Rio Verde Foothills Area Plan

Maricopa County
Department of Planning and Development
2005

ACKNOWLEDGMENTS

Preparation of the Rio Verde Foothills Area Plan was made possible through the cooperative efforts of many public and private stakeholders. Maricopa County extends its appreciation to all those that participated in this process, including the Maricopa County Board of Supervisors, Planning and Zoning Commission, citizens, property owners, cities, towns, state and federal agencies, and other stakeholders.

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EXECUTIVE SUMMARY

Plan Overview and Purpose

For many years, the Rio Verde Foothills region was a secluded valley far from the metropolitan Phoenix area, north of the McDowell Mountains. Many of the early Indian tribes who occupied the Verde Valley region left behind evidence and clues to their lifestyle. Later, the Yavapai and Apache Indians occupied the region until the late 1800s. Ranching operations used the area for cattle grazing beginning in the late 1800s. In 1960, land trades with the Tonto National Forest began opening up the area to private development, but it was not until the 1990s that significant residential uses began to appear. Today, people are attracted by the beauty of the area, the opportunity for rural and equestrian-related activities, and an alternative to city living. In 1990, there were only 33 people in the planning area; by 2000 the population had increased to 778.

The Desert Foothills Policy & Development Guide was adopted by Maricopa County in 1979 to act as a guide to growth and development of the area to the year 2000, and preserve and enhance the region's environment. The original planning area included 323 square miles and included several communities that were not yet incorporated such as Cave Creek, Carefree, and Fountain Hills. The area now known as Rio Verde Foothills was still primarily undisturbed Sonoran desert at that time and the Desert Foothills plan designated the future land use as Rural Density Residential (less than one dwelling unit per acre). In 1979, the area was zoned Rural-190 and Rural-70. Since then, the area has been rezoned to mostly Rural-43 with the exception of two sections of land that retain the Rural-190 zoning.

With the rapid rate of residential growth occurring in the planning area, it is vital to update the land use plan for the 20 square mile unincorporated Rio Verde Foothills area to help accommodate anticipated growth while preserving this area's quality of life and natural resources. Based on comments received during the public participation process, particular consideration is given to the continuance of the rural and equestrian lifestyle and compatibility of development with the natural environment. Residential development at very low densities (1 dwelling unit/acre or less) is intended for the entire planning area. Because total population is still relatively low and most residents currently prefer commuting to jobs and services out of the area, there is not an emphasis at this time on providing employment or services in the planning area. In addition, some residents are self-employed within the area. As population increases, plan updates will re-evaluate the need for employment opportunities, neighborhood commercial services, and public facilities.

Very low densities indicated in the future land use plan will help preserve the rural lifestyle, minimize impacts to the natural environment, provide compatible land

use to adjacent public open space, and reduce the demand on groundwater resources. The Agenda for Action includes action items for scenic corridor implementation, a trails plan, rural development guidelines, and a fire protection plan.

Public Participation

Throughout the planning process, community participation was emphasized through several techniques. This participation allowed stakeholders to identify planning issues and concerns, as well as provide recommendations, comments, updates, and suggestions. Rio Verde Foothills residents, landowners, workshop participants, government entities, and other stakeholders were very helpful in identifying current issues and concerns. Some frequently identified local concerns include:

- The strong desire to maintain the low-density, rural residential and equestrian character in the planning area
- The need to limit subdivision development and discourage any commercial, retail, or industrial business
- The need for a community trail system to link open space areas including the Tonto National Forest, McDowell Mountain Regional Park, and McDowell SonoranPreserve
- The significant hazard that the present open-range situation poses on Rio Verde Drive
- The need to protect native plants, wildlife, and wildlife habitats and corridors in the planning area
- Air quality is threatened by increasing amounts of dust and unpaved roads; however, most residents favor minimizing paving in the planning area
- Groundwater resources are limited in some areas and the long-term availability is unknown

What's New in the Plan?

- Updated information and citizen issues
- Geographic Information System (GIS) maps
- Five new planning elements required by Growing Smarter and Growing Smarter Plus legislation
- Planning area is now reduced in size, eliminating vast areas that have been incorporated by cities and towns since the 1979 Desert Foothills Policy & Development Guide
- Agenda for Action identifies measures that can help implement objectives and policies in the area plan

- Recommendation of community-crafted rural development guidelines to maintain and enhance the rural character of the community
- Recommendation to develop scenic corridor guidelines for Rio Verde Drive
- Recommendation of fire protection plan prepared by citizens and regional workgroup
- Recommendation of open space trails system that is coordinated with the Maricopa County Regional Trail System and the McDowell Sonoran Preserve

Conclusion

It is important to note that the Rio Verde Foothills Area Plan is not a document that represents ultimate buildout as many municipal general plans typically do. Rather, it prepares for and accommodates growth over the next ten to fifteen years, but will be reexamined and updated periodically to reflect current conditions and changes. While not a complete solution, the Rio Verde Foothills Area Plan helps address the effects of growth and development by enhancing cooperation between government agencies, citizens, and other affected interests, and by considering regional implications.

Area Plan Elements

This Area Plan contains a series of goals, objectives, and policies used to define development standards, guide public investment, and guide public and private decision making. A complete list of policies is included within the plan.

Land Use

The land use element discusses general land use, development, and preservation concepts. Efforts are directed at encouraging efficient and timely growth patterns.

Goal L1:

Promote efficient land development that is compatible with adjacent land uses, is well integrated with the transportation system, and is sensitive to the natural environment.

Objective L1.1: Encourage orderly, efficient, and functional development patterns.

***Objective L1.2*:** Promote high quality residential development that is sensitive to the natural environment and compatible with adjacent land uses.

Objective L1.3: Allow high quality special use permits that are consistent with adjacent land uses.

Objective L1.4: Preserve the scenic, rural, and residential equestrian character of the Rio Verde Foothills planning area.

Transportation

The transportation element defines a system of transportation facilities and services, including existing and future roads classification, transit and bikeway possibilities, road network connections, and system limitations. Efforts are directed at maximizing transportation system efficiency by coordinating land use and transportation planning.

Goal T1:

Provide an efficient, cost-effective, integrated, accessible, environmentally sensitive, and safe countywide multi-modal system that addresses existing and future roadway networks, as well as promotes transit, bikeways, equestrian and pedestrian travel.

Objective T1.1: Establish a safe, convenient, and efficient system for existing and future roadways while considering the need for equestrian and multi-use trails in the Rio Verde Foothills planning area.

Environment/Environmental Effects

The environmental effects element combines a survey of the physical and natural environment with an overview of anticipated effects that development may have on air quality, water quality, noise, visual quality, and sensitive plant and wildlife species.

Goal E1:

Promote development that considers adverse environmental impacts on the natural and cultural environment, preserves highly valued wildlife habitat, minimizes flooding and drainage problems, and protects historical and archaeological resources.

Objective E1.1: Encourage development that is compatible with significant natural environmental features and which does not lead to their destruction.

Objective E1.2: Improve air quality, water quality, and reduce noise impacts.

Objective E1.3: Preserve significant habitat areas for wildlife and desert plant species.

Economic Development

The economic development element focuses on creating a healthy economy in the planning area that increases living standards and quality of life.

Goal ED1:

Promote a growing, balanced, efficient, and diversified economy, consistent with available resources, that enhances quality employment opportunities, improves quality of life, and is sensitive to the natural and cultural environment.

Objective ED1.1: Encourage rural, low-density residential, and equestrian oriented development during the 10 to 15 year horizon of the Rio Verde Foothills Area Plan update, to retain the quality of life and land values enjoyed by this community.

Growth Areas

The growth areas element identifies future population projections and land use needs to accommodate growth in unincorporated Maricopa County and encourages efficient and functional growth patterns.

Goal G.1:

Promote orderly, timely, and fiscally responsible growth in Maricopa County.

Objective G.1.1: Encourage timely, orderly, and fiscally responsible growth within any approved mixed use Development Master Plan.

Objective G.1.2: Ensure that future growth is coordinated in an efficient manner with stakeholder input.

Open Space

The open space element provides an inventory of open space areas; analyzes future needs; and identifies policies and strategies for managing, protecting and acquiring additional open space areas.

Goal O1:

Maintain and, where necessary, encourage expanding the open space system for Maricopa County to address public access, connectivity, education, preservation, buffering, quantity, quality, and diversity for regionally significant open spaces.

Objective O1.1: Promote physical and visual public access to natural open space resources.

Objective O1.2: Establish regional natural open space connectivity and linkages for both recreation and wildlife purposes.

Objective O1.3: Protect and enhance environmentally sensitive areas, including existing natural washes, steep slopes, historic, cultural, and archaeological resources; view corridors; sensitive desert; and significant wildlife habitat and ecosystems.

Objective O1.4: Encourage appropriate natural open space between communities and other land uses.

Objective O1.5: Improve quantity, quality, and diversity of open space and recreational opportunities where public access is protected and preservation is encouraged.

Objective O1.6: Promote the economic, environmental, and quality of life benefits of natural open space.

Water Resources

The water resources element describes the physical aspects of surface and groundwater features in the planning area, and addresses historic and projected water demand, future water supply and policy implications.

Goal W1:

Promote development that makes conservative use of renewable water supplies such as effluent, surface water, and Central Arizona Project water when feasible, and that uses groundwater as the primary water source only in the absence of renewable sources.

Objective W1.1: Encourage protection and enhancement of renewable water and groundwater supplies within the framework of state and federal laws, regulations, and guidelines for existing and future needs.

Goal W2:

Reduce the impacts of development on water quality, land subsidence, and riparian habitat.

Objective W2.1: Encourage voluntary actions and support federal, state, and local regulations and guidelines that protect and preserve the watershed, to safeguard current and future groundwater quality in the planning area.

Cost of Development

The cost of development element focuses on fiscal considerations relating to future growth in the planning area and Maricopa County in general.

Goal C1:

Ensure that new development pays its fair and proportional share of the cost of additional public facility and service needs generated by new development.

Objective C1.1: Develop a method to determine the need for, and assess costs of, new facilities and services required to serve new development in order to maintain service levels.

Objective C1.2: Adopt and implement level of service standards for new development to help promote consistency and certainty in the cost sharing process.

Agenda for Action

To help ensure effectiveness, stakeholders helped identify various long and short-term actions that will assist in plan implementation. Many of these actions require the continued participation of area residents, as well as public and private organizations. A complete list of actions is included within the plan.

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INTRODUCTION

Adopted in 1997, *Eye to the Future 2020*, the Maricopa County Comprehensive Plan, requires an update of all County area plans to help ensure consistency with the Comprehensive Plan. The *Rio Verde Foothills Area Plan* is an update of the 1979 *Desert Foothills Policy and Development Guide.* The *Rio Verde Foothills Area Plan* reflects updated information and citizen issues; new demographic information; Growing Smarter and Growing Smarter plus requirements; and land use, boundary, and annexation changes. While the 1979 plan encompassed 323 square miles in the northeast part of Maricopa County, the updated plan excludes communities that have incorporated since 1979, and focuses on 20 square miles of unincorporated Maricopa County lands remaining north of McDowell Mountain Park and east of the City of Scottsdale. The plan also includes an Issue Identification section, and an Agenda for Action that identifies specific measures to implement the plan.

Plan Organization

This document presents the results of the update process for the Rio Verde Foothills planning area. It is organized to follow the Maricopa County Comprehensive Plan guidelines, and includes the following seven sections:

Introduction: Describes how the plan is organized, how it should be used, a brief history of the planning area, and an overview of the area plan process in Maricopa County.

Inventory and Analysis: Analyzes existing conditions in the Rio Verde Foothills planning area. Plan elements are based in part on information contained in this section.

Issue Identification: Summarizes important land use and planning issues raised by planning area residents. Key issues were condensed from a survey that was distributed at a public workshop, through the Maricopa County website, and via community newsletters.

Plan Elements: Defines specific goals, objectives, and policies that guide growth and development in the Rio Verde Foothills planning area.

Action Plan: Outlines how the Rio Verde Foothills Area Plan will be implemented through specific strategies and programs.

Amending the Plan: Specifies the process for changing this Plan. By design, plans are flexible documents that can adapt to changing conditions. The amendment process highlights this and will facilitate the plan's evolution.

Appendix: Contains a glossary of terms, a list of acronyms, and other supporting documents.

This area plan identifies goals, objectives, and policies for land use, transportation, environment, and economic development. In addition, per the state-enacted Growing Smarter and Growing Smarter Plus laws, the plan includes elements for open space, water resources, environmental impacts, growth areas, and cost of development.

Update Process

The Rio Verde Foothills Area Plan reflects current citizen issues; population increases; Growing Smarter requirements; and land use, boundary, and annexation changes. Maricopa County updates this and other area plans using the most recent Maricopa Association of Governments (MAG) population projections, Arizona Department of Economic Security (DES) projections, and U.S. Census data. Moreover, the boundaries of each Area Plan are evaluated to determine if changes are necessary. As each plan is completed, it is considered at public hearings before the Planning and Zoning Commission and Board of Supervisors.

How to Use the Plan

Each plan element contains a series of goals, objectives, and policies that define development standards, help formulate public policy, and guide public investment. In this way, this plan serves as a decision making guide for the Planning and Zoning Commission and Board of Supervisors concerning growth and development. In addition to assisting public policy makers, it also helps private individuals and businesses make informed resource and investment decisions.

History of the Rio Verde Foothills Region

The following history of the region is drawn largely from local historian Robert Mason[1, 2], Frances Carlson[3], and several websites providing historical background on Indian tribes and the region.

[1] Mason, Robert, *Our Desert Oasis*, Schuster Co., Inc., Scottsdale, AZ, 1999 (4th ed.)
[2] Mason, Robert, *Verde Valley Lore*, published by author, Rio Verde, AZ, 1997
[3] Carlson, Francis, *Cave Creek and Carefree, Arizona – A History of the Desert Foothills*, Encanto Press, Scottsdale, AZ, 1988

From about 400 to 1450 AD, it is believed that many Indian tribes, now collectively referred to as the Hohokam, populated the lower Verde River valley. The river valley and surrounding land provided fertile alluvial soil, water, many species of wildlife, and mountains and plateaus that were suitable for summer living. For centuries, the lower Verde valley remained a major thoroughfare of the Southwest. Evidence has been uncovered that indicates a large variety of encampments existed in the region. Most were located one-quarter mile or more from the river and generally on the west side, in the Tonto Verde / Rio Verde area. Pottery sherds, manos (hand-held grinders), metates (grinding stones), and artifacts (arrowheads, shell ornaments, and stone tools) have been found in the area. Based on the widespread occurrence of trash mounds, fire pits, irrigation ditches, and five ball courts, archaeologists believe that a significant city existed during the middle part of this period.

Sometime after 1450, the Hohokam people left this area for undetermined reasons. Sometime later, Yavapai and Apache Indians, two distinct tribes, began moving into central and western Arizona. These native peoples hunted deer, mountain sheep, and pronghorn antelope. They gathered seasonal berries, seeds, and fruit; cultivated corn, squash, and beans; and harvested wild tobacco.[4] It wasn't until the end of the 1500s that they encountered the first Anglo Spanish explorers. In the 1820s, a few American mountain men, such as Kit Carson and Bill Williams, came to trap beaver on the Salt and Verde rivers. They did not stay long, because they were driven out by the hostile Apaches.

After the Civil War ended in 1865, the U.S. Army established Camp (later Fort) McDowell, the first Anglo settlement in the Salt River Valley. In 1872 and 1873, military campaigns vanquished the Apaches in central Arizona. In 1875, it was decided to move the Yavapai and Apache to the San Carlos Reservation, east of Globe. Ninety people died during this two-week trek. By 1900, the tribe that once numbered about 6,000 people, had diminished to about 1,000. In the early 1900s, they were moved to Fort McDowell, which was given the designation of an Indian reservation. This site is now known as the Fort McDowell Yavapai Nation and is governed by a Tribal Council that is elected by tribal members.

A military trail, often referred to as the "Stoneman Route" or "Whiskey Bottle Trail," connected Fort McDowell with Fort Whipple in Prescott. Still evident, this old trail crosses the southwest corner of the planning area.

In the early 1880s and again in the mid-1890s, a severe drought occurred in the region which was already being over-grazed. During this period, wells went dry, springs slowed to a trickle, creeks dried up, and cattle died. Cattle owners leased

[4] www.yavapai-apache-nation.com

thousands of acres from the government for grazing purposes, as there was no privately owned land in this area through the early 1900s. The Tonto National Forest was established in 1908, which established new government rules and changed the region's cattle business forever. Grazing allotments were issued by authorities, and for the first time cattlemen began to fence their ranges. Ranchers without well-watered ranges for their cattle began to leave in the early 1900s. When the rains finally came in torrents near the turn of the century, severe erosion resulted. In 1880, it took only five acres to sustain one brood cow.[5] By 1900, the rangeland could carry only one per 20 acres. Today, the required acreage per brood cow in rangeland is 64, and in certain areas grazing rights are limited to 120 acres per animal.

In 1903, E.O. Brown and his family began purchasing land at the base of the McDowell Mountains, and started shipping cattle to California in 1910.[6] The amount of land he and his son, E.E. "Brownie", owned or leased eventually grew to 43,000 acres. In 1916, he moved his cattle to a ranch in the McDowell Mountain area and continued to drive cattle through Scottsdale south and west to the railroad in Phoenix, where they were shipped to Midwest terminal markets. Brownie took over ranch operations after the death of his father in 1937. At that time, the ranch extended from Bell Road to north of Dynamite and from Pima Road east to the McDowells (at one point, to the Verde River). Brownie and Kemper Marley, a wealthy rancher and liquor distributor, became partners in the ranch operation. By piping water from the spring in the McDowells, they were able to run over 4,000 head of cattle. During this time, several wells were dug and windmills were built to pump the water, while pipes were installed to transport this water to holding tanks. With the advent of automobiles and trucks, most cattle drives ended. Land that Brownie owned was split up between his heirs and eventually purchased by Kemper Marley, and later sold to developers.

Pemberton Ranch (P-Bar ranch) was another sizable ranch in this area. The P-Bar had its early headquarters near the center of what is now McDowell Mountain Regional Park, approximately four miles south of the Jomax Road alignment. Geological survey maps dated as early as 1919 name the ranch site. A park trail passing near the site is designated as the Pemberton Trail. In 1985, a cowboy who began working on the Box Bar Ranch in 1917 told local historian Robert Mason that Box Bar had the nicest ranch house location but the Pemberton Ranch had the best water. He said the Pemberton Ranch well was artesian, with water forced nearly to the surface by underground pressure. In the 1930s a new owner acquired the P-Bar ranch. At this time the ranch included a three-room house, a 600-gallon water tank for domestic use, and a 24,000-gallon steel tank for livestock watering. The

[5] Brood cow is a female cow used for breeding and raising young.
[6] www.scenicdrive.org/dcranch.htm, *The Story of the Original DC Ranch* by Don Schoenau

early ranch utilized about 32,000 acres. In the 1940s a new well was drilled on the present Fountain Hills High School grounds and later became the P-Bar Ranch headquarters. In the late 1960s McCulloch Oil Corporation (MCO) bought the P-Bar Ranch to develop Fountain Hills.

Doc Cavalliere, owner of Reata Pass Steakhouse and Greasewood Flats, related some history of the area in the May 1998 issue of *A Peek at the Peak*, the newsletter of the Greater Pinnacle Peak Homeowners' Association:

> "In the early days the entire area was ranch land. The largest ranch was owned by Brownie and his sons. Their grandfather had homesteaded some 27 sections of land or over 17,000 acres. This was possible because Brownie ran a water line from a spring in the McDowells . . . After the Second World War, several families homesteaded along Pinnacle Peak Road, but eventually left because of lack of water. Nothing really developed in the North area, until Jerry Nelson hit water at his well on Pinnacle Peak [Road]…"[7]

Although much of the rangeland has been fenced since 1900, the "open range" practice still exists today. Residents and visitors in Rio Verde and the planning area must always be cautious when driving on Rio Verde Drive and McDowell Mountain Road, both for livestock and deer.

The construction of Bartlett Dam and Horseshoe Dam on the Verde River brought busy times to the region. In 1946, electricity and telephones were brought into the Cave Creek area. On May 11, 1965, the 1,000 acres constituting the original Rio Verde property officially passed from national forest land to private ownership. In return, the federal government obtained privately owned land deep within the Coconino and Sitgreaves National Forest. In 1971, the original land plan for Rio Verde was completed for 869 acres. In 1972, Rio Verde Development Inc. paid for a large part of grading and paving Rio Verde Drive and Forest Road.

All of the land within the study area was once part of the Tonto National Forest. Beginning in 1960 and continuing through 1971, land exchanges resulted in the planning area passing into private ownership. However, development in the area remained confined to the Rio Verde development master plan until the 1980s. In the planning area west of Rio Verde, an average of one home per year appeared from 1980 to 1989. Between 1990 and 1995, a total of 26 homes were built; and by the end of 2000, there were a total of 330 homes. While it took 20 years to reach 330 homes, the last three years (2001-2003) added approximately 400 additional homes to the growing unincorporated Rio Verde Foothills area.

[7] www.scenicdrive.org/docstory.htm

INTRODUCTION

Despite the rapid pace of growth, the Rio Verde Foothills planning area, illustrated in **Figure 1: Planning Area**, remains primarily a rural residential, equestrian, and ranching community. Since there is no farmland in this area, new homes are being built on undeveloped desert land. With rapid growth outside of the urban area comes certain benefits, such as an opportunity to buy large parcels of undeveloped land, and to build a home in a quiet, rural area. However, growth and development also create potential problems, including the urbanization of rural and Sonoran desert areas, increasing cost of servicing scattered development, and increasing air pollution. The Rio Verde Foothills Area Plan helps address these problems by enhancing cooperation between government agencies, citizens, and other affected interests, and by considering regional implications.

Planning History

Desert Foothills Policy and Development Guide (1979)

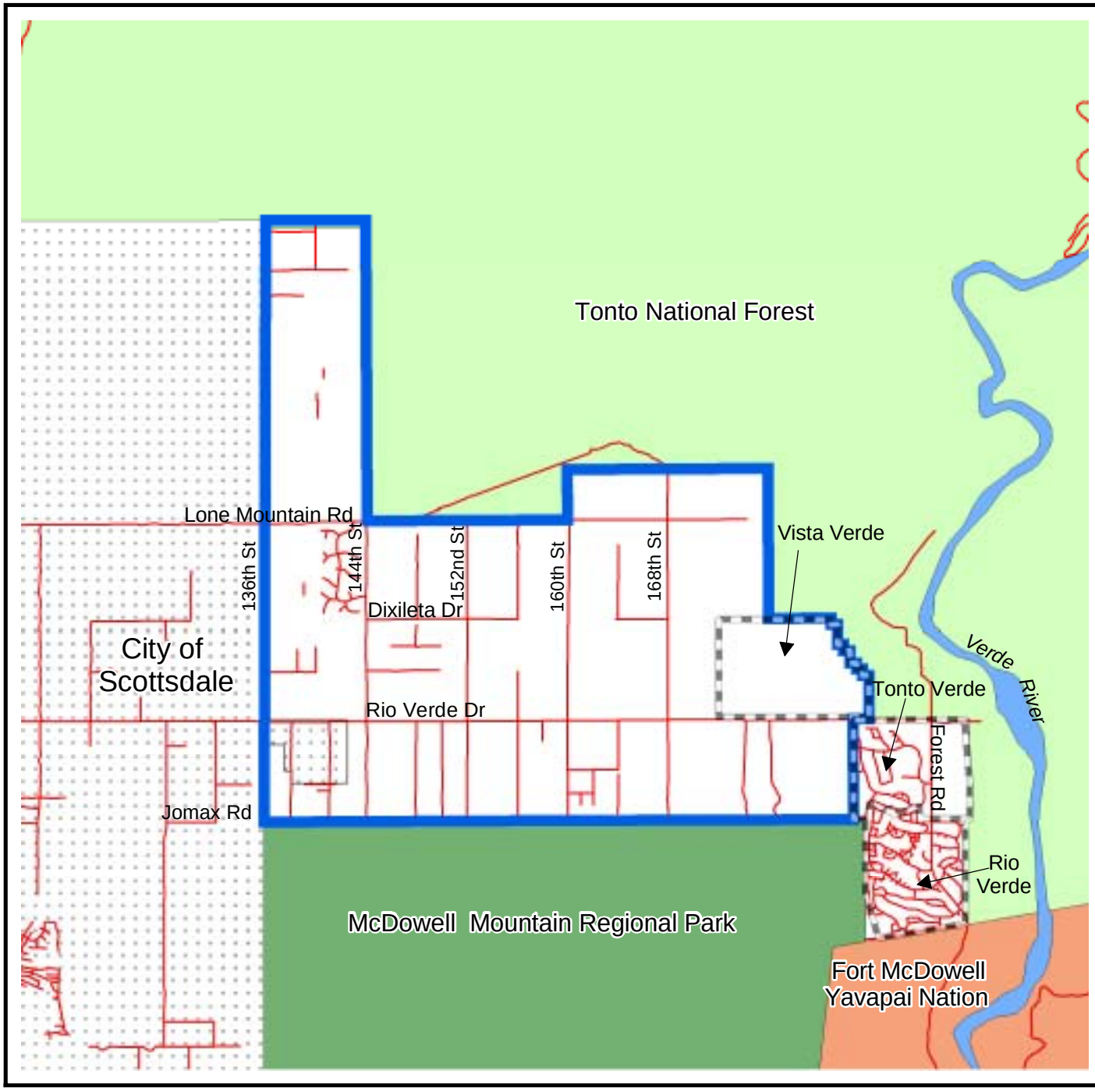
The current Desert Foothills Area Plan is comprised of two documents: the *Desert Foothills Policy and Development Guide* and the *Desert Foothills Technical Guide*. The Desert Foothills Area Plan replaced the *Desert Foothills General Land Use Plan* (1973), which covered only the Carefree and Cave Creek areas. The *Desert Foothills Policy and Development Guide,* adopted by the Board of Supervisors in May 1979*,* is a statement of goals, objectives, and policies that were developed to direct the growth of the area to the year 2000.

The 1979 plan enlarged the planning area to include Fountain Hills, Rio Verde, and Pinnacle Peak. The 1979 Desert Foothills planning area covers 323 square miles in the northeast part of Maricopa County. It includes areas that were unincorporated in 1979, including the communities of Cave Creek, Carefree, Pinnacle Peak, Rio Verde, and Fountain Hills. To maintain continuity with adjacent areas, portions of the cities of Scottsdale and Phoenix were included in the 1979 planning area.

The *Desert Foothills Technical Guide* (1982) was produced as a supplement to the policy and development guide. The technical guide provides specific background information about the Desert Foothills area, such as geology, water resources, and wildlife as well as social and economic information.

Rio Verde Foothills Area Plan (2005)

Maricopa County adopted its first comprehensive plan in October 1997. Titled *Eye to the Future 2020*, the comprehensive plan promotes healthy communities by encouraging growth in suitable areas, development of an efficient transportation system, maintaining a healthy environment, and creating a diverse economy. To effectively implement the Comprehensive Plan, the County's area plans will continuously be updated so they are consistent with *Eye to the Future 2020*.



Planning Area

Figure 1

- Planning Area Boundary
- Tonto National Forest
- McDowell Mountain Regional Park
- Verde River
- City of Scottsdale
- Fort McDowell Yavapai Nation
- Development Master Planned Communities
- Streets

1 0 1 2 Miles

MARICOPA COUNTY 2020 Eye to the Future

Maricopa County Planning and Development Department

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Due to public interest in updating the original Desert Foothills Area Plan, Maricopa County initiated an area plan update for a portion of the Desert Foothills planning area. After initial review and discussion with community members, it was decided to focus the update on approximately 20 square miles of unincorporated Maricopa County lands remaining north of McDowell Mountain Park and east of the City of Scottsdale. The master-planned communities of Rio Verde and Tonto Verde, which are included in the Goldfield Area Plan (1995), are not included in this update. The recently approved Vista Verde Development Master Plan (DMP) is not part of the Goldfield plan, and thus is included in this update. However, since the Vista Verde DMP will serve as its own land use plan, it is considered in this plan update only for population projections and potential for future development.

The Maricopa County Planning and Development Department hosted a public workshop in September 2003 to inform residents of the Desert Foothills Area Plan update, explain the planning process, and to encourage participation in formulating the updated plan. Public participation and survey results indicated a preferred new name for the updated area plan: *The Rio Verde Foothills Area Plan*. This name more accurately reflects the smaller planning area, located near the community of Rio Verde.

Public Participation

During preparation of the Rio Verde Foothills Area Plan, community participation was emphasized through various techniques. This participation allowed stakeholders to identify planning issues and concerns, and provide recommendations, comments and suggestions. Two public workshops were held to gather input from residents, property owners, interest groups, and government agencies. Informational letters announcing the workshops were prepared and distributed prior to each workshop. A workshop summary was sent out in October 2003 and a progress report was mailed to local community associations in November 2003. A website was established to disseminate basic information on the area plan update, announce public meeting dates, and to enable citizens to download a citizen survey. Project staff also worked with the Rio Verde Horsemen's Association and Rio Verde Foothills Alliance to disseminate plan information to their members through their respective newsletters.

Public Meetings

The Maricopa County Planning and Development Department held the first public workshop in Tonto Verde in September 2003. Once the draft area plan was completed, a second public workshop was held in September 2004 at Fountain Hills Middle School. These "open house" style meetings provided an opportunity for staff to present project information and allowed citizens to ask questions of

project staff and make comments and recommendations on the draft plan. A citizen survey was distributed at both public meetings to identify and gauge citizen attitudes.

Community Mailing

To encourage public participation, in August 2003, approximately 500 plan notifications were sent to property owners and stakeholders in the region. These notifications explained the significance of County area plans, the plan update process, and how citizens could be included on an active mailing list. Over time, an active mailing list of nearly 200 addresses was developed based on public meeting sign-in sheets and those requesting to be added to the mailing list. Additionally, a mailing list of 36 agencies and interest groups was compiled. These included various community associations; municipal, state and federal agencies; local land trusts (e.g. McDowell Sonoran Land Trust); a regional planning agency; service providers (e.g. Rural/Metro Fire Department); and interest groups (e.g. Mountain Bike Association of Arizona).

Other Input

Input was also obtained through meetings, telephone calls, letters, facsimile, and email messages from citizens, potentially affected interests, and public agencies. Project staff met with representatives of the Rio Verde Foothills Alliance, Rio Verde Horsemen's Association, Cave Creek Ranger District, and Tonto National Forest. In addition, Planning & Development staff met with the following County agencies to ensure interagency coordination and planning: Maricopa County Environmental Services Department, Flood Control District of Maricopa County, Maricopa County Parks Department, and Maricopa County Department of Transportation.

INVENTORY AND ANALYSIS

Demographics Characteristics and Projections

This portion of the Rio Verde Foothills Area Plan analyzes existing demographic and land use conditions.

Planning Area Growth and Change

The original Desert Foothills planning area encompassed 323 square miles, but due to annexations, the study area was reduced to the 20 square miles of unincorporated Maricopa County land north of McDowell Mountain Regional Park and east of the City of Scottsdale. **Figure 2-Original Plan Boundary** shows the geographical extent of the Desert Foothills plan versus the updated plan.

Population and Demographic Characteristics: Rio Verde Foothills Planning Area

This section highlights historic and projected population and housing unit data to the year 2030. Census data is reviewed for the updated planning area and for Maricopa County as a whole. Rio Verde and Tonto Verde development master plans are not included in the population and housing unit statistics. Population projections are derived from Maricopa County permit data, the Arizona Department of Economic Security (DES), and Maricopa Association of Governments (MAG) models, and estimates are based on present and historic U.S. census figures and trends.

Table 1 shows historic and projected population for the planning area, while **Table 2** provides historic and projected housing units for the planning area. While historic estimates are fairly accurate, future population projections can vary widely depending on source information and assumptions. Maricopa County planning staff projections are significantly higher than MAG projections. Alternative scenarios for projected population and housing are discussed later in this section under *Future Population and Housing Trends.*

Table 1: Actual and Projected Population

Area	Census 1990	Census 2000	Projection 2010	Projection 2020	Projection 2030
Rio Verde Foothills Planning Area	33[1]	778[1]	3,800[3]	6,700[3]	9,600[3]
Maricopa County	2,122,101	3,072,149	4,134,400[2]	5,164,100[2]	6,140,000[2]
% of Total Population	0.002	0.026	0.092	0.130	0.156

Source: [1] 1990 and 2000 U.S. Census block data
[2] Maricopa Association of Governments projections
[3] Maricopa County Planning and Development projections

Table 2: Residential Housing Units

Area	Census 1990	Census 2000	Projection 2010	Projection 2020	Projection 2030
Rio Verde Foothills Planning Area	13[2]	318[2]	1,570[3]	2,700[3]	3,900[3]
Maricopa County	952,041	1,260,497	1,606,670[1]	1,970,430[1]	2,309,560[1]
% of Total Housing Units	0.001	0.025	0.097	0.137	0.168

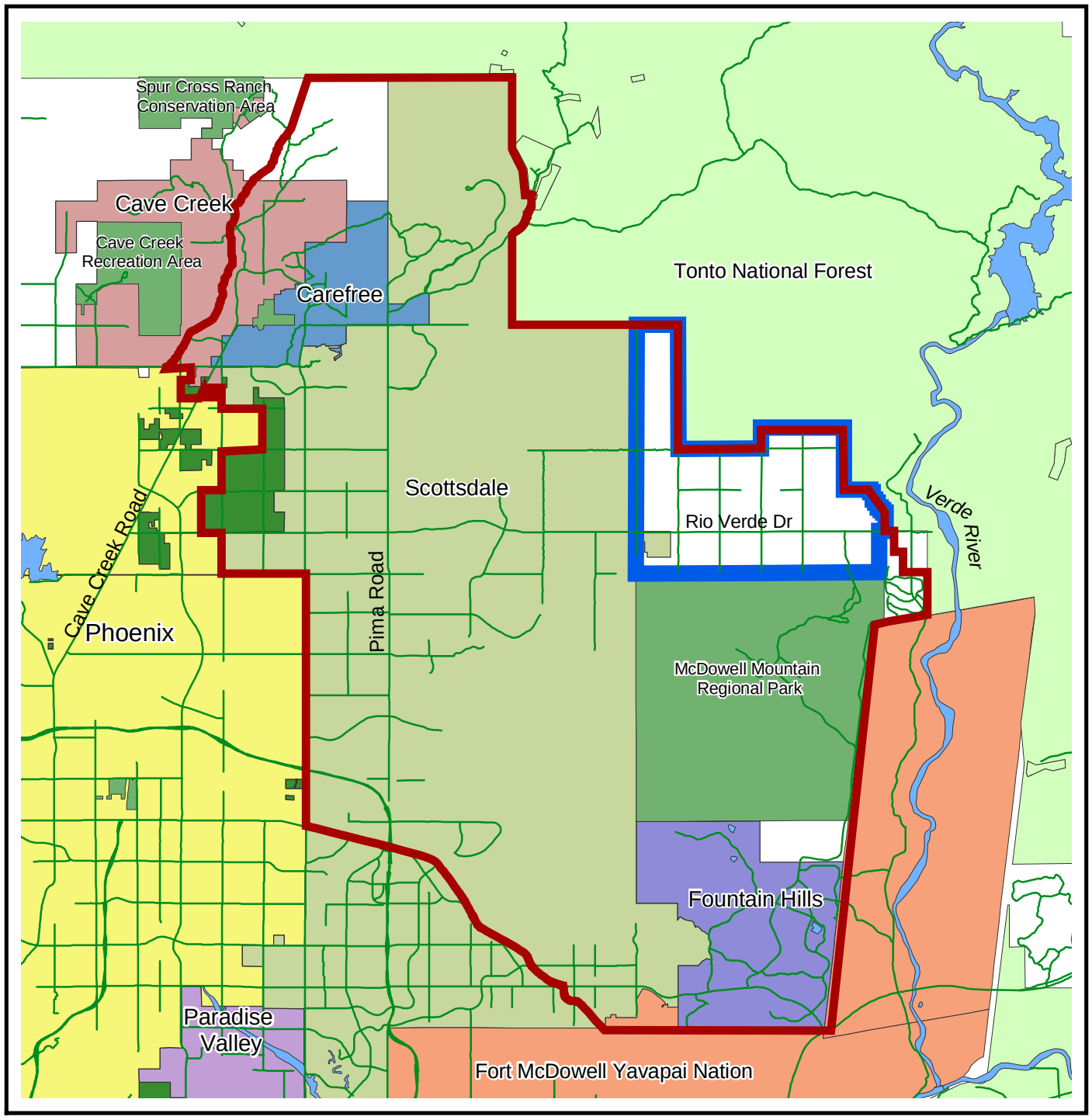
Source: [1] Maricopa Association of Governments projections
[2] Estimate derived from 1990 and 2000 U.S. Census figures and average persons per household
[3] Projection derived from Maricopa County residential permit data
Note: Housing units in this table represent Total Units, not Occupied Units

Table 3 provides persons per household data, and **Table 4** provides current population distribution by age for the planning area. Since age information was not available for the planning area specifically, percentages of total population are used for a larger sample area, using a local zip code tabulation area that corresponds to the planning area. Median age for the 85262 zip code is 54.6 years, which is higher than the median age of 33 years for Maricopa County. The number of persons per household in the planning area is slightly less than for Maricopa County as a whole. **Table 5** shows median household income reported in the 2000 U.S. Census. Since the census was in April, income was for 1999. Income levels in the planning area are generally higher than for Maricopa County overall.

Table 3: Persons Per Household

Area	Census 1990	Census 2000	Projection 2010	Projection 2020	Projection 2030
Rio Verde Foothills Planning Area	2.5	2.45	2.45	2.45	2.45
Maricopa County	2.23	2.67	2.57	2.62	2.66

Source: Estimates derived from MAG Regional Analysis Zone projections for population and housing units; 1990 U.S. Census; 2000 U.S. Census



Original Plan Boundary

Figure 2

- Original Plan Boundary
- New Plan Boundary
- McDowell Mountain Regional Park
- Tonto National Forest
- Fort McDowell Yavapai Nation
- Verde River
- Arterial Street
- Carefree
- Cave Creek
- Fountain Hills
- Maricopa County
- Paradise Valley
- Phoenix
- Scottsdale

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Rio Verde Foothills Area Plan

Maricopa County Planning and Development Department

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Table 4: Population Distribution by Age in Percentages

Area	Under 5 years	5-14	15-24	25-34	35-44	45-54	55-64	65+	Median Age
Rio Verde Foothills Planning Area[1]	2.80%	6.70%	4.40%	4.40%	11.40%	21.10%	26.20%	23.00%	54.6
Maricopa County[2]	7.90%	15.00%	14.30%	15.90%	15.50%	11.90%	7.80%	11.70%	33

Source:[1] U.S. Census Bureau Zip Code Tabulation Area (ZCTA) Zip Code Data for 85262;
[2] 2000 U.S. Census
Note: ZCTAs are not U.S. Postal Service ZIP Codes. ZCTAs are approximate area representations of United States Postal Service ZIP Code service areas.

Table 5: Median Household Income - 1999

Area	Median Household Income
Rio Verde Foothills Planning Area	$45,000-$60,000
Maricopa County	$45,358

Source: MAG compilation of 2000 U.S. Census data

Historical Population Analysis

In 1990, the Rio Verde Foothill planning area's population was 33. By 2000, total population had increased 2,260% to 778 persons. In comparison, Maricopa County's growth rate from 1990 to 2000 was 45%. Population estimates and projections are summarized in **Table 1**.

Historical Housing Unit Analysis

As shown in **Table 2**, in 1990 there was an estimated 13 housing units in the Rio Verde Foothills planning area. Between 1990 and 2000, this number had increased 2,350% (over 23 fold) to an estimated 318 units. The majority of housing is located west of 156th Street.

