WillowSprings — South Village
Planned Area Development

PZ-040-00/PZ-PD-040-00

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Willow Springs

Concept Statement

Willow Springs, an Anam, Inc. project, is envisioned as one of the most outstanding development projects of the twenty-first century in the United States. It has as its primary objective the creation of an enduring sustainable community. Willow Springs Ranch covers 21,000 acres of deeded lands and over 160,000 acres of state and federal grazing leased area.

The principals of Anam, Inc., a long time ranching family, desire to retain the quality of unique character of what comprises Willow Springs Ranch. To this end, they have directed the planning for the development to include the protection of its natural beauty thereby not allowing future use of the land in an unregulated manner.

Planning for this project will incorporate the latest scientific and technological advances in the area of environment and ecology. Any major constraints that can affect natural resources will be fully analyzed and addressed using the most competent services available.

Major elements of the development are:

- Recreational — As a destination for state, national and international travelers to a major resort area.

- Residential — Life cycle housing that meets each major stage of a person's life.

- Business — Efforts will be made to identify and create opportunities for clean, hi-tech business activities.

- Agricultural — A significant amount of the total acreage will be devoted to equestrian, ranching and special crop uses.

The project invites participation in the creation of a stunning new town as the new millennium begins and will provide a unique opportunity to include the best of the new ages for its citizens and the environment.

The initial development area is 4,600 acres within South Village P.A.D.

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1. Purpose of Request

Willow Springs - South Village is a request for Planned Area Development (PAD) overlay for approximately 4,600 acres located approximately 27 miles north of Tucson, Arizona shown in Figure 1. The site is located in a portion of the state that is primarily undeveloped. Views of adjacent mountains and valleys are spectacular from within the project limits. This unique site has slopes that range from 2,400 to over 5,200 feet. The property is currently zoned General Rural (GR). It is necessary to rezone the site to CR-3, Suburban Residential, CR-2 Rural Residential, CB-2 Town Center, CB-1 Village Center, TR Transitional, SR Open Space and PAD overlay to begin development of a sustainable community. The maximum number of units proposed for the South Village is 8,516, which is 1.8 dwelling units per gross acre (DU/ac).

The vision for the project is to create the first phase of a community that reflects new town concepts, and that provides an opportunity to live, work, shop and play within the limits of the project. New town concepts include neighborhoods that are built on a scale that encourages interaction between residents; encourages pedestrian, equestrian and other non-vehicular modes of transportation so a resident can walk from home to work or shopping, and includes mixed-use commercial areas. A civic core that provides a central place for public facilities and community gathering is a vision of many new towns. Preservation of the natural environment is a goal in the design of Willow Springs as well as integration of the natural and built environment.

2. Description of Proposal

Willow Springs consists of approximately 19,200 acres of deeded land amid approximately 160,000 of State and Federal land holdings that are collectively known as Willow Springs Ranch. Figure 2 illustrates the ownership boundaries. The PAD request represents 4,600 acres of deeded land designated as the South Village. These parcels are illustrated in Figure 2.

The vision for Willow Springs is of a sustainable community that has balanced land uses so that the residents of Willow Springs can live, work and play without having to drive to other communities. In addition to balancing land uses, impacts to the environment will be minimized through designating open space tracts for all contiguous slopes greater than 10% and all major wash corridors. These natural areas will be woven into the developed areas to maximize wildlife corridors and water runoff opportunities as well as provide natural viewsheds for the future residents. Parks, retention and other open space opportunities will be provided within the subdivision, with details to follow during subsequent planning stages.

The project has been designed with one Town Center that will serve a regional market as well as the residents of Willow Springs. It will also serve as focal points for the community by being located at a key intersection of major roadways. The Town Center is envisioned to be an all-purpose activity center where shopping, cultural facilities, education facilities, business parks and high density residential may occur. On a neighborhood scale, Village Centers are proposed that will consist of services to meet the everyday needs of the residents as well as employment opportunities and high density residential.

Another goal of the project is to offer "life cycle" housing, or housing that meets each major life stage of a person's life. A full range of houses from entry-level homes to retirement homes will be provided that will be located on lots that are very low density to high density.

The project goal is to create a sustainable community. Key sustainability concepts that will be used throughout the development of this project focus on economics, housing, environment, transportation and design. Goals for each of the focus areas were developed to guide the project.

