
Dec

.99

The heat that these air masses absorb while passing over the hot Sonoran landmass increases their capacity to hold water, resulting in increased aridity on the surface below.

#### Average monthly highs and lows in degrees Fahrenheit

		Jan	Feb	Mar	Apr	May	Jun	e July	ly Aug	Sep	Oct	Nov	Dec	
High		67	71	75	83	92	10	1 102	2 100	96	87	75	67	
Low		37	40	45	49	58	67	7 74	72	67	55	43	37	
Record H	ligh and l	1	<u> </u>			<u> </u>	1		Tesles	Arro	Care		Nor	
<b>X</b>		Jan	Feb			<del>*  </del>	May	June	July	Aug	Sep	Oct	Nov	D
Year		1999					2000	1994	1998	2003	2001	2002	1999	20
High		88	89	9	7 1	.04	110	114	113	111	107	103	95	8
Year		1987	199	0 20	02 19	983	1988	1988	2004	1985	1986	1997	2004	19
Low		22	21	2	6	32	39	47	59	61	51	35	23	1
Average	monthly	precip	itatio	n mea	sured	in ind	ches							
0	Feb	Ma	r .	Apr	Ma	ıy	June	Ju	ly _	Aug	Sep	, (	Oct	No
Jan														



Average warmest month: July Highest record temperature: 114 degrees in 1994 Average coolest month: January Lowest record temperature: 19 degrees in 1988

#### Monsoon Season: Understanding Our Annual Humidity

Average start date of the monsoon: July 7 Average end date: Sept. 13 Average rainfall during July, August and September: 2.65 inches Wettest monsoon: 1984, with 9.38 inches of rain Driest monsoon: 1924, with 0.35 inch (Source: National Weather Service)

**Non-Monsoon Formation** 

The typical guideline used by meteorologists for determining the start of the monsoon is three straight days of 55-degree + dew point average. The common citizen can recognize the beginning and end of this period by noting the wind patterns, humidity, and precipitation during the warmest part of the year. Optimum temperature for the production of monsoon thunderstorms is between 100-105 degrees Fahrenheit – accounting for their frequency throughout the deserts and low grasslands of the southwest U.S.

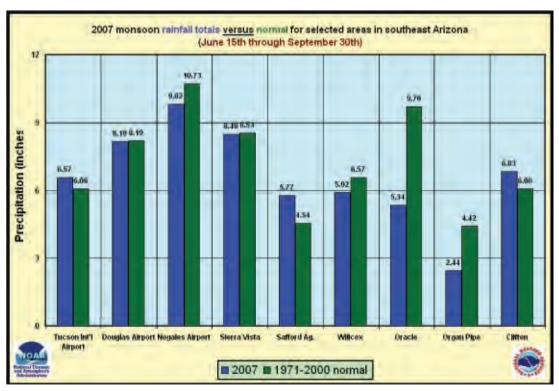


Midday Monsoon Formation Evening Monsoon Cloud Formation

A monsoonal cloud will often form in midday as humid, subtropical air from the Gulf of Mexico is forced upwards by hot desert air and mountains such as the sky islands of southeastern Arizona. This lifting effect causes the air to cool, resulting in condensation of moisture into thunderstorm formation.

Alternatively, a monsoon cloud formation can occur during the evening, as cooler mountain air descends to the desert. A cold front is created that causes the warm air to rise up, again forming thunderstorms.

Studies of the past 50 years of weather conducted by the University of Arizona's Christopher Castro reveal a negative relationship between the amount and time period of rain Tucson receives in the winter and the summer. This is caused by the regional weather patterns of El Niño and La Niña, which are primarily influenced by ocean currents.



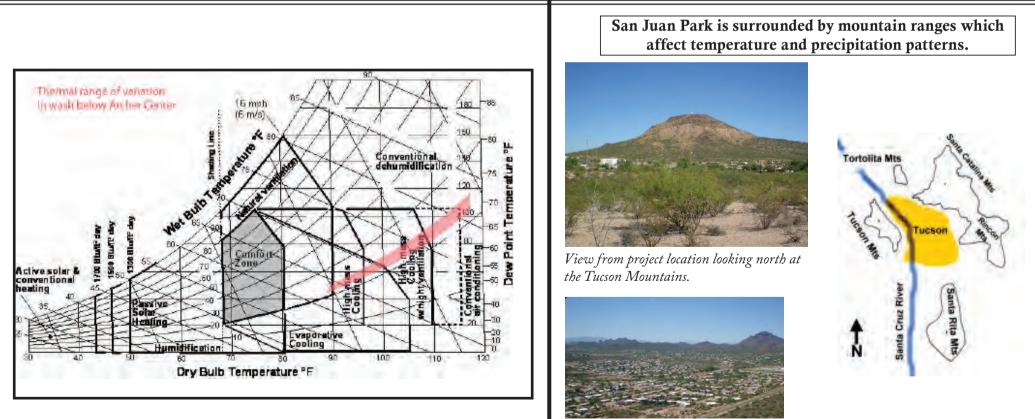
The valleys and mountains of central and southeastern Arizona play a large part in the development and precipitation of storms. As a vertical and thermal barrier to air movement, the Mogollon Rim and sky islands of southeastern Arizona condense super-heated air moisture from desert areas into clouds, which then move down slope and along the southeastern regional wind pattern between the Rincons and Santa Ritas, down the Santa Cruz valley, and towards Phoenix.

<u>Relative humidity</u> is the amount of moisture in the air compared to what the air can hold at that temperature, expressed in percent. When the air is unable to hold all the moisture it condenses as dew. When the air is unable to hold the moisture in the air, one of two things will occur: it begins condensing to form clouds, or it forms into fog or dew. This is dependent upon the height at which the air is tested; the closer to the ground, the greater the percentage of moisture will be in the form of dew, as opposed to clouds?

The warmer the air is, the more water vapor it can hold. Likewise, the cooler the air, the less water vapor it can hold.

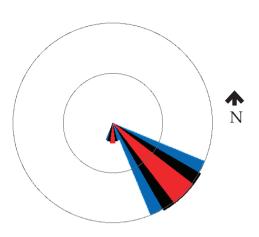
Dry bulb temperature is a measure of temperature without the influence of evaporation.

A <u>psychrometric chart</u> is a tool used by architects to determine the departure or nearness of a space to the 'human comfort zone.' Based upon field measurements of relative humidity and dry bulb temperature, the chart below demonstrates the relative hot conditions of the wash below the Archer Center on a typical morning in early October. From this chart, one can deduce the <u>wet bulb temperature</u> (the temperature of a surface, such as skin, that is actively evaporating water) and the <u>dew point temperature</u> (the minimum temperature of dew formation.) Site alterations, such as shade structures, pathways, or plantings, can alter not only these individual meteorological measures, but also, as a result, the likelihood that a location will be enjoyed by the visitors to the San Juan Park.



View of project location looking down from Tumamac Hill (south).

#### **Tucson Wind Rose Diagram**



A wind rose diagram depicts the wind patterns of a particular area over a certain time period. The diagram shown at left was created as a graphic representation of Tucson's yearly average winds. Data was used from the National Environmental Satellite, Data, and Information Service (NESDIS). Distance from the center of the diagram indicates frequency or intensity of wind gusts from the corresponding direction.

Climatic wind data for Tucson was collected from 1930 to 1996 according to the direction the wind originated, the average speed, and the maximum gust recorded for each month (see data below).

As shown in the diagram, the majority of Tucson's wind comes from the southeast and the south-southeast direction. Wind speeds vary slightly between eight and nine miles per hour.

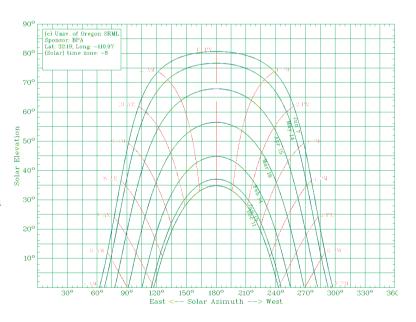
	January	February	March	April	May	June	July	August	September	October	November	December	Annual
Direction	SE	SE	SE	SE	SE	SSE	SSE	SE	SE	SE	SE	SE	SE
Speed	8	8	8	9	9	9	8	8	8	8	8	8	8
Peak Gust	55	48	53	55	55	47	6	76	71	49	46	47	76

Wind directions relating to Tucson's climate are shown on the figure below. The south and southeast wind patterns are influenced by Tucson's proximity to major bodies of water, particularly the Gulf of Mexico.