In the 1970s, the planned residential development of Rio Verde, just southeast of the planning area, was developed. The adjacent Tonto Verde master-planned community was approved and began developing in the 1990s. As a result of these developments, Rio Verde Drive was improved, making it easier to access this remote area of the Valley.

Future Population and Housing Trends

The Rio Verde Foothills Area Plan represents an important and timely opportunity to plan for the continued growth in this region. Understanding the characteristics and pace of population and housing growth can lead to more prudent planning for

future infrastructure, land uses, and natural resources. Population projections vary widely depending on the method of projection and assumptions about future conditions.

Using building permit records, Maricopa County researched how many residential building permits were completed in the planning area since 1993, then added to these records using County Assessor data and aerial photographs. It was estimated that approximately 750 homes existed in the planning area at the end of 2003. At an average of 2.45 persons per household, the planning area is estimated to have a population of approximately 1,800. This figure could be lower depending on how many homes are unoccupied.

Over the last five years, the planning area has added an average of 117 new homes per year. If homes continue to be built at this rate, the planning area could add approximately 1,990 homes by the year 2020 (17 years x 117 homes per year). At 2.45 persons per household, approximately 4,875 additional persons could live in the planning area for a total population of approximately 6,700 by 2020. **Table 6** compares three different population projections: a low projection formulated by the Maricopa Association of Governments, and moderate and slightly higher projections formulated by Maricopa County. Population projections are based on residential building completion trends in the planning area.

Factors that are likely to affect future population growth, housing trends, and expansion in the Rio Verde Foothills planning area are discussed in the *Growth Areas* and *Cost of Development* sections of this area plan.

Table 6: Population Growth Scenarios in the Rio Verde Foothills Planning

Scenario	Census 2000	Projection 2010	Projection 2020	Projection 2030
1.Maricopa Association of Governments Low Projection	778[4]	1,206[1]	1,336[1]	3,014[1]
2. Maricopa County – Moderate Projection	778[4]	3,560[2]	6,700[2]	9,600[2]
3. Maricopa County – High Projection	804[4]	4,060[3]	7,320[3]	10,580[3]
Maricopa County	3072149	4134400	5164100	6140000

[1] MAG Regional Analysis Zone projections (accepted by MAG Regional Council, June 25, 2003)
[2] Maricopa County projection based on average increase in new housing units for last 5 years (1999 through 2003)
[3] Maricopa County projection based on linear regression
[4] 2000 U.S. Census block data

LAND USE

Existing Land Use and Development

The 20 square mile planning area is bounded on the north by the Tonto National Forest, on the south by the Jomax Road alignment and the McDowell Mountain Regional Park, on the east by the 184th Street alignment, and on the west by 136th Street. Land use patterns vary from undeveloped 300-acre parcels to homes built on one to five-acre parcels. Although 100 percent of the land is privately owned, most of the land is still undeveloped desert that is impacted in some areas by grazing, unpaved roads, and the 1995 "Rio" fire in the eastern area. The following land use topics will be addressed in this section:

- Land Development Patterns
- Zoning Regulations
- Public Land Ownership
- Public Facilities and Utilities
- Special Planning Concerns

Land Development Patterns

Until recently, the Rio Verde Foothills planning area has historically experienced very little residential growth relative to the urbanizing areas of Maricopa County. Isolated ranching operations were the only activity in this region until the 1980s when a few homes began to appear. The distance from metropolitan Phoenix, lack of services, and limited roads delayed residential development. **Figure 3 - Existing Land Use** illustrates the variety of land use patterns that exist within this region.

East of the planning area, Rio Verde was the first residential community to appear in the region following a United States Forest Service (USFS) land exchange. This retirement community, begun in 1974 near the west banks of the Verde River, includes two 18-hole golf courses and about 970 residential units on 710 acres. The Tonto Verde master planned community followed in 1994, after another USFS land exchange resulted in about 695 acres available for development.

West and southwest of the planning area are several golf-course communities, including Desert Highlands, Estancia, Troon Village and Troon Village North. Major north-south roads were improved and extended to serve these developments in the City of Scottsdale. Planned housing densities in these communities range from approximately 2-4 homes per acre, significantly higher than the planning area, which is one home or less per acre. When open space is included, housing densities in Scottsdale's golf communities are closer to 1.5 homes per gross acre.

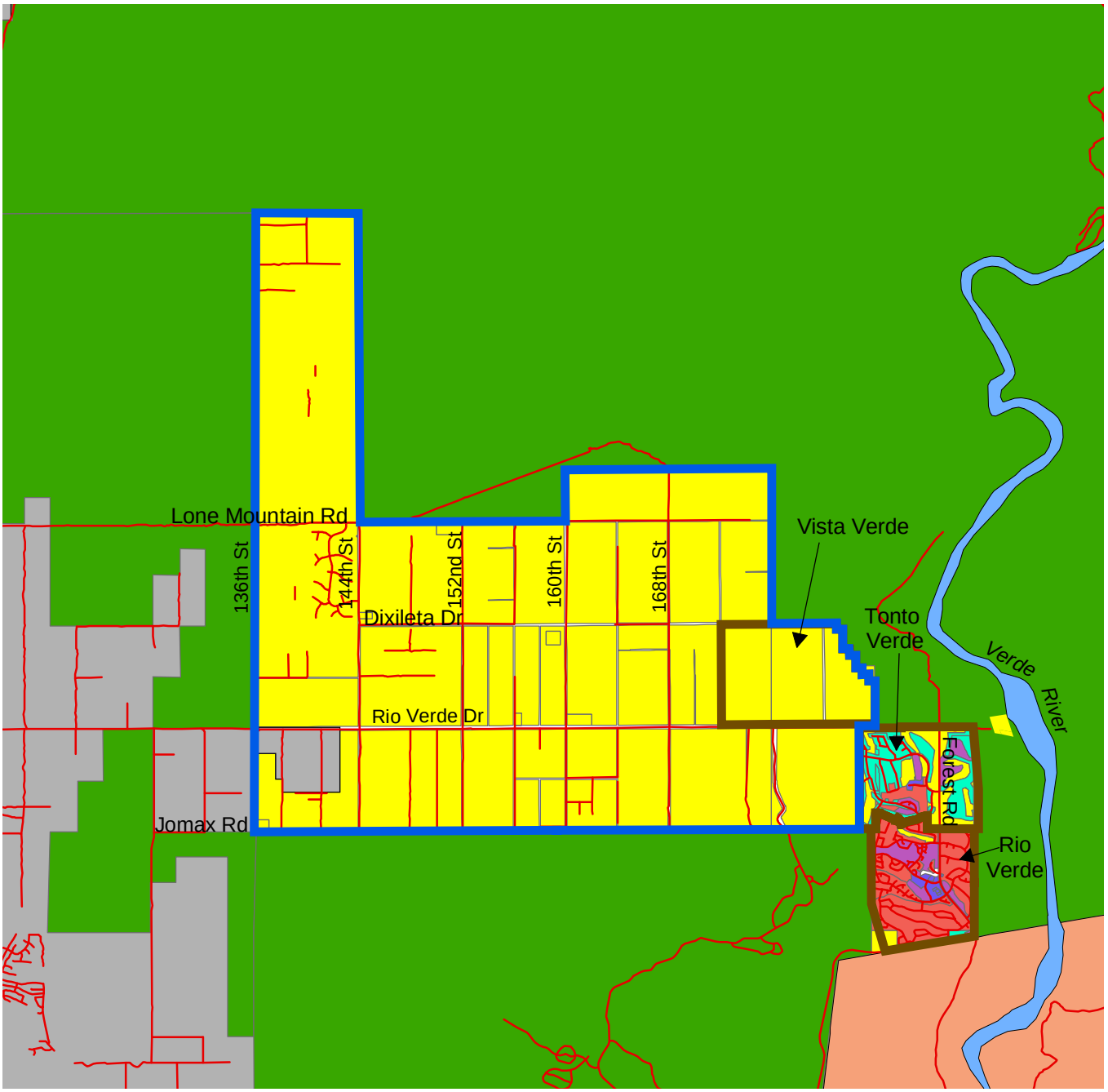
Until 1990, single-family homes on lot splits were the chief development activity in the planning area. Starting in the early 1990s, the planning area began a transition from undeveloped desert land to single-family residential development with a distinctive rural and equestrian character. Around a dozen homes were built during the 1980s, 180 homes were built during the 1990s (mostly in the late 1990s), and nearly 300 new homes were constructed between January 2000 through October 2003.

Existing development is predominantly residential homes, many with horse corrals and accessory buildings, concentrated primarily between 136th and 160th Streets. Few homes are located east of 168th Street. There are two approved subdivisions in the planning area (refer to **Table 9**), including Granite Mountain Ranch Unit I (currently under construction) and Rio Mountain Estates Unit I (construction pending). The Vista Verde Development Master Plan (DMP) was approved in April 2001 (refer to **Table 10**). No construction has taken place in the Vista Verde DMP to date. These developments are further discussed later in this report.

There are two large properties in the planning area that will not be subject to the area plan's policies, but are included in this plan because of their location adjacent to the study area and because of their potential impact on future growth in the Rio Verde Foothills area. Near the southwest corner of the planning area is a 275-acre property owned by Scottsdale National that was annexed by the City of Scottsdale in 1990. Future development of this land will be guided by Scottsdale's General Plan. In October 2001, Scottsdale city council adopted a general plan amendment and a rezoning case for the Scottsdale National property that reduced the number of homes that could be built on this property. The landowner filed a lawsuit against the City challenging the city council's decision to reduce the density permitted on Scottsdale National. The lawsuit was settled between the City and the owner in 2004 and the current zoning for the Scottsdale National property is for an estimated 95 homes on the 275 acres. No development has yet taken place on the property.

The second property, Vista Verde master planned community (856 acres), is located in the eastern end of the planning area and is currently undeveloped desert land. The development master plan approved for Vista Verde will govern future development in the Vista Verde community.

Per the Maricopa County Zoning Ordinance, the Board of Supervisors may permit as a Special Use certain uses in zoning districts from which they are otherwise prohibited. For example, while horse corrals are permitted in the Rural-43 zoning district as a use by right (an allowed use), a public riding and boarding stable must have a Special Use permit and comply with certain stipulations.



Existing Land Use

Figure 3

- Planning Area Boundary
- Indian Community
- Open Space
- Incorporated
- Commercial
- Multi-family Residential
- Low Density Residential (2-4 du/ac)
- Medium Density Residential (5 du/ac)
- Rural Residential/Agricultural

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Maricopa County Planning and Development Department

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Since 1993, seven special use permits have been approved in the planning area (refer to **Table 7**). Three of the special use permits are for riding and boarding stables; one for a training and boarding facility for horses and dogs; one for a kennel; one for an open air facility used for outdoor team-building and problem solving activities; and one for a telephone switching facility.

Table 7: Special Use Permits – Rio Verde Foothills Planning Area

Name	Date Approved	Area (Acres)	Special Use Type	Location
Omega Ltd	April 2, 1993	10	Educational/Recreational Open Air Facility (not equestrian)	Dixileta Dr. and 160th St.
Casa de los Caballos	September 20, 2000	20	Riding & Boarding Stable	Lone Mountain Rd. and 152nd St.
E & C Harrison, Inc.	January 4, 2001	5.5	Riding & Boarding Stable	Dixileta Dr. and 144th St.
Rancho del Sur	December 5, 2001	9	Equine & Canine Training & Boarding Facility	Jomax Rd. and 136th St.
Almost Home Pet Resort	June 10, 2002	5	Kennel	Rio Verde Dr. and 156th St.
Midvale Telephone Exchange	July 10, 2002	0.086	Communications Facility	Lone Mountain Rd. and 144th St.
Four Peaks Ranch	March 17, 2004	16	Equestrian Boarding, Training, and Roping Facility	Rio Verde Dr. and 160th St.

Agricultural Exemptions

An agricultural exemption can be obtained after the County Assessor assigns an agricultural classification use to the property. Once the property has been classified as exempt, the property is exempt from the Maricopa County Zoning Ordinance and/or Building Safety Ordinance, unless the Maricopa County Planning & Development director determines that all or part of the property is not used primarily for agriculture.

Zoning Regulations

The planning area includes two rural residential zoning districts that Maricopa County enforces through its adopted zoning ordinance: Rural-43 and Rural-190. Both of these districts allow residential uses, farms, recreational, and institutional uses. Rural-43 permits one single-family dwelling per minimum lot area of 43,560 square feet (one acre). Rural-190 permits one single-family dwelling per minimum lot area of 190,000 square feet (4.36 acres). Established zoning district categories are found in *Appendix B- Zoning District Categories* along with an existing zoning

map shown in **Figure 17-Existing Zoning**.

Public Land Ownership

Figure 4-Land Ownership identifies privately held property in the Rio Verde Foothills planning area and a combination of private land and publicly held land surrounding the planning area. Public property includes areas managed by the federal government, the State of Arizona, Maricopa County, and the City of Scottsdale. Lands governed by the Fort McDowell Yavapai Nation lie approximately two miles southeast of the planning area.

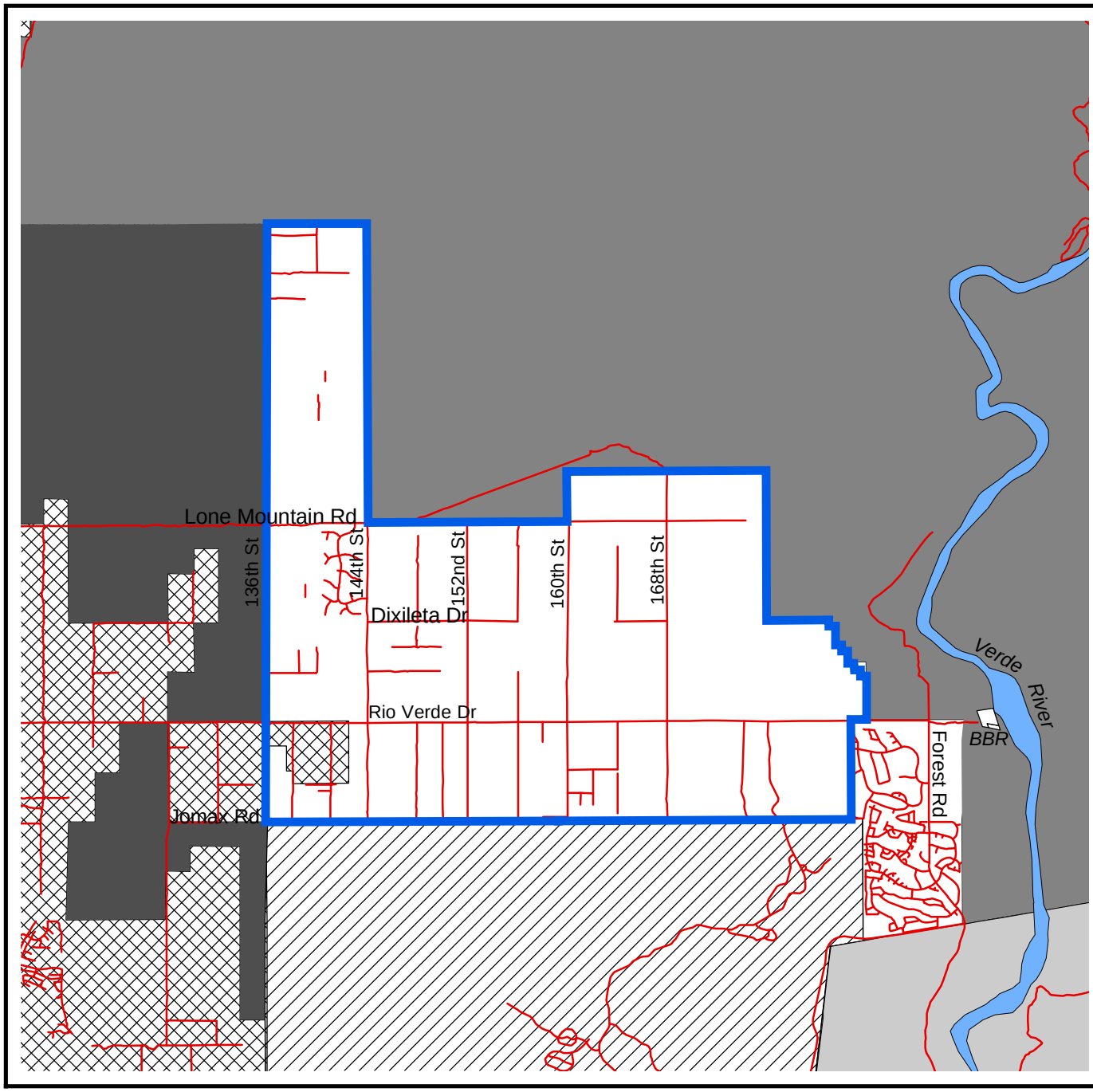
Federal Land

The USFS manages the Tonto National Forest lands north and east of the study area. The Tonto National Forest, occupying nearly three million acres of land, is the fifth largest forest in the United States. The forest has outstanding recreational opportunities year round.

When decreed in the public interest, the USFS has authority to exchange lands with non-federal parties within the boundaries of National Forests within a state. Public interest considerations include: state and local needs; protection of habitats, cultural resources, watersheds, and wilderness and aesthetic values; enhancement of recreation opportunities and public access; consolidation of lands for efficient management; implementation or accommodation of existing or planned land uses or plans; and fulfillment of public needs.

Land exchange records for the planning area were researched in the Tonto National Forest office in Phoenix. In December 1960, the first of several land exchanges occurred in what is now the Rio Verde Foothills planning area, resulting in the transfer of over 20 sections of National Forest land to private ownership. The land exchanges occurred as follows:

- 1960 - Six sections bordering 136th Street and three sections bordering Jomax Road, between 152nd and 176th Streets
- 1963 - Nearly five sections of land bordering the north side of Rio Verde Drive, between the 144th and 184th street alignments
- 1964 - Three and one-half sections of land north of Dixileta Drive, between the 156th and 176th street alignments, including the south half of sections 15 and 16
- 1965 – One and one-half sections north of the Dixileta Drive alignment, between the 144th and 156th street alignments
- 1971 – Sections 32 and 36, south of Rio Verde Drive



Planning Area Boundary
Private
State
County Parks
USDA Forest Service
Fort McDowell Yavapai Nation
Incorporated
Streets
BBR Box Bar Ranch

Land Ownership

Figure 4

1 0 1 2 Miles

Maricopa County Planning and Development Department

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In May 1965, the 1,000 acres constituting the original Rio Verde property passed from National Forest land to private ownership, a result of a land exchange involving private land holdings within the Coconino and Sitgreaves National Forest boundaries. The last exchange occurred in 1991, resulting in private land being made available for the Tonto Verde master planned community. Box Bar Ranch, between Tonto Verde and the Verde River, was originally homesteaded by J.F. Asher. Asher filed a claim in 1919, under the Forest Homestead Act of 1906, for nearly 160 acres. This appears to be the only homesteaded land in or near the planning area. The Homestead Act no longer exists.

State Land

The Arizona State Land Department (ASLD) administers thousands of acres of Sonoran desert land west of the planning area. Under state charter, the ASLD has the responsibility on behalf of beneficiaries to assure the highest and best use of the trust lands. Fair market value must be obtained from all trust land transactions. All revenues derived from the sale of trust lands are placed in a fund, which benefits public education and several other public institutions. Leases and sales must occur at public auction. New development, particularly in north Scottsdale, often occurs on newly auctioned trust lands.

In 1996, the state legislature enacted the Arizona Preserve Initiative (API) to give the Land Department authority to reclassify, lease, and sell urban state trust lands to local governments and nonprofit organizations as open space for conservation purposes. Without this legislation, development would likely occur in these areas. In 1998, as part of a long-range conservation plan described below, the City of Scottsdale petitioned the State Land Department to reclassify 16,600 acres of land as suitable for preservation. In August 2001, the State Land Commissioner reclassified 13,021 acres as suitable for preservation and committed to holding off public auction on the remaining land to allow Scottsdale to explore options for purchasing the land.

In 1990, Scottsdale citizens (through the non-profit McDowell Sonoran Land Trust) initiated the preservation of Scottsdale's McDowell Mountains and Sonoran Desert as permanent open space. The recommended study boundary (RSB) for the McDowell Sonoran Preserve includes approximately 36,400 acres (see Figure 13). The Preserve will include natural corridors linking open space in adjacent communities with the Tonto National Forest and the Maricopa County McDowell Mountain Regional Park. In 1995, Scottsdale voters approved a sales tax increase to purchase the land in the original RSB (16,460 acres). In 1998, voters approved using the sales tax to purchase land in the expanded RSB (19,940 acres). Scottsdale

voters decided on May 18, 2004, to approve a sales-tax increase to fund further acquisition of the Preserve. Scottsdale currently owns over 11,000 acres of land for the Preserve.

Maricopa County

The Maricopa County Parks and Recreation Department administers McDowell Mountain Regional Park, which forms the southern boundary of the planning area. Preliminary purchases and leases of this 21,100-acre park began in the 1940s. One of the largest in the Maricopa County Parks System, McDowell Mountain Park rates as one the most scenic with majestic mountain views and over 40 miles of trails.

City of Scottsdale

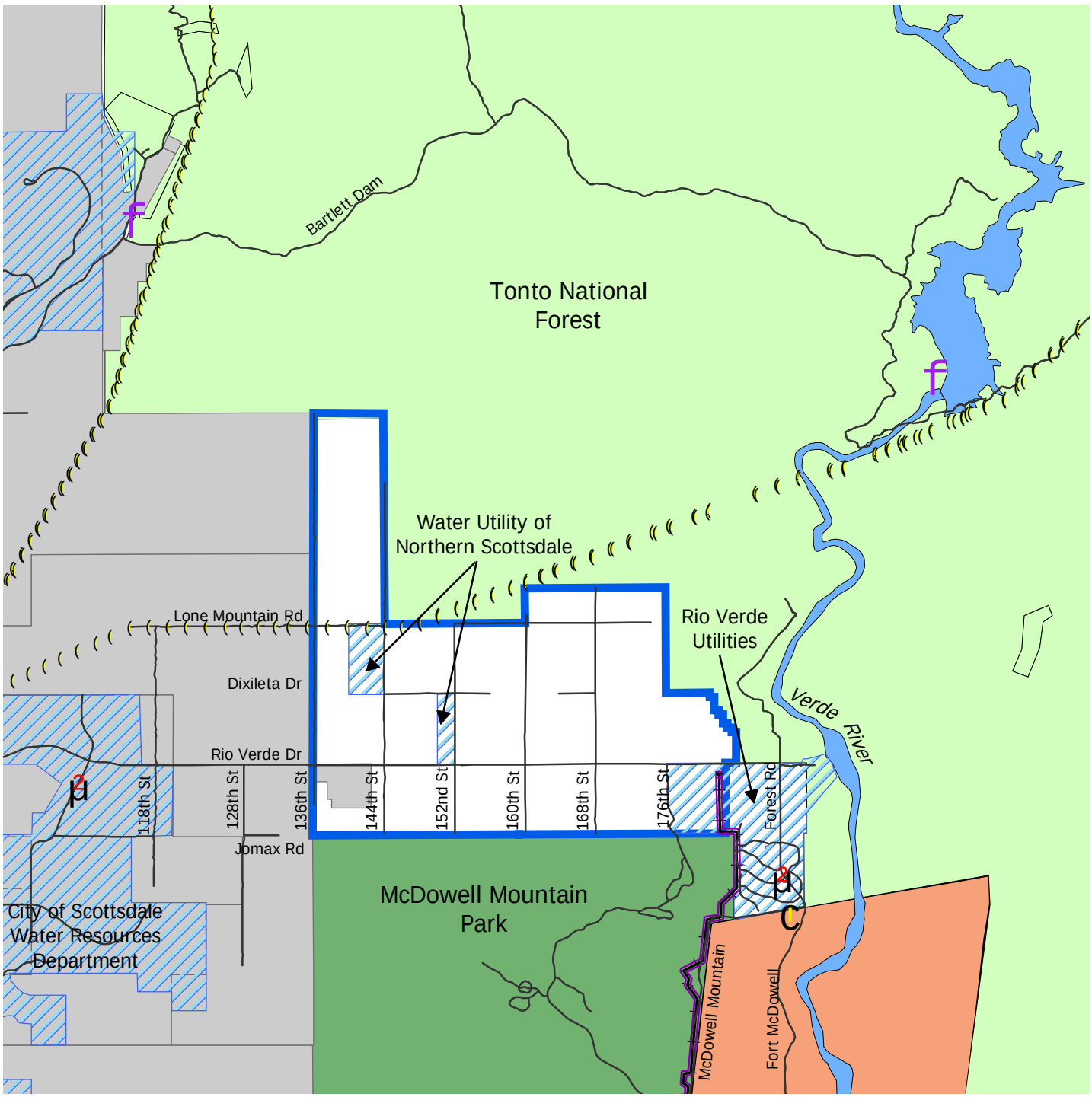
As described earlier, the City owns over 11,000 acres of Preserve land that is being permanently preserved as desert and mountain open space. Scottsdale plans to expand the ownership to include 36,400 acres for the McDowell Sonoran Preserve, an area equivalent to one-third of Scottsdale's total land area. The planned Preserve is located along the western boundary of the Rio Verde Foothills planning area and Scottsdale plans to eventually add all of the State Trust land on the west side of the 136th Street planning area boundary to the city-owned Preserve land.

Tribal Lands

The Fort McDowell Yavapai Nation manages 24,680 acres of land a few miles southeast of the planning area. In 1903, President Roosevelt established the reservation near the military outpost of Fort McDowell. This land is a small percentage of land which was once considered ancestral territory of the Yavapai Indians. Fort McDowell's prime economic activity is its casino, built in 1984. Other tribal businesses include a large sand and gravel quarrying operation, a concrete plant, and a 2,000-acre farm. The community of approximately 1,000 people has an elementary school, a library, a center for the elderly, and its own fire and police department. While development can occur on tribal lands, it is subject to the rules and regulations of the tribal government.

Facilities and Utilities

This section reviews the public and private utilities and facilities in and around the Rio Verde Foothills planning area. This assessment is not intended to provide a detailed, in-depth analysis of operations or specific service programs. Rather, it provides an overview of existing conditions to help determine how current services can help support increased development. **Figure 5** identifies **Existing Facilities and Utilities**.



Existing Facilities and Utilities

Figure 5

- 345 kv Utility Line
- Heliport
- Fire Station
- Waste Water Plant
- Electric Utility Line
- 69kv Utility Line
- Arterial Street
- Planning Area Boundary
- Incorporated Area
- Water District
- McDowell Mountain Regional Park
- Tonto National Forest
- Fort McDowell Yavapai Nation

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Maricopa County Planning and Development Department

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This review is organized into seven subsections:

- Water Distribution Systems
- Sanitary Sewer System
- Sheriff's Department
- Fire Protection and Medical Emergencies
- Educational Facilities
- Parks and Open Space
- Landfills
- Electric Power

Water Distribution Systems

Domestic water is obtained from private wells, hauled water, and a private water company. The Water Utility of Northern Scottsdale (no affiliation with City of Scottsdale) was formed in January 2001 to serve the Granite Mountain Ranch and Rio Mountain Estates subdivisions, both north of Rio Verde Drive between 140th and 152nd Streets. In September 2003, this water company began serving residents in Granite Mountain Ranch, as illustrated in **Figure 5**. A water line running parallel to the Dixileta Drive alignment connects the two subdivisions. One hundred percent of the planning area's domestic water supply comes from groundwater aquifers beneath the Rio Verde Foothills region. An in-depth discussion of water resources is included in the Water Resource Element of this Area Plan. Information on water quality is given in the Environmental Resources Element.

Sanitary Sewer System

There are currently no community sewer systems in the planning area. Residential development operates on septic systems.

Sheriff's Department

The Maricopa County Sheriff's Office (MCSO) serves the unincorporated areas of Maricopa County. The MCSO has the responsibility of providing basic patrol, investigative, and detention services to contract towns, cities, and unincorporated communities within the county. The Rio Verde Foothills planning area is within MCSO District IV South. The main station for this district is at 16836 E. Palisades, Building B, Fountain Hills.

Fire Protection and Medical Emergencies

Rural/Metro Corporation currently provides fire protection and ambulance services via subscription in the planning area. However, Rural/Metro decided in November 2003 to opt out of its contract in 2005. As of July 1, 2005, the two existing

stations will no longer be Rural Metro stations, which will require planning area residents to find another emergency fire/medical provider. Rio Verde Foothills residents are in the process of establishing a fire district. Fire Station 825 is located at 25608 N. Forest Drive in Rio Verde. This facility houses four fighters that include a captain and at least two paramedics. Fire Station 825 has off road equipment that is used for rescues that are inaccessible to an ambulance or fire truck. Station #18, located at Alma School Road and Dynamite Boulevard, opened in 2003. This station is permanently manned and has a brush engine. In 2005, Rural/Metro will no longer provide fire protection and medical emergency services for the City of Scottsdale. Scottsdale is currently creating a new municipal fire department.

Educational Facilities

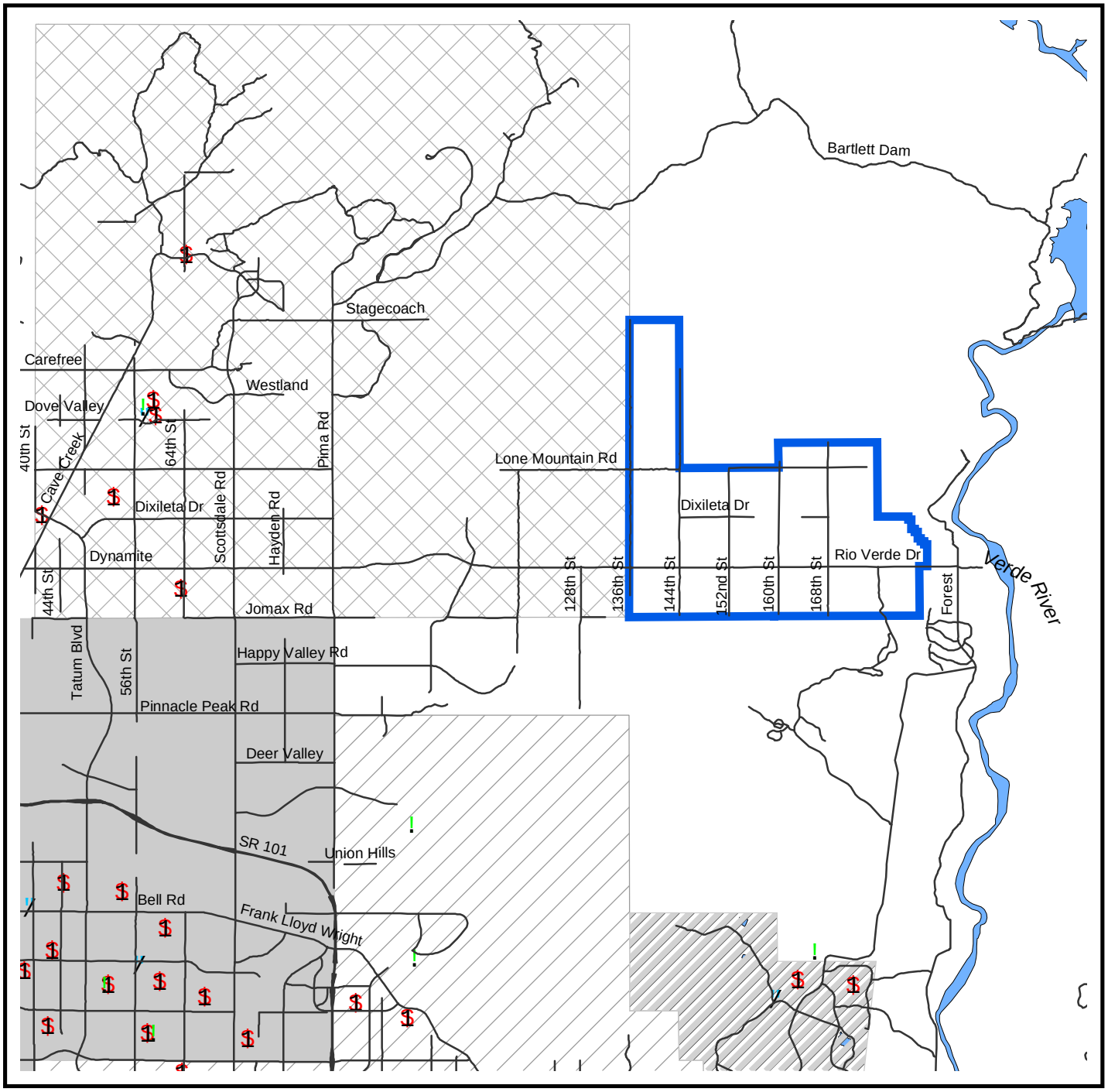
There are no schools within the planning area. School district boundaries and nearest schools are shown in **Figure 6-School Locations**. Most students attend schools in the Cave Creek Unified School District, located west and northwest of the planning area. The District operates four elementary schools serving kindergarten or pre-kindergarten through 5th grade; two middle schools serving 6th through 8th grade; and one high school, which serves 9th through 12th graders. These students are currently bused to the appropriate facilities at cost to the school district. Bus service includes morning and afternoon runs, late runs, and a special needs bus. Currently, less than 25 students from the planning area attend the Fountain Hills Unified School District (FHUSD). The district will plan for bus transportation to the unincorporated area when the number of students reaches 25. FHUSD operates two elementary schools (one serves grades K-2, the other 3-5); one middle school which serves grades 6-8; and one high school which serves grades 9-12.

The Scottsdale School District offers open enrollment for students in the planning area at one elementary and one middle school. Bus service includes two buses each morning and afternoon. Students may also attend the Paradise Valley School District in the Greyhawk subdivision area.

Post-secondary educational facilities are outside of the planning area but within commuting distance, and include several community colleges and Arizona State University in Tempe.

Parks and Open Space

The planning area contains abundant open space as discussed in the Open Space Element. There are no public parks in the planning area, although McDowell Mountain Regional Park forms the southern boundary of the study area. Open space within the planning area is privately owned and can be expected to be developed in the



School Locations

Figure 6

- Elementary School
- Junior High
- High School
- Arterial Street
- Planning Area Boundary

School District

- Cave Creek
- Fountain Hills
- Paradise Valley
- Scottsdale

0 2.5 5 Miles

Maricopa County Planning and Development Department

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future. The planning area, however, is surrounded by thousands of acres of permanently protected open space.

Landfills

There are no landfills in the planning area, although several refuse collection companies operate in the area. One of the major private trash removal companies for the planning area is Waste Management Corporation. Waste Management offers 90-gallon side load trash removal and larger front load trash removal. Temporary dumpsters are also available for construction sites. Waste Management utilizes a transfer station at 19th Avenue and Deer Valley and the Northwest Regional Landfill at 195th Avenue and Deer Valley.

Electric Power

Area residents are served by Salt River Project (SRP) electricity.

Special Planning Concerns

As discussed earlier, the slow-growth pattern of residential development is rapidly changing in the Rio Verde Foothills planning area. Lot splits continue to occur on a frequent basis and hundreds of homes have been constructed on such lots since the year 2000. It appears that this fast pace of development will continue. Rapid growth generates other concerns such as traffic congestion, air pollution, and environmental degradation. Preparing for orderly, timely, and compatible growth is an important component of the Rio Verde Foothills Area Plan.

Two planned subdivisions and one master planned community could add approximately 1,500 residents by 2010. While subdivision regulations require carefully planned traffic circulation, adequate planning for drainage, water supply, power, and other health and safety requirements, lot splits have minimal requirements. Minor land division is the legal division of land into no more than five lots without having to comply with state subdivision laws. The creation of a subdivision through circumvention of existing land division requirements is known as “wildcat subdivision.” Early in the lot splitting process, problems may not be apparent, but as the splits continue and more homes are built, both minor land division and wildcat subdivisions can create haphazard conditions, dusty roads, access problems, and costly services. A balance needs to be achieved between private-property rights of a landowner to divide and sell rural lots and the need for sound community growth. **Table 8 – Land Split Considerations** addresses several issues that should be considered when planning to split a parcel of land.

A unique planning concern of the Rio Verde Foothills area is its remote location between federally protected forest lands and a large county park, which provides both opportunities and constraints. Constraints include limited routes into and out

Table 8: Land Split Considerations

Issue	Consideration	Benefit	Problems To Avoid
Current Zoning	Newly created parcels must meet all zoning requirements, including: Minimum lot width Minimum lot area Building setbacks	Land division meets state and county requirements.	An improper land split renders the property involved unsuitable for building and not entitled to a building or use permit.
Existing Structures	Existing structures such as buildings, wells, septic systems, and driveways should be considered when determining land division.	Existing structures will meet minimum setback requirements without requiring a variance.	Structures that do not meet setback requirements will require a variance to remain on site.
Wastewater Disposal (Septic Systems)	Parcels should reserve adequate space for future on-site septic systems, and a reserve area for future use. Proposed system must meet all setback requirements, including minimum of 100' from any well, and typically 5' to 50' from any property line. Topography is essential to consider.	Newly created parcel has adequate land area to install future septic system and reserve area. Groundwater and drinking water quality is protected.	Improper lot splits can create property lines that overlap existing septic systems. This would typically require both homes to build new septic systems.
Wells	Well spacing requirements: Proposed well locations must be at least 100' from any septic or sewer system, or from another well.	New wells will meet public health codes.	Parcels that are too small may not be able to accommodate both a well and a septic system.
Drainage	Floodplain and drainage guidelines and regulations should be considered when planning land division.	Flood hazards and soil erosion are minimized.	Newly created parcels that do not plan for drainage may cause future flooding and drainage problems on site or for neighbors.
Access: • Public • Private • Fire • Emergency	Parcels should demonstrate physical access that is traversable by a two-wheel drive passenger motor vehicle. A turnaround area is preferred by emergency vehicles. New parcel should not block access to neighboring properties.	Parcels have sufficient access for fire and emergency vehicles. Parcel owner has legal access to property.	Parcels that do not have permanent legal access present problems for the landowner. Lack of access for fire and emergency vehicles presents serious safety problems.
Street and utility rights-of-way and easements	Existing and future rights-of-way and easements should be considered during land division process.	Parcels exclude roadways dedicated to the public and meet zoning requirements without a variance.	Parcels that do not meet zoning requirements after excluding public roadways will require a variance prior to building.
Land Division versus Subdivision	Land divisions of five or fewer parcels must comply with state and county requirements. Splitting a parcel into more than five parcels requires compliance with Maricopa Co. Subdivision Regulations.	Determination that proposed land split does not constitute a subdivision.	Splitting land into more than five parcels requires a Subdivision Public Report issued by the Arizona Dept. of Real Estate (DRE). Subdivisions that cannot provide a Public Report could be in violation.
Topography	Topography such as hills, washes, and boulder outcrops should be considered during land division process.	Attractive topographic features may increase land value / marketability.	Significant cuts, fills or disturbance of washes may impact marketability and value of new parcel(s).

of the area, open range hazards, flooding problems, distance to schools and other services, and limited groundwater availability in many areas. However, the relatively undeveloped desert, the nearby Verde River, and surrounding scenic mountains provide many opportunities for recreation, solitude, and rural activities. Lush Sonoran desert vegetation supports abundant wildlife; the relatively remote setting is favorable for equestrian ranches and other rural uses; adjacent protected open space provides a natural buffer to the community. The Rio Verde Foothills Area Plan will help identify and plan for limitations as well as identify opportunities to plan for recreational trails, develop guidelines for sensitive development, preserve rural character, and ensure a high quality of life.

During the citizen participation phase of this project, land owners expressed the desire to maintain the existing rural character, preserve the scenic beauty of the area, and maintain the dark night sky. These objectives are included in area plan policies. In addition, the action plan recommends creating community-crafted rural development guidelines that would encourage appropriate landscaping, lighting, signage, and other voluntary development guidelines to maintain the rural character and scenic beauty.