Economics:

- Provide for permanent employment opportunities such as local hi-tech business/industry, tourist industry, agriculture (i.e., vineyards/gentlemen farming) and local services. This will help to ensure that residents can work within Willow Springs.

The overall goal is economic sustainability, in which employment opportunities are available to residents of Willow Springs. In fact, it is believed that business development could be a driver for residential development. The following economic activities are anticipated:

- Agriculture: Interest and research is occurring regarding the creation of vineyards. This would allow the development of commercial vineyards, as well as "gentleman" farms. The higher elevations in the northern portion of the site are best suited for this kind of use.
- Hi-tech: Efforts are being made to identify and create opportunities for clean, hi-tech business activities. Special attention is oriented to business' that have a relationship to the environmental research activities now undergoing by Columbia University at Biosphere 2.
- Local services, in the form of retail, professional and other service industries will create employment options. ç

Housing:

- Provide a variety of housing types and prices for all economic segments.

Environmental:

- Create permanent, natural open space that includes slopes (continuous areas over 10%) and major drainage corridors.
- Encourage responsible energy conservation that includes “green” building design and the use of solar energy where feasible.
- Encourage recycling of waste materials.
- Promote water conservation by using native drought tolerant plant materials for landscaping, reuse of existing plant materials, groundwater recharge, use of treated effluent for major irrigation and using rainwater harvesting when feasible.
- Establish a “carrying capacity” for the area, based on water availability.

Transportation:

- Create nodes and intense use areas and corridors to promote future transportation opportunities.

- Provide a continuous pedestrian/bicycle system throughout the project, including paths along drainageways.

Design:

- Create edges, where development stops and the natural environment begins.
- Utilize rural landscape planning concepts in appropriate equestrian/agrarian areas by using building enve lope planning, clustering lots to minimize impacts and using natural terrain features to mitigate visual im pacts of structures.
- Designate continuous areas for agricultural uses.
- Use landform grading where necessary, but minimize grading and conform buildings to the terrain.
- Use innovative planning techniques to minimize street lengths and, where possible, reduce street widths.
- Create town and village centers with civic and community uses to provide local identity, shopping, services and a sense of place.
- Create a distinctive and individual character for each Village.

NATURE OF THE PROPERTY

Willow Springs Ranch provides a unique opportunity to plan a large land holding in a comprehensive manner. The site is positioned equi-distant from the population hubs of Phoenix and Tucson. Elevations found within the site range from approximately 2,400 feet to over 5,200 feet as shown in Figure 3. Within the nearly 19,200 acres, the land varies from low plains to hills and mountains. The primary vegetation associations include the Upland Sonoran Scrub Mixed Palo Verde and Cacti Community and the Upland Desert Scrub Grassland Community shown in Figure 4. Currently, an active cattle ranch, the site is well suited for a mixture of land uses, including large lot gentleman ranches to higher density residential and village centers. Figures 5 and 6 show geology and soils for the entire ranch.

There are a number of mountains adjacent to and within the project area. Cottonwood Hill is in the northern portion of the site, Black Mountain is more centrally located, and Fortified Peak is in the southern portion of the site. The Black Hills are a mountain range located to the east.

SOUTH VILLAGE DESCRIPTION

The character of the South Village is planned to be more suburban, which includes higher density residential, along with golf courses, planned communities, possibly some age-restricted developments, and four Village Centers. Slopes over 10% are preserved, as are the washes that are located within the village. The South Village Plan is shown in Figure 9.

PROPOSED LAND USES

Five zoning districts are proposed in conjunction with a PAD overlay for rezoning purposes. The Land Use Plan for Willow Springs is shown in Figure 7. Within each district, a combination of land use categories are proposed along with permitted land uses and development standards. These land use categories are intended to direct the nature and intensity of residential and non-residential uses within Willow Springs. If conflicts arise in the interpretation of this Development Plan or if minor modifications are desired, the Planning Director shall provide approval that is appealable to the Board of Supervisors. Table 1 provides a summary of the zoning districts and the land uses proposed.

One important component of the plan is the commitment to preserving open space and providing a comprehensive recreation network. The slopes greater than 10% have been identified for preservation, as have the major wash corridors. The open space in these two categories total approximately 786 acres or 17% of the total site area. Additional open space opportunities will be provided within the individual subdivisions in neighborhood parks and pocket parks.