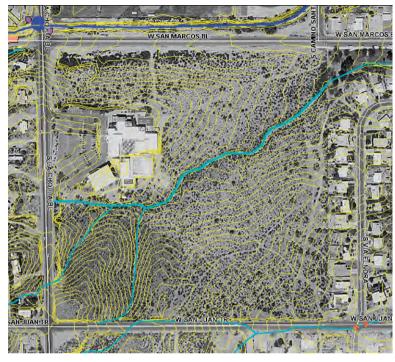


The monthly sun angle diagram seen to the right is a representation of the average solar radiation from December to June for the area containing the zip code of 85713, where San Juan Park is located.

The chart depicts the solar elevation (angle between the horizon and the sun, in degrees) and the solar azimuth (compass direction of the sun away from vertical) for different times of the day in different times of the year. (Pacific Standard Time and local solar time.)

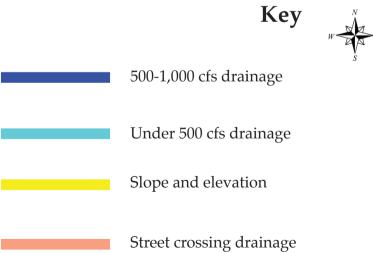


#### Environmental Factors Surface Hydrologic Features



Though drastic topographic elevations are not prevalent within San Juan Park proper, the surrounding topography and infrastructure has proven to exacerbate many drainage features within the park. The water flow direction runs from the southwest corner of the site to the northeast, following the minor topography and slopes of the park. These waterways are natural designations of <500 cfs (cubic feet per second) drainage ways.

Additional water runoff from the road west of the park is proving greater levels of concern as time passes; erosion from this unnatural watercourse increases volume and speed of water, carrying sediments from the southwest corner to the northeast. Here, in the northeast corner, additional concern is placed on sediment deposits and soil erosion within tree root bed locations.

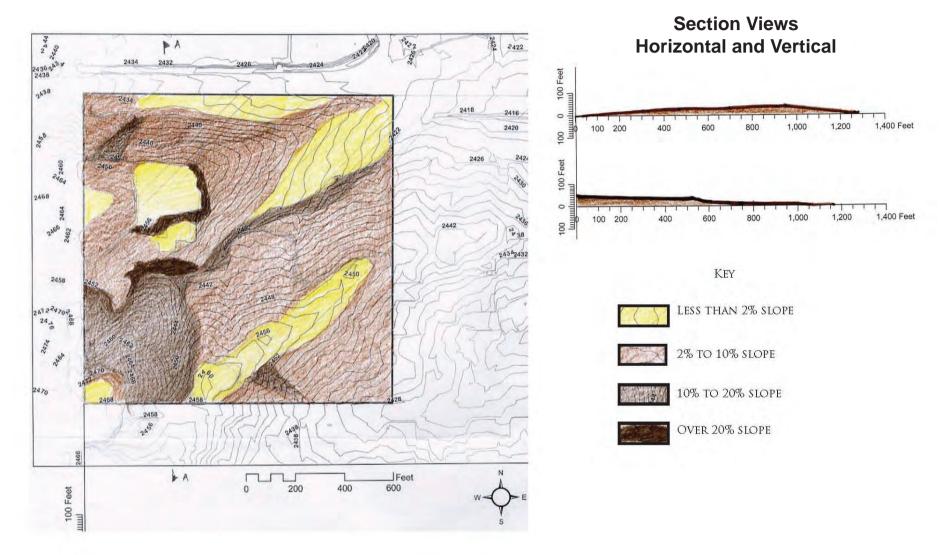


*Erosion located at the northeast corner of the project site.* 



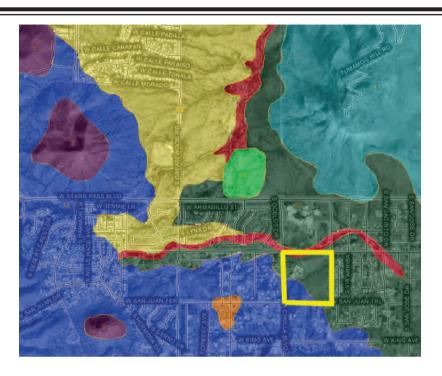
#### **Slope and Elevation Features**

#### **Slope Analysis**



The area's terrain greatly varies in slope, with low points existing through the wash, and high points along the southwestern boundary of the project area. Slope is an important feature to take into account when designing features for the site. Taking advantage of the high points on the site preserves the view shed of the mountains to the north.

#### **Environmental Factors** Surface Hydrologic Features



Pantano Granolite complex, 5 to 25 percent slopes

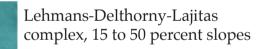


Delnorte-Stagecoach complex, 5 to 25 percent slopes



Arizona Riverwash complex, 0 to 3 percent slopes

Pits, dumps



Tubac gravelly loam, 1 to 8 percent slopes

Anklam-Cellar-Rock outcrop complex, 15 to 55 percent slopes

Pinaleno very cobbly sandy loam, 1 to 8 percent slopes

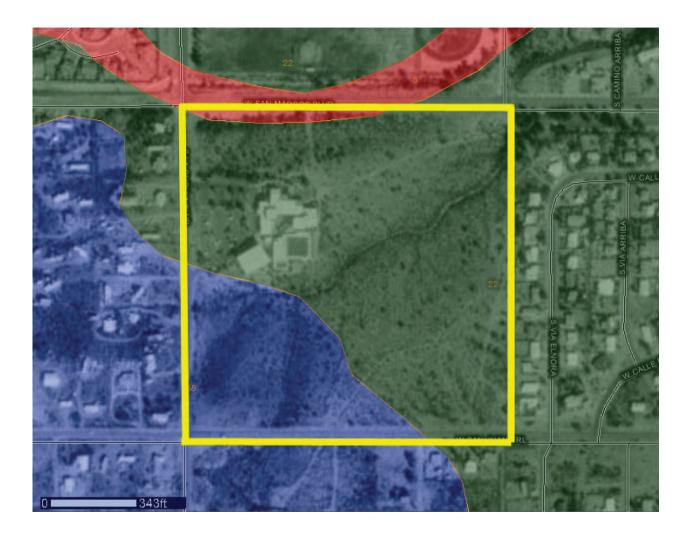
**Project Boundaries** 

The greater area surrounding the Tucson Mountains is covered with Quaternary (the geologic period beginning two to three million years ago and extending to the present) and late Tertiary deposits (a more recent time period measuring thousands of years to the present).

See the next pages for a detailed analysis regarding the geology and soil classifications affecting San Juan Park. The analysis is separated into areas that surround the park and are influential to its geologic features. Identified in each section are the qualities and types of soil deposits as well as opportunities and constraints these specific areas pose.

INVENTORY 21

Maps courtesy of Natural Resource Conservation Service, 2007.



Arizona Riverwash complex, 2.5% of project area

Pantano Granolite complex, 15% of project area Delnorte-Stagecoach complex, 72.5% of project area

#### **Geologic** Analysis

#### Delnorte-Stagecoach complex (1%-20% slopes)

- Elevation: 2300-3400 feet
- Mean Annual Precipitation: 10-12 inches
- Mean Annual Air Temperature: 64-70 Degrees F
- Area can be used for: Rangeland, home sites and urban development.
- Limitations:
  - Excavation is limited by the hardpan (Sandy and gravelly material below the hardpan is subject to caving or slumping if excavations are deep).
  - Removal of gravel and cobble in needed for landscaping (especially for lawns).
  - Necessary to backfill with several inches of good topsoil, in case of the disturbed surface layer.
  - If deep-rooted shrubs or trees are grown, it generally is necessary to excavate pits through the hardpan into more suitable and permeable material and backfill with good soil and organic matter.
- Potential plant community: bush muhly, creosote bush, fluffgrass, red grama, and slim tridens.
- Present vegetation: creosote bush, palo verde, ocotillo, and fluffgrass.
- Lawn grasses, shrubs and ornamental trees that tolerate excessive amounts of lime should be selected.
- Well suited to desert herbaceous plants and desert shrubs and trees.