Approved Developments

Several residential developments are approved within the study area as shown in **Tables 9 and 10.** In October 2000, Maricopa County approved a final plat for Granite Mountain Ranch Unit 1, and approved the final plat for Unit II in November 2000. Both subdivision plats were amended in February 2002. Home construction has begun only in Unit I. Maricopa County approved the final plat for Rio Mountain Estates in December 2003. All three of these subdivisions are in the Rural-43 zoning district.

Table 9: Recorded Subdivisions

Name	Date Approved	Gross Acres	Number of Residential Lots	Location
Granite Mountain Ranch Unit I	Final Plat: Oct. 4, 2000; Amended plat: Feb. 20, 2002	134	45	North of Dixileta Dr. on 144th St.
Granite Mountain Ranch Unit II	Final Plat: Nov.15, 2000; Amended plat: Feb. 20, 2002	185.5	55	South of Lone Mountain Rd. on 144th St.
Rio Mountain Estates Unit I	Final Plat: December 3, 2003	96	54	Between Dixileta Dr. and Rio Verde Dr. on 152nd St.

Table 10: Development Master Plans

Name	Date Approved	Gross Acres	Number of Residential Lots	Location
Vista Verde	April 18, 2001	856	842	Rio Verde Dr. and 184th St.

The Vista Verde Development Master Plan (DMP) was approved by Maricopa County in April 2001 (refer to **Table 10**). Owned by the same developer of Tonto Verde and Rio Verde, this 856-acre development is planned for 842 lots at an overall density of 0.98 dwelling units per acre. The project will be marketed as a retirement community with 27 holes of championship golf courses, a clubhouse, recreational facility, and a variety of single-family attached and detached homes. A DMP major amendment was approved August 18, 2004, which reduces the golf course area by nine holes due to drainage and wash issues. Preliminary plat and zoning applications were submitted in June 2004 for Unit 1, which covers approximately one-third of the development. No home construction has taken place in the Vista Verde DMP to date.

Future Land Use Definitions and Guidelines

Definitions and guidelines are included to give a better understanding of the proposed land uses. In addition, for each land use designation the corresponding definitions and guidelines help assure consistent interpretation. Land use categories in the Rio Verde Foothills Area Plan are in agreement with the Maricopa County Comprehensive Plan, and the system of regional land use standards.

Future Land Use Analysis

An analysis of existing land use categories in the Rio Verde Foothills planning area follow each definition. While the goals, objectives, and policies are the basis of the area's desired future land use pattern, the ultimate development pattern is tempered by recognition of these existing development activities and established patterns. This includes consideration for land uses and features outside the planning area that might affect desired future development patterns. In addition, adopted municipal land use plans were considered during the analysis of land uses.

State law requires that rezonings be consistent with the adopted county plan. As such, changes in zoning for specific areas or land parcels must be evaluated in relation to overall advancement of plan goals, objectives, and policies. Guidelines following the land use definitions are used to help ensure that the intent and integrity of the Rio Verde Foothills Area Plan is retained.

Open Space Land Use: Definitions and Guidelines

The preservation of open space, regional connections of open space, and public access to open space are important considerations in the Rio Verde Foothills Area Plan. In addition, the Growing Smarter Law of 1998 requires that Maricopa County plan for the acquisition and preservation of open space. An inventory and analysis of open space is included in the *Open Space* chapter.

The Open Space category denotes areas best suited for open space and recreation. It includes uses such as parks, recreation and scenic areas, and drainage. Residential development of one (1) dwelling unit per acre or less is permitted in certain open space areas, provided development in environmentally sensitive areas like steep slopes, floodplains, and significant wildlife and plant habitats, is in compliance with all applicable federal, state, and county regulations.

The Maricopa County Comprehensive Plan defines two types of open space: Dedicated and Proposed. These categories, as well as potential preservation techniques, are described in the Open Space chapter. It is important to note that Dedicated Open Space areas are those under public ownership (except State Trust Land) such as county parks and land administered by the USFS. Proposed Open Spaces are areas that have been identified for potential open space and recreational purposes and are intended to be managed to protect public access and encourage environmental preservation. However, all private and State Trust Land identified as proposed open space may be developed at residential densities of one (1) residential dwelling unit per acre – subject to applicable planning and zoning regulations – unless it is added to the public domain or protected using other techniques that respect private property rights.

Open Space Land Use: Analysis

Preservation of open space, protection of native wildlife and plants, wildlife habitat, and wildlife movement corridors are key issues identified by planning area stakeholders. The Rio Verde Foothills area is unique from other areas in that 100 percent of the land is privately owned and State or other public land is located outside of the planning area. As such, retention of open space in floodplains and preservation of the Sonoran desert will be a combination of voluntary support by landowners; regulations and drainage guidelines enforced and encouraged by the Maricopa County Planning and Development Drainage Review division; and open space set aside by development.

The open space category identifies areas best suited for potential open space and recreation. Open space increases land values, provides natural flood control, supports wildlife habitat connections, and facilitates recreational uses. Potential open space

corresponds with all FEMA 100-year floodplains and all Rio Verde preliminary floodplains identified by the Flood Control District of Maricopa County (FCDMC) as shown in **Figure 12-Floodplains**. Preserving these areas as open space is an achievable goal, given the large lot sizes of one acre and more, although it will require the commitment of landowners and careful attention to site design. It should be noted that preservation of the Sonoran desert is encouraged but is not shown on the land use map.

Open Space Protection Techniques

There are a number of techniques used by jurisdictions for protecting and/or acquiring open space. The following is a list of some of these techniques:

- Arizona Preserve Initiative
- Cluster Development
- Conservation Easements
- Conveyance of Property to
- Homeowner Associations
- Planned Unit Development
- Purchase of Development Rights
- Slope/Hillside Ordinance
- Transfer of Development Rights
- Land Dedication
- Land Exchange
- Lease Agreements
- Performance Zoning
- Density Bonuses
- Design Guidelines
- Federal Land Management
- Fee Simple Purchase
- Impact Fees

(A description of these techniques can be found in the Open Space Element of *Eye to the Future 2020*, Maricopa County's comprehensive plan.)

Residential Land Use: Definitions and Guidelines

The Maricopa County Comprehensive Plan outlines 24 land use categories, five of which are residential. The Rio Verde Foothills Area Plan contains only one residential land use category, although additional categories are permitted within Development Master Plans that may allow higher density development. In addition, other "uses by right," such as schools, churches, and farms are permitted in residential land use categories although special consideration should be given to their specific locations. As with all types of development, care should be given to ensure appropriate preservation of environmental and cultural features such as hillsides, washes, archaeological sites, and other sensitive areas.

In unincorporated Maricopa County, residential density within specific projects is calculated based upon the overall gross acreage of the site. With respect to the Rio Verde Foothills Area Plan land use map, the Rural land use category includes some

land zoned Rural-190 (requires minimum lots of not less than 190,000 square feet or 4.36 acres), while the balance is zoned Rural-43 (requires a minimum lot area of not less than one acre). It is important to note that land use designations do not supercede existing zoning. Land use designations are intended to guide future development, but existing zoning entitlements are not affected.

Rural (0-1 Dwelling Units per Acre)

The rural category identifies areas where single family residential development is desirable because urban services such as sewer, water, schools, parks, roads, and emergency services are limited or nonexistent. Development suitability is determined based on location, access, existing land use patterns, and natural or human constraints. Densities greater than 1 dwelling unit per acre may be permitted in new development, but only if areas of lower densities offset the increase such that an average of no more than 1 dwelling unit per acre is maintained. Uses in this category include agriculture and single family residential.

Residential Land Use: Analysis

Several significant principles guide residential development in the Rio Verde Foothills Area Plan. Particular consideration is given to the continuance of the existing rural lifestyle, the preservation of hillsides and floodplains, and compatibility with the natural environment to protect public health, safety, and general welfare. Therefore, only residential development at very low densities (1 dwelling unit/acre or less) is intended for most of the planning area unless determined otherwise as part of a development master plan. Residents who choose a rural lifestyle should not expect urban services in the unincorporated areas.

Development Master Plans (DMPs)

Master planned communities have long been a preferred type of development in Maricopa County because they promote quality standards of prudent and sustainable land use. The County advocates using DMPs to allow flexibility in the master planning of large tracts of unincorporated land. DMPs provide opportunities for creative design and development techniques, and generally require a high level of commitment to ensuring they have adequate facilities and infrastructure to serve their residents' needs. Master planned communities have the potential to provide mixed land use opportunities, a range of housing choices, open space and recreational opportunities, and a multi-modal transportation system connected to schools, parks, retail, and employment centers. A more complete discussion of DMPs is found in the Maricopa County Comprehensive Plan and the Maricopa County Development Master Plan Guidelines.

While future DMPs can be developed anywhere in the unincorporated Maricopa County, appropriate development guidelines will vary depending on the individual circumstances and the goals, objectives, and policies set forth in the Comprehensive Plan. In addition, a DMP developer must demonstrate how the project will impact the affected area plan, both positively and negatively, at project buildout. While most land in the planning area is currently rural in nature, a DMP would be urban in scale and use. To urbanize an area, a DMP will be required to establish urban level services. Adequate proximity to employment and commercial support services is an important factor. Water supply is one of the most restricting factors for a DMP. If an adequate water supply cannot be obtained, an urban project cannot be realized. Wastewater management is equally restricting in the Rio Verde Foothills area. A new DMP would require the construction of a new wastewater treatment plant or connection to an existing plant with adequate capacity. Any owner/developer wishing to urbanize a rural area will have to address the aforementioned constraints before any large scale planning or development can occur.

Development Agreements and Development Master Plans

Development agreements are voluntary arrangements between local governments and developers concerning the design and construction of specific developments. These agreements protect development from changes in laws and regulations, while allowing governments to obtain specified exactions to ensure infrastructure construction and reinforce local planning efforts. Development agreements offer a way to reduce developers' risk while simultaneously increasing government's ability to guide local development.

Commercial Land Use: Definitions

Small-scale commercial land use categories are used in some rural communities that desire potential service and retail uses. Direct access on arterial streets or freeway frontage roads is an important consideration. Limitations in terms of maximum acreage and building square footage may be used to tailor future development to the specific community. Guidelines for building scale, landscaping, and signage can also be developed. No commercial land use sites are designated in the Rio Verde Foothills Area Plan at this time.

Commercial Land Use: Analysis

During the planning process, the majority of stakeholders strongly expressed the desire that no commercial or retail development be allowed in the planning area. The Rio Verde Foothills Land Use Plan does not contain any commercial land use categories at this time. In future plan updates, citizens may desire to add locations for Neighborhood Retail if population growth warrants.

Employment Center Land Use: Definitions

Employment Center categories denote areas for the concentration of major employers. The majority of citizens in the Rio Verde Foothills area were opposed to allowing major employment centers in the planning area. No employment centers are designated in the Rio Verde Foothills Land Use Plan. A number of stakeholders identified that the horse industry would continue to provide employment opportunities in the area. In addition, home-based businesses provide employment for some residents. It is not anticipated that major employment centers will be needed in the planning area for the next 10 to 15 years.

Employment Center Land Use: Analysis

The lack of employment centers is evident in the Rio Verde Foothills planning area, but is not currently an issue due to the rural nature of development. Because this region will experience significant population growth over the next two decades, residents may desire employment opportunities closer to their homes. According to the 2000 U.S. Census, approximately 345 residents indicated that they were employed, mostly in the Industrial, Other (includes work-at-home and construction employment), and Public sectors. In addition, since geographical constraints prevent the addition of north-south roads, providing residents the opportunity to work near their homes would help reduce traffic congestion, reduce commuting times, improve air quality, and create more efficient land use patterns.

Buffering and Transitional Land Use Guidelines

When two or more types of land uses are shown on the Rio Verde Foothills Land Use Plan or are approved as part of a Development Master Plan, buffering and/or transitional land uses may be necessary. Buffering may consist of open space placed between two incompatible land uses, density transitions, walls, berms, landscaped setbacks, or other recognized methods. Buffering is required for intensive uses where a less intensive use already exists, or where the Rio Verde Foothills Land Use Plan shows a less intense use adjacent to a more intense use. The use of transitional land uses consists of placing uses of intermediate intensity between incompatible uses. Examples which may require transitional land use include:

- Low density, single-family development adjacent to multi-family development.
- Single or multi-family development adjacent to commercial land uses.

In cases where buffering is necessary, these and other methods may be considered:

- Areas of landscaped open space
- Arterial or collector streets with landscaping
- Block walls, landscaping, earth berms
- Any combination of the above

Facilities and Services

The Rio Verde Foothills planning area currently contains a combination of scattered rural development mixed with low-density subdivisions. Most of the single family homes rely on wells and septic systems, although residents in some areas must haul water to their homes. However, Granite Mountain Ranch and Rio Mountain Estates will include potable water service provided by a new private water company. Facilities and services currently available to all residents in the area include emergency fire/medical service, electric and phone service, and sheriff's office patrol. Facilities not currently available to the planning area include community sewer; parks; libraries; and elementary, junior high, and senior high schools.

Maricopa County encourages urban growth (i.e. commercial, employment, and residential density greater than 1 dwelling unit per acre) to occur within the Urban Service Area (USA) where services, infrastructure, and facilities are readily available. The USA is not delineated on the land use map. Rather, it is defined by the ability of a jurisdiction, improvement district, or private entity to provide infrastructure and appropriate urban services to a specific site or project. The USA is considered suitable for higher density development, as well as an area considered efficient to expend public infrastructure funds.

For development outside the Urban Service Area, various facilities, infrastructure, and services may not be required and will be reviewed by the County on a case-by-case basis. Although each development must be considered on its own merits, **Table 11-Facilities Space Standards** provides reference guidelines that should be used when determining and sizing necessary facilities. Park and recreation facility standards are contained in a separate table in the *Open Space* section.

Table 11: Facilities Space Standards

Libraries:

Type	Space Requirements	Source
Regional Library	40-50,000 sq.ft./80-125,000 persons	Planning for Implementation for the Maricopa County Library District, 1990
Community Library	15-20,000 sq.ft./30-50,000 persons	Ibid
Neighborhood Library	3-5,000 sq.ft./10-20,000 persons	Ibid

Educational Facilities:*

Type	Space Requirements	Source
Elementary School	8-12 acres, 1 school per 1,500-5,000 persons	U.S. Department of Health, Education, and Welfare; Urban Planning and Design Criteria, 3rd edition
Junior High School	20-25 acres, 1 school/1,000-16,000 persons	Ibid
Senior High School	30-45 acres, 1 school/14,000-25,000 persons	Ibid

*Note: These standards are provided as a base reference for the Area Plan. The Cave Creek Unified School District determines standards for all facilities within the school district. Consultation with the appropriate school district is recommended.

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TRANSPORTATION

This portion of the Rio Verde Foothills Area Plan analyzes existing transportation plans, studies, programs, public transit service issues, and provides an inventory of the area's roadway system.

Maricopa County Transportation System Plan

The mission of the Maricopa County Department of Transportation (MCDOT) is to provide a quality transportation system for the citizens of Maricopa County. MCDOT coordinates new construction with surrounding jurisdictions when appropriate. The Transportation System Plan (TSP) was adopted in December 1997 as the transportation element of Maricopa County's Comprehensive Plan. The TSP states that the transportation network should support the safe and efficient movement of goods and people, be environmentally compatible with surrounding conditions, and be supportive of economic development. The TSP helps evaluate regional transportation system impacts; helps identify funding and maintenance priorities; and organizes roadways under MCDOT's jurisdiction into primary, secondary, and local roads.

MAG Roads of Regional Significance

MAG developed the Roads of Regional Significance (RRS) concept and has assigned this designation to a limited number of key arterials whose primary function is to provide mobility within the urbanized area by supplementing and interchanging with the freeway system. Roads of regional significance are expected to receive priority for improvement to a regional standard where feasible. A six-lane divided roadway with 140 feet of right-of-way is the ultimate design standard for urban RRS. In the planning area, Rio Verde Drive is a Primary Roadway in the MCDOT Transportation System Plan, and a RRS according to MAG. This route serves as one of the main access points from the planning area to Scottsdale and Rio Verde.

Maricopa County Major Streets and Routes Plan

The TSP includes a Planning and Management chapter that calls for the preparation of a Maricopa County Major Streets and Routes Plan (MSRP). This plan was completed and adopted April 18, 2001, and was revised September 2004. The MSRP designates and maps future street widths and route overlays for all primary and secondary roads in the Maricopa County roadway system. These future classifications project the ultimate (20 year) functional status of roads. The plan includes two components: a street classification atlas and a policy document to support the atlas.

The functional classification system used by Maricopa County to classify county streets includes: expressway/freeway, principal arterial, minor arterial, major collector, minor collector, and local street. Typical design standards are illustrated in cross-section in the MSRP. Current classifications for streets in the Rio Verde Foothills area are provided in the *Inventory* section of this chapter.

The MSRP defines the components of the functional classification system as follows:

Expressway/Freeway

An expressway/freeway provides for the swift movement of large volumes of through traffic; is a divided roadway and is not intended to provide access to abutting land; will have complete separation of opposing traffic flows; and will have grade separated intersections or at-grade, signalized intersections at a minimum of one-mile spacing.

There are no expressways/freeways in the planning area. The closest, Loop 101, is located approximately 13 miles from the southwest corner of the planning area.

Principal Arterial Street

A principal arterial street provides for long distance traffic movement within Maricopa County or between Maricopa County and urban areas. Service to abutting land is limited. Access is controlled through frontage roads and raised medians, as well as the spacing and location of driveways and intersections. Opposing traffic flows are separated often by a raised median. The ultimate cross section is four to six lanes in width and includes bike lanes. None of the roads in the planning area has a **current** functional classification of principal arterial.

Rio Verde Drive does have a **future** functional classification of principal arterial in the planning area and could be widened from its existing two lanes when circumstances warrant expansion. This principal arterial classification is designed to handle ultimate future traffic demand. Existing long-term regional transportation plans do not include the possible extension of Rio Verde Drive to SR 87 (Beeline Highway).

Minor Arterial Street

A minor arterial street provides for moderately long distance traffic movement within Maricopa County or between Maricopa County and urban areas. Moderate access is provided to abutting land. Access is controlled through frontage roads, raised medians, and the spacing and location of driveways and intersections. A raised median or a continuous left-turn lane separates opposing traffic flows. The ultimate cross section is four lanes in width and includes bike lanes. There are no minor arterial streets in the planning area.

Major Collector Street

A major collector street provides for short distance (less than three miles) traffic movement; primarily functions to collect and distribute traffic between local streets or high volume traffic generators and arterial streets; and provides direct access to abutting land. Raised medians and the spacing and location of intersections and driveways may control some access. A major collector is two to three lanes in width and includes bike lanes. Rio Verde Drive is the only street in the planning area that has a current functional classification of major collector.

Minor Collector Street

A minor collector street provides for short distance (less than three miles) traffic movement; primarily functions to collect and distribute traffic between local streets and arterial streets; and provides direct access to abutting land. The spacing and location of intersections and driveways may control some access. A minor collector is two lanes in width. There are currently three minor collector segments in the planning area: Dixileta Drive (140th-144th St.), Lone Mountain Road (140th-144th St.), and 144th Street (Rio Verde Dr. to Lone Mountain Rd.). The City of Scottsdale identifies 136th Street, north of Rio Verde Drive, as a future minor collector street in its network.

Local Street

A local street provides for direct access to residential, commercial, or other abutting land, and for local traffic movements. Local streets connect to collector or arterial streets. A local street is a two-lane roadway. Examples would include 144th, 152nd, 160th, 168th Streets, portions of Dixileta Drive, and Lone Mountain Road.

Transportation Overlays

The TSP introduces the concept of overlays by stating that "overlays acknowledge the special importance of roads for purposes other than mobility." There are seven overlays established in the Transportation System Plan.

1. Scenic/Recreational Overlay

The scenic/recreational overlay acknowledges the need to minimize impacts to or preserve characteristics of a road's environment, or it recognizes a road's importance as access to recreational facilities. Characteristics such as design speeds, right-of-way, cuts and fills, existing vegetation and viewsheds will be carefully analyzed.

The entire length of Rio Verde Drive is included in a scenic overlay. Dynamite Boulevard/Rio Verde Drive has been designated as a scenic corridor by the City of Scottsdale from 56th Street to 144th Street.

2. Public Transportation Overlay

The public transportation overlay identifies potential regional rail or bus rapid transit corridors. There are no roads in the planning area with a public transportation overlay.

3. AZTech Overlay

The AZTech overlay recognizes the special importance of roadways and corridors to implement transportation-related technology. The AZTech overlay identifies corridors where technology will be incorporated to improve transportation service. No roadways in the planning area are designated with the AZTech overlay by the TSP.

4. Oversize Load Overlay

The oversize load overlay identifies routes designed for usage by oversize vehicles and restricted routes where oversize vehicle use is discouraged. An oversize load is defined as a vehicle having a gross weight of over 160,000 pounds or having dimensions larger than one of the following:

- 120 feet in length
- 14 feet in width
- 16 feet in height

There are no roadways in the planning area identified as being restricted.

5. School Safety Overlay

The school safety overlay identifies sites where special design or operational criteria will be implemented to provide for safety. There are no roads in the planning area with a school safety overlay.

6. Roads of Regional Significance (RRS) Overlay

The Roads of Regional Significance (RRS) concept and design guidelines were adopted by the MAG Regional Council in the spring of 1991, and by the Maricopa County Board of Supervisors in October 1992. Further analysis of this concept was completed in January 1996. The concept is a system of upgraded streets and roads to improve mobility in the urban areas, as well as into and out of the region. The adopted RRS concept includes Urban and Gateway routes. Urban routes are designed to complement the freeway system and are three to six miles apart. The concept facilitates the development of a system of routes with higher design standards and higher speeds that will help ensure regional mobility. Gateway routes provide access to the region and need protection to maintain free flow access in and out of the region. Rio Verde Drive is the only road in the planning area with an RRS overlay.

7. Emergency Management Overlay

The emergency management overlay identifies roadways that are of special importance in case of emergencies or catastrophes at the Palo Verde Nuclear Generation Station. The planning area lies well outside the ten-mile radius surrounding the Palo Verde Nuclear Generation Station. No roads in the planning area are identified by the TSP as being emergency evacuation routes.

Rural Maricopa Transit Development Program

In 1997, Maricopa County completed the *Rural Maricopa County Transit Development Program*. The purpose of this study is to identify transit needs and ways to provide additional transit options in rural Maricopa County. The study also identifies several important recommendations, including:

- Having Maricopa County serve as the lead agency in establishing public transit service from rural to urban areas.
- Implementing a pilot transit program between Gila Bend, Buckeye, and Phoenix. Once operations prove successful; establish a similar program along the Wickenburg Highway.
- Continuing support for a regional transportation system through service coordination.

At this time there are no existing or proposed transit routes in the planning area.

MCDOT Bicycle Transportation System Plan

The MCDOT Bicycle Transportation System Plan recognizes bicycling as a viable transportation mode and encourages improving the transportation network to increase access and safety for bicyclists. The standard cross section for all County arterial and collector streets includes bike lanes.

The Bicycle Transportation System Plan identifies 473 miles of Maricopa County roads for the addition of on-road bicycle facilities. This network reflects a network for bicycle facilities to prioritize investment and guide project development. Rio Verde Drive is identified as a future component of MCDOT's Bicycle plan.

Maricopa Association of Governments Transportation Plans

The Regional Transportation Plan (RTP) was adopted on November 25, 2003 and represents the first comprehensive review of transportation investment needs for the region since the early 1960s. This plan is a comprehensive, performance based, multi-modal and coordinated regional plan, covering the period through Fiscal Year 2026. The RTP was developed under the direction of the Transportation Policy Committee, a public/private partnership charged with finding solutions to the Region's transportation challenges.

The Long Range Transportation Plan (LRTP) identifies specific transportation facilities and services to be constructed or provided in the next twenty years. The LRTP is updated annually and is fiscally constrained, so only includes projects for which funding is currently available or reasonably expected.

MAG's Transportation Improvement Program (TIP) is a five-year schedule of specific projects to be constructed across the Maricopa County region. In the current TIP (2005-2009) there are no proposed road improvements in the planning area. MCDOT submitted a project for the MAG TIP in 2009 to pave the shoulders along Rio Verde Drive from the Scottsdale boundary to Forest Road for bicycle riders.

MCDOT Transportation Improvement Program

Roadway investment decisions by MCDOT are based on a fundamental principle: to provide the right transportation system, at the right time, and for the right cost. To achieve this vision, Maricopa County develops an annual Transportation Improvement Program (TIP) to identify project funding priorities for the next five years. Each year new projects are added to the fifth year, while previously programmed projects move up a year in the schedule. As a structured finance plan, the TIP determines future road expansions and improvements. There are no projects in the Rio Verde Foothills planning area identified in the 2005-2009 Transportation Improvement Plan.

Existing Conditions

Average Daily Traffic Counts

MCDOT provides average daily traffic count data for many major streets. **Table 12** summarizes traffic count information for the Rio Verde Foothills study area. Due to the low population in the planning area, there are only traffic counts for Rio Verde Drive.

Table 12: Peak Traffic Counts

Count date	Street	Direction	Ref. street	Peak AM hour	Peak AM volume	Peak PM hour	Peak PM volume
9/3/02	Rio Verde Dr.	West	144th St	6:00	377	1:00	371
9/3/02	Rio Verde Dr.	West	Forest Rd	8:00	138	2:00	155
7/5/04	Rio Verde Dr.	West	144th St.	7:00	412	1:00	423
7/5/04	Rio Verde Dr.	West	Forest Rd.	7:00	144	1:00	175

Dust Abatement

MCDOT paves many county maintained roads to help reduce dust. The Environmental Protection Agency (EPA) imposed the 1998 Federal Implementation Plan for PM-10 nonattainment in Maricopa County, requiring dust control measures for publicly maintained roads with more than 250 vehicles per day. EPA indicated in the fall of 1999 that the measures submitted with the Serious Area Plan for PM-10 were inadequate and needed additional measures. Maricopa County proceeded to obtain MAG approval for CMAQ (Congestion Management and Air Quality) funding to assist with paving dirt roads, and has included this as a committed measure in the revised serious area plan submitted February 2000. Maricopa County's PM-10 traffic volume standard was changed June 10, 2004, to require County-maintained dirt roads to be evaluated for paving if 150 vehicles or more per day use the road. Rio Verde Drive (east of the Scottsdale border), 144th Street (from Rio Verde Dr. to Lone Mountain Rd.), Dixileta Drive (140th St. to 144th St.), and Lone Mountain Road (140th St. to 144th St.) are currently the only County-maintained roads in the planning area.

As of July 2004, MCDOT maintains approximately 500 miles of unpaved roads in Maricopa County. There are many more unpaved private roads that are the responsibility of the property owners to maintain. MCDOT helps property owners establish improvement districts to manage and finance paving and maintenance projects.

Inventory of the Existing Transportation System

In general, the existing roadway system is based on a grid pattern with arterials spaced at one-mile intervals. Most of the roads in the planning area are private or unclassified, and are maintained by the residents. Unclassified roads are those not listed in any jurisdictions' inventory.

The Rio Verde Foothills planning area roadway network consists of one major collector, one minor collector, and a number of unclassified streets. Using national classification terminology, these functional classifications are based on the trips served and the operational characteristics of roads.

Existing roadways in the planning area and their **current** functional classification are listed below:

Jomax Road	Unclassified
Rio Verde Drive	Major Collector (in the unincorporated county)
Dixileta Drive	Unclassified; Minor Collector (140th to 144th St.)
Lone Mountain Road	Unclassified; Minor Collector (140th to 144th St.)
136th Street	Minor Collector (from Rio Verde Dr. to Lone Mountain Rd.)
144th Street	Unclassified; Minor Collector (Rio Verde Dr. to Lone Mountain Rd.)
152nd Street	Unclassified
160th Street	Unclassified
168th Street	Unclassified

Bicycle and Pedestrain Facilities

Bicyclists and pedestrians have access to all public road rights-of-way in the planning area. In most cases, bike lanes or shoulders will be added during construction, reconstruction, or widening of existing roadways. However, there is currently no continuous or integrated bikeway or pedestrian system serving the entire study area. Within the Rio Verde Foothills planning area, the MCDOT Bicycle Transportation System Plan identifies Rio Verde Drive as a component of the regional bicycle network. As mentioned above, MCDOT has submitted a bike lane paving project to MAG for 2009 for Rio Verde Drive, east of Scottsdale. In addition, Scottsdale's minor collector classification includes bike lanes on minor collectors. 136th Street, a minor collector, is within the City's jurisdiction. Bike lanes will be part of the cross section of 136th Street when and if the roadway is built to its full capacity.

Existing Transit and Rail Services

There are currently no local bus routes serving the Rio Verde Foothills area. The closest facility, a shared-use park-and-ride lot, is located in Fountain Hills at the corner of Palisades Boulevard and La Montana Drive. This facility serves the Express Route, Scottsdale 512, to downtown Phoenix during certain times on weekdays.

ENVIRONMENT / ENVIRONMENTAL EFFECTS

This section combines an overview of the study area's physical and natural environment with the state-mandated Environmental Effects element. The Environmental Effects element complies with requirements of the Growing Smarter Act, and helps ensure that planning for future development in Maricopa County is consistent with federal, state, and local requirements for air quality, water quality, and other elements affecting the environment. This section addresses anticipated effects that development may have on air quality, water quality, noise abatement, visual quality, and sensitive plant and wildlife species. The report is organized into the following sections:

Physical Environment

- Physical Setting
- Topography
- Climate
- Soils
- Geology
- Vegetation
- Wildlife

Environment Effects

- Sensitive Species and Habitat
- Visual Character
- Air Quality
- Noise
- Archaeology
- Water Quality
- Hazardous Material

Physical Environment

Physical Setting

The Rio Verde Foothills Planning Area is located in the northeast region of Maricopa County (**Figure 7-Physical Setting**). The planning area lies between the foothills of the McDowell Mountains to the south and the Tonto National Forest to the north. Its eastern boundary is a few miles from the Verde River and its western boundary borders pristine Sonoran desert lands planned for permanent preservation. The updated planning area encompasses approximately 20 square miles.

The Desert Foothills planning area (adopted in 1979) was a 323 square mile area bounded on the west by Cave Creek Wash, on the south by the Central Arizona Project and Salt River Indian Reservation, on the east by the Fort McDowell Indian Reservation and the Tonto National Forest, and on the north by the Tonto National Forest (**Figure 2-Original Plan Boundary**). Since 1979, Cave Creek, Carefree, Fountain Hills, Scottsdale, and Phoenix have incorporated most of this land. The updated plan focuses on the unincorporated Maricopa County lands remaining north of McDowell Mountain Park.

Topography

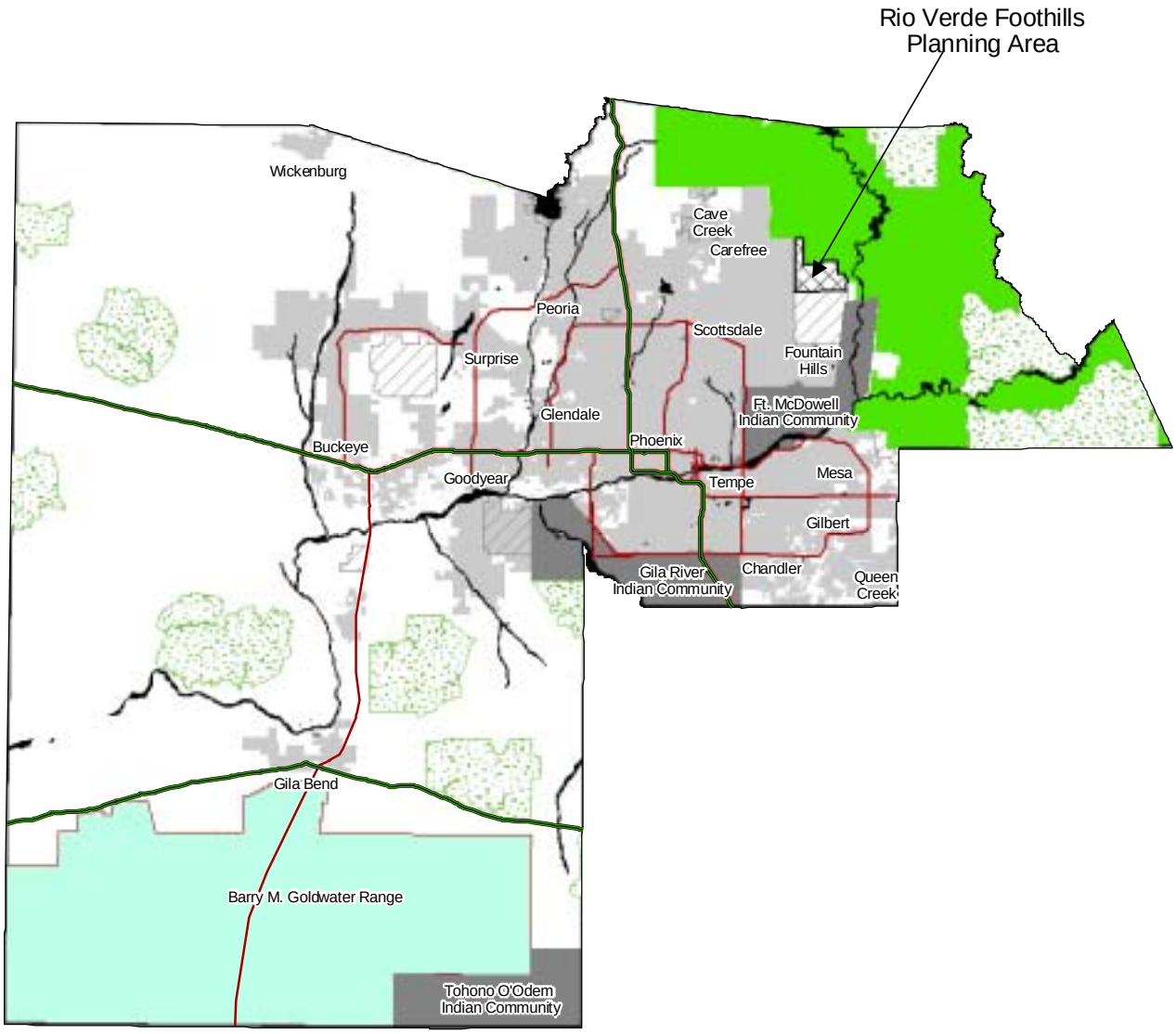
Rural, natural desert, and equestrian scenes characterize the typical landscapes in the Rio Verde Foothills planning area. Most of area is comprised of low-density residential development or horse-related facilities, and most of the natural scenes are composed of desert foothills where Palo Verde-Saguaro habitat is found. The planning area is gently sloped and drains east towards the Verde River. Striking mountain ranges such as the McDowell Mountains to the southwest and Mazatzal range to the north and east surround the planning area. The entire Rio Verde Foothills area is laced with small to medium-sized washes.

Figure 8-Elevation depicts general elevations within the planning area, which range from less than 1,700 feet above sea level near the Verde River to 2,700 feet above sea level near the northwestern portion of the planning area. The planning area can be characterized as a broad, gently sloping valley with Asher Hills, in the southeast corner, as the only significant topographical feature. The planning area slopes approximately three percent over nearly six miles as measured from east to west.

Climate

Generally, climate in the planning area is similar to the Phoenix metropolitan area with mild fall, winter, and spring seasons and hot, dry summer weather. Any differences that do occur are due to higher elevation and its location on the urban fringe. Over the past 30 years, precipitation has averaged 13.28 inches per year compared with only 8.29 inches for Phoenix. Precipitation can be three times greater in wet years than in dry years. Most of the precipitation occurs in the winter months and in July, August, and September. From mid to late summer, moist air from the Gulf of Mexico influences weather patterns. From November through March, the region is impacted by storm systems from the Pacific Ocean and the northwest United States. Storms in both seasons can create flooding and drainage problems depending on their intensity and duration.

The average high temperature for the planning area is 81 degrees, compared to 84.3 degrees for Phoenix. **Table 13-Average Monthly Climate**, summarizes



Physical Setting

Figure 7

- Incorporated Area
- County parks
- Barry M. Goldwater Range
- Indian Community
- Tonto National Forest
- Wilderness
- Rivers/Major Washes

10 5 0 10 20

Miles

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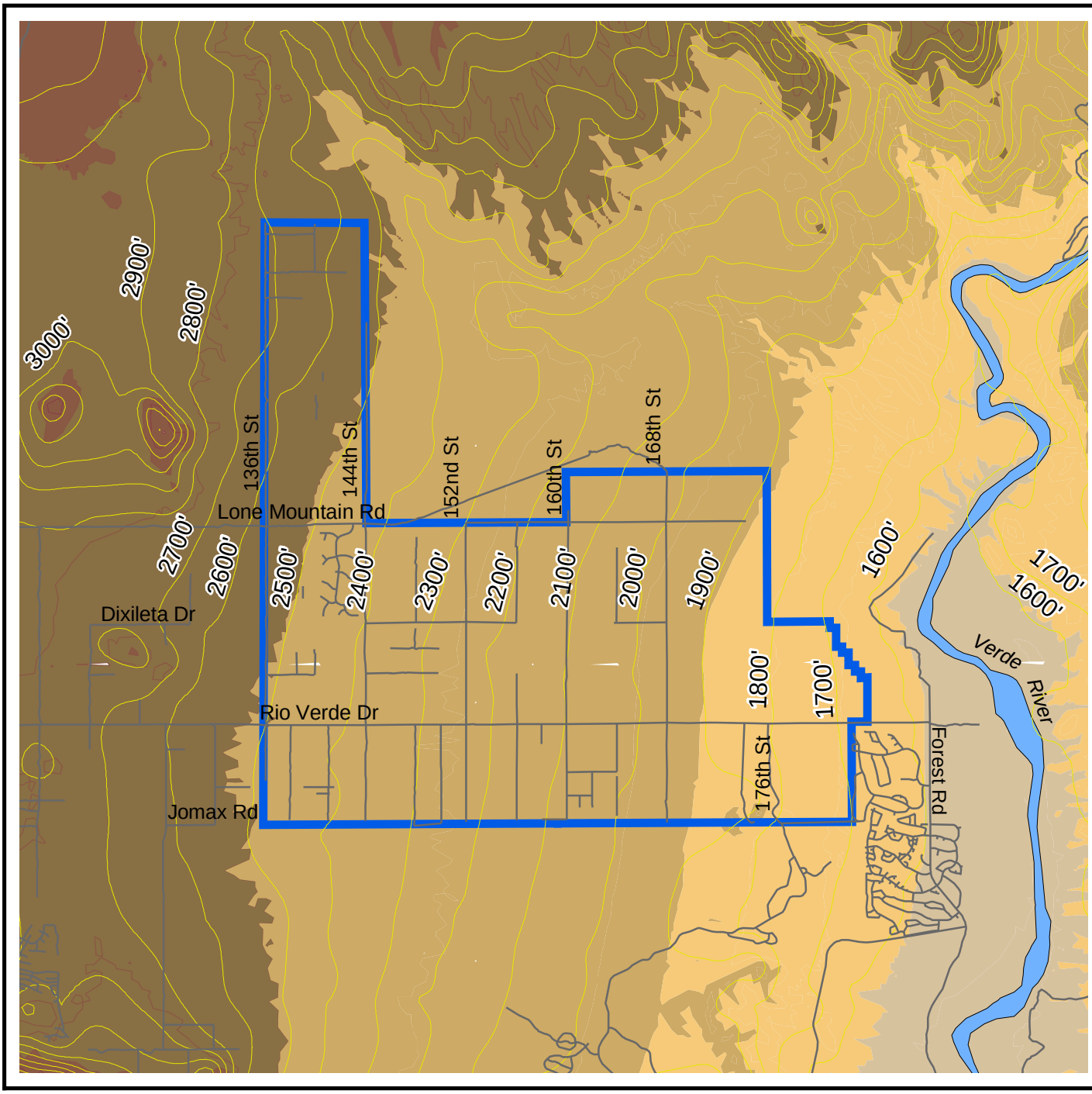

Elevation

Figure 8

Arterial Streets

Planning Area Boundary

Contour Lines

1 0.5 0 1 2 Miles

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Maricopa County Planning and Development Department

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monthly temperature and precipitation levels in the planning area.