Table 1
Proposed Zoning Districts

Zoning Districts	Land Use Categories	Acreage	Uses & Dev. Standards
CB-2 Town Center	Commercial Office Light Industrial Multi-family	133.7	See Page 13
CB-1 Village Center	Commercial Office Multi-family	139.6	See Page 16
CR-3 Suburban Residential	Low Density Medium Density Medium High High Density	3434.9	See Page 17
CR-2 Rural Residential	Agrarian Equestrian Ranchettes Cluster	106.0	See Page 19
SR Open Space	Open Space	785.9	See Page 21

The South Village is a combination of three parcels as shown in Figure 7. Within each parcel planning areas have been identified. The likelihood that the planning areas will develop at different times and by different developers provides the basis for identifying planning areas. This PAD defines zoning districts and a maximum gross project density of 1.8 dwelling units per acre (DU/ac). Within each of the planning areas, zoning districts and maximum residential densities have been defined that cannot be exceeded. Table 2 provides a summary of the land use data.

Table 2
South Village Land Use Summary

Planning Area	Area, ac	SR***	CR-2	CR-3	CB-2	CB-1	(MF)*	maximum DU/Area
Area 1	680.0	214.5	106.0	337.0	0	22.5	0	831
Area 2	3280.0	505.3	0	2,561.6	133.7	79.4	54.0	6,380
Area 3	6401 -	66.1	0	536.3	0	37.7	9.4	19305
Total	4,600.1 AC	785.9 AC	106.0 AC	3,434.9 AC	133.7 AC	139.6 AC	(63.4) AC	8,516 DU
Du/ac (max)			1.0	2.2			16.0	
Residential DU			106	7,396			1,014	

Max DU: 8,516
**Total Net Area: 4,390.2 acres
Project Net Density: 1.9 DU/ac
Project Gross Density: 1.8 DU/ac

* Note: Assumed acres of Multi-Family within CB-1 and CB-2.
** Note: Net area (Total area — commercial area).
*** Note: Open Space

COMMERCIAL LAND USE DESCRIPTIONS

Town Center Commercial Zone Requested - CB-2 133.7 Acres

The intent of the commercial districts (Town Center, CB-2; and Village Center, CB-1) is to respond to future market conditions with a variety of land uses. The Town Center is proposed in the southern portion of the planning area in the South Village. These locations will provide for a range of land uses that will serve a regional market for retail, commercial uses, office, light industrial and high density residential. The land use categories, permitted uses and development standards for the CB-2 district follow.

- Town Center

  Land use categories within the Town Center include:

  Commercial
  Office
  Light industrial
  Hotel/Motel
  Civic and quasi public uses
  High density residential (Multi-family, cluster homes, senior housing, etc.)

Permitted Uses

The permitted uses for the Town Center CB-2 Zone shall be in conformance with the CB-2 General Business Zone, Section 1601; CR-5 Multiple Residence Zone, Section 1301; and Section 801.c of Pinal County's Zoning Ordinance.

Development Standards

The following development standards shall apply to the Town Center CB-2 Zone.

Table 3
Town Center CB-2
Commercial Zoning Requirements Comparisons

Land Use Category	Zoning Element	Required Existing Zoning	Requested Base Zoning	Proposed Zoning Variation
Town Center	Lot Area	None	Same	None
Commercial/	Front Yard	15'	Same	None
Off ice	Side Yard	None*	Same	None
CB -2	-Rear Yard	101**	Same	None
	Lot Width	None	Same	None
	Bldg Ht.	35'	Same	None
	Parkin	Varies per use	Same	None
Town Center	Lot Area	7,000	Same	None
Residential	Front Yard	25'	1 Same	None
	-Side Yard	7' each side	Same	None
	-Rear Yard	25'	Same	None
	-Lot Width	60'	Same	None
	Bldg Ht.	30'	Same	None
	Parking	One per dwelling unit	Same	None

*7 feet each for residential uses
** 25'for residential use

Village Center Commercial Zone Requested - CB-1 139.6 Acres

Similar to the Town Center, Village Centers are intended to respond to future market conditions by providing for a number of land uses, but not in an exact configuration. Village Centers are proposed that will have a combination of the uses. There are four Village Centers proposed. They are located at the intersections of the major roadways throughout the planning area. An approximate land area and uses are proposed that should accommodate the potential population and services for these residents. The land uses proposed within the Village Centers include retail/commercial, office and high density residential. The land use categories, permitted uses and development standards for the CB-1 district follow.