#### Qo: Early Pleistocene Alluvium

This classification is represented in the larger basin area where San Juan Park is located. Qo is identified in all areas of San Juan Park except the most northern section, the northeast tip, and the southwest corner. This basin is surrounded north, south, and west by mountainous terrain. Formed between 1-2 million years ago, Qo maintains a strong soil development with moderately well preserved alluvial fan surfaces. These surfaces tend to be smooth and broadly rounded, lighter in color (soft browns), and comprised of cobbles, boulders, sand, and finer clays. Qo is dominated by creosote, offering many challenges and constraints with drainage and infrastructure needs.

#### Qm: Middle Pleistocene Alluvium

This classification is represented in a smaller portion of the basin in the northeast tip of San Juan Park, and extending outward northeast. Deposited some 130 to 500 thousand years ago, Qm possesses characteristics of strong soil development and composition throughout these foothill-like areas. Because well-developed and somewhat incised tributary channel networks drain Qm surfaces, many surrounding, less-drainable surfaces find route to Qm surfaces. Due to this, channels in

Qm tend to be located several meters below adjacent Qm surfaces.

Surfaces tend to be smoother with pebble and cobble lags. Surface colors tend to be darker shades or orange and brown. Many plant species are found in this classification, such as bursage, ocotillo, creosote, cholla, and saguaro.

#### Pantano-Granolite complex (5%-25% slopes)

Elevation: 2400-3600 feet Mean annual precipitation: 10-12 inches Mean annual air temperature: 64-70 degrees F

Area under can be used for: Rangeland, urban development, home sites, irrigated cropland and recreational areas.

Less sloping areas can be used as campsites, picnic areas and playgrounds. Paths and trails should be constructed on the contour where possible. Should maintain adequate plant cover in order to maintain erosion and sedimentation.

Limitations:

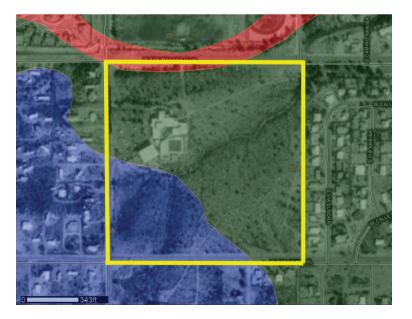
Coarse fragments on the surface, depth of the bedrock, slope. Excavation for buildings and roads is limited by shallow depth to bedrock.

Potential plant community: creosote bush, bush muhly, slim tridens, Arizona cottontop, slender grama, and ratany.

Present vegetation: palo verde, cacti, whitethorn, and triangle bursage.

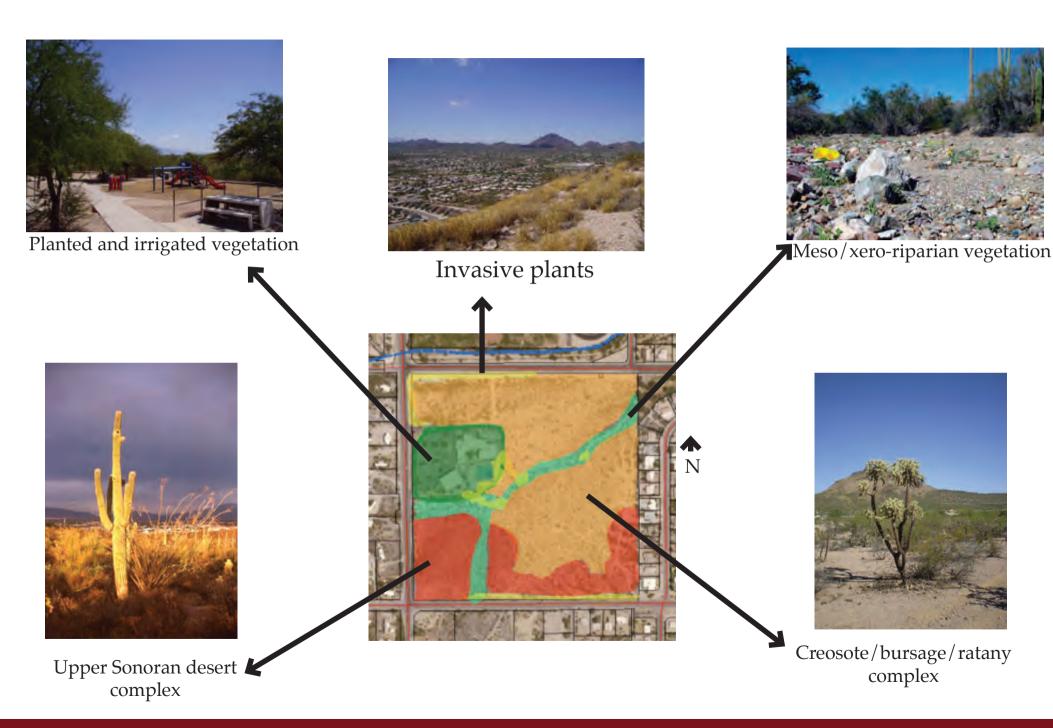
Moderately well suited to desert herbaceous plants and desert shrubs and trees.

(Soil classification "R" is also present which is bedrock or volcanic bed.



## Vegetation

Name of the Community	Species of the community	Observations and issues raised
Upper Sonoran desert complex	saguaros (Carnegiea gigantea)	diverse in number of species in growth and form
	fishhook barrel cactus (Ferocactus wislizenii)	plants of different stages of maturity present
	ocotillo (Fouquieria splendens)	visually interesting
	foothills palo verde (Parkinsonia microphyllum)	indication of warmer temperatures commonly found on the Sonoran desert foothills
	slender janusia (Janusia gracilis)	combination of ratany and boulders indicative of Sonoran desert tortoise habitat
	desert senna (Senna covesii)	
	cholla, prickly pear (Opuntia spp.)	
	creosote bush (Larrea tridentata)	
	bursage (Ambrosia spp.)	
	ratany (Krameria spp.)	
	hedgehog cactus (Echinocereus nicholii)	
Planted and irrigated vegetation	sweet acacia (Acacia farnesiana)	African sumac, Mexican palo verde are spreading in other sectors of the site
5 6	South American hybrid mesquite ( <i>Prosopis</i> x. 'South American')	water seep from irrigation or pool is reaching the surface
	Mexican palo verde (Parkinsonia aculeata)	several trees are planted on the pathway and are not receiving any irrigation
	Australian cassia (Senna spp.)	irrigated park of Mesquite bosque and Bermuda grass at the bottom of the riparian wash
	desert marigold ( <i>Baileya multiradiata</i> )	0I
	African sumac ( <i>Rhus lancia</i> )	
Invasive plants	Mexican palo verde (Parkinsonia aculeata)	competition and fire risk from fire-tolerant African-native buffelgrass
¥.	African sumac ( <i>Rhus lancia</i> )	tree tobacco and Mexican palo verde have become naturalised throughout Sonoran desert
	buffelgrass (Pennisetum ciliare)	Rhus lancia growing in the wash appears to be providing habitat cover but is also compet- ing with native vegetation
	bermuda grass (Cynodon dactylon)	
	tree tobacco (Nicotiana glauca)	
Meso/xero-riparian vegetation	wolfberry (Lycium spp.)	Mexican palo verde and Rhus lancia invading
	Arizona velvet mesquite (Prosopis juliflora)	important wildlife corridor (shade, cool temperature, water, forage)
	whitethorn acacia (Acacia constricta)	Native ephemeral and perennial grasses and forbs valuable for muledeer grazing
	catclaw acacia (Acacia greggii)	potential habitat for endangered cactus ferruginous pygmy owl ( <i>Glaucidium brasilianum cactorum</i> )
	sacred datura (Datura wrightii)	
	desert broom (Baccharis sarothroides)	
	bush muhly (Muhlenbergia porteri)	
Creosote/ bursage/ ratany complex	creosote bush ( <i>Larrea tridentata</i> )	predominant complex on the site
	triangle leaf bursage (Ambrosia deltoides)	majority of dumping on site is done in this complex
	range ratany ( <i>Krameria erecta</i> )	lowest diversity of native plant communities on site
	white ratany ( <i>Krameria grayî</i> )	several rare crucifixion thorns identified
	cholla, prickly pear ( <i>Opuntia</i> spp.)	least habitat value, but suitable for rodents and lizards
	crucifixion thorn ( <i>Castela emoryi</i> )	
	hedgehog cactus ( <i>Echinocereus nicholii</i> )	
	fishhook barrel cactus ( <i>Ferocactus wislizenii</i> )	
	IISTITOUK DATTET CACIUS (1 ETOCACIUS WISHZEIIII)	



#### Wildlife Habitat and Biodiversity

When planning any area of land, it is critical to grant ample recognition and sensitivity to the protection of the land itself. San Juan park embodies a wide variety of life within its ecosystem. Biodiversity - a contraction of biological diversity - is a more recent term used to describe the variety of life in a given area.