TABLE 13: Average Monthly Climate

Month	Average Maximum Temperature (F)	Average Minimum Temperature (F)	Average Total Precipitation (inches)
January	62	41	1.7
February	66	44	1.56
March	70	47	2.01
April	79	52	0.51
May	88	60	0.16
June	98	70	0.14
July	101	76	1.16
August	99	75	1.5
September	94	70	0.9
October	83	60	1.29
November	70	48	1
December	62	41	1.35
Annual	**81**	**57**	**13.28**

Information based on 30 year average, Zip Code 85262. Source: www.weather.com

Soils

Soil types and their location have a direct effect on potential land uses. Development type, quality, and character can be significantly influenced by soil properties. Important soil properties include permeability, compaction, shear strength, shrink-swell potential, plasticity, salinity, susceptibility to erosion, corrosiveness, and the amount and type of cementation.

Soil types are categorized by *associations*. Soil associations describe a group of soils that occur in a repeating pattern, and usually consist of one or more dominant soil along with at least one minor soil. The association is typically named for the major soil it represents. There are ten major soil associations in the Rio Verde Foothills study area, and their characteristics are described later in this section. Because soil characteristics vary, testing should be done prior to development to determine if soils pose problems for septic tanks, water and sewer lines, and/or building and road foundations. In the planning area, alluvial soils prohibit seepage pit type septic systems because of potential contamination of the water table. Therefore, shallow trench systems are required in the planning area. Seepage pits are only allowed if specially engineered and must pre-treat the effluent before disposing to the pit. **Figure 9–Soils** illustrates the ten major soil associations in the planning area. These soils and their characteristics are as follows:

A) *Anthony-Arizo complex*: Deep and well-drained soils on floodplains and in drainageways. Runoff is slow, and the hazard of water erosion is moderate to severe. This unit is used as rangeland and wildlife habitat. To control erosion, extra care must be taken to maintain a good plant cover.

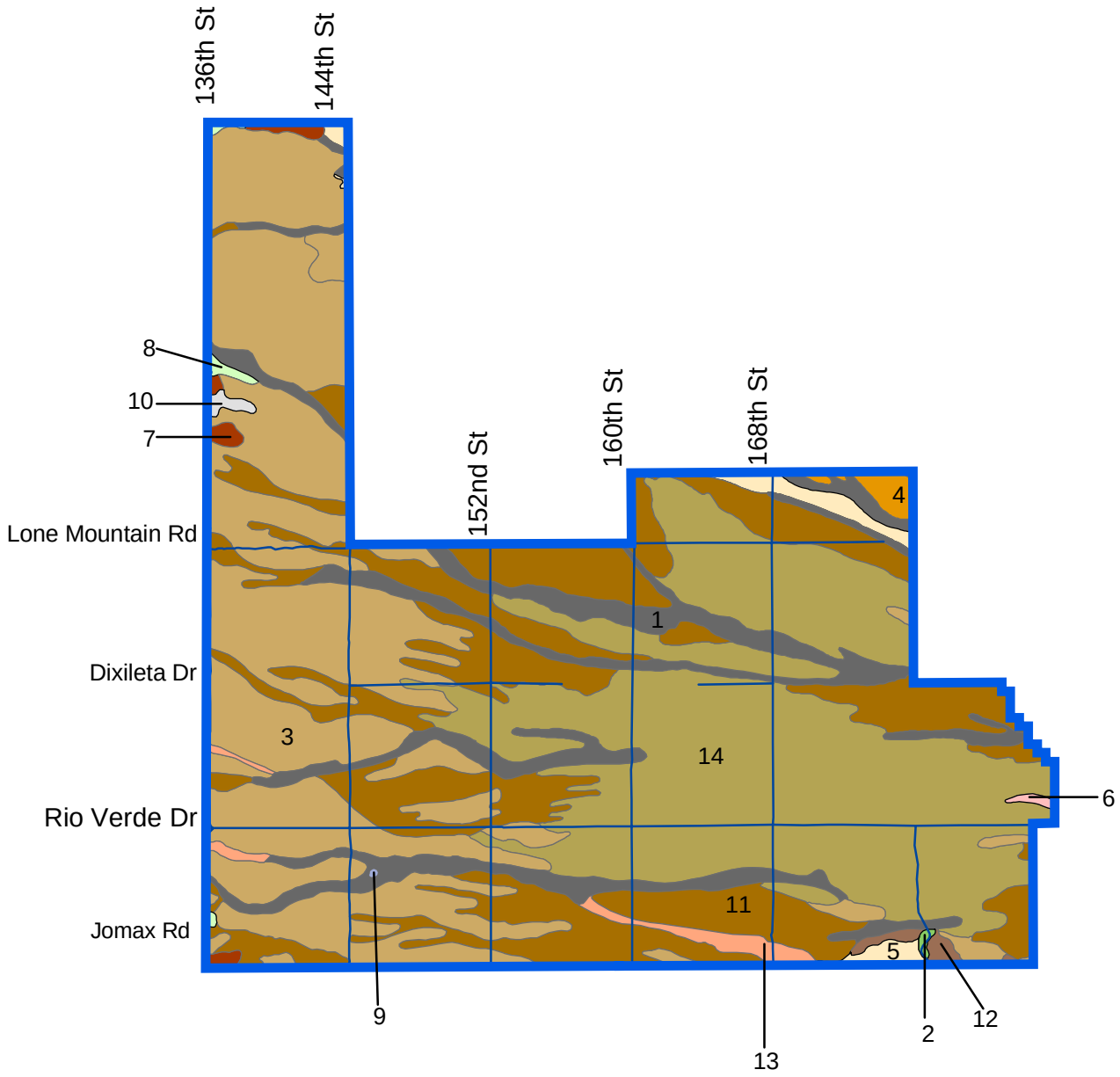
B) *Carefree cobbly clay loam*: Deep and well-drained soils on fan terraces of 0 to 8 percent slopes. Permeability of this soil is slow; runoff is slow to medium; and the hazard of water erosion is slight. Most areas of this unit are used as rangeland or wildlife habitat. A few areas are used for urban development. The shrink-swell potential and slow permeability may require specially designed septic systems, buildings, and roads.

C) *Eba series*: Deep, well drained soils on fan terraces and stream terraces. Permeability is slow to moderate. Slopes range from 0 to 40 percent. About 50 to 60 percent of the surface is covered with cobbles and pebbles. There are five sub-categories of Eba series soils in the planning area.

D) *Gila fine sandy loams*: Deep and well drained soils on alluvial fans and flood plains. Slope is 0 to 3 percent. Permeability is moderate, runoff is slow, and the hazard of water erosion is slight. If this association is used as sites for buildings or roads, the main limitation is the hazard of flooding, particularly during high intensity thunderstorms of short duration. Foundations built on this association should be placed on elevated fill material, and yards should be graded away from the foundations so that surface water will flow away from the buildings.

E) *Gran-Wickenburg complex*: Shallow, well drained soils on pediments, hill slopes, and mountain slopes. Hard rock may be encountered in some areas. Runoff is slow to medium and erosion hazard is slight. If the soils in this association are used for septic tank absorption fields, the main limitation is the shallow depth to bedrock, which restricts the movement of effluent. In areas of rock outcrop, runoff is medium to rapid, and hazard of water erosion is moderate. There are two sub-categories of Gran-Wickenburg soils in the planning area.

F) *Nickel-Cave complex*: This association is about 50 percent Nickel gravelly sandy loam and 35 percent Cave gravelly loam, occurring on fan terraces. The Nickel soil is deep and well drained. The Cave soil is very shallow to shallow and is well drained. For both Nickel and Cave soils, runoff is medium and erosion hazard is slight. Nickel soil is better suited to use as sites for buildings, roads, and absorption fields than is the Cave soil. Cemented hardpan may be present in the Cave soil.



Soil Associations

Figure 9

Soil Association

1	Anthony-Arizo complex	8	Gran-Wickenburg-Rock outcrop complex
2	Carefree cobbly clay loam	9	Lakes, ponds, reservoirs - perennial
3	Eba very gravelly loam Series	10	Nickel-Cave complex
4	Eba-Continental-Cave association	11	Pinaleno-Tres Hermanos complex
5	Eba-Pinaleno complex Series	12	Torriorthents
6	Gila fine sandy loams	13	Tres Hermanos-Anthony complex
7	Gran-Wickenburg complex	14	Vado gravelly sandy loam

0.5 0 0.5 1 Miles

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G) *Pinaleno-Tres Hermanos complex*: This association is about 45 percent Pinaleno very gravelly clay loam and 40 percent Tres Hermanos gravelly loam. Both soil components are deep and well drained; runoff is slow and the hazard of water erosion is slight. If the Pinaleno soil is used as sites for buildings or roads, it has few limitations. If the Tres Hermanos soil is used as sites for buildings or roads, the main limitation is the shrink-swell potential.

H) *Torriorthents*: Deep and well-drained soils on the side slopes of fan terraces and stream terraces. Slopes are formed by head cutting, undercutting by streams, and sloughing of sides. Torriorthents are stratified loamy sand to clay. Runoff is medium to rapid, and the hazard of water erosion is high.

I) *Tres Hermanos-Anthony complex*: This association is about 50 percent Tres Hermanos gravelly loam and 35 percent Anthony sandy loam. It is found on fan terraces, stream terraces, and associated flood plains. Both soil components are deep and well drained; runoff is slow and hazard of water erosion is slight. The Anthony soil is one of the most productive rangelands in the soil survey area. It receives extra moisture from runoff, which increases production. Extra care in management is needed to protect the soil from gullying and channeling. The riparian habitat in some areas of this association is extremely important to wildlife.

J) *Vado gravelly sandy loam*: Deep and well drained soil on fan terraces. One to five percent slopes. Runoff is slow and the hazard of water erosion is slight. Few limitations are present if the soil is used as sites for buildings, roads, or septic tank absorption fields.

The four primary soil properties that effect development suitability are permeability, available water capacity, shrink-swell potential, and corrosivity. **Table 14** categorizes the degree of constraint associated with the type of development activity for each soil association.

Table 14: Soil Association Development Constraints

Activity	A	B	C	D	E	F	G	H	I	J
Septic tank absorption fields	Moderate to severe: Flooding	Severe: percs slowly	Severe: percs slowly	Moderate: flooding	Severe: depth to rock	Severe	Moderate: percs slowly	No information provided	Severe: percs slowly	Slight
Dwellings without basements	Severe: Flooding	Severe: shrink-swell	Moderate: shrink-swell	Severe: flooding	Moderate: shrink-swell, depth to rock	Severe: slope	Slight	No information provided	Moderate: shrink-swell	Slight
Dwellings with basements	Anthony-slight; Arizo-severe	Severe: cemented pan	Moderate: too clayey	Slight	Severe: depth to rock	Severe: cut banks cave, slope	Slight	No information provided	Slight	Slight
Local roads and streets	Moderate to severe	Severe: low strength, shrink-swell	Moderate: shrink-swell	Moderate: flooding	Moderate: depth to rock, shrink-swell	Severe: slope	Slight	No information provided	Moderate: low strength, shrink-swell	Slight
Small commercial buildings	Severe: Flooding	Severe: shrink-swell	Moderate: shrink-swell, slope	Severe: flooding	Moderate: shrink-swell, slope, depth to rock	Severe: slope	Moderate: slope	No information provided	Moderate: shrink-swell	Slight
Lawns and landscaping	Anthony-slight; Arizo-severe	Severe: large stones	Severe: small stones	Slight	Severe: small stones	Severe: slope	Severe: small stones	No information provided	Moderate: small stones	Severe

Source: U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of Aguila-Carefree Area (1986)

Notes:

A) Anthony-Arizo
B) Carefree cobbly clay loam
C) Eba series
D) Gila fine sandy loams
E) Gran-Wickenburg
F) Nickel-Cave
G) Pinaleno-Tres Hermanos
H) Torriorthents
I) Tres-Hermanos-Anthony
J) Vado gravelly sandy loam

Permeability

Refers to the rate at which water moves through soil and is usually determined by soil texture. Soils with slow permeability pose severe limitations for septic tank absorption fields. Soils with slow permeability do not allow adequate absorption of effluent from tile or perforated pipe into natural soil.

Available Water Capacity

Refers to the amount of water a soil can hold which is available for plants. The ability of soil to hold water helps determine the type of plants that can be used for landscaping and lawns. It should be noted that these soil limitations do not prevent the use of imported topsoil for landscaping purposes provided that it has a high available water capacity.

Shrink-Swell Potential

Identifies the capacity of a soil to expand or shrink as the moisture content is increased or decreased. Soils with a high percentage of clay tend to have a high shrink-swell capacity, which can contribute to structural problems for buildings and roads.

Corrosivity

Refers to a soil's capacity to induce chemical reactions that will corrode or weaken metals and concrete. Corrosive soils may create problems for underground utilities if installed unprotected.

Geology

The Rio Verde Foothills planning area lies within the Sonoran desert region of the Basin and Range geographic province. The region is characterized by wide, essentially flat alluvium filled valleys surrounded by rugged, low relief mountain ranges. Central Arizona has a fascinating geologic history, which explains the dramatic escarpments, giant boulders outcrops, and vast mountain ranges seen in the landscape.

Robert Mason provides a brief account of the major geologic evolution that has occurred in the region.1 In summary, three billion years ago the land that is now Rio Verde and vicinity was at the bottom of a vast sea. Massive granite deposits seen today in the landscape are the result of great volcanic activity about one and one half billion years ago, during the formative Pre-Cambrian era. An uplifting process began about 600 million years ago and by approximately 100 million years ago this area became dry land. The former seabed, rich in silt and crustacean shells, nourished a variety of birds and land creatures, including the mammoth, dinosaur, giant sloth and saber-toothed tiger.

The last major volcanic activity occurred approximately 25 million years ago. During this volcanic period, the land in this region was actually higher than northern Arizona, and the waterway that is now known as the Verde River flowed north. It is estimated that the Verde River reversed its direction approximately five to 10 million years ago, following further uplifting to the north. The ancient Verde River was many miles wide and through its shifting deposited enormous amounts of sedimentary conglomerate rock. One example of this is Lousley Hill, a prominent landmark about a mile and a half south of Asher Hill. The McDowell Mountains were worn down into a gentle sloping pattern, primarily as a result of erosion by the once massive river. The Mazatzal Mountains display numerous valleys and canyons caused by water cutting away softer rock formations.

The McDowell Mountain range is a northwest-southeast ridge of gneiss, schist, and granite, all of which are classified as older Precambrian rocks, estimated to be two to three billion years old. The McDowells are partly composed of Miocene stream deposits. The Mazatzal Mountains, also oriented northwest-southeast, are composed of very hard, erosion-resistant Precambrian metamorphic and igneous rocks, with Quaternary lava flows between the foothills and Bartlett Reservoir. Coarse gravel with large rounded cobbles of Mazatzal Quartzite, basalt, and other hard rock types are found in the terraces of the Verde and Salt Rivers, which converge near the McDowell Mountains.[8]

Vegetation

The Rio Verde Foothills planning area is located in the Arizona Upland subdivision of the Sonoran desert and includes two general types of native plant communities: Palo Verde-Saguaro and Mixed Riparian Scrub. The Palo Verde-Saguaro community, also known as “Upper Sonoran” vegetation, is found throughout the planning area. Naturalists describe this plant community as including some of the most picturesque portions of the Sonoran desert: “Truly spectacular, it is one of the best watered and least desert-like desertscrub in North America.”[9] This community is composed of small trees including Palo Verde (*Cercidium* spp.), Catclaw (*Acacia* spp.), and Mesquite (*Prosopis* spp.); shrubs such as Creosote (*Larrea tridentata*), Bursage (*Ambrosia deltoidea*), and Saltbush (*Atriplex* spp.); and cacti including the Giant Saguaro (*Carnegiea gigantea*), Barrel (*Ferocactus acanthodes*), Hedgehog (*Echinocereus engelmannii*), Prickly Pear (*Opuntia* spp.), and Cholla (*Opuntia* spp.). The Palo Verde-Saguaro community is rich in species diversity and supports a number of wildlife species. In addition, this vegetative community provides scenic quality that enhances the overall area and should be protected wherever possible.

[8] Chronic, Halka. Roadside Geology of Arizona. Mountain Press Publishing Co., Missoula, 1983

[9] Turner, Raymond and D.E. Brown. Biotic Communities - Southwestern United States and Northwestern Mexico. University of Utah Press, Salt Lake City, 1994

The Mixed Riparian Scrub habitat is found along some washes in the planning area. The typical vegetation is composed of one or more of the following: Desert Willow (*Chilopsis linearis*), Mesquite, Catclaw, Blue Palo Verde (*Cercidium floridum*), and Ironwood (*Olneya tesota*). Not as lush or rare as true riparian habitat along rivers, riparian scrub habitat is nonetheless important for the control of erosion, natural flood control, and as habitat for wildlife. Due to the unique functions and values of the riparian scrub habitats, they should be preserved when feasible.

Most of the planning area is undisturbed Sonoran desert, although, residential uses and roads are increasingly becoming woven into the overall landscape. While the eastern region is sparsely developed, the western region is more of a patchwork of natural desert, homes on one to five acres, livestock enclosures, and a few pastures. Some residential landscapes have retained natural desert by building on small construction envelopes, with a narrow band of cleared land around the home. Other residential lots and most horse facilities have been partially or completely cleared of desert vegetation 100 feet or more away from structure(s). Analysis indicates an increasing number of roads created to reach home sites. Five years ago there was a sparse network of dirt roads throughout the area, mostly following section lines. Today, these have branched off into more numerous private roads and long driveways into residences set back from the main road.

In areas where large amounts of vegetation have been removed, the natural beauty of the region and the flood mitigating capacity is at risk of being lost. Further, once vegetation has been disturbed it is often invaded by desert broom, mustard weeds, and annual grasses. Future residential development should seek to preserve native vegetation, revegetate areas such as abandoned roads, and consider building envelopes that would limit lot disturbance, but would not necessarily apply to livestock corrals or pastures. Some rural Arizona communities have initiated a program, modeled after the Town of Oro Valley's *Save-A-Plant Program*, where planners and citizens rescue cactuses and other plants and replant them in the community.

Brush fires can occur in desert areas from mid-April through September. Rural-Metro Corporation recommends creating a 30-foot area of "defensible space" – an area free of dried grass or other highly flammable dry vegetation – around structures. Living plants need not be removed; only those that are dry or dead. They also recommend that dead branches be removed from trees, and that brush and grass around trees be cut very short.

The following is a partial list of some of the generally accepted common names of Arizona protected native plants which, by law can only be moved from one location to another after applying for a state permit.[10] Removing or destroying protected species from public and private property requires notification to the Arizona Department of Agriculture.[11]

Cacti:

Barrel
Cholla
Hedgehog
Mammillaria
Night Blooming Cereus
Pin Cushion
Prickly Pear
Saguaro

Other Plants:

Agave (Century Plant)
Crucifixion Thorn
Desert Holly
Desert Spoon (Sotol)
Ironwood Tree
Jerusalem Thorn
Mesquite
Ocotillo
Palo Verde
Yucca

Foreground to background: Buckhorn cholla, Palo Verde, and Saguaro cactus

[10] (A.R.S. Title 3, Chapter 7, Article 1)
[11] (http://agriculture.state.az.us/PSD/nativeplants.htm)

Wildlife

The Sonoran desert is thought to contain the most complex animal-plant community of any desert. The Palo Verde-Saguaro association, occurring in most of the planning area, is generally found on foothills and in valleys at an elevation of 1,200 to 4,400 feet. This habitat is important to a variety of birds that use the saguaro for nesting. Wildlife typical of this community include Gambel's quail, mourning dove, mule deer, javelina, coyote, several species of bats, and black-tailed jackrabbit. More solitary species like the mountain lion and bobcat may also be found. Species of special interest in this habitat include desert tortoise, Gila monster, and Harris' hawk. In addition, an array of small mammals, amphibians, and reptiles live in the area.

Desert dwellers also include several poisonous creatures that deserve respect and awareness, especially in the warmer months. These include the seldom seen Gila Monster, several species of rattlesnake, scorpions, centipedes, black widows, and the Hualapai Tiger beetle (also known as the assassin beetle or kissing bug).

A large variety of birds are found in the planning area due to the diverse desert habitat. More than 85 species have been counted in the nearby Cave Creek Foothills area. Roadrunners feed on grasshoppers, scorpions, lizards, and rattlesnakes, and in turn are food sources for hawks and coyotes. Spring brings back several species of hummingbirds that feed on cacti, ocotillo, and wildflower blossoms. Dozens of Gambel's quail chicks can be seen trailing the parents each spring and early summer. In addition, cactus wrens, cardinal, phainopepla, woodpeckers, Great Horned Owl, Red-tailed Hawk, vultures, and Great Blue Herons make their home in and around the planning area. Besides the pleasure of watching these beautiful creatures, they help control rodent, snake, and insect populations, cleaning up carrion (vultures), pollinating flowers, and dispersing seeds to help rejuvenate desert plant life.

Wildlife specialists recommend reserving a portion of one's property in a natural state, especially along washes and game trails, to provide habitat for desert inhabitants. This will be increasingly important as more people move to the planning area. Wildlife should not be fed as this encourages wild animals (e.g. coyotes, javelina) to become potential pests.

Mixed Riparian Scrub habitat is found in drainage ways in the region. These areas provide feeding, nesting, and shade areas for wildlife. Wildlife species in these areas are generally the same as the species in surrounding habitat but are more numerous. Conservation and preservation of local drainage ways could help provide some habitat preservation.

The McDowell Mountains, Matatzal Mountains, and Verde River encourage migration of larger animals from the unpopulated areas. Within the desert habitats, higher concentrations of wildlife live along the local drainage ways and within the riparian habitats. These drainage corridors also function as movement corridors for wildlife, including larger animals such as javelina and mule deer. The Arizona Game and Fish Department (AGFD) recommends protecting corridors that connect important habitat areas to facilitate wildlife movement between desert mountain ranges and other habitat areas.

Roads and highways can be a serious threat to wildlife as a result of roadkill, habitat loss, and habitat fragmentation. When roads disturb landscapes, they divide wildlife populations into smaller, more isolated units. Habitat fragmentation threatens all wildlife species that have to cross roads or highways to meet their biological needs. Strategies to counteract these threats range from site-specific projects like wildlife-friendly underpasses to regional models that combine landscape ecology with long-range transportation planning. A small-scale example of helping wildlife along roads was implemented on a portion of Arizona State Route 86 on the Tohono O'odam Reservation. Installation of a sturdy, welded-wire fence along two miles of the highway reduced desert tortoise roadkill by 75%. Wildlife managers recommend the use of "wildlife friendly" fencing in rural or formerly undeveloped areas. For example, a barbed wire fence consisting of three horizontal wires would leave the bottom wire smooth and about 18 inches off the ground. Open fencing such as pipe fencing allows for flooding and enables wildlife to continue to use large washes as movement corridors.

Of the six ranger districts in the Tonto National Forest, the Cave Creek Ranger District is the largest. Bordering the planning area on the north and east, it covers about 1,000 square miles. The Verde River runs 63 miles through the district with 23 miles protected as a wild and scenic river. Several threatened and endangered species are protected along the river, including bald eagles, bighorn sheep, river otters, and several native fish species. Approximately 10 miles northeast of the planning area is the Mazatzal Wilderness, on the Tonto National Forest, where larger wildlife such as mountain lion, bear, and antelope can be found.

Environmental Effects

Sensitive Species and Habitat

The Arizona Game and Fish Department's (AGFD) Heritage Data Management System lists the following sensitive species that may occur in the planning area (**Table 15**):

Table 15: Sensitive Species

Scientific Name	Common Name	Federal Status*	State Status*
Agave murpheyi	Hohokam Agave	SC; S (USFS & BLM)	HS
Coccyzus americanus occidentalis	Western Yellow-billed Cuckoo	C; S (USFS)	WSC
Gopherus agassizii	Sonoran Desert Tortoise	SC	WSC
Haliaeetus leucocephalus	Bald Eagle	LT; S (USFS)	WSC
Rallus longirostris yumanensis	Yuma Clapper Rail	LE	WSC
Rana yavapaiensis	Lowland Leopard Frog	SC; S (USFS)	WSC

*Status Explanations:

Federal:
- **LE** = listed as endangered under the Federal Endangered Species Act
- **LT** = listed as threatened (imminent jeopardy of becoming Endangered) under the Federal Endangered Species Act
- **SC** = Species of Concern (USFWS)
- **C** = Candidate Endangered or Threatened (USFWS)
- **S** = Sensitive (USFS) (BLM)

State:
- **WSC** = Wildlife species of concern in Arizona (AGFD)
- **HS** = Highly Safeguarded; no collection allowed (Arizona Native Plant Law)

Five fish are listed by the AGFD as sensitive species that may occur in or near the planning area: Longfin Dace, Desert Sucker, Sonora Sucker, Roundtail Chub, and Speckled Dace. However, since these would only occur in the Verde River they are excluded from the above list. In addition, the USFS has listed the following species as “sensitive”, which may occur along and near the Verde River: Arizona Bell’s Vireo, Arizona Southwestern Toad, Arizona Night Lizard, Maricopa Leaf-nosed Snake, Obsolete Viceroy Butterfly, and Maricopa Tiger Beetle. Development in the planning area could have potential effects on the health of the watershed, the river, and on sensitive species.

The Hohokam Agave is a succulent, rosette-shaped plant with narrow spoon-shaped leaves approximately 20-30" long. Deep green leaves are edged with small teeth and end in a short spine. After several years, plants bloom once before dying. The flowering stalk is about 10 feet tall and contains many cream-colored blooms. Miniature plants called bulbils form after the flowers and can produce new plants. This plant was a major food source for the Hohokam Indians.

The Western Yellow-Billed Cuckoo is a neo-tropical migrant which winters in South America. This streamside bird is about 12" long and slender with short legs. The decline of riparian habitat is contributing to this species decline. River restoration has been identified as an important management need.

Sonoran desert tortoise occurs primarily on rocky slopes and is known to use dry watercourses to move between habitats. These tortoises can reach 14 inches in length and have a brown to gray rounded carapace. Desert tortoises cannot be collected, killed, transported, bought, sold, imported or exported from Arizona without authorization from the AGFD. The AGFD has developed guidelines for handling Sonoran desert tortoises encountered on development projects. The AGFD should be contacted during the planning stages of any project that may affect desert tortoises.

The Bald Eagle is a large raptor with brown plumage and a golden wash on the back of the neck and head. They are over 3 feet in length with a wingspan of over 7 feet. They are mostly found in western states and nest on rock ledges, cliffs, or in large trees. This species can be found in the Tonto National Forest, north and east of the study area and often nest along the Verde River at the Box Bar site, just east of the planning area. Bald Eagles are carnivores that feed primarily on small mammals. This species is susceptible to power line electrocution, occasional shootings, and habitat loss due to development. They are extremely sensitive to human disturbance during the nesting period. Residents have reported that Bald Eagles have recently been observed in the planning area. Tonto National Forest personnel note that Bald Eagles nest adjacent to the planning area at Box Bar Ranch, Needle Rock, and Bartlett Lake.

The Yuma Clapper Rail, a marsh bird (8 to 9" tall) with a short tail, long legs, and short rounded wings, is federally endangered and a state species of concern. The Rail can be found along the Colorado, lower Gila, and Salt rivers below the Verde/ Salt River confluence. Primary reasons for concern are that the Yuma Clapper Rail is very susceptible to modifications of wetland habitat, such as channelization, bank stabilization, and water impoundments. In addition, its prey base, including crayfish, is vulnerable to pesticide and heavy metal poisoning.

The Lowland Leopard Frog is found in lower and upper Sonoran desert, but is able to survive in a wide variety of natural and human-made aquatic systems, including rivers, springs, abandoned swimming pools, and ornamental backyard ponds. They are considered a species of concern due to the negative impact of the introduction of bullfrogs, crayfish, and predatory fish. Their population has also been stricken with the chytrid fungus, a fatal skin disease.

Other species of concern to wildlife management agencies include the Cactus Ferruginous Pygmy-Owl, Southwest Willow Flycatcher, and Lesser Long-nosed Bat. The Cactus Ferruginous Pygmy-Owl was listed as endangered in Arizona in 1997; critical habitat was designated in 1999 in Arizona. Pygmy owls were historically found as far north in Arizona as New River. Suitable habitat includes Sonoran scrub with trees and/or cacti large enough to support nesting cavities, such as

those found in the planning area. Southwest Willow Flycatcher, listed as endangered in 1995, makes its home in dense streamside habitats. Potential flycatcher habitat is found along the Verde River. The Lesser Long-nosed Bat, listed as endangered in 1988, has been observed as far north as the McDowell Mountains (Maricopa County). Adult bats arrive in Arizona in spring each year and leave by early October. The bats feed on nectar and pollen from plants including saguaros and agaves.

Visual Character

Visual resources in the planning area range from lush Sonoran desert accented by majestic Saguaro cactuses, sandy-bottomed washes lined with desert trees and shubs, to more sparsely vegetated areas (remnants of 1990s brush fires), and scattered low-density rural residential areas. The overall visual character is composed of gently rolling desert with no significant hills; however, dramatic mountain vistas can be viewed in nearly every direction. The following visual characteristics are described as viewed primarily from Lone Mountain Road, Dixileta Drive, and Rio Verde Drive.

Primary visual elements in foreground areas (along the roadside) from Lone Mountain Road and 140th Street include newly paved sections of road giving way to unpaved road, pipe-rail fencing outside of the roadway shoulder, cleared/grubbed areas where new underground utilities have been installed to serve a new subdivision, and overhead 500kV electric transmission lines and towers along the south side of the road. Free-range cattle were seen in this vicinity in spring of 2004. Middleground areas, approximately one mile from the roadway, include Sonoran desert vegetation, and Granite (3526') and Fraesfield (3055') Mountains approximately one mile to the west. In the distant background are views of Blue Mountain (3169') and Brushy Mountain (3533') to the north, McDowell Mountain (over 4000') foothills to the south, Mazatzal Mountains (over 7000') to the east, and views of undisturbed Sonoran desert to the west.

Range cow in west end of planning area

Looking NE from 136th Street and Rio Verde Dr.

The primary foreground element at the northeast corner of Rio Verde Drive and 160th Street, is an approximately 16-acre equestrian riding and boarding facility enclosed by pipe-rail fencing. The facility includes several boarding stables, corrals, hay canopies, round pen, two arenas, modular home, four 26-foot tall arena lights, and other related structures. The site is entirely cleared of washes and vegetation with the exception of several rows of newly planted evergreen trees. Another equestrian facility, approximately 9 acres, adjoins the north border of the larger facility. The opposite (southwest) corner of Rio Verde Drive and 160th Street contains several smaller equestrian-related facilities of approximately 35 combined acres. The northwest and southeast corners of this intersection consist of a mix of undisturbed desert, residential homes on 1+ acres, and equestrian facilities. Middleground is dense desert vegetation with many trees and occasional Saguaro cactuses. The distant background features the same mountain views as described above.

At Rio Verde Drive at 176th Street, the primary foreground element is a cattle guard and fence controlling access south on unpaved 176th Street and small sign "Private Property-Keep Out." No structures are nearby and relatively dense desert vegetation covers the area. At this site is the intersection of smaller telephone lines on wood poles, running east/west with taller SRP electric lines on metal poles, running south from Rio Verde Drive. A wide unpaved shoulder runs along the south side of paved, 2-lane Rio Verde Drive. The telephone line runs parallel to and south of Rio Verde Drive. Middleground is dense vegetation with a view of Asher Hills less than a mile away to the south. Distant views of mountains can be seen to the north, east, and southeast from this location.

From Dixileta Drive near 176th Street, foreground elements include sparse desert shrubs, blackened Saguaro cactuses, and very few trees. Grasses and shrubs are beginning to return to this area, which was burned by the 1995 brush fire. East of 176th Street is a barbed-wire fence, marking the edge of the Tonto National Forest. The gate can be opened for local hikers and equestrians wishing to access the National Forest. The middleground is sparsely-vegetated desert. The gentle downhill slope to the Verde River is more evident now, but the Verde River still cannot be seen from this point. Distant views are of the same mountain views described above, but now Asher Hills and Lousley Hill are seen approximately two miles to the south.

Air Quality

The Environmental Protection Agency (EPA) is the federal agency in charge of setting air quality standards to protect public health and welfare. National Ambient Air Quality Standards (NAAQS) have been set for six criteria pollutants: carbon monoxide, nitrogen dioxide, particulate matter, ozone, sulfur dioxide, and lead.

States are required to adopt ambient air quality standards, which are at least as stringent as the federal NAAQS for the six criteria pollutants. The Arizona Department of Environmental Quality (ADEQ) is the state agency responsible for compliance and enforcement for all portable sources of air pollution within the state and all stationary sources outside Maricopa, Pinal, and Pima counties. The Maricopa Association of Governments is responsible for maintaining plans and addressing problems with carbon monoxide (CO), ozone (O_3), and particulate matter (PM_{10}) within Maricopa County. The Maricopa County Environmental Services Department issues air quality permits to regulated businesses, monitors ambient air for pollutants, writes the Maricopa County Air Pollution Control Rules & Regulations, and determines facility compliance. The Department sets the long-range direction for clean air within Maricopa County.

The EPA normally designates nonattainment areas only after air quality standards are exceeded for several consecutive years. Maricopa County has been designated as a nonattainment area for CO, O_3, and PM_{10}. The Rio Verde Foothills planning area lies within the nonattainment boundary.

Carbon monoxide is an odorless, colorless, toxic gas formed when carbon-containing compounds or fuels are burned incompletely. Potential primary sources of CO in the planning area are on-road mobile sources (e.g. automobiles and trucks), non-road mobile sources (e.g. lawn and garden equipment, construction, farm, and recreational equipment), and area sources (e.g. fuel combustion, open burning, fire places, and woodstoves). The EPA classified all of Maricopa County as a serious CO nonattainment area in June 1996. CO pollution can reach unhealthy levels in Maricopa County during the winter months.

At ground level, ozone (O_3) is a primary component of photochemical smog. It presents a serious health threat to people suffering from respiratory disease. The primary emission sources include volatile organic carbons and nitrogen oxides from nonroad, area, motor vehicle and biogenic sources (certain types of vegetation including citrus and eucalyptus). O_3 can reach unhealthy levels in Maricopa County during the summer months.

PM_{10} refers to fine particulate matter suspended in the atmosphere. These particles have a diameter equal to or less than 10 micrometers. When inhaled, the fine particles can be deposited in the lungs, resulting in difficult breathing, bronchitis, aggravation of existing respiratory diseases, and permanent lung damage. Earthmoving and windblown emissions from unpaved roads and parking lots, agricultural areas, construction sites, and disturbed open areas are the predominate causes of exceedences of air quality standards. Maricopa County's PM_{10} traffic volume standard was recently changed to require dirt road paving of County-

maintained roads if 150 vehicles or more per day use the roadway. In 1996, the EPA classified Maricopa County as a serious PM_{10} nonattainment area. The closest PM_{10} air monitoring site to the planning area is at the intersection of Forest and Del Ray Avenues in Rio Verde. To meet EPA and MAG standards, the City of Scottsdale paved one mile of 136th Street north of Rio Verde Drive in 2000, and an additional two miles of 136th Street in 2001 for a total of three paved miles due to increases in traffic counts north of Rio Verde Drive.

In the Rio Verde Foothills planning area, the main sources of dust include unpaved roads; trucks, ATVs and other traffic; corrals and arenas; and construction sites. Maricopa County has implemented several air pollution control programs including a Clean-Burning Fireplace Ordinance, Clean Burning Gasoline, Fugitive Dust, and Vehicle Emissions Inspection programs.

Noise

Prolonged exposure to loud noise can cause general community annoyance and reductions in property values. Residents in the Rio Verde Foothills community indicate the area is mostly quiet. The primary sources of noise would be vehicular traffic, ATV use, and occasional noise from special use permit facilities such as loud speakers at horse arenas. While there are several airports in Maricopa County, no major flight paths cross over the planning area.

Archaeology

Arizona, and especially Maricopa County, has one of the highest concentrations of archaeological sites in the United States and possibly the world. There have been over 800 Hohokam sites recorded just within the Salt River Valley. The State Historic Preservation Office (SHPO) has detailed information on file for site locations and surveys that have been conducted in the planning area. For resource protection, only members of federal, state, or local government agencies can examine the files.

If a federal or state agency is involved in a project that will affect an undisturbed area, that agency is required to consult with the SHPO to determine if any historic or archeological properties exist in the project area and/or if a survey is necessary. Given the high potential for sensitive sites, prior to development, excavation, or grading an archaeological/historical review should be performed to determine an area's full archaeological potential, and preservation precautions should be taken where necessary. On private property, Arizona state law requires the landowner to notify the Arizona State Museum of the discovery of human remains at least 50 years old or of the intent to disturb a known burial site.

Although no systematic reconnaissance field survey of the county has been conducted, preliminary studies indicate high potential for significant archaeological resources north and east of the planning area, including the Verde River basin. The SHPO, in cooperation with federal, state and other agencies is developing a statewide electronic database to provide comprehensive survey information of all historic sites in Arizona. In general, there is evidence to show that the lower Verde River valley supported a large variety of encampments, including Hohokam villages, ballcourts, and several irrigation canals built near the river. As their population grew, the Hohokam spread out from the Salt and Gila River into the Verde and Agua Fria River valleys.

In 1991, the Bureau of Reclamation contracted an excavation project around the Horseshoe and Bartlett Reservoir areas north of the planning area. During this excavation one Hohokam Indian village was discovered, Scorpion Point Village. Hohokam Indians are believed to have inhabited the area from around 300 A.D. until the early 1400's when they vanished. The Scorpion Point Village contained two ball courts, cemeteries, plazas, and between 200 to 400 pit houses.[12]

Another significant site was found in Troon Village, west of the planning area, near Pinnacle Peak. Discovered in this site were seven pit houses, 30 trash mound, jars, bowls, grinding stones, a complete shell pendant and whole-shell ornament carved as a snake head, 679 human bone fragments, and a copper bell that is assumed was traded for in Mexico. This property has since been donated to the Archaeological Conservancy.

One large archaeological site was found along the bank of the Verde River near Rio Verde Ranch. This land is said to have once supported several thousand Native Americans around 800 A.D. This inference is drawn from the large number of artifacts found in the area, including trash mounds, fire pits, irrigation canals, pottery, arrowheads, and five ball courts.

Water Quality

The entire Rio Verde Foothills planning area lies within the Fountain Hills sub-basin, which is located in the northeastern part of Maricopa County and covers an area of approximately 360 square miles. Limited groundwater quality data indicate that most of the groundwater in the Fountain Hills sub-basin is suitable for most uses, including domestic use.

[12] More information on this site and others found in the lower Verde Valley is found in the book published from this project, *Vanishing River: Landscapes and Lives of the Lower Verde Valley: The Lower Verde Archaeological Project*.

In the Fountain Hills sub-basin, total dissolved solids (TDS) concentrations have been estimated to range from 294 milligrams per liter (mg/l) to about 834 mg/l in 1983.[13] Most groundwater in the Phoenix area contains TDS concentrations between 500-1,000 mg/l. TDS is an indicator of salinity or hardness of the water. The Environmental Protection Agency (EPA) has established a secondary maximum contaminant level (SMCL) of 500 mg/l for TDS, primarily for aesthetic reasons. From the perspective of human health, dissolved solids are less of a concern than pesticides or nitrates, for example. Dissolved solids are considered secondary contaminants that affect taste, smell, and appearance of drinking water.