- Village Center
  - Commercial (CB-1)
  - Office
  - Civic and quasi public uses
  - High density residential (Multi-family)

Table 4 provides the proposed zoning standards for the Village Center CB-1 category.

Permitted Uses

The permitted uses for the Village Center CB-1 Zone shall be in conformance with the CB-1 Local Business Zone, Section 1501; CR-5 Multiple Residence Zone, Section 1301 of Pinal County's Zoning Ordinance; and GR General Rural Zone, Section 801.c (for public and quasi public land uses).

Development Standards

The following development standards shall apply to the Village Center CB-1 Zone.

Table 4
Village Center CB-1
Commercial Zoning Requirements Comparisons

Land use Category		Base Zoning	Requested Development Standards	Proposed Variation
Village Center Commercial/ Office CB -1	Lot Area	None	Same	None
	Front Yard	20'	Same	None
	Side Yard	None*	Same	None
	Rear Yard	25'	Same	None
	Lot Width	None	Same	None
	Bldg Ht.	30'	Same	None
	Parking	Varies per use	Same	None
Village Center Residential	Lot Area	7,000	Same	None
	Front Yard	25'	Same	None
	Side Yard	7′ each side	Same	None
	Rear Yard	25'	Same	None
	Lot Width	60'	Same	None
	Bldg Ht.	39′	Same	None
	Parking	One per dwelling	Same	None

*7 feet each for residential uses

RESIDENTIAL LAND USE DESCRIPTIONS

Suburban Residential Zone Requested - CR-3 **3434.9 Acres**

The CR-3 Residential District is intended to allow residential development with a range of lot sizes, depending on the topography and site constraints as well as market conditions. The CR-3 Residential District provides three residential development options with a range of residential lot sizes and establishes minimum property development standards. The maximum density that can occur within any of the parcels is 2.2 DU/ac.

The Land Use Categories that will implement this zoning district include:

- Low Density Single Family Residential (10,000 s.f. minimum lot size)
  This single family district will have the lowest density within the suburban residential zone. The minimum lot size is 10,000 square feet. Table 5 has a summary of the development standards associated with category and permitted uses are discussed below.

- Medium Density Single Family Residential (6,050 s.f. minimum lot size)
  The parcels planned for this use are located throughout the project and provide for lots at a minimum of 6,050 square feet. Table 5 has a summary of the development standards associated with this category and permitted uses are discussed below.

- Medium High Density Single Family Residential (4,950 s.f. minimum lot size) The minimum lot size for this category is 4,950 square feet. This category will serve as a transition between commercial and lower density residential. Table 5 has a summary of the development standards associated with this category and the permitted uses are discussed below.

- High Density Residential (6-16 DU/ac)
  Table 5 has a summary of the development standards associated with this category and the permitted uses are discussed below.

Permitted Uses

Single Family Categories (Low, Medium and Medium High Density)

The permitted uses within the low, medium and medium high density categories are:

a. one residential dwelling unit per lot;
b. publicly or privately owned and maintained parks, recreation areas, paths, trails, and recreation centers;
c. public and private schools;
d. elderly care facilities;
e. religious facilities;
f. detached guest houses;
g. temporary uses including sales/marketing facilities, model home complexes, sales offices, construction trailers and related accessory uses.

Multi-Family Categories (High Density)

The permitted uses within the multi-family Categories are:

a. any use permitted in the single family category;
b. duplex dwelling;
c. multiple dwelling for any number of families;
d. temporary uses including sales/marketing facilities, model home complexes, sales offices, construction trailers and related accessory uses.

Development Standards

The development standards for all of the Suburban land use categories are shown in Table 5.