Biodiversity is the variety of all forms of living things in an area, from genes to species, and how its conservation may be integrated with other needs of society.

One exceptionally useful tool to understanding and accounting for biodiversity here in Tucson, is The Sonoran Desert Conservation Plan. The plan was initiated at a time when experts had limited resources and information on the relationship land development had on a region-wide declination of biodiversity, here in the Sonoran Desert.

Dedicated biologists, planners, and a slew of other experts developed and established a first-ever scientific basis in the Tucson region. This nationally awarded plan identifies, among other things, the unprotected ironwood tree as being the central core of life for the Sonoran Desert.

Understanding biodiversity is critical to the long term success of San Juan Park.

Tucson Region Riparian Resources Map (From The Sonoran Desert Conservation Plan)

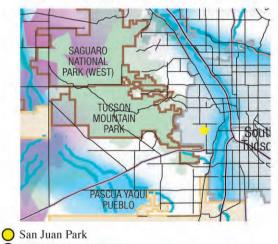


Effluent-Based Riparian Projects
Springs
Other Projects or Studies
Watershed Boundary

San Juan Park is both historically and culturally significant, rich, and sensitive. The Sonoran Desert Conservation Plan, as indicated by the maps to the left and below, identify San Juan Park and its surrounding area as having the following:

> Cultural Resource: \*Priority archaeological sites, \*Priority archaeological site complexes, \*Priority historic sites, \*Archaeologically sensitive zones, and \*National Register properties.

Riparian Resources: \*Riparian restoration/rehabilitation area Tucson Region Biological Corridors Map (From The Sonoran Desert Conservation Plan)



Wildlife Corridors
Important Riparian Areas
Multiple Area Use
Biological Core Areas

#### Priority Vulnerable Species in Pima County

Priority vulnerable species are species that are being considered and analyzed as potentially covered species under the multi-species habitat conservation plan. These species were chosen through a process of scientific review of over 100 species that are already listed as Threatened or Endangered or recognized by the federal government as imperiled, extirpated species, and a much larger number of species that are in decline, and potentially on the way toward Endanger Species Act (ESA) listing.

Invertebrates

Talus Snails - Sonorella species

Arkenstone Cave Psuedoscorpion - Albiorix anophrhalmus

#### Fish

Desert Sucker - Pantosteus clarki

Longfin Dace - Agosia chrysogaster

Sonora Sucker - Catostomus insignus

#### Reptiles

Desert Box Turtle - Terrapene ornata luteola

Ground Snake - Sonora semiannulata

Giant Spotted Whiptail Lizard - Cnemidophorus burti stictogrammus

Mexican Garter Snake - Thamnophis eques

Organ Pipe Shovel-nosed Snake - Chionactus palarostris

Red-backed Whiptail Lizard - Cnemidophorus burti xanthonotus

Tucson Shovel-nosed Snake - Chionactus occipitalis klauberi



Plants

Gentry indigo bush - Dalea tentaculoides

Needle-spined Pineapple Cactus - Echinomastus erectocentrus var. erectocentrus

Tumamoc Globeberry - Tumamoca macdougalii

Amphibians

Lowland Leopard Frog - Rana yavapaiensis

#### Mammals

Allen's big-eared bat - Idionycteris phyllotis

Arizona Shrew - Sorex arizonae

California leaf-nosed bat - Macrotus californicus

Mexican Long-tongued Bat - Choeronycteris mexicana

Merriam's Mesquite Mouse - Peromyscus merriami

Pale Townsend's big-eared bat - Plecotus townsendii pallescens

Southern Yellow Bat - Lasiurus ega

Western Red Bat - Lasiuris borealis

#### Birds

Abert's Towhee - Pipilo aberti

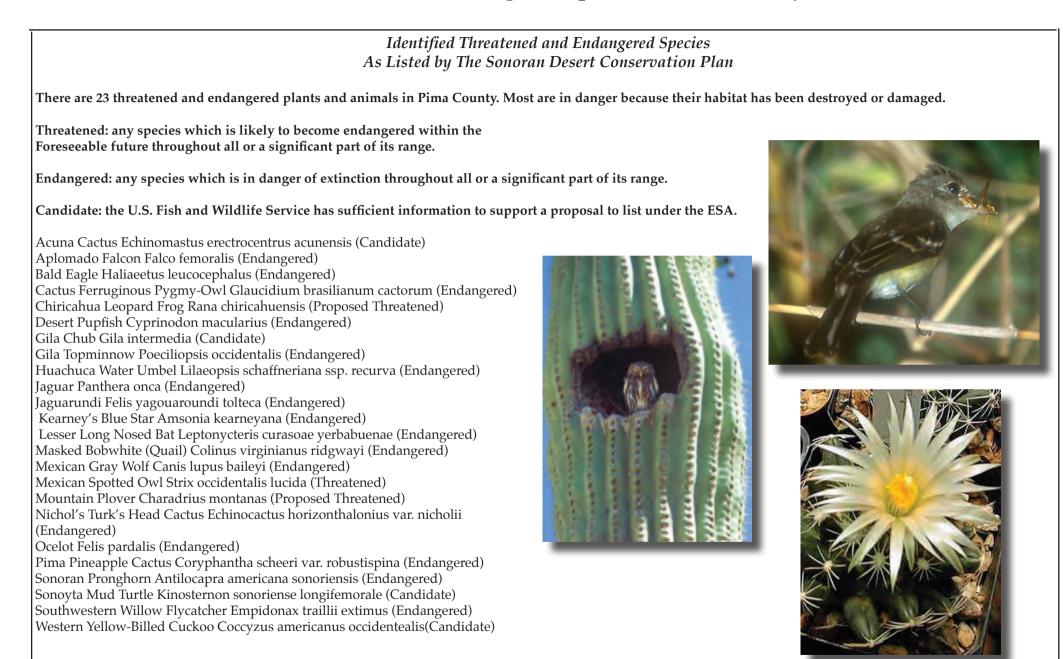
Bell's Vireo - Vireo bellii

Burrowing Owl - Athene cunicularia

Rufous-winged Sparrow - Aimophila carpalis

Swainson's Hawk - Buteo swainsoni

#### Threatened and Endangered Species in Pima County



# CHAPTER 4 ANALYSIS

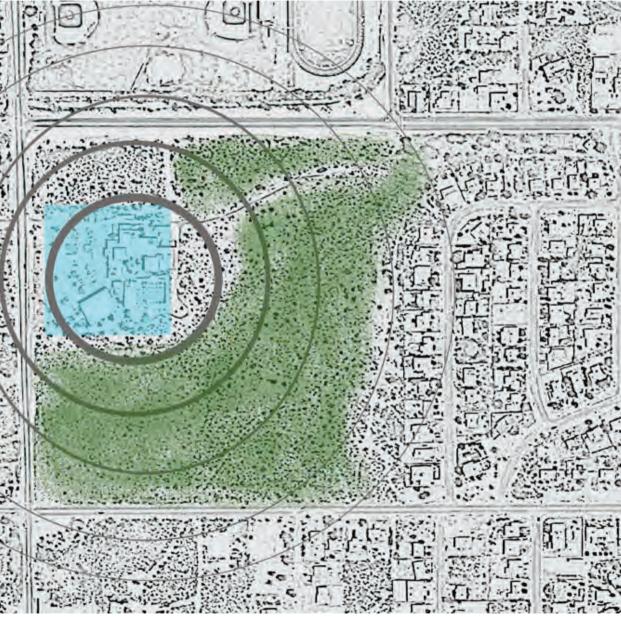


CONCEPTUAL
DIAGRAMS

· SYNTHESIS

A fter compiling the inventory data, we created analysis diagrams based on the information we found. An analysis diagram is a conceptual representation of data that is used to analyze specific existing features. These analysis diagrams were then overlaid with one another to gain insight into how the existing conditions are working with or against each other.