Fluoride concentrations in the sub-basin ranged from 0.4 to 9.2 mg/l.13 The EPA's primary MCL for fluoride is 4.0 mg/l and the recommended SMCL (secondary MCL), an aesthetic standard, is 2.0 in order to prevent mottling of teeth. The Water Utility of Northern Scottsdale (WUNS) is the water provider for two new subdivisions in the planning area: Granite Mountain Ranch and Rio Mountain Estates. WUNS has no affiliation with the City of Scottsdale. Lab reports for the water utility's well no. 2 indicate a fluoride concentration of 1.4 mg/l. Water quality testing for the WUNS well no. 2 indicated very little arsenic, less than 2 parts per billion (ppb). In January 2001, the EPA lowered the arsenic standard from 50 ppb to 10 ppb, with an effective date of January 23, 2006. A nitrate concentration of 1.6 mg/l was found for well no. 2. Drinking water supplies are required to have less than 10 mg/l of nitrate. Lab reports for another WUNS well indicated a relatively low TDS concentration of 270 mg/l.

Surface water pollutants can originate from both single point sources such as a pipe or ditch, and non-point sources such as runoff from agricultural fields, construction sites and urban development. In Maricopa County, agriculture, industry, construction, wastewater treatment plants, motorized recreation, landfills, and resource extraction are the primary contributors to surface water pollution. Sources of elevated levels of nutrients may include fertilizers, livestock-feeding operations, sewer and septic systems. Best management practices and regulation of point-source pollution are methods to reduce the quantity of nutrients entering streams. Regulatory agencies and environmental legislation have resulted in greater attention to the mitigation of existing pollution problems and the prevention and mitigation of future problems.

In the planning area, there are a number of horses and other livestock in corrals, as well as free-roaming livestock. All of these animals contribute to the potential for effluent contamination of surface waters. Large horse operations, in particular, have a responsibility to clean up manure on a daily basis and store it in enclosed

[13] Arizona Water Resources Assessment, Volume II Hydrologic Summary. Arizona Department of Water Resources, August 1994

containers for proper weekly disposal, as indicated in the Maricopa County Environmental Health Code.

The U.S. Army Corps of Engineers regulates activities in the nation's waterways. In 1972, Section 404 of the Clean Water Act was passed. It prohibits discharging dredged or fill material into U.S. waters without a permit from the Corps. The Corps' first priority in its enforcement program is to protect the aquatic environment and other public interest resources. The Section 404 program's geographic jurisdiction extends to all waters of the U. S., including all tidal waters, all interstate waters, virtually all wetlands, lakes, rivers, perennial and intermittent streams, and dry washes in the arid west.

The quality of Central Arizona Project (CAP) water, although naturally high in dissolved solids, is acceptable for most uses with appropriate treatment. Imported from the Colorado River, CAP water has become a major source of water in the Valley. CAP water is not currently used in the planning area but is used as a primary water source in the City of Scottsdale.

Additional information on water quality in Maricopa County is available in the Water Resource element of *Eye to the Future 2020*, the Maricopa County Comprehensive Plan. A discussion of water quality issues in the Rio Verde Foothills planning area is also presented in the Water Resources section of this area plan

Hazardous Material

ADEQ's Emergency Response Unit responds to hazardous material and pollutant releases that pose an immediate threat to public safety. The Unit directly provides for containment and proper disposal of materials when responsible parties are not capable of doing so. They also operate the statewide hazardous substance spill reporting network. There have been no reported spills of hazardous materials in the study area since 1998.

Wildfire Prevention

Community wildfire protection planning is one of the priority issues that emerged with the enactment of the Healthy Forests Restoration Act in 2003. The legislation includes incentives for the USFS and Bureau of Land Management to consider priorities of local communities as they develop forest management and hazardous fuel reduction projects. The Rio Verde Foothills community may benefit from developing a Community Wildfire Protection Plan (CWPP) with assistance from the Healthy Forests Restoration Act. A website containing information on preparing a CWPP is available at: www.wildfire.org. Tonto National Forest policy is to

aggressively suppress any wildfires in the wildland/urban interface area. The USFS is not likely to conduct any major fuel reduction projects in the planning area because of its location within the Sonoran desert vegetative community. Currently, the USFS works together with Rural/Metro or other local fire departments when fire threatens communities adjacent to the national forest.

ECONOMIC DEVELOPMENT

Social and Economic Characteristics

The social and economic characteristics of the Rio Verde Foothills planning area are described in the following five sections:

- Area Economy/Economic Base
- Housing
- Residential, Commercial, and Industrial Demand
- Economic Base Potential
- Policy Implications

Area Economy/Economic Base

Two types of markets provide income and employment within any economy. The local market, or non-basic sector, sells products to consumers within a city or area, and the export market, or basic sector, which sells products to consumers outside a city or area. Economic theory asserts that a region must produce and export goods and/or services to an outside market in order to increase local income.

One of the major goals of economic development is to create jobs. Many established rural areas include some employment opportunities such as manufacturing operations, distribution centers, agricultural activities, local government offices, or public schools. Industrial employment activities are typically located close to an Interstate freeway or regional highway. The Rio Verde Foothills area, by contrast, has only recently been developed, does not contain any farmland, and is over 12 miles from a regional highway. The primary economic activity in the planning area is comprised of equestrian-related activities that produce income and/or contribute to the economy through direct and indirect expenditures. As with many other "bedroom" communities, residents in the planning area are willing to trade convenient urban services and short commutes to gain quality of life benefits of living in a less congested, more natural environment.

Table 16 provides a classification of total employment in the planning area. These numbers are based on types of employment reported by residents in the planning area for the U.S. Census 2000. Most of the employment sites are outside the planning area. Employment figures for the year 2000 were developed by MAG, based on a Traffic Analysis Zone (TAZ) that corresponds to the unincorporated Rio Verde Foothills planning area. In this table, 'Industrial' and 'Other' appear to be the top two employment categories. There were 757 total jobs reported in the planning area in 2000.

Table 16: MAG Socioeconomic Data - Base 2000 Employment

Area	Retail	Office	Industrial	Public	Other	Total Employment
TAZ Area 345	9	1	627	47	73	757
Total % in Employment Category	1.2%	0.1%	82.8%	6.2%	9.6%	100%

Source: Maricopa Assoc. of Governments POPTAC data, Accepted June 25, 2003 (consistent with 2000 census data).

Note: **'Other'** employment includes work-at-home and construction employment.

According to the U.S. Bureau of the Census - County Business Patterns (2001), the top employers in the Industrial / Manufacturing sector in the greater Phoenix area include computer and electronic product manufacturing, transportation equipment manufacturing, and fabricated metal product manufacturing. Greater Phoenix has a number of large high-tech manufacturers such as Honeywell, Intel, and Motorola.

In the greater Phoenix area, the Public sector includes major employers such as the State of Arizona, Maricopa County, City of Phoenix, U.S. Postal Service, and Arizona State University. The largest retail employer in the greater Phoenix area is Wal-Mart Stores, Inc., followed by Albertson's-Osco, Bashas' Inc., and Safeway Inc. The top healthcare sector employer is Banner Health Systems, and the largest financial services employer is Wells Fargo Company.[14]

In 2003, Arizona ranked behind only Nevada in percentage of job growth. The Arizona Department of Economic Security (DES) continues to believe that Arizona's economy will expand and improve the pace of job growth over the next two years. Employment growth is forecast to accelerate in 2004 to 2.5 percent, and to 3.1 percent in 2005 primarily due to population growth and migration. Currently, construction and health services are leading job growth in the state, and the unemployment rate is hovering around 5 percent.

For the Phoenix-Mesa metropolitan area, DES indicates that the professional and business services industry is forecast to add more than 21,500 jobs during the 2004-05 period, while the education and health services group is expected to add 20,500 new jobs during the same period. Trade, transportation, and utilities is forecast to add 17, 000 jobs. Government is forecast to add nearly 11,000 service-providing jobs. The construction industry is expected to add more than 9,000 jobs. Arizona's tourism industries are also expected to show considerable improvement, resulting in an increase of nearly 7,000 jobs during the 2004-05 period. Arizona's manufacturing industry has been slow to recover from the post-

[14]Business Journal Book of Lists 2004 (online)

2000 recession and is forecast to continue to lose jobs in 2004, but will add jobs in 2005.

According to DES, many of Arizona's rural areas are experiencing strong housing demand, a trend that is likely to continue through the next decade. This trend is attributed to: retirees seeking value and less congested lifestyles; a reaction to terrorist attacks of 2001 to relocate to low-density communities; and, out of state residents seeking a southwestern lifestyle.

Besides modest improvement in employment growth, a longer-term trend at the county, state, and national level is an increase in workforce age. Over the next twenty years, the number of younger workers available to replace older workers will decline, creating a possible shortage of workers. Whereas growth in the number of working adults (ages 25 to 55) will increase by about 34% between 2000 and 2020, the number of people over the age of 60 will increase by 104%.

Horse Industry

As noted, equestrian-related activities make up the primary economic activity in the planning area. In 2001, the University of Arizona (U of A) College of Agriculture and Life Sciences conducted an economic impact analysis of Arizona's Horse Industry, sponsored by the Arizona State Horsemen's Association. The study found that direct, indirect, and induced expenditures by Arizona's horse industry total between $1.1 and $1.3 billion. Direct effects are the result of purchases by horse owners and users. Indirect and induced effects are created by ripple effects throughout the economy, resulting from expenditures of end users.

The largest portion of this expense comes from the direct expenses of the pleasure horse owners, $500 to $600 million (78%). Money is spent on the care and maintenance of pleasure horses and related infrastructure (including the annualized cost of horse, tack, equipment, land and facilities ownership). Horse racing in Arizona generates an estimated $108 million (16%) in expenditures. Horse show events contribute an estimated $43 million (6%) in expenditures. Arizona resident spectators at other horse-related events (rodeos, roping, polo, gymkhana) spent $9 million in 2001.

The combined indirect and induced effect of the above contributed an additional $444 to $504 million to the total Arizona horse industry expenditures. Major categories not included in this study are commercial pleasure riding, participants at rodeo, roping and polo events, and breeding of horses for export sale outside Arizona.

The U of A study looks at four of the state's largest horse shows, two in Tucson and two in Scottsdale. Combined, these shows had a direct economic impact of over $27 million between December 2000 and March 2001. The number of Arizona households with one or more horses is between 48,000 and 64,000, and it is estimated that there are more than 170,000 horses in Arizona. According to a 1990 study by the U of A, over 15,000 jobs are directly or indirectly linked to expenditures on horses.

In the planning area, there are currently four equestrian riding/boarding stables permitted under special use permits. Hundreds of individual properties also have horses. The Rio Verde Horsemen's Association membership directory indicates there are 165 to 175 member residences (350+ voting members) that have horses on their individual properties. According to Rio Verde Foothills Alliance records, there are approximately 65 member households that have horses. As more people move into the area, these numbers are anticipated to increase.

Economic Development Corridors

As seen in **Figure 10 – Scottsdale General Plan Land Uses** (revised June 2004), the City of Scottsdale's general plan identifies several existing golf courses, existing and proposed resort/tourism areas, and existing and proposed commercial centers located west of the planning area. The resorts and golf courses are concentrated east of Pima Road along Dynamite Boulevard, while the commercial centers are clustered along Alma School Parkway, south of Dynamite Boulevard and ending approximately at Jomax Road. The closest employment location is clustered near Bell Road/Frank Lloyd Wright Boulevard and Pima Road, with additional employment concentrated around the Scottsdale Airpark, south of Bell Road and west of Pima Road. These employment locations are an approximate 15-mile drive from the planning area.

Housing

Over the last several years, growth in the Phoenix metropolitan area housing market has been strong. Maricopa and Pinal counties combined took in nearly 50,000 residential permits in 2003. The University of Arizona forecasts over 51,000 residential permits and another 6,000 new construction jobs in 2004.

A steady increase in residential building permits within the planning area reflects a similar trend. **Figure 11A-Residential Completions** indicates those parcels that contain residential structures. Most of the housing stock in the planning area is characterized as conventional single-family homes, and most homes are less than 10 years old. Between 1993 through 2003, 730 single-family homes were completed in the planning area; at least 25 of these were manufactured dwellings. Only about a dozen homes in the planning area were constructed prior to 1990.

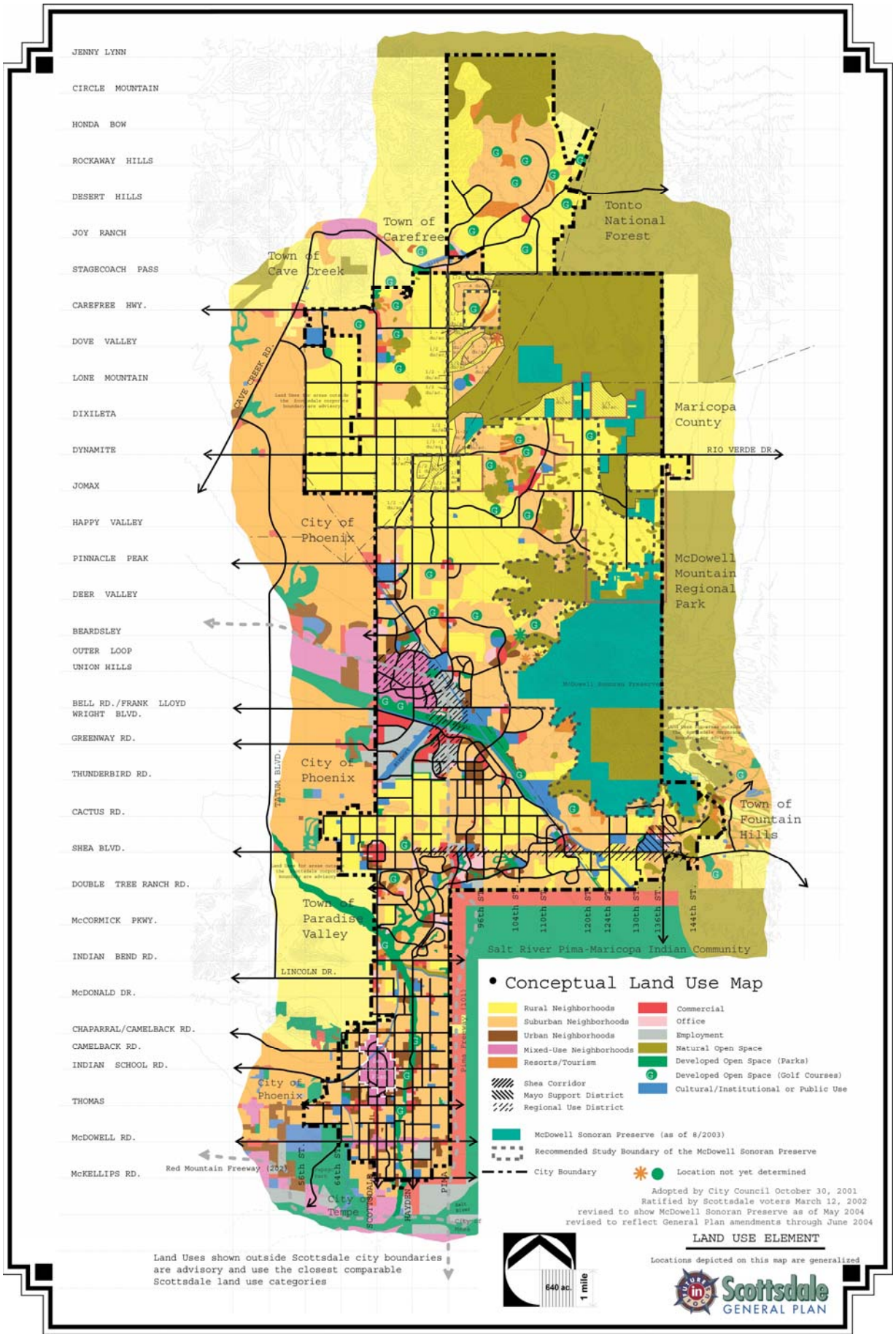

Figure 10 – Scottsdale General Plan Land Uses

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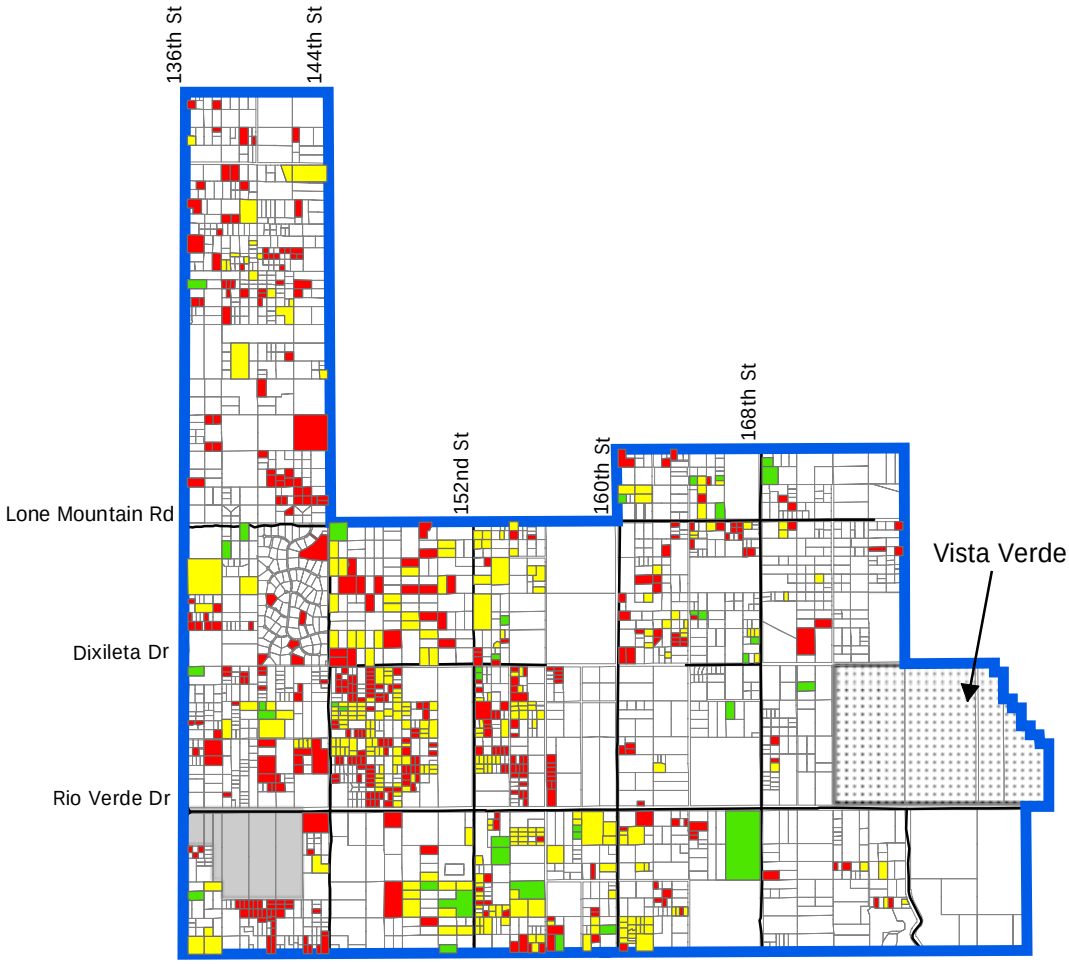

Residential Completions

Figure 11A

Residential Completion Dates

- 1993-1996
- 1997-2000
- 2001-October 30, 2003
- Incorporated Area
- Development Master Plan

0 0.5 1 2 Miles

Maricopa County Planning and Development Department

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Another indicator of housing demand is approved final subdivision plats in the planning area. In October 2000, Maricopa County approved a final plat containing 45 single-family lots for Granite Mountain Ranch Unit I (average lot size 2.64 acres). In November 2000, a final plat for Granite Mountain Ranch Unit II was approved for 55 single-family lots (average lot size 2.7 acres). In December 2003, Rio Mountain Estates Unit 1 final plat was approved for 54 single-family lots (average lot size 1.18 acres). The preliminary plat for Rio Mountain Estates Unit II includes 45 additional single-family lots. Also, 842 lots (primarily single-family and some townhouse units) are planned for the Vista Verde master-planned community. Planned densities within individual parcels is between 2-4 units per acre, although overall gross density is 0.98 units per acre.

Personal Income

Census 2000 reports do not include income data specifically for the Rio Verde Foothills planning area. However, the Maricopa Association of Governments (MAG) provides estimates of household and family income for Arizona, Maricopa County, incorporated cities and towns; and, provides an income range for general areas outside of incorporated areas. **Table 17** indicates income levels for the state, the county, two jurisdictions adjacent to the planning area, and for the planning area.

Table 17: Median Family and Per Capita Income

Area	Median Family Income	Per Capita Income
Arizona	$467,000[1]	$20,300
Maricopa County	$518,000[1]	$22,300
Rio Verde CDP	$862,000[1]	$58,800
Scottsdale	$738,000[1]	$39,200
Rio Verde Foothills planning area	$45,000 - $60,000[1]	Not available

[1] Maricopa Association of Governments compilation, based on Census 2000 data.

[2] U.S. Bureau of the Census, Census 2000 (profile of selected economic characteristics).

Note: The median divides the income distribution into two equal parts: one-half of the cases falling below the median income and one-half above the median income.

Definition: CDP – Census Designated Place

Population data by age was not available specifically for the planning area. However, age data was available for a Zip Code Tabulation Area (ZCTA) that roughly corresponds to the planning area, but includes population in the City of Scottsdale as far west as Scottsdale Road. **Table 4-Population Distribution by Age in Percentages**, indicates that the median age of ZCTA 85262 residents (54.6 years) is significantly higher than the County's median age of 33. Median age of males is 55.9, compared to median age for females of 53.5 years. The median age of Rio Verde residents is 68.7 years, significantly higher than the ZCTA 85262 median age. This would be expected since Rio Verde and Tonto Verde are retirement

communities. Only 10 percent of ZCTA 85262 residents are under the age of 15, compared to 23 percent for the County. Since nearly 50 percent of ZCTA 85262 residents are age 55 and older, one could assume that a large segment of the population is retired or semi-retired.

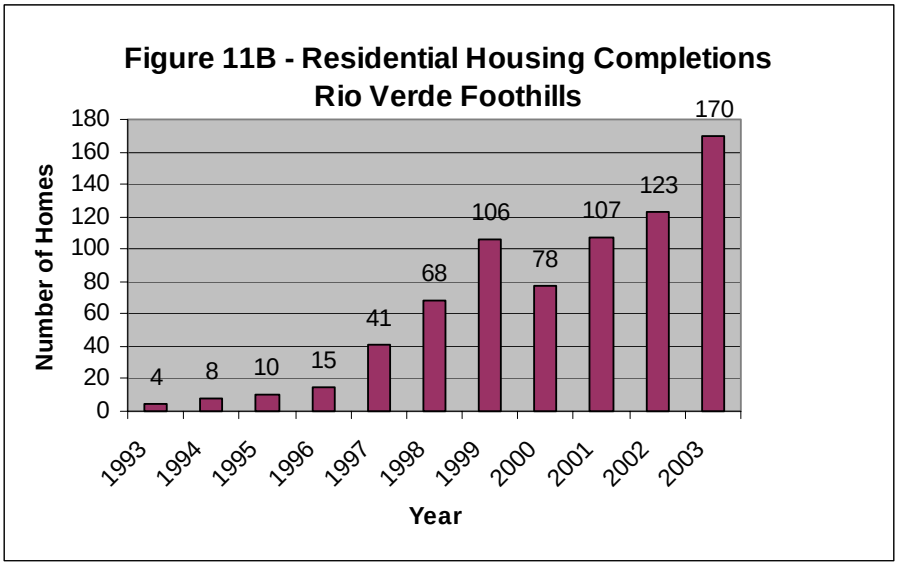
Census 2000 data for the census block that corresponds closely to the Rio Verde Foothills Planning Area does not break down population into age groups, but does provide a breakdown of population greater than 18 years. Census 2000 data indicate that out of the 778 residents, 585 (75%) were older than 18 years; 193 (25%) were 17 years and under. The Cave Creek Unified School District identified 206 students within the unincorporated area east of 136th Street that were attending district schools in early 2004. In addition, some students attend schools in Fountain Hills and Scottsdale.

Economic impact studies find that the economic impact of retirees can be considerably larger than that of manufacturing employees in the same region. [15] Retirees are mobile and many have substantial incomes. Local economic development strategies may include retaining retirees as a way to receive economic benefit. Blair suggests that a community seeking to attract and retain retirees should attempt to establish an amenity-rich setting, such as a natural environment, with good health care facilities.

Construction and Real Estate

Over the past several years, Maricopa County has been one of the nation's leaders in residential construction. The planning area reflects a similar pattern to Maricopa County in that residential permits have remained relatively high since the late 1990s. During the 1980s, an average of zero to three new homes per year were built in the planning area. By contrast, approximately 170 homes were completed in 2003 (**Figure 11B – Residential Housing Completions graph**). Several of these dwellings are manufactured homes, including those used temporarily (under a temporary use permit), during construction of a permanent home. It should be noted that multi-sectional manufactured homes are allowed in the rural zoning districts as a use by right. However, singlewide trailers permanently remaining on property require a special use permit through the County. Some localized areas within the planning area prohibit manufactured homes through deed restrictions.

[15] Blair, John P. 1995. *Local Economic Development, Analysis and Practice*. Thousand Oaks, CA.: Sage Publications.



Source: Maricopa County Planning & Development data; Maricopa County Assessor data

According to the Greater Phoenix Economic Council, between 1990 and 2000 the greater Phoenix area was the fastest-growing large metropolitan area (population above 2 million) in the United States, adding 1,013,396 new residents since 1990 (a 45.3% increase). By 2010, the population is expected to grow by another 24% to 3,709,566, an increase of 718,316 new residents. The population growth trend, along with other factors, is predicted to be a key driver of growth and development in the greater Phoenix area. The Rio Verde Foothills area will likely remain attractive to many people who want to escape the city and reside in a quiet, rural setting.

Residential, Commercial, and Industrial Demand

Residential, commercial, and industrial demand calculations can be found in the Growth Areas element of this area plan. Estimates for the amount of land needed to accommodate future land uses are also provided in the Growth Areas element.

Economic Base Potential

The economic base of this 20 square-mile planning area is modest. The area is characterized by scattered, low-density residential development; a few large commercial (with special use permit or agricultural exemption) equestrian facilities; several non-commercial equestrian facilities; and large areas of undeveloped desert.

Economic development activities that are expected to continue include equestrian activities (trail riding, boarding, breeding, buying, selling); real estate activity; construction activity; well drilling; fencing; and other residential-related service businesses. Some residents conduct small-scale, home-based businesses such as real estate services, saddle repair, and computer assistance. According to the Maricopa County Zoning Ordinance (MCZO), residents in rural areas are permitted to conduct certain businesses from their home, subject to certain requirements. In general, the business must be conducted within an enclosed dwelling; no signs or advertising is allowed on the premises; the business must not generate any noise, odors, dust, etc., or use toxic or dangerous material; and, only residents of the dwelling may be employed in the business.

Commercial growth during the next 10 to 15 years is expected to be limited to the activities described above, due to the distant geographic location, the unknown status of water availability, lack of infrastructure, distance from existing services, and the desire of the community to maintain the rural residential character. By 2020, there may be some potential for limited small-scale neighborhood retail or service development on Rio Verde Drive. If this point is reached, scenic corridor guidelines may be in place for Rio Verde Drive that would help to preserve the rural character and natural desert setting along this principal arterial roadway.

Policy Implications

During data analysis, Maricopa County identified several important social and economic considerations that are addressed in this plan:

Employment Corridors

The completion of Loop 101 has provided residents in outlying areas with more convenient access to employment opportunities in Scottsdale, Tempe, Chandler, and Mesa. However, should this area become more urban, policies may need to be developed for the long term that will help create employment opportunities closer to the planning area; create a better jobs/housing balance; reduce traffic volumes; and increase multi-modal transportation alternatives.

Commercial Development

Currently there is little commercial development in the planning area, with the exception of facilities developed under special use permits or agricultural exemptions. Any future development permitted under special use permits should be sited and designed such that the activities present will not detrimentally affect adjacent residential neighborhoods. The community should provide input so that any approved facility would be compatible with the area. In addition, creation of scenic corridor status for Rio Verde Drive should be pursued in order to develop policies

and design guidelines to help preserve the existing rural character and conserve significant scenic resources. The design guidelines would be developed with community participation and would apply to all new special use permit development, new residential subdivisions, or any other new zoning entitlements within a designated corridor. The design guidelines would not apply to individual single-family home construction (outside of a subdivision). However, individual property owners may elect to comply with design guidelines to support the community effort. Scenic corridor status is discussed further in the Open Space element under open space issues.

Residential Development

Residential development will continue to impact the region's environment and character. Current development regulations and lot splitting requirements will not be sufficient to prevent development in washes, areas with high quality Sonoran desert, and areas that lack the proper services (sewer, water, and streets). Policies and guidelines should be developed to encourage suitable locations for new subdivisions and to help ensure that appropriate access and services are provided. For new subdivisions, incentives such as flexible development standards and voluntary agreements can be explored to protect sensitive areas, open space areas, and trails.

Coordinated and Comprehensive Economic Development Strategy

For the next 10 to 15 years, a comprehensive economic development strategy is not critical since commuting to employment centers outside of the planning area, along with a component of home-based business, will continue to be feasible. If the planning area continues to grow at the rapid pace of the last 10 years, cooperative and coordinated strategies may become necessary to expand and enhance the local economy. Maricopa County should actively participate in and support such strategies and programs.

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GROWTH AREAS

Introduction

In 1998, the State of Arizona passed the Growing Smarter Act to ensure the wise management of growth and protect our state's natural heritage. Among other elements, Maricopa County is now required to include a plan for growth areas. Specifically, Maricopa County must identify those areas, if any, that are particularly suitable for planned multi-modal transportation and infrastructure expansion and improvements designed to support a planned concentration of a variety of land uses. This includes residential, office/employment, commercial, tourism, and industrial uses. This mixed use planning must include policies and strategies designed to:

- Make automobile, transit, and other multi-modal circulation more efficient
- Make infrastructure expansion more economical
- Provide for rational land development patterns
- Conserve significant natural resources and open space areas within growth areas, and coordinate their location to similar areas outside of growth areas
- Promote timely and financially sound infrastructure expansion

The Growth Areas element is important because it allows Maricopa County to accommodate growth in an orderly and fiscally responsible manner that is sensitive to the natural environment and residents' quality of life. This type of growth will keep Maricopa County economically, socially, and environmentally successful. For a County perspective on growth areas, refer to the *Eye to the Future 2020* Growth Areas element. Although there are fewer opportunities to plan for urban growth areas in rural county areas, it is still important to plan for and anticipate growth in these areas.

Development Pattern Analysis

Past

An early history of the Rio Verde Foothills region is described in the Introduction section. In 1978, Maricopa County began collecting data for the first Desert Foothills Policy & Development Guide. Demographic research for this first area plan includes population figures dating back to 1960 when there were an estimated 450 residents in the original 323 square mile planning area. By 1980, this fast growing area grew to almost 9,300 people.

The updated Rio Verde Foothills planning area covers approximately 20 square miles of unincorporated private land. In 1990, there were only 33 people living in

the planning area. By 2000, the population had increased to 778. Until recently, the planning area experienced little growth or development. Isolated ranching operations were the only activity in this region until the 1980s, when a few homes and equestrian ranches began to appear.

In the 1960s, over 6,000 acres of Bureau of Land Management (BLM) land were exchanged to develop what is now Fountain Hills. The Fountain Hills masterplan was approved in 1970 and encompassed 12,000 acres south of McDowell Mountain Park. Prior to 1960, land in the Rio Verde Foothills planning area was under USFS management. Between 1960 and 1971, this area became private land after a series of USFS land exchanges. These exchanges are outlined on page 13 in the land use element.

USFS land exchanges also provided private land at the edge of the Tonto National Forest for development by the Rio Verde and Tonto Verde developments. The original Rio Verde masterplan was approved in 1971, but sales did not begin until 1974. Tonto Verde, an extension of Rio Verde, was approved in 1994.

Present

Today, Maricopa County is one of the fastest growing counties in the United States. In addition, with a current population of over 3 million residents it is also one of the largest. Growth continues throughout Maricopa County in both incorporated and unincorporated areas. Over the last couple of decades, much of the growth in unincorporated Maricopa County occurred in the southeast, the far northeast, and the near northwest portions of the Phoenix metropolitan area. Maricopa County also has several large-scale master planned communities. These Development Master Plans (DMPs) tend to be large, self-sustaining communities with mixed land uses. Vista Verde DMP, within the planning area, was approved in April 2001.

Scottsdale began developing several nearby golf course communities in the mid-1980s. Should the McDowell Sonoran Preserve be permanently conserved as planned, the Sonoran desert west of the planning area will remain mostly undeveloped. The Troon North development at Alma School Parkway (110th Street) and the Golf Club of Scottsdale (golf course only) at 122nd Street were built in the last 10 years. Also, the 273-acre Scottsdale National property (annexed by Scottsdale) east of 136th Street will be developed in the future.

Future

Given its strong economy, mild climate, and quality of life, Maricopa County is expected to continue growing rapidly over the next several decades. Whereas it took Maricopa County over 100 years to reach approximately 3 million in population, DES projections show population rising to approximately 4.5 million by 2020, and

more than doubling to 7 million over the next 50 years. Development over the next 20 years will continue to shift from southeast Maricopa County to areas in the southwest, west, and north portions of the metropolitan area. Growth is also expected along existing and new transportation facilities. This includes Interstate highways (I-10 and I-17), as well as the expanded metropolitan freeway system (Loop 101, Loop 202, Loop 303, and U.S. 60).

Population growth is influenced by many variables. The primary limitation in the planning area is water availability. Assuming that groundwater will continue to be extracted through private wells and possibly a water improvement district, growth can reasonably be expected to continue as it has over the last five years. By 2020, the Rio Verde Foothills planning area could have a population of approximately 6,700.

Projected Population and Land Use: Rio Verde Foothills

Using historic building permit data, future population projections for the Rio Verde Foothills planning area are established by deriving approximate estimates from known data. Calculations for land absorption do not include the Scottsdale National or Vista Verde DMP area. To determine projected population and land use for the planning area, several assumptions were made:

- 5-year growth rate of 117 new homes per year (consistent with average planning area increase from 1999 to 2003)
- 2.45 persons per occupied household (per MAG projections, in study area)
- One household equates to a single dwelling unit
- Average residential density per gross acre equals 1.0 dwelling unit (typical)
- 8 acres per 1,000 population for commercial land use (typical)
- 8 acres per 1,000 population for industrial land use (per Maricopa County Subdivision Regulations-Administrative Guidelines, 1990)

Residential Demand

The Rio Verde Foothills planning area had a population of approximately 1,800 in January 2004. Assuming a continuance of the recent growth rate, the planning area will increase to approximately 6,700 persons by the year 2020. At 2.45 persons per household, the planning area could add approximately 2,000 dwelling units over the next 20 years. Based on one dwelling unit per acre, this equates to approximately 2,000 acres of additional land needed to accommodate future residential development through the year 2020. This can be accommodated by the amount of land currently under private ownership (13,260 acres in the entire planning area).

Not including the Scottsdale National property or the Vista Verde DMP area, there are 16 sections (10,240 acres) of land zoned Rural-43, and two sections (1,280 acres) zoned Rural-190. Based on this zoning, over 8,400 lots could theoretically be created at build-out, if land division continued indefinitely. If both sections zoned Rural-190 were allowed to be rezoned to Rural-43, an additional 790 lots could theoretically be created. Two sections zoned Rural-190 could yield 234 lots, whereas two sections zoned Rural-43 could yield 1,024 lots. These buildout calculations include subtracting an average of 20% of the land area for easements typically required when creating new lots. These buildout scenarios are unlikely to occur because of geographic, environmental, water supply, and other limitations.

The planning area is unique in being surrounded by dedicated open space on most of its borders. Considering the geographic location, the unknown status of water availability, distance from existing services, and the desire of the community to maintain rural residential densities, there is little potential for increased residential densities. Scattered rural residential development will likely continue at a moderate rate in the planning area.

Commercial Demand

Research indicates that a majority of residents and landowners in the planning area are opposed to commercial development in this area. Also, typical land absorption calculations do not always apply in rural areas. However, in order to address the Growth Areas element, commercial demand will be calculated for hypothetical purposes.

Estimated commercial land use demand is based on projected resident population increase. Based on a projected 6,700 planning area residents by the year 2020 and the commercial land use ratio listed above, it is estimated that a minimum of 54 acres of commercial land would be needed to support the population after 2020. Historically, there has been very little demand for commercial uses in the Rio Verde Foothills planning area other than special use permits for equestrian facilities, which do not require commercial zoning. With commercial nodes at Alma School Road and other locations in north Scottsdale and a small store located in Rio Verde, the majority of residents would prefer to shop outside of the planning area and exclude any commercial development in the area. Depending on future population growth, this could be feasible for the next 10 to 15 years. At present, no commercially zoned property exists in the planning area.

Industrial Demand

Public comments indicate that industrial-type uses are strongly opposed and would not be appropriate in the planning area. Rural areas do not necessarily have the same demand for urban industrial uses. Demand for industrial land is calculated

using the same method as commercial land. Based on a year 2020 resident population of 6,700, a minimum of 54 acres of industrial land would be required. At present, there is no industrial zoned property in the planning area. The closest industrial zoned land is near the Scottsdale Municipal Airport, approximately 15 driving miles from the planning area.

When commercial and industrial land use needs are combined with residential land use needs, the Rio Verde Foothills planning area would theoretically support approximately 2,110 additional acres of land for growth and development. It is important to note that these numbers should be used as a guide rather than definitive criteria. Various factors, such as changing annexation patterns, economic conditions, demographic conditions, and land use patterns can alter population growth and demands in the planning area.

Growth Areas Issues and Considerations

Included in this section is an overview of growth-related issues identified during the public participation process. Also included is a review of some potential physical, built, and jurisdictional considerations that may affect future growth and development patterns.

Growth Area Issues

Stakeholders involved in the planning process were very helpful in identifying a variety of growth-related issues and concerns. A list of some of the more frequently identified local concerns is included below.

- Limit residential growth to one dwelling unit per acre maximum (recommendations ranged from 1 to 5-acre minimum lot sizes).
- Limit subdivision development.
- Discourage commercial/business/industrial development (majority opinion); or, want commercial/business developments limited to Rio Verde Drive only.
- Encourage businesses to locate at Alma School Road/Dynamite Boulevard in Scottsdale.
- Concern about impacts of development on water availability, air quality; and plants and wildlife.
- Do not want to be annexed into Scottsdale.
- Coordinate information and existing policies between Maricopa County agencies.

Growth Area Considerations

Besides public attitudes about growth, there are also potential natural, built, and ownership constraints to growth. While not necessarily a complete list, this section presents a brief overview of some of these possible constraints.

Physical Considerations

Topography

The planning area is a gently sloped desert valley surrounded by rugged terrain on the north and south, a series of small hills on the west, and the Verde River on the east. Slopes generally range from zero to approximately three percent. Due to the rugged surrounding topography and inaccessible park and forest land, the planning area can only be accessed from the Phoenix area from the east or west side of the McDowell Mountains. There is no direct access from the north or south. Numerous unnamed washes, which can constrain development, run toward the Verde River.

Maricopa County encourages preservation of significant slope areas, especially those above 15%. For areas over 15% slope, the Maricopa County Zoning Ordinance provides guidelines for development to protect public health, safety, and welfare, and to minimize the impacts to the existing character of such areas. Asher Hills appears to contain the only slopes exceeding 15%.