Table 5
Suburban Residential CR-3
Residential Zoning Requirements Comparisons

Land Use Category		Base Zoning	**Requested Development** Standards	Proposed Variation
Large Lot	Lot Area	12,000 s.f.	10, 000 S.f.	2,000 s.f.
Single Family	Front Yard	25'	Same, with reduction to 15'for	15' to side entry garages
Detached			side entry arages	
(Low Density)	Side Yard	10'	5/10'	5' on one side
	Rear Yard	25'	Same	None
	Lot Width	60'	Same	None
	Bid-q. Ht.	30'	Same	None
Medium Lot	Lot Area	7,000 s.f.	6050 s.f.	950 S.f.
Single Family	Front Yard	20'	Same, with reduction to 10'for	10' to side entry garage
Detached			side entry garages	
(Medium	Side Yard	8'	5'min. total 15'	3'
Density)	Rear Yard	25'	20'	5'
	Lot Width	60'	55'	5'
	Bldq. Ht.	30'	Same	None
Small Lot	Lot Area	7,000 s.f.	4,950 s.f.	2,000 s.f.
Single Family	Front Yard	25'	20', with reduction to 10' for side	5', 15' to side entry
Detached			entry garages	garage
(Medium High	Side Yard	8'	5' min. total 15'	3'
Density)	Rear Yard	25'	15'	10'
	Lot Width	60'	50'	10'
	Bldq. Ht.	30'	Same	None
Townhouse	Lot Area	7,000 s.f. (4 DU/ac)	2,500 s.f. 750'	
Single Family	Front Yard	25'	20', with reduction to 10' for side	5', 15'to side entry
Attached			entry garages	garage
(High Density)	Side Yard	8'	0'	8'
	Rear Yard	25'	12'	13'
	Lot Width	60'	35'	25'
	Bldg. Ht.	30'	Same	None

*Minimum distance between main building is 14'

Rural Residential Zone Requested - CR-2 106.0 Acres

The CR-2 Rural Residential District is intended to allow low density residential development with a range of lot sizes, depending on the topography and site constraints as well as market conditions. The maximum density that can occur within any of the parcels is 1.0 DU/ac.

The Land Use Categories that will implement this zoning district include:

- Agrarian Single Family Residential (144,000 s.f. minimum lot size)
  The agrarian residential is the lowest density within the Rural Residential Zone. Within this land use, farming and equestrian uses are encouraged. Permitted uses are shown below and the development standards associated with this land use are listed in Table 6.

- Equestrian Single Family Residential (87,120 s.f. minimum lot size)
  Within the Rural Residential Zone, the equestrian residential will provide for medium density residential. While it is labeled equestrian, agrarian uses are also

encouraged. The permitted uses are shown below and the development standards associated with this land use are listed in Table 6.

- Ranchettes Single Family Residential (43,560 s.f. minimum lot size) The ranchettes are the highest density residential within the rural Residential Zone. The permitted uses are shown below and the develoment standards associated with this land use are listed in Table 6.

- Clustered Homesites Single Family Residential (12,000 s.f. minimum lot size The clustered homesites category provides the opportunity to preserve additional open space by clustering lots that have a smaller minimum lot size. The permitted land uses are shown below and development standards associated with this land use are shown in Table 6.

encouraged. The permitted uses are shown below and the development standards associated with this land use are listed in Table 6.

Permitted Uses

Rural Residential Zone Categories (Low, Medium and Medium High Density)

The permitted uses with the Agrarian, Equestrian and Ranchette categories include the permitted uses listed in the Suburban Ranch Zone, Section 601, Suburban Ranch zone, Section 625, and General Rural Zone, Section 801 of the Pinal County Zoning Ordinance. The permitted uses for the Clustered Homesites include the permitted uses listed in the CR-2 Single Residence Zone, Section 1001. Additionally, model homes, sales offices, construction trailers and parking for each are permitted for all categories.

Development Standards

The development standards shown in Table 6 below shall apply to the Rural Residential land use categories.

Table 6
Rural Residential CR-2
Residential Zoning Requirements Comparisons

Land Use Category		Base Zoning	Requested Development Standards	Proposed Variation
Agrarian	Lot Area	144,000 s.f.	Same	None
Single Family	Front Yard	50'	Same	None
Detached	Side Yard	10' each side	Same	None
	Rear Yard	50′	Same	None
	Lot Width	None	Same	None
	Bldq. Ht.	30'	Same	None
Equestrian	Lot Area	87,120 s.f.	Same	None
Single Family	Front Yard	30'	Same	None
Detached	Side Yard	10,	Same	None
	Rear Yard	40'	Same	None
	Lot Width	100′	Same	None
	Bldq. Ht.	30'	Same	None
Rlanchettes	Lot Area	43,560 s.f.	Same	None
Single Family	Front Yard	30'	Same	None
Detached	Side Yard	10′	Same	None
	Rear Yard	40'	Same	None
	Lot Width	100′	Same	None
	Bldq. Ht.	30'	Same	None
Clustered	Lot Areka	12,000	Same	None
Homesites	Front Yard	25'	Same	None
Single Family	Side Yard	10′	Same	None
Detached	Rear Yard	25'	Same	None
	Lot Width	60'	Same	None
I	Bldg. Ht.	30'	Same	None

OPEN SPACE - SR 785.9 Acres

The open space zone is the district that will be used for sensitive land preservation. The sloped areas and the wash corridors have been identified as Open Space (SR). Additionally, there may be open space preserved on large lots as open space easements, or areas shown as SR may be included within large residential lots, but will be preserved as open space.