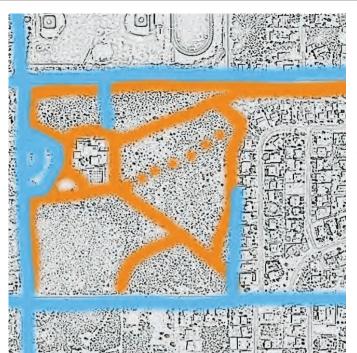
The analysis phase of design is important because it allows us to effectively enhance good conditions and create the opportunity to solve poor conditions.



This diagram was used by overlaying features on a base map of San Juan Park. The Archer Center is highlighted in blue, with north oriented towards the top of the page.

The green highlights the existing vegetation that we felt was important to preserve based on our inventory data. The concentric circles represent the proximity to the Archer Center. Based on this diagram, we felt it was important to preserve as much of the vegetation as possible by focusing any proposed development close to the Archer Center.

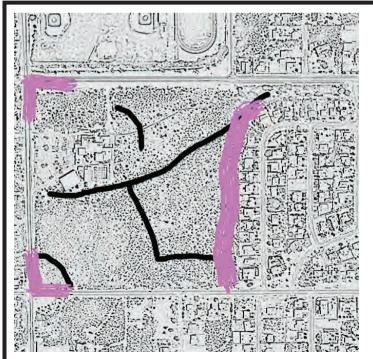
## ANALYSIS 33



#### Circulation

The diagram to the left displays existing pedestrian circulation routes in orange, and vehicular routes in blue. This diagram allowed us to analyze the existing trails to determine if they are currently meeting the needs of the park's users.

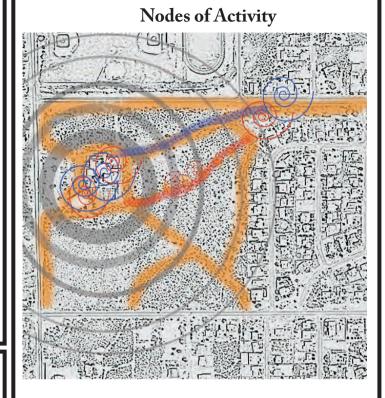
Based on this diagram, we decided to preserve the majority of the existing paths as to not frustrate users wishing to pass through the park.



#### **Views and Screening**

This diagram shows the existing view sheds along paths in black. We felt that maintaining the good views was an important factor to be taken into account when designing features. The areas that we felt needed to be screened due to privacy and noise are displayed in pink.

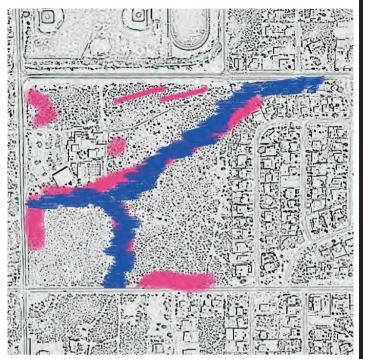
Based on this diagram, we decided to screen using additional vegetation and accentuate views by limiting development near the view shed areas.



The diagram above displays existing pedestrian circulation routes in orange, and proximity areas in grey. Areas where kids and teens currently utilize are in red. Areas where adults currently utilize are in blue. This diagram allowed us to explore where we wanted to place additional activity nodes.

ANALYSIS 34

#### **Unbuildable** Areas

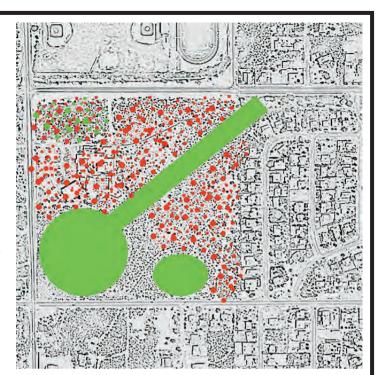


This diagram shows unbuildable slopes in pink and the wash in blue. This diagram allowed us to explore what areas would be best for preservation and which would be better for development.

#### **Preservation Areas**

The diagram to the right displays areas to preserve in green and possible developable areas in red. This diagram allowed us to analyze the vegetation areas in terms of preservation vs. rehabilitation.

Based on this diagram, we decided to preserve the majority of the wash area and focus development along the east side of the Archer Center.



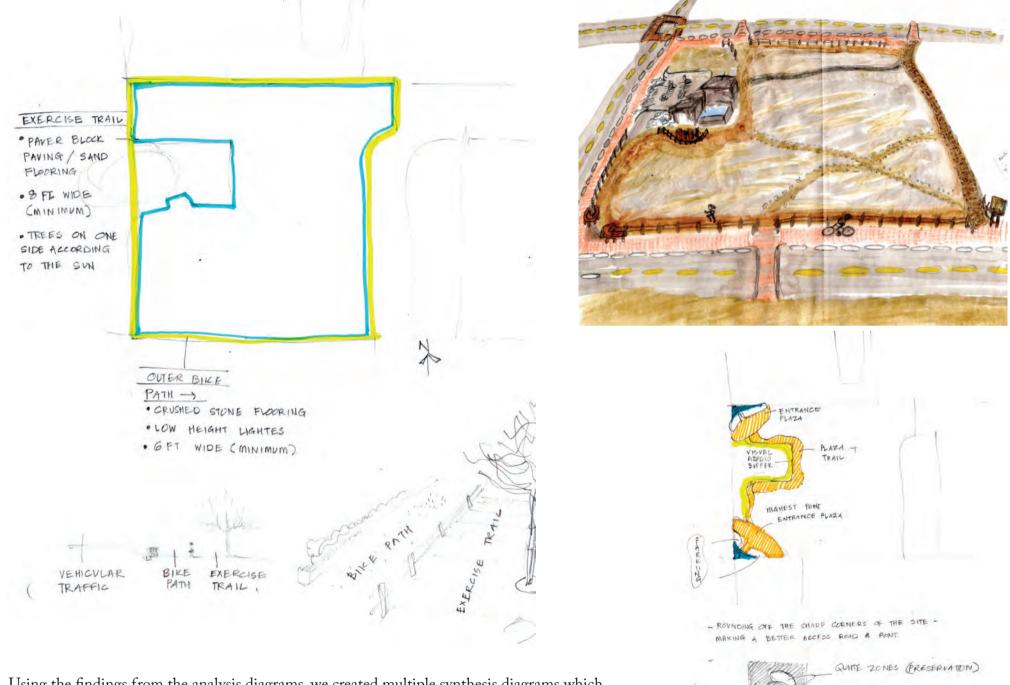
#### Access Points

This diagram shows the existing pedestrian circulation routes in orange and major access points in yellow and black.

Based on this diagram, we felt it was necessary to create a hierarchy of entrances in accordance with the circulation routes.



#### ANALYSIS 35

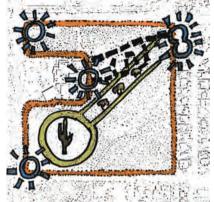


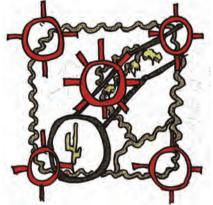
Using the findings from the analysis diagrams, we created multiple synthesis diagrams which explored our conceptual layout, settling upon the large image on the facing page.