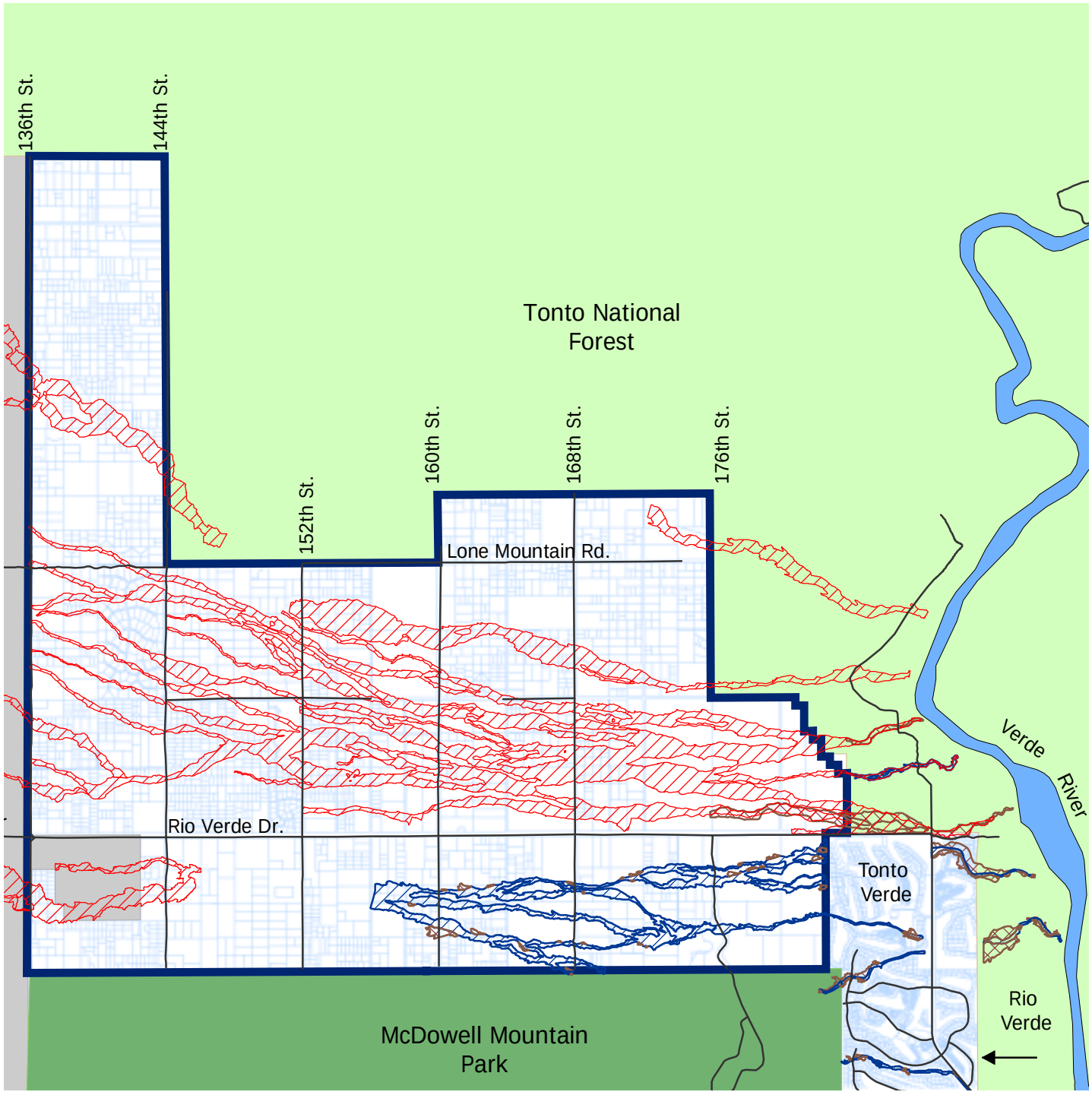
Floodplains

Floodplains are areas that are susceptible to flooding during significant rain events. The most common delineation is the Federal Emergency Management Agency (FEMA) 100-year floodplain. The 100-year flood is defined as the flood level having a 1% chance of occurring within a year. It is important to note that the 100-year flood may occur more often than once every 100 years, and that it is not the maximum flood that can occur along a waterway.

Figure 12-Floodplains identifies floodplains in the Rio Verde Foothills study area. The FCDMC conducted floodplain studies south of Rio Verde Drive that were approved by FEMA in 1995. South of Rio Verde Drive, there are approximately 341 acres of land in the 100-year FEMA floodplain. Nineteen of those acres are within the 100-year FEMA floodway fringe, areas adjacent to the floodway where encroachment may be permitted. The remaining 322 acres are located within the floodway, which is a more hazardous area of the floodplain that has restrictions on the type of development that can occur. Only limited private and recreational uses are allowed within a floodway. Some examples of allowed uses within a floodway (subject to obtaining a floodplain use permit) include sand and gravel operations, corrals and shade structures, golf courses, picnic grounds, wildlife preserves, farming, parking and loading areas, and hiking trails. Buildings are not permitted within the floodway.[16] *Eye to the Future 2020* contains policies that discourage development within the entire area of the 100-year floodplain.

The FCDMC recently identified preliminary floodplain areas for the land north of

[16] Floodplain Regulations for Maricopa County. Flood Control District of Maricopa County, 2000



Floodplains

Figure 12

- Arterial
- Planning Area Boundary
- Incorporated Area
- Parcels
- Tonto National Forest
- McDowell Mountain Park

* Preliminary Floodplains (subject to change)
- 100-year floodplain (AE)

* Floodplains Approved by FEMA (studies continuing)
- Floodway (FW)
- Floodfringe (AE)

0 0.5 1 Miles

* Contact the Flood Control District of Maricopa County for latest floodplain information.

Maricopa County Planning and Development Department

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Rio Verde Drive. Detailed studies are continuing for the area. According to FCDMC maps, approximately 1,900 acres are within the 100-year floodplain. This area is equal to roughly 15 percent of the planning area. Drainage guidelines developed for the Rio Verde Area Drainage Master Plan are discussed in the Open Space element on page 71.

Subsidence and Earth Fissures

In areas where extensive pumping has significantly lowered groundwater levels, subsidence and cracking of the land surface can occur. Groundwater depletion can make it economically infeasible to pump water in some cases. Land subsidence and earth fissuring have been documented in certain portions of Maricopa County and have caused water quality problems, flooding, damage to well casings and building foundations. No land subsidence or fissures have been documented in the Rio Verde Foothills planning area.

Water Supply

Water in the planning area comes from groundwater sources. The planning area is located in the Fountain Hills subbasin, where water quantities have not been established. Groundwater supply and depth varies widely throughout the planning area. Test wells must be drilled to establish the depth and quantity of groundwater. In general, wells have been more successful producing water in the western half of the planning area than in the eastern half.

Currently, individual wells are the largest users of groundwater in the planning area. In 2003, approximately 570 acre-feet of groundwater was withdrawn by all users, and projections for 2020 indicate that over 2,100 acre-feet could be pumped, not including the Vista Verde development. The major determinant of groundwater pumping will be availability and whether a domestic water improvement district is eventually formed.

Colorado River water is not available in the planning area, nor will it be in the foreseeable future due to cost and distance from distribution facilities. The Scottsdale City Council did not show any interest in annexing this area in the 1990s and this lack of interest was due, at least in part, to the lack of guaranteed surface water supply to serve any newly annexed area. Most planning area residents are not interested in being annexed. As such, it is unlikely that water will be provided by Scottsdale in the next 10 to 15 years. Although the Verde River is just over a mile away, legal rights would have to be established to divert any water from the Verde. A more in-depth discussion of water supply is found in the Water Resources element.

Vegetation and Wildlife Habitat

The Rio Verde Foothills planning area currently contains abundant open space,

which supports a large variety of animals and plants. Located in the Sonoran Desert, two general types of native plant communities are represented. The Palo Verde-Saguaro community, also known as "Upper Sonoran" vegetation, is found throughout the planning area and is the most scenic of the Sonoran Desert plant communities. The Mixed Riparian Scrub habitat is found along washes in the planning area. Citizens have expressed the strong desire to protect the native vegetation and wildlife found throughout the planning area by maintaining low-density residential development and through sensitive development practices.

A variety of federal and state laws that protect biological resources help govern development. This includes the Endangered Species Act, the Clean Water Act, the National Environmental Policy Act (NEPA), and the Arizona Native Plant law. A more complete discussion of vegetation and wildlife is found in the *Environmental Effects* element report of this area plan.

Built Considerations

Infrastructure and Services

One of the principles of *Eye to the Future 2020* is ensuring that growth occurs in an orderly and fiscally responsible manner. This includes ensuring that necessary infrastructure and services such as roads, utilities, schools, police, fire, and medical facilities are available to meet the needs of future residents. The availability of infrastructure and services can dictate the type and timing of future development, particularly with urban development. This generally refers to residential densities greater than one dwelling unit per acre. This subject is discussed in more detail in the Cost of Development element.

For most development within the Rio Verde Foothills planning area, a full compliment of facilities and services has not been required and is usually not expected, with the exception of adequate streets, flood control, law enforcement, and fire protection services. However, with the rapid increase in residential development over the last 10 years and continued development in the future, the planning area will face situations where water service is required and other facilities expected, depending on the character and magnitude of development. In the future, facilities such as community sewer, parks with playfields, sheriff's office, fire station, emergency clinic, and schools may be required to accommodate a growing population. A facilities standards table, which provides reference guidelines for determining necessary facilities, is provided in the *Land Use* section. Park and recreation facility standards are provided in this plan's *Open Space* section.

Noise Generating Operations

Careful consideration must also be given to noise generating operations. Significant and sustained noise can affect health, sleep, and learning patterns. Prolonged

exposure to loud noise can cause general community annoyance and possibly a reduction in property values.

The Rio Verde Foothills planning area can generally be characterized as a quiet, rural area. The primary sources of noise are vehicular traffic, occasional flyovers by aircraft associated with Scottsdale Municipal Airport, and ATV use. Several residents identified dirt bikes and ATVs as a source of irritating noise and have been known to spook horses, endangering riders.

Flood Control

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

The location of existing and future flood control structures can impact the location and type of future development. While flood control structures minimize the impacts of floods on human safety, health, and welfare, they can also influence where specific development is appropriate. The FCDMC conducts comprehensive watershed studies throughout the County. Plans are then prepared based on hydraulic analyses, future land use development, and environmental considerations. The plans incorporate information provided by watershed studies and recommend specific, project-oriented solutions for flooding problems. FCDMC planning studies specific to the planning area are discussed in the Open Space element.

MARICOPA COUNTY PLANNING AND DEVELOPMENT (MCP&D) DRAINAGE ADMINISTRATION

In 2005, the MCP&D Department assumed responsibility for drainage permitting, drainage inspection, development plan review, and enforcement. The FCDMC reviews plans for residential, single family, commercial, subdivisions, and industrial building for compliance with floodplain regulations. The MCP&D Department checks for compliance with design drainage guidelines and gives the applicant a drainage clearance.

Ownership Considerations

Besides potential physical and built constraints, land ownership can also impact growth and development. All of the 20 square miles in the Rio Verde Foothills planning area are held in private ownership. This compares with approximately 29% private ownership in Maricopa County as a whole. The surrounding land, by contrast, is predominantly publicly owned.

Land along the west boundary of the planning area is managed by the State of Arizona; land along the north boundary is managed by the Federal government (Tonto National Forest); and land along the south boundary is managed by Maricopa County (McDowell Mountain Park). The only privately owned land adjacent to the

planning area is a section of private land at the southwest corner of Rio Verde Drive and 136th Street, and a section of land at the southeast corner of Rio Verde Drive and 184th Street. A brief overview of land ownership is included below.

Federal

The USFS manages the Tonto National Forest, located north and east of the planning area. The USFS has authority under a number of statutes, when it is in the public interest, to exchange lands with non-federal parties within the boundaries of National Forests within a state. In the past, the USFS has traded lands along the Tonto National Forest border, including land that is now the Rio Verde Foothills planning area, and the Rio Verde and Tonto Verde communities, for tracts of private property within USFS boundaries.

State

The State of Arizona manages thousands of acres of Trust land west of the planning area. Under state charter, the Arizona State Land Department has the responsibility on behalf of beneficiaries to assure the highest and best use of the Trust lands. The Federal Enabling Act and state constitution mandate that fair market value be obtained from all Trust land transactions, which include sales and commercial leasing. This typically results in the sale and development of state-owned land.

In 1996, the state legislature enacted the Arizona Preserve Initiative (API) to give the Land Department authority to reclassify, lease, and sell state trust lands in and around urban areas to local governments and nonprofit organizations as open space for conservation purposes. The McDowell Sonoran Preserve plan, adopted by the City of Scottsdale, is planned to preserve most of this state trust land. The total land area proposed for the preserve is 36,400 acres. Scottsdale voters decided on May 18, 2004 to approve a sales-tax increase to fund further acquisition of the preserve.

Maricopa County

Maricopa County manages McDowell Mountain Regional Park, which abuts the southern boundary of the planning area. Maricopa County controls access to its parks and often requires user fees. The Maricopa County Parks and Recreation Department does not have plans to acquire any more land in this region of the county. Planning area residents have non-motorized access to the park at 152nd Street and the Jomax Road alignment via a controlled opening. The main entrance station is off McDowell Mountain Road, on the east side of the park.

Development Considerations: Conclusion

The potential constraints identified in this section will continue to affect the amount, type, and location of future development. Indeed, some of these constraints make development impossible, while others may only have a minimal effect. However, the combination of these potential constraints will continue to guide public and private decision makers in future land use decisions.

Growth Area Opportunities

Based primarily on the need for services and infrastructure, Maricopa County's area plans typically identify where urban growth and development should occur over the next several years.

General Plan Development Areas

The General Plan Development Area (GPDA) is unincorporated area that is likely to be annexed by a city or town in the future, and is therefore included in an adopted municipal general plan. These municipal general plans often provide specific recommendations for proposed land use. Future growth is encouraged within GPDAs for the reasons outlined in *Eye to the Future 2020 – Growth Areas Element*. The City of Scottsdale is the only city that borders the planning area. Scottsdale's general plan, as illustrated in **Figure 10,** does not include any land in the Rio Verde Foothills planning area, therefore the Rio Verde Foothills area is currently not in a GPDA.

Scottsdale's Conceptual Land Use Plan (last revised June 15, 2004) designates land west of 136th Street as "Natural Open Space" and "Rural Neighborhoods". Rural Neighborhoods are defined as areas of relatively large lot single-family neighborhoods with densities usually no more than one house per acre. Native desert vegetation predominates many areas and special care is required to preserve the area's open desert character and environmental features. The closest location of planned Suburban Neighborhoods is the Troon North community at Alma School Parkway and Dynamite Boulevard. Suburban Neighborhoods are defined as medium to small-lot single-family neighborhoods or subdivisions with densities usually more than one house per acre, but less than eight houses per acre. This category also includes some townhouses and can also be used for small lot single-family homes such as patio homes.

All of the land bordering the western side of the Rio Verde Foothills planning area was annexed by the City of Scottsdale in 1983 and 1984. In addition, the 273-acre Scottsdale National property at the southeast corner of Rio Verde Drive and 136th Street was annexed in 1990. In April 2004, the Scottsdale City Council approved a

tentative agreement to allow 119 homes on the property. Once developed, this property will receive services and infrastructure from Scottsdale. However, there is no indication that Scottsdale will annex any additional land in the Rio Verde Foothills planning area. Future growth area opportunities appear to be concentrated in the Scottsdale National community and the Troon North community, both located in the City of Scottsdale.

Urban Growth Opportunities in the Rio Verde Foothills Area Plan

County area plans include areas that are generally located outside of a municipal general plan. Most county area plans contain some locations where urban growth opportunities exist. These locations of higher intensity use (i.e. commercial, industrial, mixed use, and residential density greater than 1 dwelling unit per acre) are typically selected based on municipal general plans, available services and infrastructure, and residents' input during the planning process. However, because the Rio Verde Foothills planning area is outside of the urban service area, no urban growth opportunities have been identified in the current area plan update. Considering this and that the majority of residents and landowners express a strong desire to maintain the existing rural nature of the community, the planning area is anticipated to continue to experience rural growth that is consistent with the underlying zoning for the current 10 to 15 year planning horizon.

Some requirements of the Growing Smarter law that relate to growth areas and may be implemented in this area plan are discussed below. In particular, the identification of areas that are potentially suitable for multi-modal transportation. Areas identified as General Plan Development Areas and growth areas are suitable for certain multi-modal transportation systems.

Although the Rio Verde Foothills planning area is more rural and isolated from urban growth than other parts of the Valley, development is occurring in and around the planning area. Two new subdivisions (Rio Mountain Estates and Granite Mountain Ranch) will add approximately 200 single-family homes in the west end of the planning area, with all lots exceeding one acre. Vista Verde DMP will add up to 842 residential units on 856 acres. Future residential development will generate greater traffic volumes. While an urban bus system would not be suitable for the area, it would be prudent to plan for appropriate future transit options that could reduce vehicle trips within the area. For example, a community circulator (using smaller neighborhood friendly vehicles) that includes routes to local stores, libraries, and hospitals could help reduce traffic volumes and pollution. Other potential multi-modal opportunities include bicycling, walking, and telecommuting as a replacement for vehicle trips. Given the current popularity of Rio Verde Drive as a bicycle route, improvements to this route will be an important element of the

multi-modal system for this area. Safe and efficient biking and walking routes will be especially important in the future if a local school(s) is built within the planning area.

The Growth Areas element encourages rational land development patterns that include a balance of employment and housing to improve transportation efficiency and reduce automobile travel. For rural communities outside of urban service areas, planning for employment is not always feasible, or may be premature. Currently, planning area residents prefer to commute to jobs outside the area, have home-based businesses, or operate equestrian-related operations on their properties. As described in the Land Use element, several properties have special use permits that allow riding and boarding stables, kennels, or special training facilities.

The Growing Smarter Law promotes conservation of significant natural resources and open space within growth areas, and encourages coordinating their location to similar areas outside of growth areas. Natural resource and open space planning in developing areas can have long-lasting effects on a community's quality of life and can minimize environmental impacts of development. Examples may include integrating open space areas such as major desert wash corridors into a regional open space plan. Also, environmentally sensitive techniques for site selection, site preparation, and construction contribute to long-term ecosystem health, quality of life, and increased land values.

Development Master Plans

Eye to the Future 2020 recognizes Development Master Plans (DMPs), also known as master planned communities, as a preferred type of development because of the opportunity to provide mixed land uses. Historically, DMPs have been allowed throughout Maricopa County. As such, Maricopa County will continue to evaluate DMPs on an individual basis to determine if they provide mixed use, multi-modal development opportunities, and that they either have or will provide the necessary infrastructure and services to support urban type development.

The Vista Verde Development Master Plan was approved in February 2000. Located in the eastern end of the planning area about one mile north of Rio Verde, the development is essentially an extension of the Rio Verde and Tonto Verde communities. Rio Verde Utilities will extend water and sewer services north to serve the new 856-acre site. The applicant has indicated that all sewer and water improvements will be done with private funds. Electricity will be provided by Salt River Project and telephone by Qwest. Since this is planned to be an age-restricted community, there will not be any impacts to the school system. Fire protection and

emergency medical services will be supplied by Rural Metro, which currently has a station with a fire truck and paramedics located in Rio Verde. The nearest Sheriff substation is located in Fountain Hills, with a response time of approximately 20 minutes. Most of the land use is planned to be Large Lot Residential, with approximately 35 acres Small Lot Residential, and a 9.5-acre parcel designated as Neighborhood Retail Center to accommodate a clubhouse, community center, dining establishment, and golf shop.

Growth Area Opportunities: Conclusion

With the recognition of General Plan Development Areas, specific locations within County Area Plans, and mixed use DMPs as growth opportunities, Maricopa County reaffirms its commitment to orderly and fiscally responsible growth that is consistent with requirements of the Growing Smarter law. While planning for future growth, Maricopa County will continue its long-standing policy of coordination and cooperation with incorporated municipalities.

Opportunities for urban style growth are not identified in the Rio Verde Foothills Area Plan. However, any future rural subdivisions or DMP proposals will still be evaluated on an individual basis in concert with the potential constraints noted in this report. Also, because the areas best suited for mixed use and multi-modal urban growth will continue to change, Maricopa County will periodically review these growth areas and make changes to them as necessary.

Although significant growth is expected to continue for the foreseeable future, where and when growth occurs is determined by a variety of factors. Both physical and built features can impact growth, as can land ownership and existing infrastructure. Public opinions regarding growth and development will also continue to be important in determining growth patterns.

OPEN SPACE

The Open Space element complies with the requirements of the Growing Smarter Act by providing an inventory of open space areas; an analysis of future needs; policies and strategies for managing, protecting, and acquiring additional open space; and promoting a regional system of integrated open space and recreational resources. In the Rio Verde Foothills area, there are some unique opportunities to connect open space corridors and areas to protect sensitive lands while allowing for future community growth and development. This section addresses open space issues in and around the Rio Verde Foothills planning area. For a countywide perspective on open space issues, refer to the *Eye to the Future 2020 – Open Space Element*.

Background Plans

It is important to consider a number of local and regional open space planning efforts that may be relevant to Rio Verde Foothills open space and recreation planning.

Scottsdale's General Plan, Character Area Plans, Ordinances

The Rio Verde Foothills planning area borders on the City of Scottsdale, which is unique in its policy of aggressively pursuing opportunities to acquire new open space resources. The *Scottsdale General Plan* contains an Open Space and Recreation element, and a Preservation and Environmental Planning element. The former includes a vision statement that a substantial portion of the city will remain as natural open space through citizen initiative, as evidenced by the widespread support of the McDowell Sonoran Preserve. Even developed areas are expected to include a network of parks, scenic corridors, paths, and trails that provide access to open spaces.

The Preservation and Environmental Planning element includes a vision statement that the city is committed to preserving the Sonoran Desert and mountains to maintain scenic views, ensure protected habitats for wildlife and desert plants, protect archaeological and historical resources and sites, and provide appropriate access for educational and passive outdoor recreational opportunities for residents and visitors. Scottsdale's General Plan outlines goals and approaches to preserve open spaces, provide access to recreation, develop trails, and conserve valuable resources.

The McDowell Sonoran Preserve, initiated by citizens in 1990, is planned to create an integrated desert open space system consisting of mountains, desert, and natural corridors linking open spaces in and adjacent to Scottsdale. Although the plan includes trails, the preserve will be left in as pristine a state as possible. The vision

is to preserve approximately 36,400 acres. **Figure 13-McDowell Sonoran Preserve Acquisition Status**, illustrates the recommended preserve study boundary and those areas already acquired, as per Scottsdale 's map dated September 2004. The planned preserve abuts five miles of the western boundary of the Rio Verde Foothills planning area. **Figure 14** shows planned preserve access areas and conceptual trails. A Major Community Access area is shown just west of 136th Street and north of Lone Mountain Road. A Minor Community Access area is shown at 128th Street and Rio Verde Drive. Potential continuance of a trail into the unincorporated planning area is shown at Lone Mountain Road and 136th Street along the power line trail.

Scottsdale's Dynamite Foothills Character Area Plan includes policies, guidelines, and an implementation program. In March 2000, Scottsdale adopted the *Dynamite Foothills Character Area Implementation Program* for an area west of and abutting the county's Rio Verde Foothills planning area. The plan is designed to help achieve a Rural Desert character through guidelines developed for land uses, streets, open space corridors, and infrastructure. Guidelines focus on maintaining a feeling of openness through natural undisturbed desert, minimal impact of development, open view corridors, low building heights, and maintaining natural desert vegetation. For example, a land use guideline encourages that low density single-family homesites be carefully sited to avoid dominating the character of any large, adjacent open space. Open visual corridors of at least 50 feet between homes are encouraged to provide a gradual transition into the large open space. Private equestrian residences are encouraged to locate within one mile of Dynamite Boulevard, or within ½ mile of McDowell Mountain Regional Park where environmental conditions are least sensitive and access to major open space is most likely. Ranches, stables, and other major equestrian facilities are encouraged to locate within ½ mile of a collector or arterial, and within ½ mile of a trail or major open space.

The City of Scottsdale adopted the *Desert Foothills Character Area and Implementation Plans* in July 1999, including Design Guidelines. Scottsdale's Desert Foothills area is west of the Dynamite Foothills area and covers land generally west of Pima Road, north and south of Dynamite Boulevard. This area is similar to the county's Rio Verde Foothills area, with parcels ranging from one to five acres, minimal infrastructure, and a broad range of lifestyles including equestrian activities. The plan describes similar policies to the Dynamite Foothills plan, and also addresses places of worship. For example, it encourages that natural open space buffers be placed around the entire perimeter of the facility to mitigate the impact on adjacent land uses. It also recommends that worship buildings be laid out to maintain an open campus character, which allows for reasonable view corridors between buildings. Guidelines are provided that focus on blending equestrian facilities into the natural and residential setting.

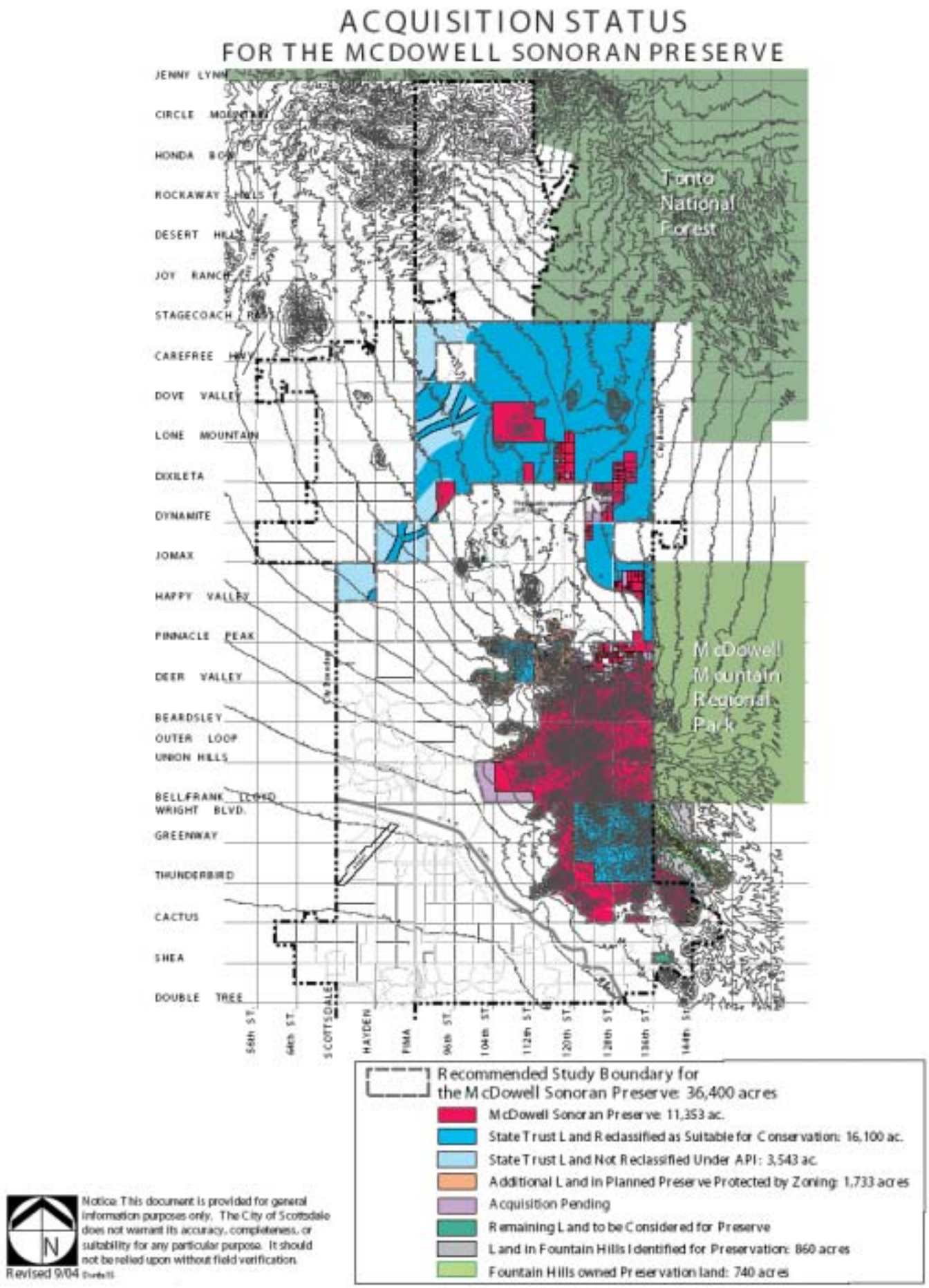

Figure 13 - McDowell Sonoran Preserve Acquisition Status

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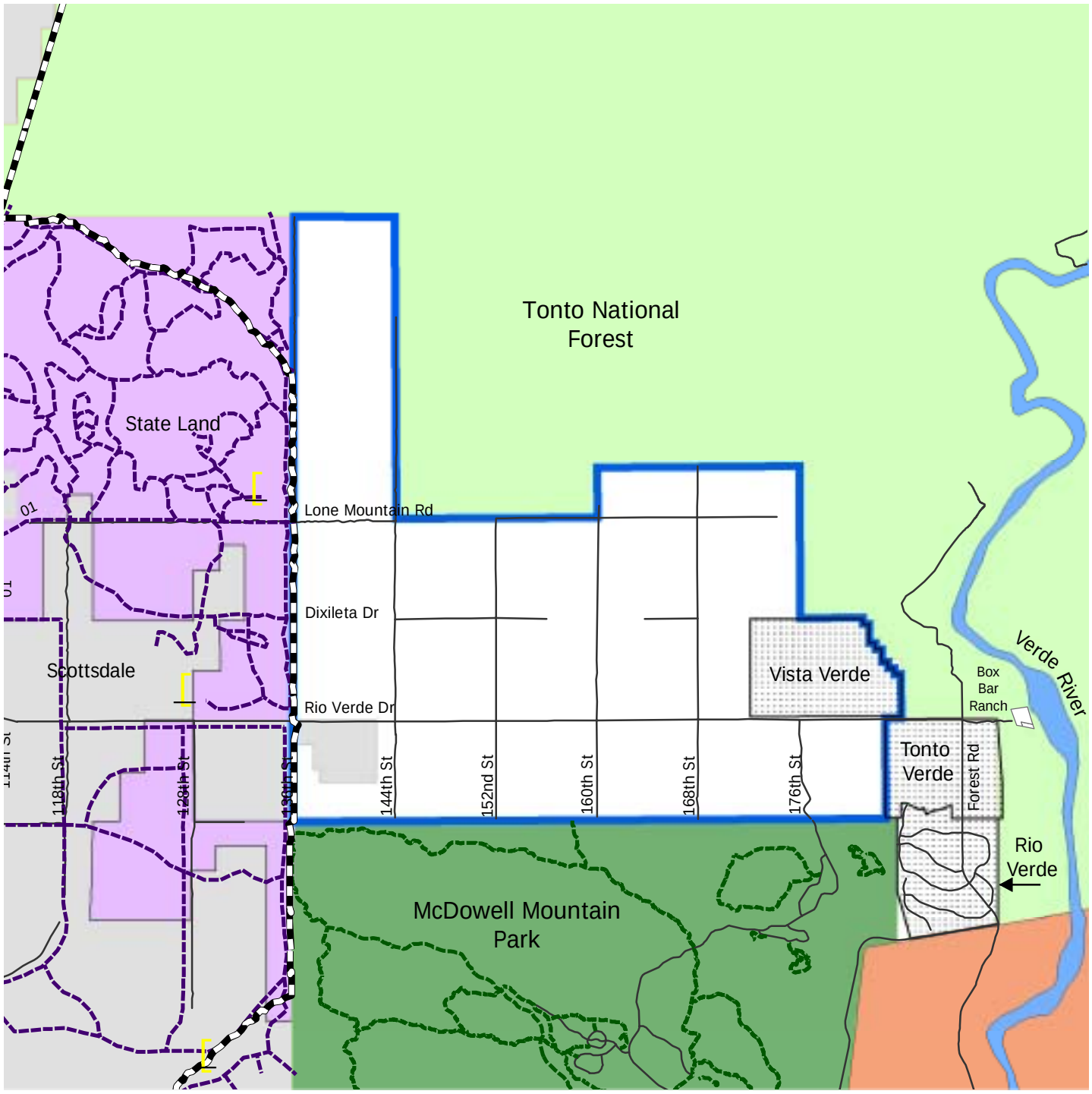

Open Space, Trails and Access Areas

Figure 14

- Planned Preserve Access Areas
- Arterial
- Planned McDowell Sonoran Preserve Trail System
- McDowell Mountain Park Trails
- Maricopa County Regional Trail- Adopted Alignment
- Planning Area Boundary
- Development Master Plan
- Incorporated Area
- Fort McDowell Yavapai Nation
- Private Land

0 0.5 1 2 Miles

Maricopa County Planning and Development Department

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The city's Hillside Ordinance was adopted in 1974 and later repealed. The Environmentally Sensitive Lands Ordinance (ESLO) was adopted by Scottsdale in 1991 and updated in 2003 and April of 2004. The ESLO controls development in fragile desert lands and mountains in 134 square miles of land in northern Scottsdale. Scenic Corridor Design Guidelines were adopted by Scottsdale in March 2003, covering six corridors, including Dynamite Boulevard from 56th Street to 136th Street.

The Rio Verde Foothills community could adapt some of Scottsdale's rural design guidelines into its own set of rural development guidelines to implement some of the open space policies identified in this Area Plan update. The potential for rural development guidelines is discussed in more depth in the Land Use element.

Vista Verde Development Master Plan

Vista Verde is an 856-acre Development Master Plan (DMP) located at the eastern end of the planning area. The DMP will guide the development of the site, which is planned to include 842 lots, 27 holes of golf, and a clubhouse/recreation facility. Several major desert washes traverse the site draining from west to east, and eventually into the Verde River approximately two miles east. Impacts to the washes are planned to be minimized or washes will be incorporated into the golf course design. The unimproved Dixileta Drive alignment abuts the site along the north property line with 55 feet of right-of-way. Currently, there are no north/south roads within the project or abutting the site. According to the project narrative, perimeter walls, if any, will follow the natural topography and meander around existing vegetation and rock outcroppings.

The primary recreation element is the golf course and clubhouse. A total of 421 acres of open space is planned, with golf courses and entry features providing 254 acres of recreational open space, and wash corridors providing 167 acres of undeveloped open space. The golf course and open space will ultimately be for private use. No trails are indicated on the plan.

Desert Spaces - An Open Space Plan for the Maricopa Association of Governments

The Maricopa Association of Government's Regional Council adopted the *Desert Spaces* plan on October 25, 1995. The plan provides a non-regulatory framework for decision making and coordinating local and regional efforts toward establishing a viable open space system. The *Desert Spaces* plan identifies and recommends conservation and management strategies for natural resources and open spaces critical to the quality of life in Maricopa County. The foundation of the plan is existing parks and preserves.

The *Desert Spaces* plan seeks to preserve, protect and enhance the mountains and foothills; rivers and washes; canals and cultural sites; upland desert vegetation; wildlife habitat; and existing parks and preserves. Mountain areas identified in the plan include the Usery, White Tank, New River, McDowell, Estrella, Heiroglyphic, Deem, Hedgepeth, and Union Hills mountains. The primary rivers and washes in the plan are the Salt, Gila, Verde, Agua Fria, and New Rivers, and parts of the Cave and Skunk Creeks and Hassayampa River. Also identified are trails, which primarily follow rivers, washes, and canals and allow the public to enjoy a diversity of open spaces. Proposed trails are seen as linking and integrating existing parks and preserves throughout the region. The plan encourages infill development in urbanized areas to reduce the need to develop undisturbed open space.

Two basic management approaches, based on public comments, are identified in the *Desert Spaces* plan for protecting priority areas and resources. *Conservation Areas* are public and private lands with outstanding open space value. Lands in this category are recommended for protection from development and its effects through policy amendment, easements, restrictions, and/or acquisition. According to a map of "Critical Areas Not in Public Domain," Asher Hills is identified for protection because of its outstanding open space value. Near the planning area, Granite and Fraesfield mountains are also identified for protection, including land east of these mountains which includes the northwest region of the Rio Verde Foothills planning area.

Retention Areas are public and private lands with high open space value and are recommended for sensitive development regulation. The Desert Spaces plan identifies all the remaining land in the Rio Verde Foothills planning area as Retention Areas. Approximately two-thirds of Maricopa County lands are not categorized (i.e., urbanized areas or areas with lower resource values).

The *Desert Spaces* plan contains policies to protect upland Sonoran desert vegetation at the higher elevations of Maricopa County. For example:

> *Encourage development that does not require mass grading of the remaining areas of upper Sonoran desert vegetation to protect the region's "sense of place," wildlife habitat, drainages, and scenic quality.*

The plan identifies several specific Sonoran desert areas that serve as major links between regionally significant open space resources and should be protected. For the region in and around the Rio Verde Foothills area, this includes "lands that connect the McDowell Mountains and the Mazatzal Mountains." Maricopa County

area plans recognize the recommendations provided by the *Desert Spaces* plan and will integrate them into open space policies, where feasible.

Area Drainage Master Plans and Watercourse Master Plans, Maricopa County

The FCDMC conducts a proactive program of regional flood control studies, which identify existing flood-prone areas and project future conditions. Area Drainage Master Plans (ADMPs) are being prepared for all developable portions of the county. The ADMPs will mitigate flood hazards in the respective study area. Water Course Master Plans (WCMPs) are similar to ADMPs, except that a WCMP has more of a focus on the management of a particular river or wash and its banks and flood zones, while an ADMP focuses on flooding issues over a wider drainage area. The FCDMC has made a commitment that new flood control projects not only protect people and property, but also provide opportunities for multiple uses such as natural habitat protection, recreational facilities, and aesthetically pleasing designs.

The FCDMC is preparing the *Rio Verde Area Drainage Master Plan,* which encompasses 50 square miles within and surrounding the planning area. It is bounded on the east by the Verde River, on the north by the Tonto National Forest, on the west by the 115th Street alignment, and on the south by McDowell Mountain Regional Park. The project began in 2002 in response to the area's significant increase of single-lot family residences and subdivisions and concern about the impact development is having on the area's drainage needs and flood protection.

The purpose of the Rio Verde ADMP is to identify the flooding problems, flooding sources, and flooding hazards and identify a range of cost-effective alternatives to eliminate or minimize these problems. As part of the study, *Drainage Guidelines for Single-Lot Development* were developed, taking effect in May 2003. The guidelines may have a positive effect on the quality of future open space in the planning area. Existing major washes cannot be disturbed, wash setback requirements are established, grading of lots is limited to no more than 40 percent of the total lot area (including driveways), and permits are required for site grading.

As part of the Rio Verde ADMP, the FCDMC is preparing a FLO-2D Analysis, which is using a two-dimensional computer modeling program to identify "personal hazard areas" where water would actually flow during a major storm. The computer modeling program can identify areas with sufficient depth and velocity that could knock a person over during a storm event. In areas where detailed information has been determined, individuals planning new homes are encouraged to work with the Maricopa County Planning and Development Drainage Review to determine

how best to engineer a site design that promotes flood protection and compatibility with natural drainage. Most of the area north of Rio Verde Drive is modeled; studies are continuing for the area south of this road.