Permitted Uses

The only use permitted in the open space zone is pedestrian/equestrian trails.

Development Standards

There are no development standards associated with this district.

SCHOOLS

The site is located within two school districts. Parcels 1 and 2 are within the Florence Unified School District and parcel 3 is within the Oracle Elementary District No. 2. Schools will be an important component of the community. It is the intent of the owners of Willow Springs to cooperate fully with the school districts to provide timely facilities. Opportunities for college facilities and alternative schools such as charter schools will also be encouraged. Nearby Columbia University has indicated that they are interested in establishing a charter school in the area, which would serve Willow Springs.

Student generation estimates were completed for Willow Springs. A student generation factor of .5 students per household was used. Based on this factor and using School Facilities Board criteria, it is estimated that six (6) K-8 schools and one (1) high school site may be needed in South Village. More studies will be completed during subsequent planning stages.

CONFORMANCE TO ADOPTED LAND USE PLANS

The site falls within the Pinal County Comprehensive Plan Area 4. To date, land use plans for the area have not been adopted.

CIRCULATION AND RECREATION SYSTEMS

The primary circulation system is shown in Figure 10. Access to the site will be provided by Park Link Road which connects with Interstate 10, Freeman Road which connects with SR 79, and Willow Springs Road which connects to SR 77. When crossing over the state land parcels, it will be necessary to obtain perpetual access easements or acquire the right-of-way from the Arizona State Land Department.

3. Relationship to Surrounding Properties

ADJACENT LAND USES

The site is surrounded by undeveloped property. There are some active ranches in the area. South of the site just north of Oracle Junction is a proposed age restricted master planned community.

4. Location and Accessibility

Willow Springs is located in central Pinal County as follows:

Oro Valley: approximately 21 miles
Tucson: approximately 27 miles
Florence: approximately 9 miles
Casa Grande: approximately 24 miles
Phoenix: approximately 85 miles
Apache Junction: approximately 41 miles

South of the Tom Mix Monument along SR 79, Freeman Road branches off providing access to Willow Springs. Freeman Road joins with Willow Springs Road, which runs south through the project boundary, connecting with SR 77 near Oracle Junction. Internally within the site, there are a number of small roads that fork off from Freeman Road and Willow Springs Road. All of the roads mentioned above currently provide access to, and within the site. Some of the roads mentioned may be dirt roads at this time, with improvements anticipated at a future time.

Park Link Road exits off 1-10 north of Red Rock. Park Link Road connects with SR 79 and it continues east to Willow Springs. This road provides an important link with 1-10, which is a major travel corridor between Phoenix and Tucson and will lessen potential impacts to SR 77.

5. Timing of Development

PHASING PLAN

It is anticipated that development of the property will begin within parcel 2. The first stages of development could begin as early as the middle of 2001. It is anticipated that Willow Springs will be a multi-year and multi-developer/builder project.

6. Public Utilities and Services

DOMESTIC WATER SUPPLY & DISTRIBUTION

Options are being studied for domestic water supply and distribution, including use of available ground-water. As the project moves forward, further negotiations will occur to finalize the water provisions. Cella Barr Associates conducted a Hydrogeologic Investigation for Willow Springs Ranch on February 10, 1988, and reviewed the findings again on March 29, 1999. This study projects the adequacy of water sources for development of Willow Springs. Water conservation and reuse has been studied and will be included in future development plans. A summary of water and environmental concepts are in the Appendix.

SANITARY SEWER AND SEWAGE TREATMENT

It is anticipated that sewer treatment will occur within the project limits with sewer treatment facilities.

ELECTRICAL SERVICE

Similar to the domestic water supply, discussions are underway with the San Carlos Indian Reservation for electrical service.

TELEPHONE

At this time, it is undetermined who will provide telephone service.