## ANALYSIS 36

PLAZAS, TRAILS







# CHAPTER5 DESIGN CONCEPT



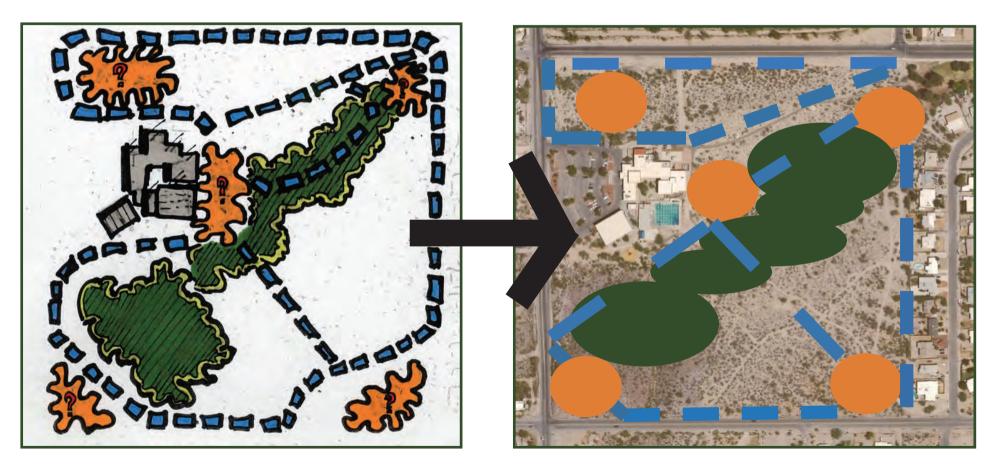
## · ELEMENTS

- · TRAILS
- · SCREENING
- · SEATING
- · CENTRAL PLAZA
- · PLAY AREA
- · REVEGETION
- · PROCESS SKETCHES

**B** ased on the analysis and synthesis discussed previously, we created a list of elements we felt were important to include when designing new park features. These elements include:

- Shade
- Seating
- Trails
- Safety and Screening
- Education/interpretation
- Sculpture

- Native habitat preservation/restoration
- Active gathering- adults
- Active gathering- children/teens
- Open gathering space
- Parking



A fter formulating the previous list of program elements and possible locations, we explored different aesthetic features and options for materials.

## TRAILS

Aspects taken into consideration -

1. Views and unbuildable slopes

2.Vegetation (develop/no develop)

3. Circulation and entrances (pedestrian and vehicular)

Design –

Multipurpose trail is a trail that is ADA-compliant, interpretive and useful for exercise. This trail will channel different types of activities along one path, minimizing disturbance to native habitat and security risk.

The trail is design according to contours/ slope of the site. It is placed so that no excessive cutting and filling of land would be needed.

Possible materials -

1.Asphalt, paving - for the main multipurpose trail

2.Mud road, existing road with proposed cleaning - for secondary/ existing trail



### SCREENING

Aspects taken into consideration – 1.Views and unbuildable slopes 2.Noise onto and from site 3.Privacy and safety 4.Circulation and entrances (pedestrian and vehicular) Design – Screening is done with plants, trees and architectural features like walls. These are cost-effective features that can be used to screen visibility, noise and access. Screening is kept to a level that will not hamper the issue of security. Possible Materials -1.Passion vines, cat claw – for green screens, 2.Stonewalls – architectural screens.

## SEATING

Aspects taken into consideration -

1. Circulation and entrances (pedestrian and vehicular)

2. Existing microclimate

- 3. Existing structures (parking, benches, pool, court, tot lot, water)
- 5.Views and unbuildable slopes
- 6.Vegetation (develop/no develop)

Design -

Seating is designed in such a way that it encourages people to enjoy nature while acting as a resting point. It will be in-built and arranged to encourage communication wherever needed, as in the central plaza.

Possible Materials -

- 1.Low height stonewalls
- 2.Boulders on the site
- 3.Stonecrete slabs









## **CENTRAL PLAZA**

Aspects taken into consideration:

- 1. Circulation and entrances (pedestrian and vehicular)
- 2.Privacy and safety
- 3. Existing structures (parking, benches, pool, court, tot lot, water)
- 4. Existing microclimate
- 5.Views and unbuildable slopes
- 6.Noise onto and from site
- 7.Vegetation (develop/no develop)
- 8. Popular sites for different age groups
- 9. Proximity to Archer Center
- Design –

Central plaza is a meeting place that is common to all age groups. It is a convertible space that can cater to many events such as community activities, students' activities, school activities, etc. It is covered by a tensile fabric structure that shades some part of the central plaza. It also has a public painting path to encourage public participation.

Possible Materials -

1.Stonecrete / Concrete / Stone

- 2. Tensile fabric structure with post and tension members
- 3. Stone furniture / Pre-cast concrete furniture











## PLAYAREA

Aspects taken into consideration -

1. Circulation and entrances (pedestrian and vehicular)

2.Privacy and safety

3. Existing structures (parking, benches, pool, court, tot lot, water)

- 4.Existing microclimate
- 5.Views and unbuildable slopes
- 6.Noise onto and from site
- 7.Vegetation (develop/no develop)
- 8. Popular sites for different age groups
- 9. Proximity to Archer Center

Design -

There are two types of play areas – one is a conventional play area. Here, existing play features can be relocated along with some new play features. Other two play areas will be unconventional, where instead of rigid play features, there will be mounds, mud, earth shelters, swings, ladders, tree house etc. Possible Materials –

Soil, Mud, Wood, Trees, Ropes, Soft sand etc

## REVEGETATION

Aspects taken into consideration -

- 1. Šoil type, permeability
- 2. Existing botanical survey, including location of invasive species
- 3. Water availability and possibility for irrigation
- 4. Privacy and safety
- 5. Shade

Design -

Leguminous trees and shrubs (mesquite, acacia, wolfberry, fairy duster, crucifixion thorn, creosote) planted in a dispersed manner and drip-irrigated until root establishment. Broadcast native seed mixture from plants collected on-site (including succulent clones) possibly undertaken by Archer Center volunteers. Possible Materials –

- 1. Native trees, shrubs, grasses, forbs, and succulents from local sources
- 2. Soil fences, geotextiles
- 3. Drip/bubbler irrigation