Maricopa County Regional Trail System Plan

On September 4, 2002, the Board of Supervisors adopted the Maricopa County Regional Trail System: Phase One. The trail system's goals are to connect the County Park System, link recreational corridors around the Valley, and help preserve open space. The project will capitalize on existing right-of-ways such as canals, parks, utility corridors, and flood control projects. The Maricopa County Trail Commission is developing community partnerships to make the program a reality. Phase Two (described further under Linear Parks) includes a 9.7-mile stretch of trail, Segment 23, which runs along the western boundary of the Rio Verde Foothills planning area. The entire trail alignment was completed when Phase Three was adopted in August 2004. When implemented, a large non-motorized trail will loop around the County with branches into important open space and recreation areas. Some of the planned projects identified for possible incorporation in the regional trail system in or near the Rio Verde Foothills study area include:

- Maricopa County Regional Park System (e.g., McDowell Mountain Regional Park)
- Sun Circle Trail (adopted by Maricopa County June, 1964)
- Desert Spaces Plan (adopted by MAG October, 1995)

Existing and planned trails identified for the system cross through many jurisdictions, communities, and properties, so partnerships and agreements are important to creating the regional trail. Maricopa County will serve as the facilitator to bring the different links together. Many types of recreational opportunities are anticipated for the trail system, including biking, walking, jogging, and horseback riding.

Regional Off-Street System (ROSS) Plan

The ROSS Plan, initiated by MAG, identifies a region-wide system of off-street paths and trails for non-motorized transportation. Easements for canal banks, utility lines, and flood control channels intersect numerous arterial streets where local destinations are typically located. The goal of the ROSS Plan is to help make bicycling and walking viable options for daily travel using off-street opportunities. The plan encourages trail connectivity between jurisdictions. A potential corridors map shows a trail that follows the power line from 136th Street and Lone Mountain Road and continues northeast into the Tonto National Forest. Although the primary project goal is to provide trails for bicycling and walking, the plan also considers a wide range of users, including equestrians.

Open Space Issues

Research of Maricopa County open space documents, as well as input from local stakeholders, have identified the following regional and Rio Verde Foothills open space issues:

- Regional connectivity and linkages are important for both recreation and wildlife.
- Recognition of the economic benefits of open space is important. Natural open space is a desirable adjacent land use which enhances property values and maintains the long-term investment in the Rio Verde Foothills community.
- Recognition of environmental benefits of open space is important. Natural open space recharges the aquifer, improves water quality, controls soil erosion, improves air quality, moderates temperatures, and provides habitat for wildlife.
- Recognition of the quality of life benefits of natural open space is important. Natural open space provides areas of natural beauty, physical and visual access, educational opportunities, and sustains the passive and active recreational needs of the community.
- Environmentally sensitive areas including mountains and slopes; rivers and washes; historic, cultural, and archeological resources; view corridors; Sonoran Desert; and wildlife habitat and ecosystems need to be protected.
- Implementation of existing plans is important (i.e., *Desert Spaces* plan; Maricopa County Regional Trail System Plan; ROSS Plan).
- Preserving existing open space and planning for future open space is important.
- Planning for trails and paths along easements and roadways are important to many stakeholders.
- A coordinated trail system is needed to link Rio Verde Foothills community to McDowell Mountain Park, Tonto National Forest, and Scottsdale's planned preserve area for equestrian use, biking, and hiking.
- Plan for non-motorized trail access to public lands.
- Plan for non-horse activities such as quads, motorcycles, bicycles, and hiking trails.
- Keep large washes and floodplain areas open for equestrian trails and open space.
- Consider scenic corridor status for Rio Verde Drive.
- Work with the City of Scottsdale to coordinate regional trails and open space efforts.

Open Space Inventory

Dedicated Open Space:

Dedicated open spaces are areas under public ownership, excluding State Trust and BLM lands, which have unique environmental and physical qualities. In Maricopa County, dedicated open space exists as regional parks, wilderness areas, wildlife areas, national monuments, and the Tonto National Forest. Proposed open space is discussed later in this section.

For this inventory, open space is separated into seven categories, which are derived from the National Recreation and Park Association (NRPA):

Neighborhood Parks: A neighborhood park is defined as an area of 15 or more acres, which is suitable for intense recreational activities. No dedicated neighborhood parks are located in the Rio Verde Foothills planning area.

Community parks: A community park is defined as an area 25 acres or larger that has a diverse environmental quality and may include areas suitable for intense recreational activities. No dedicated community parks are located in the planning area. The City of Scottsdale contains numerous parks. The city's parks and schools map indicates a new community park is planned for an area located south of Dynamite Boulevard near Alma School Road, about three miles west of the planning area.

Regional Parks and Recreation Areas: A regional park is defined as an area 1,000 acres or larger that is suitable for nature-oriented recreation. McDowell Mountain Regional Park forms the southern boundary of the planning area. Preliminary purchases and leases of this 21,100-acre park began in the 1940s. One of the largest in the Maricopa County Parks System, McDowell Mountain Park rates as one the most scenic with majestic mountain views. The park offers over 40 miles of hiking, mountain biking, and horseback riding trails, and 14 miles of competitive track. There are two large picnic areas with restroom facilities and three large areas for camping with restroom and shower facilities. Current non-motorized access to this park from the planning area is at 148th Street and the Jomax Road alignment, via a controlled opening in the park's fence. A voluntary fee box is located inside the fence. The main entrance is off McDowell Mountain Road, on the east side of the park. The Maricopa County Planning and Development Department will continue its long standing policy of coordinating and assisting the Maricopa County Parks and Recreation Department to determine when and where park expansion and/or acquisition would best serve county residents.

Special Use Parks: Special use parks may include plazas, civic malls, town squares, historical sites, small parks, botanical gardens, zoos, fairgrounds, outdoor museums, or outdoor amphitheaters. No special use parks are located in the Rio Verde Foothills planning area.

Conservancy Areas: The NRPA defines conservancy area to mean the protection and management of natural or cultural environments with recreational use as a secondary objective. Conservancy areas within Maricopa County include municipal preserves and open spaces, federally administered wildlife areas, designated wilderness areas administered by the BLM and the USFS, and other lands managed for conservation purposes by the BLM or the USFS.

The closest future conservancy area to the planning area is Scottsdale's planned McDowell Sonoran Preserve west of 136th Street as shown in **Figure 13**. The total land area proposed for the preserve is 36,400 acres; 16,600 acres of this area is State Trust land. The remaining land is either owned by Scottsdale or in private ownership. In August 2001, the State Land Department reclassified 11,390 acres as suitable for conservation with a deed restriction on the land to ensure that the property purchaser would conserve these lands. An additional 1,630 acres were reclassified as suitable for conservation without a deed restriction. Approximately 3,500 acres were not reclassified.

Other Conservancy Areas: Forming the northern border of the planning area, the Tonto National Forest encompasses approximately three million acres, of which nearly 25% are within Maricopa County. Most of the forest, excluding designated wilderness areas, is managed for watershed protection and multiple uses including timber, range, water, wildlife and dispersed recreation. Recreation activities include hiking, backpacking, wildlife viewing, picnicking, mountain biking, hunting, jeep tours, motorized and non-motorized trails, some designated off-highway vehicle routes, horseback riding, and camping. In addition, water-related recreation is available at several reservoirs and portions of the Salt and Verde rivers. Designated Tonto National Forest lands bordering the Rio Verde Foothills planning area are closed to shooting ("discharging a firearm or gas gun"), other than for taking game in accordance with Arizona hunting laws.[17]

Linear Parks: A linear park (which can include trails) is defined as an area developed for one or more varying modes of recreational travel, such as hiking, biking, horseback riding, cross-country skiing, canoeing, and pleasure driving. The Maricopa County Parks and Recreation Department maintains over 150 miles of trails within the existing regional parks, including the 40 miles of trails in McDowell Mountain Regional Park.

[17] Order 12-182, Special Restriction, Tonto National Forest, pursuant to 36 CFR §261.50(a).

Maricopa County is planning a comprehensive trail system that connects regional parks and conservancy areas in a large loop around the county. On September 4, 2002, Maricopa County adopted Phase One of the Maricopa County Regional Trail System. Phase One identifies trail corridors connecting White Tank Mountain Regional Park to Lake Pleasant Regional Park to Spur Cross Ranch Conservation Area and Cave Creek Recreation Area.

Phase Two, adopted in October 2003, connects Spur Cross Ranch Conservation Area and Cave Creek Recreation Area to McDowell Mountain Regional Park to Usery Mountain Recreation Area to San Tan Mountain Regional Park. A segment of the Phase Two trail corridor will run along 136th Street, the western boundary of the Rio Verde Foothills planning area as shown in **Figure 14**. The trail meets 136th Street north of Lone Mountain Road and follows 136th Street south to McDowell Mountain Regional Park (MMRP). It runs along a portion of the western boundary of MMRP then winds southwest through the McDowell Mountain Preserve to make a connection to the CAP aqueduct near WestWorld. From this point, the trail will run southeast to connect to Usery Mountain Regional Park.

Phase Three was adopted in August 2004, completing the regional trail alignment. The regional trail, named the Maricopa Trail, will be a non-motorized, multi-modal, shared-use trail system.

Other Types of Regional Open Space: Several other open spaces in Maricopa County may be considered important, but are not necessarily dedicated or publicly accessible. These areas include golf courses; agriculture; and designated open space in master-planned developments, subdivisions, and other types of development. While most land in this category is not accessible to the public, it is nonetheless important for visual and aesthetic purposes.

Since the early 1990s, dozens of golf courses have been built in north Scottsdale and the northeast county. Tonto Verde, abutting the east boundary of the planning area, includes two semi-private 18-hole golf courses. Rio Verde, immediately south of Tonto Verde, includes two private golf courses. Approximately four miles west of the planning area are two additional golf communities: Troon North includes two semi-private 18-hole courses, and Estancia Golf Club with one private 18-hole course. In addition, the planned Vista Verde development will have 27 holes of golf for private use, and 421 acres of developed and natural open space.

Needs Assessment

Research shows that open space protection is one of the most important public policy issues for Maricopa County residents. A 1999 Arizona State University survey identified that open space is an important priority to 93 percent of the population.

In addition, a survey by the Maricopa Association of Government's *Valley Vision 2025* plan identifies that open space preservation ranked third in importance for regional issues. Recent research documented the importance of physical activity in helping to prevent heart disease, diabetes, obesity, asthma, and depression.[18] Planning for bicycle, equestrian, and pedestrian trails will help ensure that citizens have access to safe and welcoming activities.

Open Space Analysis

Open space and trail needs will become more important as the Rio Verde Foothills planning area grows and develops. **Table 18** identifies open space standards based on NRPA recommendations. The Rio Verde Foothills community may wish to implement some of these standards as the community grows and the need for recreation and open space increases.

Table 18: Parks and Recreation Facilities Standards

Type	*Space Requirements*	*Source*
Minimal Park Standards	6¼ to 10½ acres/1,000	Nat'l Recreation & Parks Assoc Individual Park Type Standards
Playlots	0.1 to 0.3 acres/1,000 persons	Ibid
Neighborhood Playground	2.0 acres/1,000 persons	
Neighborhood Park	2.0 acres/1,000 persons	
Community Playfield	1.0 acre/1,000 persons	
Major Community Park	5 acres for 1,000 to 10,000 persons	
Open Space	.75 to 1 acre/1,000 persons	
Baseball (youth)	1.2 acres/5,000 persons	
Basketball	7,280 sq.ft./5,000 persons	
Swimming Pool	2.0 acres/20,000 persons	
Regional Open Space	15.2 acres/1,000 persons* 25.0 acres/1,000 persons	NRPA Maricopa County Open Space Study (1970)

*The NRPA also recommends that communities adapt these standards to reflect the needs of the people in a specific area.

The Rio Verde Foothills planning area currently does not have any community parks or dedicated open space. The planning area is bordered by a number of mountains including the McDowell Mountain (foothills) to the southwest, the Mazatzal Mountains to the northeast, and the spectacular Four Peaks mountains to the east. Although these mountains are outside the planning area, foothills of the McDowells

[18] Creating a Healthy Environment: The Impact of the Built Environment on Public Health. Centers for Disease Control and Prevention, November 2001

and Mazatzals are accessible to planning area residents. In addition, areas along the Verde River provide activities such as fishing, water activities, camping, picnicking, and wildlife observation. It should be noted that some areas in the Tonto National Forest occasionally experience recreational user conflicts with all-terrain vehicle (ATV) riders and hunters.

Some communities find that schools and their recreational facilities are an important source of open space. If the future school-age population in the planning area becomes great enough to warrant a new school, there may be opportunities to plan for associated recreational areas. Some school districts are willing to share facilities such as baseball, softball, soccer fields, and gymnasiums with public groups for recreational purposes under liability agreements.

Proposed Open Space:

The Maricopa County Comprehensive Plan separates proposed open space into publicly-owned and privately-owned proposed open space. Proposed open spaces are areas that, if acquired for the public domain, are intended to be planned and managed to protect, maintain, and enhance their intrinsic value for recreational, aesthetic, and biological purposes. It is recommended that proposed open space be protected through policy, easements, restrictions, and/or acquisition.

In unincorporated Maricopa County, two-thirds of the privately owned land proposed as open space is either in the 100-year floodplain or located on slopes over 15 percent. Most of the remaining one-third is State Trust land. According to state law, all privately owned and State Trust land may be developed unless added to the public domain or protected using other techniques that respect property rights. As such, limited opportunities exist in the planning area for proposing open space in the 100-year floodplain of privately owned land. Prior to any designation of private land as open space, the county must receive the written consent of the landowner. This would typically only occur in subdivisions and master plans as public or private easements. Developments may also establish natural open space tracts that provide trail linkages and preserve natural drainage ways.

The *Desert Spaces* concept plan considers the Salt and Gila Rivers as the spine of the open space system and other regionally significant rivers and washes as arms that connect major open space destinations. Canals, off-road trails, and utility corridors connect components of the open space system and provide visual relief from urban development. Policies also include on-road bicycle paths to provide connections to Maricopa County Regional Parks and other major open space destinations.

In the planning area, Asher Hills is identified by *Desert Spaces* for protection because of its outstanding open space value. The remainder of the planning area is identified as lands that should be managed as retention areas, where development is allowed if it is sensitive to maintaining open space resources and values. Locally important washes are encouraged to be managed to enhance wildlife and appropriate recreation values. Historic and archaeological sites are to be protected and are considered extremely valuable as educational opportunities as well as economically important to the tourist industry.

In addition to open space system opportunities, MAG's *Regional Off-Street System Plan* (ROSS) identifies flood control structures and rights-of-way, utility easements, freeway rights-of-way and railway corridors as potential routes. In the planning area, a potential corridor is identified that follows the power line from 136th Street and Lone Mountain Road and continues northeast into the Tonto National Forest. Potential opportunities in the Rio Verde Foothills planning area for regional connectivity include protection of washes and floodplains as potential trail corridors and to protect wildlife habitat connections. Existing floodplain regulations and drainage guidelines will assist in preserving open space, preserving natural desert vegetation, and minimizing the impact of development.

Rio Verde Drive could serve as a future recreational connection between the planned Maricopa County Regional Trail along 136th Street, trails planned by Scottsdale, and the Verde River to the east. On-road bicycle lanes are planned by MCDOT in conjunction with future improvements to Rio Verde Drive, but are not anticipated for some time. In 2004, MCDOT submitted a project for the MAG TIP in 2009 to pave the shoulders along Rio Verde Drive from the Scottsdale boundary to Forest Road.

Scenic corridor status could help promote desert landscape setbacks and sensitive development guidelines, and help preserve the outstanding scenic quality and mountain views currently provided along Rio Verde Drive. As discussed in the Transportation element, Rio Verde Drive is included in a scenic corridor overlay that was established in the Maricopa County Transportation System Plan (TSP). Development of scenic corridor guidelines for Rio Verde Drive would help implement the TSP. Maricopa County currently has four scenic corridors with development guidelines that were put together by local residents and stakeholders. They include Carefree Highway, Wickenburg Highway, State Route 74, and Interstate 17. Scenic corridor projects are underway for Old U.S. Highway 80 and Castle Hot Springs Road. Guidelines for the Rio Verde Drive scenic corridor would be policy and not regulatory. Scenic corridor design considerations may include landscaping, scenic quality, community character and identity, streetscapes, connectivity, structure height, lighting, signs, and perimeter walls.

Some open space issues identified by Rio Verde Foothills stakeholders involve planning for trails and paths along easements and roadways in the planning area. According to MCDOT policy, the public (including bicyclists and equestrians) has a right of passage on County road right-of-ways. However, the County will not assume liability for passage, and does not allow building or improving trails, other than normal "wear and tear." MCDOT acquires right-of-way only as required by its geometric design standards as described in the Major Streets and Routes Plan policy document. Currently MCDOT only has right-of-way on Rio Verde Drive. MCDOT has a procedure for including trail easements onto Maricopa County road rights-of-way. The first step is finding out if the County owns the land in the right-of-way, and if it is wide enough for a trail easement. If the Transportation Department ("Transportation") determines that a trail easement is technically possible, the next step is to find an agency to sponsor those trail easements.

The Parks and Recreation Department ("Parks") is Maricopa County's agency for trails. A citizen group would have to make a request for sponsorship to the Trail Commission. If the Trail Commission approves of the trail system plan, they will recommend to the County Board of Supervisors ("Board") that Parks should adopt the trail system. If the Board agrees, Parks will assume responsibility, including liability, for the trail system. Parks will then develop an intergovernmental agreement with Transportation. Once this is signed, the Planning and Development Department ("Planning") will be notified. Finally, Planning would amend the Rio Verde Foothills Area Plan to include the trail system. Trail plans would also be given to Transportation to include in their road development plans.

It would be up to the citizen organization to work with Parks to develop details, including trail guidelines. The trail system would be designated for shared-use. The citizen group may be responsible for material and labor costs but Parks would have final decision-making authority.

Land Ownership Considerations for Open Space

General land ownership is illustrated in **Figure 4 – Land Ownership**. All of the land in the planning area is privately owned. Nearly all of the surrounding lands, however, are publicly owned, as described below.

Federal Land

The USFS manages all of its resources (wood, water, forage, wildlife, and recreation) for multiple use and sustained yield of goods and services to maximize long-term public benefits in an environmentally sound manner. The USFS has authority, when it is in the public interest, to exchange lands with non-federal parties within the boundaries of National Forests within a state. Public interest considerations include: state and local needs; protection of habitats, cultural resources, watersheds, and

wilderness and aesthetic values; enhancement of recreation opportunities and public access; consolidation of lands for efficient management; implementation or accommodation of existing or planned land uses or plans; and fulfillment of public needs.

The Tonto National Forest, north and east of the planning area, is the fifth largest forest in the United States, occupying nearly three million acres of land. The only USFS land in Maricopa County, it is one of the most visited forests in the United States (approximately 5.8 million visitors annually). Historically, the Tonto National Forest has traded lands along its borders, including all of the land that is now the Rio Verde Foothills area, for tracts of private property within USFS land. Land ownership adjustments help to increase efficiency in resource management and satisfy needs of expanding communities. The USFS plans no major land exchanges in or near the planning area.

State Land

State-owned land borders the western boundary of the planning area. Under state charter, the Arizona State Land Department has the responsibility on behalf of beneficiaries to assure the highest and best use of the trust lands. In 1996, Arizona enacted the Arizona Preserve Initiative (API) to give the Land Department authority to reclassify, lease, and sell state trust lands in and around urban areas to local governments and nonprofit organizations as open space for conservation purposes. In 1997, amendments to the API created a public-private matching grant program under the State Parks Board for acquisition or lease of trust lands for conservation. The McDowell Sonoran Preserve, adopted by the City of Scottsdale, is an example of API implementation.

County Land

Maricopa County owns McDowell Mountain Regional Park, which abuts the southern boundary of the planning area. Maricopa County controls access to its parks and often requires user fees. Fees are used to fund operations and maintenance. Park access is controlled to protect and prevent over-use. The County Parks and Recreation Department does not plan to acquire any more land in this region of the county.

The FCDMC provides flood and storm water management services for the benefit of the residents of Maricopa County. It is responsible for administration of the Maricopa County Floodplain Regulations and does so through the study and delineation of County floodplains and the regulation of development within floodplain boundaries. The FCDMC has authority, provided by the state, to acquire property through eminent domain, purchase, donation, dedication, or exchange. However,

this is done only for flood control projects such as constructing a basin or channel; not for open space purposes. The FCDMC currently owns no land in the planning area.

Designation of Access Points to Open Space Areas and Resources

The *Desert Spaces* plan identifies that for people in rural areas of the county access to natural open space is more important than accessing developed parks. In rural areas there is a general perception of "impermanence" of access to open lands as new development may close off access to privately held lands that were once accessible for open space. *Desert Spaces-Environmentally Sensitive Development Areas -Policies and Design Guidelines* (2000) recommends developing safe public access to passive recreational activities and trails linking open spaces, between existing park facilities and new development areas. The ROSS plan recommends providing sufficient, convenient access that is highly visible.

In the planning area, as new development occurs it will be critical to preserve access to Tonto National Forest lands, the McDowell Sonoran Preserve, and county park lands. To this end, it will be important to encourage communication between developers, public land managers, and the community to preserve access to trails within the Rio Verde Foothills area and access to public lands.

The Tonto National Forest works with local communities to identify and designate future trails and access points. The USFS recently applied for a funding grant for fencing and access points along the southern border of the forest, which is the northern border of the Rio Verde Foothills planning area. Currently, there are numerous uncontrolled access points into the forest. Future plans may continue access points that connect to existing forest service roads at north/south streets such as 136th, 144th, 160th, and 168th Streets, but there would be fewer access points than currently exist. Routes are proposed for motorized and non-motorized trails within the National Forest. Eventually, these routes will be numbered, signed, and identified as to specific uses.

WATER RESOURCES

Water supply and quality are important considerations in planning for future growth. State law requires that Maricopa County address water resources by including an inventory of county water supplies in its comprehensive plan, and calculations of historic and projected water demand. This section describes the physical aspects of rivers, streams, groundwater basins and subbasins in and around the Rio Verde Foothills planning area, as well as historic and projected water demand, future water supply and policy implications.

Water Supply Inventory

The following describes water supplies in the Rio Verde Foothills planning area:

Surface Water

The planning area is drained by numerous washes that flow towards the Verde River. Dry washes in the planning area flow only in response to rainfall events and may overtop during heavy rainfall events. Flooding is more likely to occur during the monsoon season lasting from July through September, but may also occur during the winter storms from December through February.

The **Verde River**, which flows year-round, originates in Chino Valley north of Prescott and enters Maricopa County north of Horseshoe Dam, west of the Mazatzal Mountains. The Verde River drains an area over 7,000 square miles and meanders a distance of about 140 miles from Sullivan Lake south to its confluence with the Salt River, southeast of Fountain Hills. The Verde's flow is regulated by Horseshoe Dam and Bartlett Dam, northeast of the study area. These reservoirs, operated by the Salt River Project, provide flood control and water for agricultural, industrial, and municipal use in the Phoenix area. The average annual flow of the Verde River above the confluence with the Salt was 456,400 acre-feet from 1962-1990.[19]

Central Arizona Project

Currently, no water from the Central Arizona Project (CAP) is being used in the planning area. Vista Verde, a new master-planned community, will be the first development in the planning area to use CAP exchange water.

Since 1985, Colorado River water has been transported to the Phoenix area via the Central Arizona Project canal. The CAP was constructed to help Arizona conserve groundwater supplies by importing surface water. The relatively high cost of CAP water and lack of infrastructure needed to convey this water to users who are far from the CAP aqueduct prevents widespread use. However, it is projected that full

[19] Corkhill, Edwin et al. A Regional Groundwater Flow Model of the Salt River Valley – Phase I, Phoenix Active Management Area. Arizona Department of Water Resources, Phoenix, 1993

utilization of CAP water supplies in Arizona will be reached by the year 2040.

Several jurisdictions bordering or near the planning area have CAP allocations. The City of Scottsdale has a current (as of September 3, 2004) annual CAP allocation of 51,129 acre-feet of water for municipal and industrial (M&I) purposes.[20] Scottsdale gets about 63 percent of its drinking water from the Colorado River through CAP aqueducts, 32 percent from city wells, and five percent from Salt River Project. All golf courses along Pima Road north of Loop 101 receive reclaimed water and some CAP water. Any future golf courses are required to provide their own renewable surface water supply in order to locate in Scottsdale. The City of Scottsdale charges every new development in Scottsdale a water resources acquisition fee, which is used to buy surface water supplies like CAP water. In 2003, Scottsdale recharged nearly 6,000 acre-feet of treated CAP water and reclaimed water at its Water Campus. Scottsdale's goal is to replace any groundwater pumped with groundwater recharge, as required by the Arizona Department of Water Resources.

Rio Verde Utilities, Inc. has an annual CAP allocation of 812 acre-feet for M&I purposes. The utility company obtains its CAP allocation through an exchange agreement with Salt River Project. Wells in the lower aquifer contain fluoride levels that exceed drinking water standards. High quality water from the upper aquifer near the Verde River is blended with water in the lower aquifer to bring fluoride levels down. Rio Verde Utilities, Inc. has a total of nine wells. Vista Verde will receive its potable water from Rio Verde Utilities, Inc. beginning in 2004.

The Fort McDowell Indian Community (FMIC) has an annual CAP allocation of 18,233 acre-feet. Under a 1990 federal agreement, the FMIC is provided an annual entitlement of 35,950 acre-feet of water from the Verde River and CAP. The 18,233 acre-feet of CAP in the water budget may be leased for 100 years or less off-reservation within Pima, Pinal, and Maricopa counties. A lease of 4,300 acre-feet to Phoenix has already been signed. This settlement also creates a minimum stream flow on the Lower Verde River of 100 cubic feet per second (cfs).

Groundwater

The primary source of water in the planning area is groundwater. The withdrawal and use of groundwater is governed by the 1980 Arizona Groundwater Management Act. The entire study area is within the Phoenix Active Management Area (AMA). Within the AMA, The Arizona Department of Water Resources (ADWR) oversees the groundwater rights system; prohibits the development of new farmland; requires new subdivisions to have long-term, dependable supplies; and requires measuring and reporting of groundwater withdrawals. These provisions were put into place

[20] An acre-foot of water contains approximately 326,000 gallons and is roughly the amount of water needed to serve a family of five for one year.

to help the Phoenix area achieve safe-yield by 2025. To achieve safe yield, the amount of groundwater pumped from AMA aquifers on an average annual basis must not exceed the amount that is naturally or artificially recharged.

The planning area lies within the **Fountain Hills Subbasin**, one of seven groundwater subbasins in the Phoenix AMA. Located in the northeastern part of the Phoenix AMA, the subbasin covers approximately 360 square miles, all of which drains into the lower part of the Verde River. The subbasin includes the Rio Verde Foothills study area, Fort McDowell Yavapai Nation, the Town of Fountain Hills, and the developments of Rio Verde and Tonto Verde. The amount of recoverable groundwater in the Fountain Hills Subbasin has not been quantified.

Depth to bedrock (solid rock) in the Fountain Hills Subbasin ranges from a few feet near the basin margins to over 1,200 feet near its center. The regional aquifer consists of two distinct hydrogeological units: an older basin-fill sequence and unconsolidated alluvium deposited by the Verde River. The unconsolidated alluvium that underlies the modern floodplain of the Verde River is approximately one mile wide and at least 90 feet thick.[21] The alluvium, which is the principal source of groundwater, is composed mostly of gravel and sand, with floodplains of sandy silt. Water in these aquifers occurs in small pores between the grains of sediment.

The composition of the older basin-fill is not well defined due to a lack of subsurface data. Data from 1977 indicated that wells drilled in this unit yield from a few tens to several hundred gallons of water per minute. At the time of the Arizona Water Resources Assessment report (1994) there were very few wells in the Fountain Hills Subbasin and groundwater conditions were not well defined. The general direction of the groundwater flow is from north to south, parallel to the axis of the subbasin. Available information suggests that the regional aquifer in the Fountain Hills Subbasin is not connected to adjacent subbasins. According to ADWR, the unconsolidated alluvium is hydraulically connected to the Verde River. Local studies and conditions are discussed at the end of this section.

Until recently, groundwater pumping in the Fountain Hills Subbasin was relatively minimal. In 1922, the City of Phoenix began diverting groundwater from the Verde River alluvium for municipal water supply, and a few years later the City installed a number of wells. Currently, groundwater is pumped by Chaparral City Water Company (for Fountain Hills), Rio Verde and Tonto Verde master-planned communities, and an increasing number of domestic wells. Almost all of the groundwater pumping occurs in the southern region of the subbasin. Approximately 2,600 acre-feet of groundwater were pumped in 1990. Groundwater pumping from individual wells in the planning area is addressed later in this chapter.

[21] Arizona Water Resources Assessment. Arizona Department of Water Resources, Phoenix, 1994

A new private water company, the Water Utility of Northern Scottsdale (no affiliation with the City of Scottsdale), was initiated in 2001 to serve the Granite Mountain Ranch subdivision and was later expanded to serve Rio Mountain Estates subdivision, less than one mile to the east. The water company has drilled three wells. Well #1 was drilled in December 1997 to a depth of 1,000 feet; has a 6" casing that is perforated from 800 to 1,000 feet; and was recorded as having a depth to water of 560 feet. Drilling records were not available for the other two wells.

Long-term water level records are not available for the subbasin; however, available information suggests that water levels have not been significantly affected by groundwater pumping. Depth to groundwater in 1982 ranged from 16 feet below land surface in the Verde river floodplain south of Bartlett Dam to 490 feet below land surface near the McDowell Mountains.10 In 1998, depth to groundwater ranged from 19 feet below land surface in the Verde River floodplain south of Bartlett Dam to over 500 feet below land surface near the McDowell Mountains.[22] ADWR has one monitoring well near Jomax Road and 144th Street. Between 1983 and 1998, the well experienced a high average decline rate of 3.6 feet per year.

In the Fountain Hills Subbasin, sources of groundwater recharge (additions to the aquifer) include streambed recharge from the Verde and Salt Rivers and their tributaries, and mountain-front recharge. Sources of groundwater discharge (depleting the aquifer) include groundwater pumping, discharge to the Verde and Salt Rivers, and usage by phreatophytes (water-loving plants with roots that extend into the water table) distributed along the Verde and Salt Rivers.

ADWR conducted depth to bedrock studies in 2000 that reveal preliminary groundwater conditions in the planning area. A hydrologic boundary is estimated to occur near 136th Street, where hard rock gives way to a trough-like structure (east of 136th Street) filled with decomposed and fractured granites. Groundwater tends to accumulate in this sediment-filled trough. Preliminary studies indicate a thick, clay layer that begins roughly in the center region of the planning area, functioning as an opposite edge of the trough. Groundwater is difficult to find east of this region, until the clay transitions to alluvium near the Verde River. In addition, ADWR estimates two cones of depression beginning to form within the trough. Lowering of the groundwater table occurs in times of long-term drought and in response to significant pumpage. On the positive side, the trough and cones of depression are replenished by rainfall and sheetflow that washes across the desert and runs off hardrock northwest of the trough. Natural recharge potential is reduced when washes are channelized, land is paved, or vegetation removed.

[22] Third Management Plan for Phoenix Active Management Area (2000-2010). Arizona Department of Water Resources, 1999

Effluent (Treated Wastewater)

In the Phoenix AMA, effluent is used for landscape irrigation (mainly golf courses), cooling purposes at power plants, irrigation of crops, and riparian areas downstream from the 91st Avenue wastewater treatment plant. Effluent production in rural areas is typically low to nonexistent due to the higher occurrence of septic systems. Effluent production in urbanized areas of Maricopa County is increasing. In 1990, effluent production and use in the Phoenix AMA was 202,700 acre-feet and 89,757 acre-feet respectively. In 1998, that increased to 257,000 acre-feet and 175,083 acre-feet respectively. By 2010, it is projected that 374,000 acre-feet of effluent will be generated annually. Looking at percent utilization, effluent use in the Phoenix AMA has increased from approximately 20% in 1985 to approximately 60% in 1998.[23]

The Rio Verde Services, Inc. wastewater treatment plant has a maximum capacity of 700,000 gallons per day. In 2003, the plant treated over 56 million gallons of effluent. Effluent flow is higher during winter months and lower in summer months. This fluctuation is attributed to seasonal usage from retirement communities where many residents leave during the hot summer months. All treated effluent is used to water golf courses and to fill lakes.

Rio Verde Services Inc. serves the communities of Rio Verde and Tonto Verde, and will begin serving Vista Verde. Treated effluent will be used for irrigation, as well as water from existing non-potable wells. The irrigation requirement for the 27-hole course will be 662 acre-feet per year. Initially, as new grass is established, the average daily demand will be approximately 750,000 gallons per day. The average daily demand is expected to diminish to approximately 600,000 gallons per day.

The City of Scottsdale uses effluent on all golf courses north of Loop 101 on Pima Road. For a short time, the City of Scottsdale operated a wastewater treatment plant located at Alma School Road and Dynamite Boulevard, approximately three miles west of the planning area. This plant was decommissioned in 1996 when Scottsdale built the Water Campus on Pima Road, north of Bell Road. Sewer, potable water, and treated effluent lines now run from the Water Campus to the Troon North development at Alma School Road and Dynamite Boulevard. The Water Campus wastewater treatment plant has an annual average capacity of 12 million gallons per day. In 2003, the plant treated 4.36 billion gallons of effluent. Three billions gallons were reused for landscape irrigation (mostly golf courses), and over one billion gallons were recharged underground near the Water Campus.

[23] Renewable Supplies Issues #1: Availability, Reliability & Utilization of Renewable Supplies. Governor's Water Management Commission-Technical Advisory Committee, Phoenix, Arizona, November 2000

Water Supply Analysis

This section provides an analysis of historical and future groundwater use in the planning area. Recoverable groundwater amounts for the Fountain Hills Subbasin have not been quantified. Updates to this area plan will provide new information that may be available from groundwater studies.

Historical Water Demand

Historical water use is estimated more accurately than groundwater supplies because of well records and pumping data recorded by the Arizona Department of Water Resources (ADWR). ADWR divides wells into two reporting categories: *exempt* and *non-exempt*. *Exempt wells* are those with a pump capacity of 35 gallons per minute or less and are exempt from ADWR reporting requirements. These smaller wells are generally for home use or stock watering purposes. *Non-exempt wells* are those with a pump capacity of greater than 35 gallons per minute and are required to report annual pumpage if within an active management area. Most non-exempt wells are used for agricultural irrigation or belong to a city, town, or private water company.

Table 19 shows historic well pumpage in acre-feet for non-exempt (regulated) wells. One acre-foot of water contains about 326,000 gallons and is roughly the amount of water needed to serve a family of five for one year. There are only a few of these large capacity wells in the planning area. The largest producing well, owned by the Water Utility of Northern Scottsdale (no affiliation with the City of Scottsdale), pumped a total of 60.27 acre-feet of groundwater in 2001, for hydrotest purposes and development of Granite Mountain Ranch and Rio Mountain Estates subdivisions. Several non-exempt wells west of 144th Street and south of Rio Verde Drive were drilled in 2000 but were cancelled. Well pumpage data for 2002 is not available.

Table 19: Non-Exempt Well Pumpage

Year Reported	1997	1998	1999	2000	2001	2002	2003
Acre-Feet	0.30	0.00	0.00	0.00	60.27	0.00	5.57

*Note: Only four non-exempt wells in the planning area reported water withdrawals from 1997-2003. These were under hydro-testing permits or recovery well permits.

According to the Groundwater Code[24], a city, town, or private water company has the right to withdraw and transport groundwater within its service area for the benefit of landowners and residents. ADWR classifies water providers that deliver 250 acre-feet or less for non-irrigation use annually as small municipal providers.

[24] A.R.S. § 45-492

The average per capita use rate among small municipal providers is estimated to be 223 gallons per person per day. Small providers are required to use water efficiently, but are not assigned specific conservation requirements. Large providers that serve more than 250 acre-feet of water annually are regulated for compliance with specific conservation requirements.

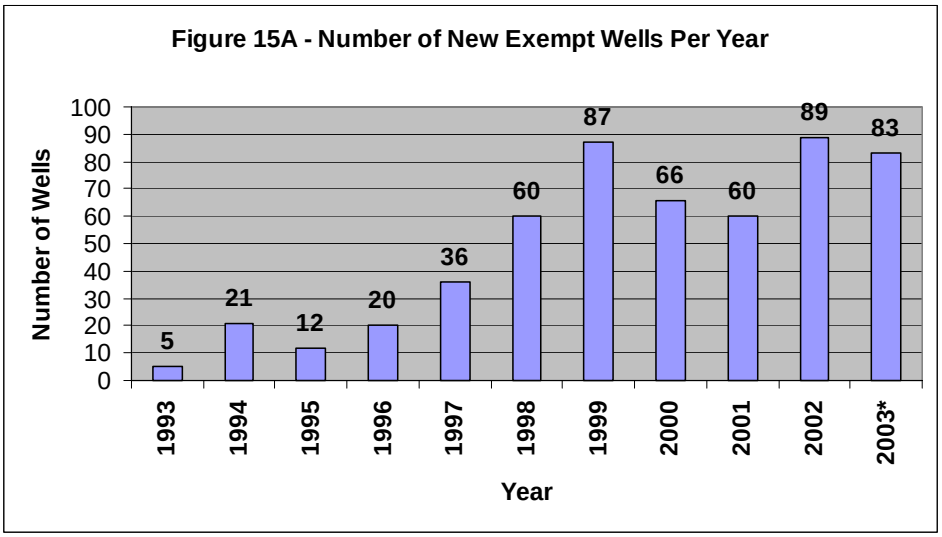
Table 20 shows historic pumpage from smaller, exempt wells in the planning area. From 1982 to 1993, 25 exempt wells were reported as drilled in the planning area. By the end of 2003, a total of 564 wells had been drilled. Because they are exempt from reporting water withdrawals to ADWR, it is assumed that each exempt well pumps one acre-foot of water per year for either domestic (residential) uses or stock watering purposes.

Table 20: Exempt Well Pumpage (Acre-Feet)

Year Reported	1993	2003	% Change
Estimated Acre-Feet	25	564	>2000%

Note: Exempt well pumpage estimate based on assumption of 1 acre-foot/year pumped per exempt well.

Figure 15A – Number of New Exempt Wells Per Year illustrates the increase in the number of new wells that have been drilled in the planning area. The number of new wells being drilled roughly parallels the number of new homes being built. A map of well locations is provided in **Figure 15B-Existing Wells**.