REFUSE OR SOLID WASTE CONDITIONS

Currently, there are no solid waste collection facilities in the vicinity of the site. As the project develops, appropriate facilities will be planned for either through a public entity such as Pinal County or future municipality, or through a private entity.

FIRE AND POLICE PROTECTION

Provisions for fire and police protection will initially be via contracted services. Districts will be formed at some time in the future to assume fire and police protection.

7. Maintenance of Streets and Common Area

Public roadways will be built to Pinal County standards and when accepted into Pinal County, will be maintained by Pinal County. Private roads may also be constructed in Willow Springs. Any private roads will be consistent with County Standards.

Covenants, Conditions and Restrictions (CC & R's) will provide for the formation of associations within Willow Springs. It is anticipated that there will be maintenance guidelines established for the overall project. Associations will be established for the commercial parcels and homeowner's associations will be established for the residential parcels. One of the responsibilities of the commercial associations and the homeowner's associations will be the maintenance of common open space and private roads (if any occur).

ERROL L. MONTGOMERY & ASSOCIATES, INC.

December 8, 2000

SUMMARY OF PROPOSED GROUNDWATER SUPPLY FOR WILLOW SPRINGS RANCH - SOUTH VILLAGE

The Willow Springs Ranch South Village project is located approximately 10 miles north of Oracle Junction and 12 miles northwest of the Town of Oracle. South Village encompasses approximately 7 square miles of deeded land. Approximately 13,000 units are proposed.

Water demand at full buildout has not yet been projected, but may be on the order of 5,000 acre-feet per year, which is equivalent to about 3,000 gallons per minute. Part of this demand will be met using reclaimed wastewater and surface runoff. The principal water supply for the project will be groundwater withdrawn from the regional aquifer system.

The regional aquifer system consists of a thick sequence of alluvial deposits of gravel, sand, silt, and clay, eroded from the surrounding mountain blocks and deposited in the basins to the west, south, and east from the Willow Springs Ranch area. The proposed South Village development occurs along the margin of the regional aquifer system. General direction of groundwater movement is south, from the project area toward Oracle Junction. Existing information suggests that saturated alluvial deposits may occur beneath the south part of the project area. Saturated thickness of the sequence of alluvial deposits increases toward the center of the valleys, and is estimated to be about 2,000 feet in Falcon Valley, about 6 miles south of the project.

A groundwater exploration drilling program would be required to determine occurrence and thickness of saturated alluvium in the South Village project area. Construction and testing of a pilot production well would be required to demonstrate feasibility of developing sufficient groundwater supplies for the project.

A certificate of assured water supply must be obtained from the Arizona Department of Water Resources before development could proceed. To obtain this certificate, the following must be demonstrated:

- Physical availability of water to meet demands of the proposed development for a period of 100 years after full buildout, considering existing and projected demands of othergroundwater users.

- Adequate chemical quality of water for intended uses.

- Consistency with the safe-yield goal of Tucson Active Management Area (AMA), which requires balancing groundwater withdrawals with artificial recharge of the aquifer in the Tucson AMA. This can be accomplished by becoming a member of the Central Arizona Groundwater Replenishment District.

Willow Springs Preliminary Assessment Draft
Transcript, 10/31/00, First Site Visit
Tim Murphy, Regenesis

The following draft transcript is provided to the Willow Springs Development team in preparation for the conceptual charrette on Monday, November 12, 2000. The understanding expressed here results from first-blush impressions that will be enhanced with futher study of the site.

The observations summarized in this draft were gained from a tour through the project beginning at the intersection of Freeman Road and Florence Highway, SR 79. The tour ran east along Freeman Road to the intersection with Willow Springs Road and then South around Black Mountain to the South Village. Included in the observations are indicators in each area that will serve as guides to future research and planning directions.

Because we are recommending the South Village as the most appropriate site for initial development, the first part of this paper focuses on observations of this area, along with initial conclusions based on the understanding of place gained from the visit. Part two includes the observations from the remaining areas.

Part 1

South Village

The vegetative community in this region is similar to that found closer to the 3C Ranch, however it is less brittle and has a higher capacity to support life. Indicators of this potential are found in microclimates and grazing exclusions there. This is most likely due to a higher rate of precipitation and a different soil type, but further study will help clarify this. The slope and lack of ground cover in this area is most likely account for the most severe erosion (in the form of broad spread downcutting) we encountered on the tour. The balance among turpentine bush, bursage and the grasses points to overgrazing there.