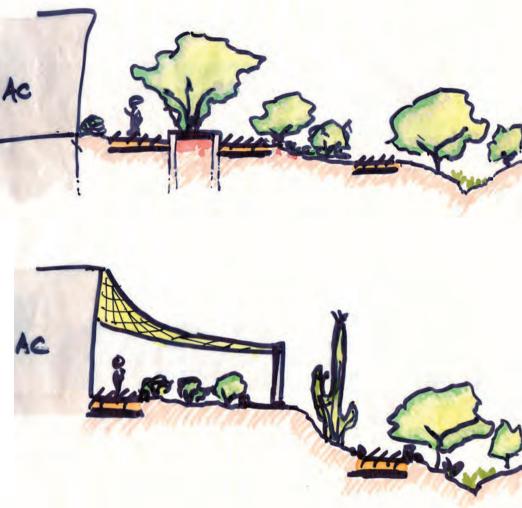


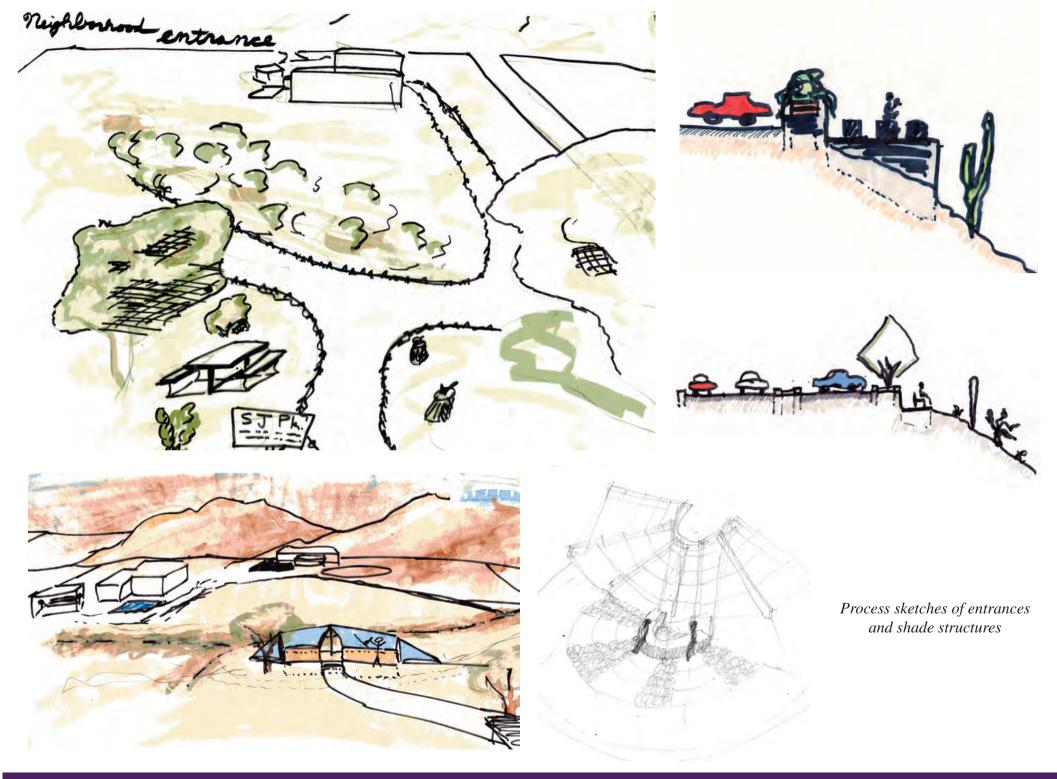


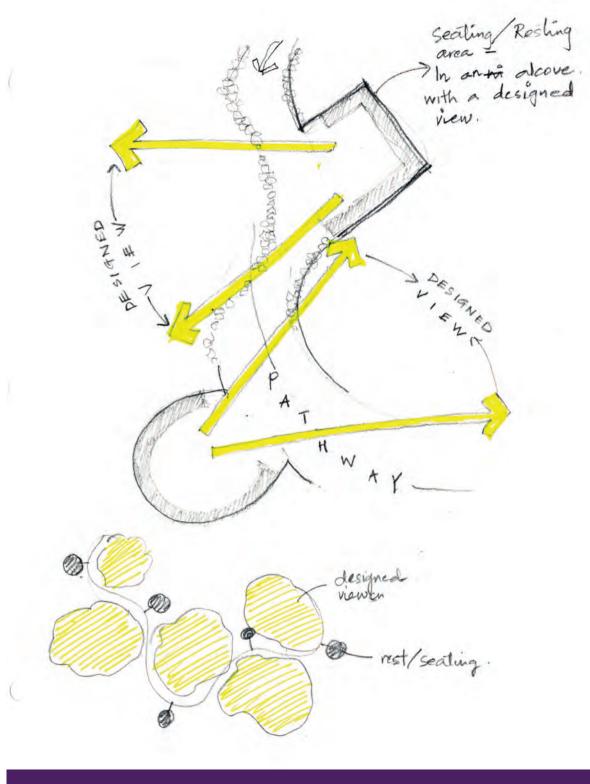
Sectional diagrams exploring alternative plaza/trail layout between the Archer center and the wash.

AC





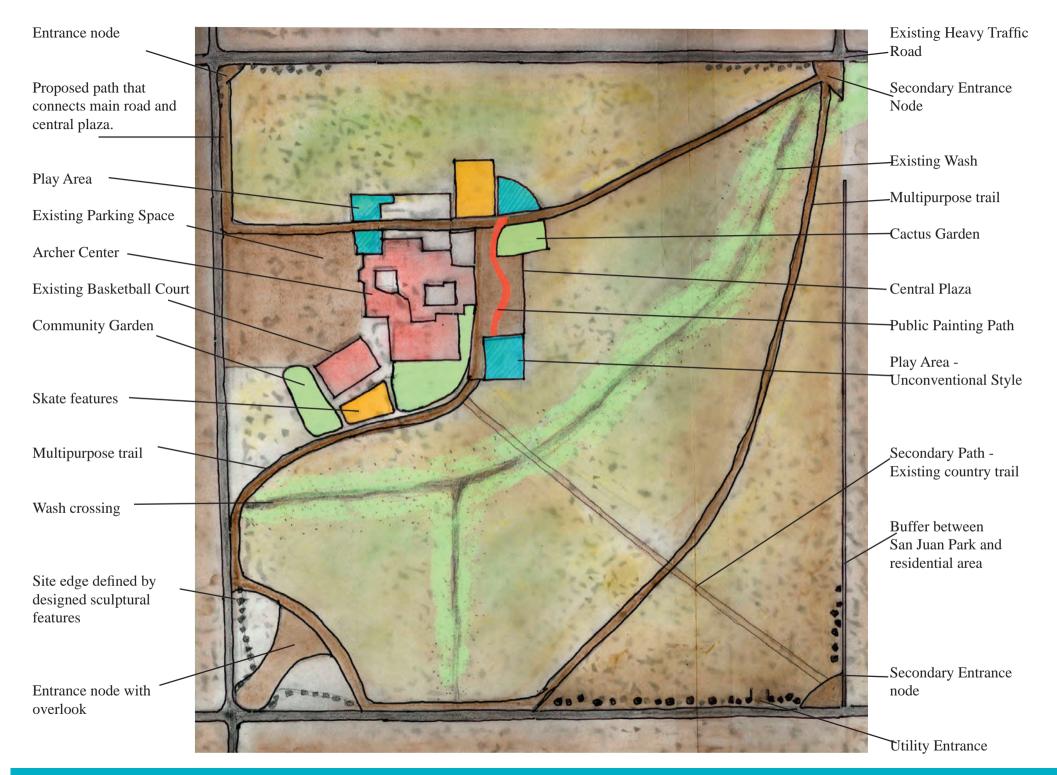




Process diagrams of seating alternatives and designed views

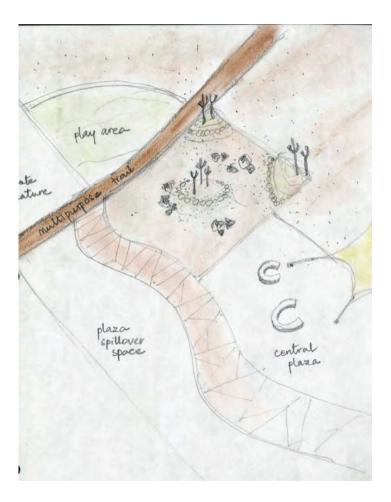
# CHAPTER6 MASTER PLAN

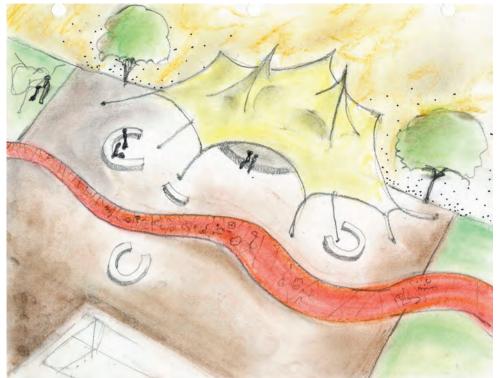


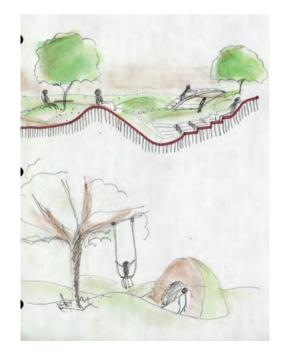


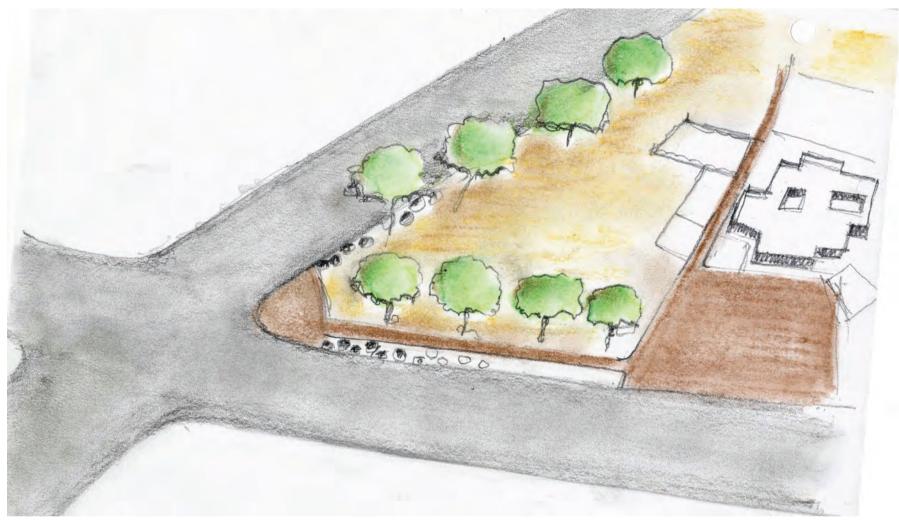
Central Plaza:

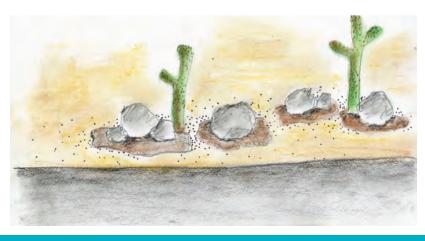
- Located centrally, near the Archer center; easily accessible from all entrance nodes
- Open to all age groups and group sizes
- Light weight fabric shading structure that covers a portion of the plaza
- Built-in circular seating walls to accommodate small groups
- Public painting path where children, artists, and interested community members can paint/ sculpt
- Trees to give shade
- Play areas and cactus garden located nearby









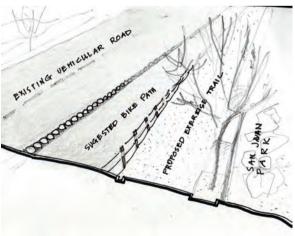


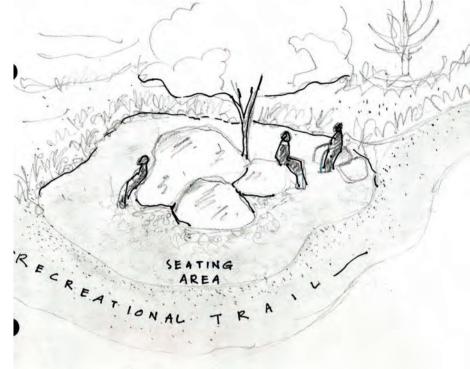
#### Entrances:

- paved plazas of varying size
- orientation signage
- connected to ADA accessible pathway

#### Site Border:

- Proposed bike path on edge of road
- low fence separating road from exercise trail
- boulders and native vegetation to prevent vehicular intrusion and provide visual boundary





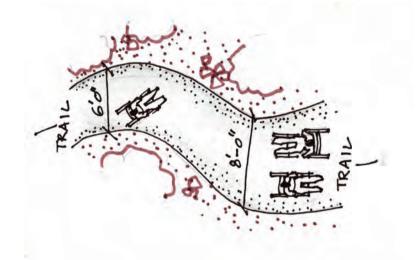
Trails:

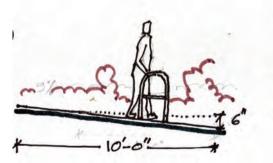
- ADA accessible in slope and material
- minimally-invasive stream crossings to maintain animal habitat and stream function

Seating areas along trails:

Placed at regular and convenient intervals along the trail to provide an opportunity to pause, rest, and enjoy designed views.

- Constructed of concrete/ steel/ or boulders available on-site
- Trees planted for shade
- Accented with water fountains, signage, information boards, park map



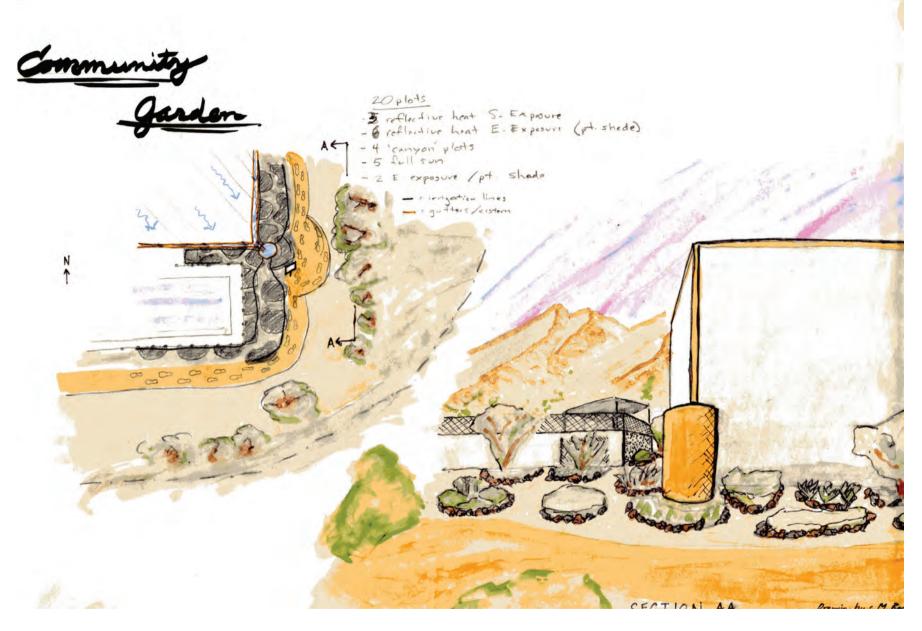


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MASTER PLAN 55

Community Garden:

- Possible sponsorship from local nursery
- water harvesting from roof of building
- cistern leading to drip irrigation lines
- ~30 individual plots available for community adoption

# CHAPTER 7 FURTHER RECOMMENDATIONS



Helpful Resources:

#### **Tucson Parks and Recreation Commission**

The City of Tucson Parks and Recreation Commission serves as a citizen advisory panel to the Mayor and Council, making recommendations regarding:

- 1. recreational activities and park facilities within the city
- 2. operations and maintenance policy and procedures
- 3. user fees
- 4. park development
- 5. park name changes.

They conduct one regular meeting per month, excluding the summer months of June, July and August. These meetings are open to the public. The public is encouraged to attend these meetings, as public input is necessary in shaping neighborhoods that reflect communities' needs.

#### **Tucson Parks Foundation**

The Tucson Parks Foundation (TPF) is a non-profit organization that supports the mission of the Parks and Recreation Department. They have donated more than \$2.8 million to support local projects.

For more information, or to direct comments or questions regarding San Juan Park, contact:

City of Tucson Parks & Recreation Department - Southwest District Office (520) 791-5909 www.tucsonaz.gov/parksandrec/

#### Adopt-a-Park and Public Area Program

Tucson Clean & Beautiful Adopt-a-Park Program includes parks in the City of Tucson and eastern Pima County.

Tucson Clean & Beautiful launched its community environmental projects in 1985, with the implementation of a model Adopt-a-Park program. The agency has worked closely in partnership with both the City and County to help maintain Tucson's beautiful environment. Community commitment, ownership and involvement by dedicated citizens have made the program successful.

For more information contact:

Tucson Clean and Beautiful (520) 791-3109 www.tucsonaz.gov/tcb/tcbaap.htm

## FURTHER RECOMMENDATIONS 60

#### Pima County Public Library Grants and Non Profits Info Center

Pima County's Public Libraries offer comprehensive information resources. The center is staffed with experts to help guide interested citizens in locating and applying for all types of grants.

For more information, visit your local Pima County Library, or contact: (520) 791-4010 (520) 791-4391 http://www.library.pima.gov/research/grants/guide.cfm

#### Office of Conservation and Sustainable Development

The Office of Conservation and Sustainable Development (OCSD) collaborates with City departments, community and interest groups, nonprofit organizations, and other partners to protect and enhance the integrity of the unique Sonoran Desert ecosystem of the Tucson basin, improve the environmental quality and livability of the urban environment, and support a vibrant local economy.

OCSD offers programs to integrate efforts related to energy efficiency, renewable resources, waste reduction and recycling, resource conservation, climate change, green building, and smart growth.

For more information, contact the OCSD office at: (520) 791-4675 http://www.tucsonaz.gov/ocsd/

#### **PRO** Neighborhoods

PRO Neighborhoods is a collaboration of four entities: City of Tucson, Pima County, Community Foundation for Southern Arizona, and United Way of Tucson and Southern Arizona. These groups joined together to encourage and assist grassroots groups. PRO is a strong advocate for community problem solving and revitalization, and offers small grants and technical assistance to help groups mobilize and build upon existing talents and resources within the community.

In addition to helping with the grant application process, PRO maintains a resource library, organizes workshops, and is available to assist groups with project development. For more information contact: PRO Neighborhoods (520) 882-5885 www.proneighborhoods.org/

# FURTHER RECOMMENDATIONS 61