The issues of available water that challenge development here are compounded by the fact that the AMA divide slashes diagonally through the holdings, splitting the higher density South Village from the rest of the project. The geology of this landscape is primarily granite, though a number of rhyolite and quartz intrusions occur. Granite is relatively impervious to water and generally makes a poor aquifer until it is decomposed and in alluvium or colluvium. Faults in granite, however, fracture the blocks on either side, creating voids that can yield larger volumes of groundwater.

Down of the Southeast flank of the Black Mountain foothills is an area where volcanic formations overlie sedimentary and metamorphic formations. There are faults at the interface of these formations with the surrounding granite, and these faults form intersections in tat least two places described on the Black Mountain Geologic Quadrangle. Such locations are likely sites for higher yield water wells. The North-South fault on the map appears to curly as it leaves the map page and contours on in the direction of the South Village and the more highly regulated side of AMA Boundary.

Finding such a feature in close proximity to the South Village could make a significant difference in whether the proposed densities there are achievable or not.

Conclusions regarding selection of initial development site. Initial observations indicate that the potential for regenerative development is highest for the South Village. While all four areas contain indicators of pressure on natural systems resulting from human interventions, breakdown is not yet occurring in the 3C Ranch, and the North and Central Villages. This is not the case for the South Village where this area's need of restoration is demonstrated by such indicators as the severe erosion. This very need, however, is one of the reasons that make it a good candidate for regenerative development, along with its proximity to utility corridors, and its accessibility. These same factors also recommend this site as a good place to begin.

Conclusions regarding development potential and design considerations.

The Potential of Regenerative Development. Currently the expression of life at Willow Springs is significantly less than the optimum potential. Through regenerative development, this expression can be lifted up to its optimum potential. To realize this potential, the pattern of the development must enable life within the water budget of the place and provide wind and fire protection while holding resources like water, soil, and nutrients at their highest potential in any given place on the land. Such a pattern of development has the potential to exponentially increase the carrying capacity for both wildlife flora and people. It also mirrors the pattern of resource relationships that will best translate into sound economic sense and marketability. This is because it is the pattern that underlies and structures living systems, where every element performs several functions in support of the whole, every function is supported by several elements, and the interrelationship create economies and stability.

In addition to this potential, other resources like the Hohokam ruins and the land-use history are potential sources of community pride and understanding of a people's place in the landscape. They have the possibility of enhancing not only the relationship of the community with the place they inhabit but of increasing the desirability to live there.

Design Considerations Relevant to Realizing this Potential. There are several considerations that need to be reflected in every aspect of design for the successful regenerative development of Willow Springs:

- The first and most important is about water. Living well within the water budget of a place is the best insurance for an enduring community in the and southwest. In 50 years water will be as valuable as gold to a community. Water awareness needs to underlie or be embodied in every aspect of design and development. Honoring the immeasurable value of water in this landscape will need to be community ethic. Water will need to be used and reused repeatedly in a way that improves (if at all possible) the quality of that resource and the way that it is held in the system. Every effort will need to be made to avoid reducing the volume of this resource in that system. Wastewater is an oxymoron.

• Protection from the wind will help hold available water in this landscape and in this community and reduce energy costs for heating, cooling, and pumping. Wind protection will also improve the quality of life at Willow Springs by shifting the ion balance in the air, reducing particulates in the air, and lessening the dust in homes. Wind protection and shading also create more usable outdoor living space for a greater part of the year. Wind protection must also be in support of fire protection.

• Fire protection is another underlying facet to address through every aspect of design and development. In the four living systems that dominate the ranch, all are firedependant for renewal of health. The consequence of wildfire in this landscape will parallel the experiences of people that live in fire-prone parts of Southern California. Currently, the fire cycle is suppressed by grazing. This has allowed woody species to thrive in areas that would normally be grasslands that are maintained that way by periodic fires. A 3 to 5 year cycle is not unusual in undisturbed and healthy grassland or woodland here in the Southwest. When cattle are removed from this landscape another way of dealing with the fire liability will have to be designed, because tall grasses will once again cover the ground there. The more people in this lush landscape, the greater the risk of accidental or intentionally started fires. For it to be successful, this fire management system will need to be a productive, integral and reciprocal aspect of the land-community-economic relationship. It will need to embody protection, management, and business aspects that are a part of the fabric of life at Willow Springs.

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