*January 1, 2003 through November 10, 2003
Source: Arizona Department of Water Resources

Projected Water Demand

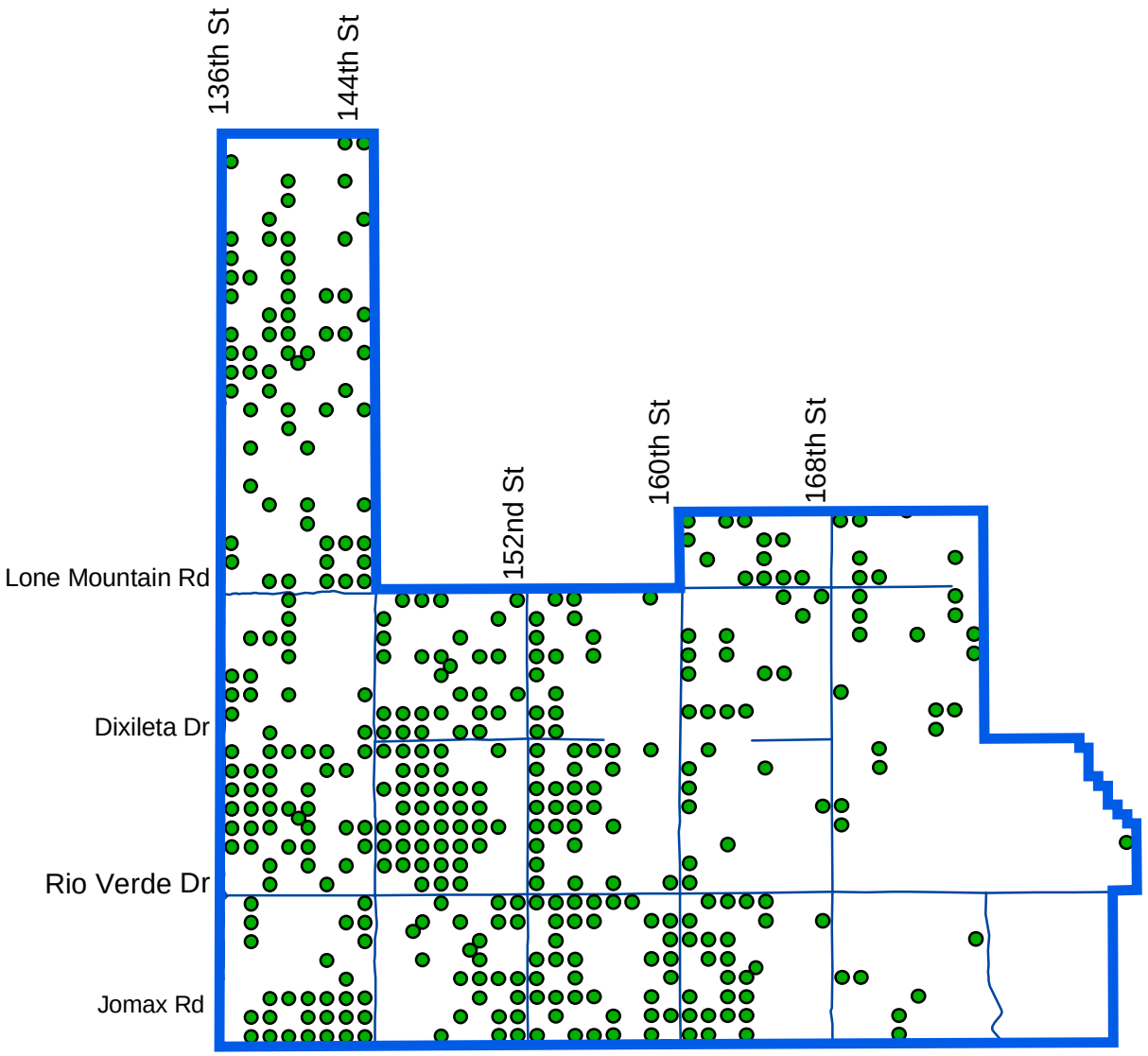
Water demand projections in the planning area were estimated using an estimate of new homes projected to be built in the planning area. In the Rio Verde Foothills planning area, an average of 117 homes per year were built between 1999 and 2003. Assuming this rate continues, an estimated 1,990 new homes could be built by the year 2020. Adding the existing 750 homes results in a total of approximately 2,700 homes (6,700 persons) by 2020, not including Vista Verde, which will be served by Rio Verde Utilities, Inc.

For this projection, an average per capita use rate of 110 gallons per day (gpd) is used as an assumption for the planning area. This was the per capita residential use rate of Cave Creek Water Company in 1995. ADWR will require Cave Creek Water Company to maintain a residential gallons per capita per day rate of no more than 109 between 2005-2009. Assuming a similar average use rate, one can estimate the quantity of water that could be needed for residential use in the planning area by 2020:

- 110 gal. per person per day x 365 days = 40,150 gal. per person per year
- 40,150 gal. per person per year / 325,851 gal. per acre-foot = 0.123 acre-foot/person/year
- 0.123 acre-foot/person/year x 6,700 persons = 824 acre-feet per year (needed by 2020)

This estimate does not include other water uses such as dust control, pasture watering, or stock watering. Many factors can influence residential water demand, including landscaping (native vs. non-native), swimming pools, and low-flow plumbing fixtures. The average per capita use rate of 223 gpd for small providers is too high to use as an assumption for the planning area since some small providers use water on golf courses, parks, and schools. ADWR conservation requirements set Desert Hills Water Company's residential gallons per capita per day rate at 101 between 2005-2009. Water companies' service areas in Cave Creek and Desert Hills are rural residential, similar to the planning area.

Since most single-lot residences have an exempt well, the number of wells in the area should roughly match the number of homes in the planning area. Some residences rely on shared wells or haul water to their homes, lowering the total number of wells. Some ranching and equestrian operations have wells, adding to the total number of wells. From 1982 through 2003, ADWR records report a total of 564 wells drilled in the planning area. Some of these wells may not be used, but they were drilled. Maricopa County residential building records indicate there are



Existing Wells

Figure 15B

Location of Well

Arterial Streets

Planning Area Boundary

0.5 0 0.5 1 Miles

Maricopa County Planning and Development Department

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approximately 750 homes in the planning area as of the end of 2003. This results in a ratio of approximately 0.75 wells per home. Using this ratio, one can roughly correlate the projected number of new homes to the projected number of new wells and their pumpage, as shown below in **Table 21**. The estimate is based on an assumption of 1 acre-foot/year pumped per well and 0.75 wells per home. Projecting a total of 2,700 homes in 2020 could result in 2,025 acre-feet of water pumped in 2020. Exempt well water use may include residential, pasture, and stock watering.

Table 22-Projected Non-Exempt Well Pumpage is the amount of withdrawn groundwater reported by the local water company in 2003 and the expected build-out demand by the two new subdivisions in 2020. Combined, the total amount of groundwater projected to be withdrawn by all wells in the planning area in 2020 is 2,118 acre-feet.

Table 21: Projected Exempt Well Pumpage *

	2003	2020
Single-lot residential wells	564 AF/YEAR	2,025 AF/YEAR

*Projections based on historical trend in number of new single-lot residences added between 1999-2003, and a ratio of approximately 0.75 wells per home.

Table 22: Projected Non-Exempt Well Pumpage

	2003[1]	2020[2]
GRANITE MOUNTAIN RANCH	5.57 AF/YEAR	49.08 AF/YEAR
RIO MOUNTAIN RANCH	0	43.68 AF/YEAR
TOTAL	5.57 AF/YEAR	92.76 AF/YEAR

[1] 2003 well pumpage based on Water Utility of Northern Scottsdale's Annual Water Use report.
[2] Projected annual build-out demand per Certificates of 100-year Assured Water Supply

Issues

Land Subsidence and Earth Fissures

In areas where extensive pumping has significantly lowered groundwater levels, subsidence and cracking of the land surface can occur. Groundwater depletion can make it economically infeasible to pump water in some cases. Land subsidence and earth fissuring are documented in the Phoenix AMA and cause water quality problems, flooding, and damage to well casings and building foundations. No significant land subsidence has been documented in the Rio Verde Foothills planning area.

Projected Water Level Trends

Substantial water level decreases have been documented in the Carefree and North Scottsdale area, northwest of the planning area. The Carefree Subbasin has experienced water level declines exceeding 10 to 12 feet per year due to growth and development. Projected decline rates of up to eight feet per year have been projected for the extreme north Scottsdale area.20 Drought conditions can contribute to lowered aquifer levels. Maricopa County is currently in its ninth year of drought, and if drought conditions persist, local aquifers could experience lower water table depths. Seasonal changes in pumping rates also cause local fluctuations in groundwater levels.

While Arizona's Groundwater Management Act and the Assured Water Supply (AWS) rules provide one of the strongest groundwater regulatory programs in the nation, they do not have the regulatory authority to prevent legal groundwater pumping. For example, new exempt wells can continue to be drilled for residential uses and do not require well impact analyses. All new subdivisions in the Phoenix AMA must demonstrate the use of renewable supplies or join the Central Arizona Replenishment District if they plan to use groundwater. Although groundwater will be recharged into AMA aquifers, it may not replenish the local aquifer from which it was withdrawn. Also, the AWS rules allow groundwater levels to decline to 1,000 feet below land surface over 100 years; a level that could mean irreversible damage to the aquifer. These issues are addressed in ADWR's Third Management Plan and have been identified as issues that the Department will examine.

Population growth is a significant factor in projecting future demands on an aquifer. The Rio Verde Foothills Area Plan recommends maintaining the current low density of one or less homes per acre. Even with this restriction, each landowner could potentially divide their land into one-acre parcels, resulting in over 8,000 homes that could be built in the planning area (not including approved subdivisions). Until more is known about the availability of water in this area, landowners and developers should be aware of the impact that new development may have on water supplies. Many planning area property owners feel that the area will not support any new golf courses, and it appears that water supplies are not sufficient to develop golf courses in the planning area, excluding the Vista Verde golf course that will be supplied by Rio Verde Services, Inc.

Water Availability

Residents report that water is generally less available and drilling more expensive in the eastern portion of the planning area than in the western area. Several residents have built homes in this area; some have successfully drilled wells and others must haul water to their homes. Development in the east will likely continue to be slower than the west. Vista Verde is the exception, since it will be served by

Rio Verde Services, Inc. In response to the water availability problem, some residents are pursuing the formation of a domestic water improvement district, which requires approval by the Maricopa County Board of Supervisors. Residents are exploring alternative sources of water that could be used to serve this area, such as drilling deep wells that would produce enough water to serve a neighborhood, or entering into a water exchange agreement with the Salt River Project that could enable surface water to be used. Should a dependable source of water be developed, this would provide increased incentives for land division, home construction, and subdivision applications, and possibly pressures for increased density. In addition, creation of a large water improvement district would require an update of this area plan.

Water Quality

Groundwater quality data indicate that most of the groundwater in the Fountain Hills Subbasin is suitable for most uses, including domestic use. Deeper aquifer wells in the Rio Verde Services area have higher than recommended fluoride levels. These levels are lowered to meet drinking water standards by mixing with high quality water from the upper aquifer near the Verde River. Water quality tests for the Water Utility of Northern Scottsdale (no affiliation with the City of Scottsdale) well #2 indicate a fluoride concentration of 1.4 mg/l, below the recommended standard of 2.0 mg/l. Tests indicate less than 2 parts per billion (ppb) arsenic, well below the new standard of 10 ppb arsenic. A nitrate concentration of 1.6 mg/l was found in the tested well, below the standard of 10 mg/l.

In Maricopa County, agriculture, industry, construction, wastewater treatment plants, motorized recreation, landfills, and resource extraction are the primary contributors to surface water pollution. In the planning area, possible sources of pollutants include livestock operations, construction sites, fertilizers, and septic systems. If deep percolation water reaches the groundwater, the upper part of the aquifer can be contaminated.

Best management practices, such as waste disposal plans for livestock operations, can reduce the quantity of pollutants entering drainage ways. Maricopa County Environmental Services Department now requires the use of leach trenches for residential septic systems in the planning area, due to unique soil properties, to prevent aquifer contamination. Prior to 2001, seepage pits with depths of 30 feet or more were allowed; however, new state Aquifer Protection Program rules require that disposal systems be designed to prevent any movement of pollutants into the aquifer. The new shallow systems (no deeper than 60") result in a higher quality of water that goes back into the ground. Any future commercial projects in the planning area will be required to have a public wastewater system; septic systems will not be allowed.

Proposed drinking water standards for arsenic, radon, and uranium have major implications for groundwater supplies. In the central Arizona basins, proposed standards for radon and uranium are more likely to be exceeded than for arsenic. Many public water systems are required to treat drinking water to decrease concentrations of these substances. A more in-depth discussion of water quality in the Rio Verde Foothills planning area may be found in the Environmental Effects element of this plan.

Riparian Habitats

There are no true riparian habitats in the planning area, although some desert wash habitats are considered semi-riparian. Trees and shrubs in desert wash habitats are generally taller and denser than those of surrounding desert habitats and support more bird species than other habitats, with the exception of riparian. Dense vegetation also provides food and cover for other wildlife. Riparian areas can be negatively affected by diversion of the natural water channel or excessive drawdown of an aquifer. Desert wash habitats should be protected for their habitat value, flood mitigating functions, and recharge potential.

True riparian habitat is located along the Verde River. Preserving healthy riparian habitat along the Verde is critical to maintaining the high water quality present in the river.

Use of Renewable Supplies

Groundwater is the primary source of water used in the planning area. In most cases, groundwater is less expensive and easier to obtain than renewable supplies such as surface water or effluent. The Vista Verde master-planned development will receive water from Rio Verde Services, Inc., which is outside of the planning area. Rio Verde Services obtains water from shallow wells near the Verde River (considered surface water) and deeper wells, considered groundwater. Vista Verde will use treated effluent to water its golf courses and landscaping. No other surface water or treated effluent is currently being used in the planning area.

Assured Water Supply

To ensure protection of future water supplies, the 1980 Groundwater Code included Assured Water Supply (AWS) provisions. The 1980 Code prohibits the sale or lease of subdivided land in an Active Management Area without demonstrating that there is sufficient water of adequate quality for at least 100 years. A subdivision is defined in state law as land divided into six or more parcels with at least one parcel having an area of less than 36 acres. This includes subdivisions for residential, commercial, or industrial uses. The AWS program helps minimize groundwater use where feasible.

The AWS provisions were strengthened with the adoption of the Assured Water Supply Rules in February 1995. Applicants must now demonstrate the use of renewable supplies to meet most of the demand of the development for 100 years. Renewable supplies include surface water, Central Arizona Project water, and effluent. The 1995 rules also raised the physical availability depth-to-water standard from 1,200 to 1,000 feet below land surface. The Arizona Department of Water Resources (ADWR) administers the Assured Water Supply program.

There are several ways in which a subdivision or a water provider can meet the "consistency with the management goal" requirement, including using renewable supplies and/or extinguishing groundwater rights. The intent is to maximize the use of renewable supplies. However, it is possible for the subdivisions or water providers to pump groundwater to serve a development if the subdivision or water provider enrolls in the Central Arizona Groundwater Replenishment District (CAGRD). The CAGRD will then recharge CAP water into AMA aquifers to replace "excess" groundwater used by its members. However, replenishment does not necessarily take place within the same subbasin from which groundwater was withdrawn. Subdivisions and water providers pay an annual assessment to the CAGRD based on the amount of groundwater used. No recharge sites are located in the Rio Verde Foothills area.

Granite Mountain Ranch obtained a Certificate of AWS from ADWR in March 2000 and Rio Mountain Estates obtained a Certificate in October 2001. Maricopa County does not approve final subdivision plats until an AWS certificate is provided by the applicant.

Effluent Use

Effluent production in the metropolitan Phoenix area is increasing with population. The 91st Avenue wastewater treatment plant (WWTP) accounts for most of the effluent production within the Phoenix area. Although remote, effluent is being used on golf courses a few miles west of the planning area, and will be used on Vista Verde golf courses at the east end of the planning area. The two newest subdivisions in the planning area are planned for low density rural residential with individual septic systems, so no effluent will be produced.

Supplying Future Population

On a regional scale, effluent treatment will continue to be enhanced, making it an increasingly valuable source of water. In June 2001, the Arizona Department of Environmental Quality adopted new standards that allow private residential reuse of gray water if certain standards are met.[25]

Groundwater will likely be the primary source of water used in the Rio Verde

[25] Arizona Administrative Code R18-9-711, Reclaimed Water General Permit for Residential Use

Foothills area. Treated effluent and poor quality groundwater will be supplied by Rio Verde Services Inc. for landscaping uses in the Vista Verde master-planned community. Central Arizona Project (CAP) water, while not currently used in the planning area, could potentially be exchanged with SRP for surface water from the Verde River, similar to the water exchange program Rio Verde Services has in place to serve their customers. Future water resource planning in the Rio Verde Foothills area will need to be coordinated with regional planning efforts to consider water quantity, quality, conservation methods, and flood control issues.

COST OF DEVELOPMENT

This section provides an overview of fiscal considerations relating to future growth in the Rio Verde Foothills planning area. The Cost of Development element is one of several new elements added to the Maricopa County comprehensive plan to comply with the Growing Smarter and Growing Smarter Plus Acts. Policies and strategies are identified that Maricopa County will use to require development to pay its fair share toward the cost of additional public facility needs generated by new development. In addition, existing techniques are identified that can be used to fund additional public services associated with new development, and policies to ensure that any funding mechanism(s) bear a reasonable relationship to the financial burden imposed on the County.

Cost of Development goals and policies will be integrated with other plan elements, particularly the Growth Areas element. The Cost of Development element as presented in this plan will provide the preliminary basis for more detailed future studies of funding techniques and public costs.

Existing and Future Conditions: Demographics

The Rio Verde Foothills planning area's population grew from 33 in 1990 to 778 in 2000. This represents an increase of over 2000% during the 1990s. This incredible growth rate can be attributed to the extremely low number of residents present in the planning area in 1990. Although the growth rate will continue to be high over the next decade, it will not likely be near 2000%. By comparison, the City of Scottsdale's population increase during the 1990s was approximately 56%, while the Town of Fountain Hills population increased approximately 102% during the same time. Further, Maricopa County's growth rate from 1990 to 2000 was 45%, and was the fastest growing county in the United States, adding over 950,000 people. Maricopa County's current population exceeds 3 million.

Significant population growth is expected to continue, and the Arizona Department of Economic Security projects the County population will top 4.5 million by the year 2020, and 6.2 million by 2040. Assuming a continuance of the recent growth rate, the planning area could increase to approximately 3,700 persons by the year 2020, which would be a 360% increase over the 2000 population.

Besides population growth, demographic characteristics is also an important consideration because it can affect public revenues from sales taxes, residential property taxes, vehicle taxes, and user fees, as well as public expenditures for services like health care, education, social services, and infrastructure. Based on data for Zip Code Tabulation Area 85262, the Rio Verde Foothills planning area population is 49.5% male and 50.5% female. The median age of Rio Verde Foothills

residents, 54.6 years, is significantly higher than Maricopa County's median age of 33. In Maricopa County, by 2040 the percentage of persons under 50 is expected to decrease approximately 10%, while the percentage of population over the age of 50 is expected to increase by approximately 10%.

Over the next several decades Maricopa County's population will not only become older, it will become more diverse. This is likely to be reflected to a lesser degree in the Rio Verde Foothills planning area as well. Other than "Hispanic," no other races besides "White" were reported in 1990. In 2000, in addition to the 7% Hispanic category, approximately 91% identified themselves as "Non-Hispanic White," approximately 2% as "American Indian and Alaskan Native," less than 1% as "Asian," less than 1% as "Hawaiian or Other Pacific Islander," and less than 1% as "Black or African-American."

Existing and Future Conditions: Economics

Some highlights from the *Eye to the Future 2020* Cost of Development element are included in the following discussions, some which may pertain to the Rio Verde Foothills planning area. Information on employment, and construction and real estate is found in the Economic Development section of this area plan.

Issues and Considerations

- As growth occurs in Maricopa County—primarily at the urban fringe—the cost to service development in rural areas such as Rio Verde Foothills generally increases.
- Maricopa County's diversifying and aging population might affect County revenues and expenditures with respect to providing County services in unincorporated rural areas. New programs may be needed to serve the diversifying and aging population.
- Certain development costs are higher in rural areas like Rio Verde Foothills than in urban areas. For example, road maintenance, schools, busing, and emergency services are generally more expensive to develop and maintain in rural areas. Costs associated with growth are higher for development that is far from existing services and infrastructure.

Available Funding Techniques

It is important to identify all financial mechanisms available to local governments (including Maricopa County) to help fund the additional public service and infrastructure costs of new development. A listing of these techniques is provided in this section. An in depth discussion of these funding techniques is included in the Maricopa County comprehensive plan.

- Property tax
- Specialty/industry tax
- User fees
- Bonds
- Lease purchase finance
- Dedication
- Development agreement
- Intergovernmental agreement
- Development fee/exaction
- Special districts

Improvement District

An Improvement District is a program offered to residents of unincorporated Maricopa County to provide roadway maintenance or other improvements. To form an improvement district, residents must first submit a request for a petition to the MCDOT Office of the Superintendent of Streets outlining the improvements desired (e.g., street paving, water or sewer lines, street lights, etc.). A petition, which includes the district boundary and a cost estimate, would then be returned for signatures of either a majority of persons owning real property within the district or the owners of 51% or more of the real property within the district. Proceedings and hearings as required by state law are conducted with the Maricopa County Board of Supervisors serving as the district Board of Directors. All costs associated with Improvement Districts are paid for by those property owners through property assessments. The process of organizing an improvement district is provided by the Maricopa County Department of Transportation.

Current Cost Sharing Efforts

Although Maricopa County does not have an impact fee ordinance, there are ways in which new development is required to pay for and provide facilities and services associated with growth. A brief discussion of these efforts follows.

Urban Service Area

The Urban Service Area exists as part of the Maricopa County comprehensive plan, and helps guide decision making to coordinate future development with urbanizing areas. It is based on the necessity for services and infrastructure to establish and maintain a high quality of life. The Urban Service Area doesn't exist as a designation on a map. Rather, it is based on the ability of new development to provide infrastructure and appropriate urban services to future residents at a particular location. The type of new development referred to here includes higher intensity

uses such as residential densities greater than 1 dwelling unit per acre, commercial, industrial, and mixed use development. The Rio Verde Foothills planning area is not expected to see these higher intensity uses for the current planning horizon of 10-15 years. However, if at some point such uses are proposed, they must demonstrate (at a minimum) that the following infrastructure and services exist or will be provided by the development:

- All necessary roads
- All necessary flood control structures
- Adequate utilities, including water, sewer, electric, and natural gas
- Adequate capacity and appropriate proximity to elementary, middle, and high schools
- Appropriate emergency service (police and fire) facilities and response time
- Adequate library facilities within appropriate proximity
- Adequate supply and proximity to parks
- Appropriate proximity to or supply of commercial and large-scale employment
- opportunities
- Appropriate proximity to hospital and emergency medical facilities
- Adequacy and proximity to multi-modal transportation facilities

Development Agreements

As identified earlier, development agreements are contractual arrangements between local governments and property owners regarding service and infrastructure funding. Maricopa County frequently uses development agreements, especially with respect to master planned communities, to ensure adequate infrastructure is available for future residents.

Stipulations

Stipulations are conditions or restrictions placed upon the approval of entitlements granted to landowners. Stipulations cover a wide range of issues, including requirements for services, infrastructure, and facilities. Stipulations frequently set conditions in order to begin or continue construction.

Voluntary Contributions

Developer donations and contributions are another way in which new development helps pay for infrastructure and service costs. Voluntary contributions are used for various services, including monetary donations for regional parks and libraries, as well as property and monetary donations for schools and emergency service facilities. Contributions are beneficial because they are usually amenable to both the public and private stakeholders.

ISSUE IDENTIFICATION

Issue History

This section summarizes current planning issues identified by Rio Verde Foothills residents, land owners, and other stakeholders during the planning process.

Issue Identification Workshops and Survey Results

On September 25, 2003, Maricopa County Planning and Development Department hosted the first public workshop for the Desert Foothills Area Plan update. Approximately 200 people attended this workshop at the Tonto Verde Clubhouse in Rio Verde, which introduced the area plan update project and identified citizen issues. Based on this meeting and other methods of public participation, over 200 issues and comments were identified for land use and growth areas; transportation; environment; economic development; open space and water resources. Issues and comments were also received through a second public workshop in September 2004; a three-page comments and questions survey; meetings, emails, and phone conversations with representatives of the Rio Verde Horsemen's Association and the Rio Verde Foothills Alliance; meetings or other communications with the City of Scottsdale, McDowell Sonoran Land Trust, and Tonto National Forest staff. These issues are listed in **Table 23: Issue Identification**.

Issue Analysis

Regarding land use and growth areas, there is a strong desire to maintain the existing low-density residential character and not allow commercial, retail, or industrial business. A smaller number of survey respondents would consider allowing some small commercial businesses if limited to Rio Verde Drive. In addition, most residents feel that subdivision development should be limited. Many residents want to maintain the rural, equestrian-oriented nature of the area, and some assert that non-horse people need to be considered as well.

The principal transportation issue is whether to pave dirt roads or leave them unpaved. Slightly more survey responses favor minimal paving in the area, or support paving section-line roads only. Residents feel that more equestrian trails need to be established in the community. Many expressed the need for bicycle lanes on Dynamite Road/Rio Verde Drive. Some stakeholders feel that Dynamite Road/Rio Verde Drive needs to be widened to four lanes, but should not be extended to the Beeline Highway. The open range situation is noted as a significant hazard on Rio Verde Drive. In 2005, the Maricopa County Assessor's Office determined that the Rio Verde Foothills area no longer meets the qualification criteria as "open range" grazing area. A "high density" grazing policy will be phased in to take the place of open grazing, requiring property owners to fence the boundaries of their property to confine livestock to their property. Residents believe public buses

should be used on main roads only, for school children and transportation for the elderly. Some think that ATVs need to be restricted, for noise/dust/safety reasons, and separated from equestrian riding areas. Many stakeholders support pursuing scenic corridor status for Rio Verde Drive.

Water availability and air quality are the key environmental issues, followed by protection of wildlife habitat and natural vegetation. Residents want to preserve the desert environment, and keep the night sky dark by minimizing lighting. Many stakeholders would like more roads to be paved to reduce dust. Water quality protection is also an important issue.

Most residents feel that economic development and associated commercial or office development is not appropriate or necessary, with the exception of rural and equestrian-oriented facilities, through special use permits. Economic development and employment opportunities are available in Scottsdale, according to survey comments. Some stakeholders believe that schools are needed or will be needed in the near future.

Preserving existing open space and planning for future open space and trails are important issues to stakeholders. Residents want to maintain access to surrounding public lands and develop a coordinated trail system that links open space for equestrian use, biking, and hiking. Some residents feel that separation of ATVs from other recreational uses is important. Several stakeholders want to see more planning for non-horse activities such as bicycles, hiking trails, ATVs, and motorcycles, in addition to equestrian activities.

The majority of survey respondents believe that an alternative supply of water will be needed in the future. Residents are concerned about the impact of large developments and private wells on the community's water supply, and recommend a comprehensive water availability study be conducted for the area.

Other comments include adding cellular/telephone service, concern over county services, and wanting to keep urban-type development out of the community. Several area plan names were suggested, with *Rio Verde Foothills* receiving the most support.

Community Issues:

The City of Scottsdale identified several important long-range issues which could potentially impact Scottsdale and Fountain Hills. Although some of these issues may not come into play with the current area plan update, they will need to be re-

evaluated with each plan update. Scottsdale is concerned that if population in the planning area reaches 15,000 or more and there are few or no services such as retail, recreation, water, sewer, and transportation-related services in the planning area, then Scottsdale's and Fountain Hills' roads, parks, and neighborhood services may potentially be overburdened. With future plan updates, the development of neighborhood services such as parks, neighborhood level professional offices, grocery stores, churches, etc. should be reconsidered if population and market conditions justify.

Table 23: Issue Identification (7 pages total)

The following issues are listed in order of most frequently sited to least frequently sited:

1. Land Use & Growth Areas

- Maintain Low Density

Recommended Densities: 1.0-acre minimum lots; 1.25-acre minimum lots; 2.5-acre minimum lots; 1.5-acre minimum lots; 2 to 5 acre minimum lots

- No commercial, retail, or industrial businesses
- Maintain rural character
- Keep area equestrian-oriented
- Limit subdivision development
- Limit commercial/business developments to Rio Verde Drive only

- Limit special use permits to Rio Verde Drive only
- No multi-family apartments, condos, etc. (single-family only)

- Allow horse-related non-retail businesses only
- Be aware of non-horse people
- Encourage businesses to locate at Alma School Rd/Dynamite Blvd

- No two-story homes
- Do not annex
- Eliminate open range
- Need a community center for children/adults

Other Issues:

- Continue open range
- Limit golf courses
- Continue to allow home businesses
- Coordinate information and existing policies between county agencies (Planning & Dev., Drainage Review, FCDMC, Environmental Services, and MCDOT)
- Include Rio Verde and Tonto Verde communities in area plan
- Consider potential of annexation by Scottsdale
- Refer to 1979 Desert Foothills Area Plan guidelines for use in the update
- Rural-43 zoning for the majority of the planning area would be too dense overall for this large area to be compatible with Scottsdale's rural residential zoning of one to 5-acre lots
- No street lighting
- Require developers to provide some infrastructure
- Consider not including Vista Verde DMP in area plan boundaries
- No national forest land trades to private sector

2. Transportation

- Minimize paving or do not pave dirt roads (slightly more favor minimal paving)
- Pave all dirt roads or just section-line roads off Rio Verde Drive (opposite opinion)
- Establish equestrian trails within community
- Bicycle lanes needed on Dynamite Road
- Widen and/or make Dynamite/Rio Verde Drive 4-lane
- Do not extend Rio Verde Drive to the Beeline Highway
- No mass transit needed
- Concern about increasing traffic
- Consider scenic corridor status for Rio Verde Drive
- Establish clearly defined horse trails on roads within community
- Public buses for school children and elderly on main roads only
- Restrict ATVs

- Eliminate open range
- Establish hiking and walking trails through open land and/or road rights of way
- Preserve access to open space areas
- Need access along McDowell Mountain Park for horses and bicycles
- Do not widen Rio Verde Drive to 6 lanes (leave as is or widen to 4 lanes)
- Need to separate equestrian trails from dirt bike/quad/ bicycle trails
- Need connecting trails in area for horseback riders and bicyclists
- Dust problem

- Fences are cutting off access to trails
- Need to extend Rio Verde Drive to Beeline Highway
- Heavy commercial traffic a problem
- Maintain rural nature
- Need some stop signs/street signs

Other Issues:

- street grading needed
- Need ATV lane on Dynamite/Rio Verde Dr.
- Use 136th Street as model for paving dirt roads
- Install cattle guards to keep livestock off Rio Verde Dr.
- Horseback riding access to Tonto National Forest needed
- Add center turn lane to Rio Verde Dr.
- Limit road access
- No stop signs or traffic lights on Rio Verde Dr.; Limit stoplights
- Plan access and improvements to Rio Verde Dr. with care
- Need to plan to delete any east/west through streets in county's planning area that would enter Scottsdale's Preserve area
- Maintain wildlife corridors
- Consider Scottsdale's transportation guidelines for equestrian uses
- Create buffer of desert between roads and trails (on section line roads)
- Consider safe wildlife and trail crossings across Rio Verde Dr.
- Extend certain north/south cross streets to Rio Verde Dr. to improve mobility

3. Environment/Environmental Effects

- Concern about water availability in area and excessive well drilling
- Concern about air quality in area, especially dust

- Protect native wildlife and plants, wildlife habitat, and wildlife movement corridors
- Preserve natural vegetation, especially native trees and cacti

- Preserve the desert environment
- Concern about light pollution (keep dark night sky)

- Eliminate open range (cows/horses need to be removed)
- Concern about well and aquifer water quality

- Concern about unregulated grading/clearing of properties, roads, and large-scale equestrian facilities

- Maintain low density housing
- Pave section line roads to control dust

- Enforce flood control issues
- Keep area rural
- Avoid urban heat island (do not pave roads)
- Preserve the scenic beauty of the area
- Do not urbanize area

- Replenish the desert with more natural plants
- Need water improvement district for water supply
- Careful use of groundwater
- Limit growth because of limited water supply
- No more golf courses

Other Issues:

- Look for alternative water sources to replace hauled water
- Concern over adequate resources for fire control
- County needs to verify 100-year water supplies
- Unregulated use of groundwater for agricultural (pasture) and horse facilities
- Concern over drainage problems
- Preserve washes as wildlife corridors
- Concern over trash left by workers on new home construction sites
- Concern over horse issues (manure, odor, flies, rodents attracted to feed)
- No restrictions on fencing property
- Restrict small planes from flying overhead at low level
- Too many hunters on or close to trails a danger to people in some areas
- Implement native plant protection plan similar to Scottsdale's program
- Do not want to be annexed

4. Economic Development

- Do not want any economic development/employment, business, or retail
- Economic development and employment opportunities are available in Scottsdale

- Limit commercial development to rural/equestrian oriented facilities with
- special use permits (i.e. boarding stables, ranches, feed and tack store)
- Allow economic development/employment in designated areas along
- Riio Verde Drive

- Allow only home-based businesses

- Maintain low density residential character
- Horse industry will continue to provide employment opportunities in area
- Need grocery store/pharmacy in area
- Need schools
- No big-box stores, large chain-operated businesses, or Del Webb-like communities

Other Issues:

- Encourage equestrian activities
- Need minor retail and business at end of Rio Verde Dr.
- Encourage farms
- Need strip malls
- Preserve the land
- Place a variety of recreational facilities in McDowell Mountain Park (i.e. golf course, tennis courts, croquet, soccer, baseball fields)
- Replenish the desert
- Do not want development with high traffic flows
- Allow commercial riding stables along Rio Verde Drive
- Will need gas station in future
- Need grocery store east of Rio Verde Drive and 180th Street
- Would like limited small businesses/ restaurants similar to Troon North area
- Need U.S. post office and county services
- Would like homes and a few condominiums similar to Troon North area

5. Open Space

- Preserve existing open space and plan for more open space
- Trails and paths needed along easements and roadways

- Coordinated trail system and access needed to link community to
- McDowell Mountain Park, Tonto National Forest, and Scottsdale's
- preserve area for equestrian use, biking, and hiking
- Protect and expand trail system for hikers, bikers, and equestrian use
- (no ATVs or ATVs on separate trails)

- Trail access is important
- Non-motorized access to McDowell Mountain Park and Scottsdale preserve is important

- Plan for non-horse activities such as quads, motorcycles, bicycles, and hiking trails
- Keep large washes and floodplain areas open for equestrian trails and open space
- Need separate motorized and non-motorized areas
- Need more neighborhood open space, parks, and trails
- There is already enough open space

Other Issues:

- Maintain access to public lands
- Allow fencing of property
- Promote/preserve hiking trails
- Community center for recreation needed within community
- Develop equestrian trails in areas that are now undeveloped so future homeowners will know of trail use in advance
- Designate area for community park
- Preserve wildlife corridors
- No gated communities (they prevent trail access)
- More horse trails needed to connect to Tonto National Forest
- Preserve open space in washes
- Desert preservation
- Eliminate free range
- Less development
- Consider desert education center
- Open space along existing property lines and road shoulders
- Set boundary fences back from property easements to allow for trails
- Keep equestrian element in entire area
- Consider the current community trails planning efforts
- Plan for public recreation facilities in McDowell Mountain Park (i.e. golf course, tennis, etc)
- Work with the City of Scottsdale to coordinate regional trails and open space efforts
- Marking of trails in Granite Mountain area should continue
- Change zoning to 2 ½ acres to help maintain open space

6. Water Resources

- Alternative supply of water needed in future (i.e. water improvement district, municipal water system, private water company, Indian allocations, Rio Verde community)

- Concern about effect of big housing developments and future growth
- on limited water supply (how much water is in the ground?)
- No more golf courses (too much water being used on golf courses)

- Current water supply not adequate in some areas (i.e. some wells barely producing)

- Water availability study needed and policies based on study
- Protect water resources in the area
- Keep low-density housing due to water issue
- Revise policies to prevent waste of water

- Deny permits to develop if not enough water proven
- Water is generally available between 144th and 160th Streets
- (scarce outside of this area)
- Educate land owners on water conservation

Other Issues:

- Require real estate disclosure of lack of water
- Determine how much water lost from aquifer due to increased runoff down to Verde River
- Make developers pay for all infrastructure related to their projects
- Concern about effect of drilled pit wastewater systems on water quality
- How long will the water last
- Water quality unknown
- Concern about limited water for fire control (many residents haul water)
- Concern regarding investment in well construction if area if eventually annexed and receives city water services
- Do not allow large subdivisions
- Promote greywater reuse
- Promote the use of low flow water fixtures
- Do not allow export of water out of area
- Encourage technologically advanced onsite wastewater treatment systems
- Promote homeowner education on maintenance of onsite wastewater systems

7. Miscellaneous

- Keep rural character

- Maintain low density
- End open range
- Cell sites/phone service needed in some areas
- Preserve Sonoran Desert
- No businesses/commercial development
- Maintain dark night sky

- Keep in mind that this is not just an equestrian community
- Concern over condition of dirt roads and not knowing who grades them
- More proactive county inspection needed
- Don't want to be another Scottsdale
- Keep city away from this area

Other Issues:

- Concerned that County resources not sufficient to handle growth of area
- No more large horse properties
- County should enforce existing laws and policies
- Include Rio Verde and Tonto Verde communities in plan
- Flood Control District too restrictive on drainage and flood control issues
- Buses for school children will be needed for growing population
- Flood Control District, Environmental Services, and Rural Metro regulations are difficult to comply with and sometimes conflicting
- Many services needed including DSL Internet; cable; paved or graded roads; locked USPS boxes, private water company; sewers; additional cellular towers
- Grading of properties without permit a problem, should fine and make restore with plants
- Work with Rio Verde Horseman's Association
- Stop or control development
- Contact Rio Verde Foothills Alliance, Rio Verde Horsemen's Assoc., and McDowell Mountain Park Assoc. about participating in this study
- Maintain wildlife and roaming cattle
- Non-golfers should not be assessed for development and construction of golf courses
- Need dust control
- Request for environmental/habitat bulletin board in Granite Mountain area

Area Plan name suggestions:

- Rio Verde Foothills [most frequently sited]
- Foothills of the Rio Verde
- Verde Foothills
- Rio Verde Equestrian
- Rural Verde, Rural Rio Verde, Rio Verde Rural

PLAN ELEMENTS

The Rio Verde Foothills Area Plan establishes comprehensive goals, objectives, and policies that are derived from input obtained from community workshops, stakeholder meetings, surveys, telephone conversations, letters, and electronic mail. The goals, objectives, and policies help support and implement *Eye to the Future 2020*, the Maricopa County Comprehensive Plan.

Using the Comprehensive Plan's format, the area plan elements are organized within eight subject areas.

- Land Use
- Transportation
- Environment/Environmental Effects
- Economic Development
- Growth Areas
- Open Space
- Water Resources
- Cost of Development

Several general definitions are included to help explain their purpose:

Goal: A concise statement describing a condition to be achieved. It does not suggest specific actions, but describes a desired outcome.

Objective: An achievable step towards a goal. Progress towards an objective can be measured and is generally time dependent.

Policy: A specific statement to guide public and private decision-making. It is derived from the goals and objectives of the plan.

The goals, objectives, and policies are the action components of this area plan. Therefore, determination of land use on any specific parcel must be in conformance with the goals, objectives, and policies contained in this plan.

Goals, Objectives, and Policies

The following goals, objectives, and policies are designed to achieve specific outcomes in the Rio Verde Foothills Area Plan.

Land Use

Goal L1:

Promote efficient land development that is compatible with adjacent land uses, is well integrated with the transportation system, and is sensitive to the natural environment.

***Objective L1.1*:** Encourage orderly, efficient, and functional development patterns.

Policy L1.1.1: Encourage continued densities no greater than one dwelling unit per acre; minimum lot size is one acre; clustered development is discouraged.

Policy L1.1.2: Encourage federal, state, and local agency cooperation and coordination for area planning efforts.

Policy L1.1.3 Encourage county inter-agency cooperation and coordination for area planning efforts.

Objective L1.2: Promote high quality residential development that is sensitive to the natural environment and compatible with adjacent land uses.

Policy L1.2.1: Encourage developers to cooperate and communicate with residents and local associations during the development review process. In addition, encourage subdivision developers to notify potential homebuyers that the new development is adjacent to a growing equestrian community.

Policy L1.2.2: Besides normal site plan review, development proposals along major streets and adjacent to existing and approved land uses will be reviewed to determine compatibility with those uses.

Policy L1.2.3: Support enforcement of existing real estate disclosure requirements for status of public services, flooding and drainage hazards, roads and access, and other information when parcel splitting and sales occur.

Policy L1.2.4: Encourage property owners to contact Maricopa County Environmental Services Department to obtain septic system requirements prior to land division.

Policy L1.2.5: Encourage property owners to contact the Maricopa County Planning and Development Department for drainage requirements prior to land division.

Objective L1.3: Allow high quality special use permits that are consistent with adjacent land uses.

Policy L1.3.1: Allow land uses that are compatible with the rural residential and equestrian character of the Rio Verde Foothills planning area and that are sensitive to the natural environment.

Policy L1.3.2: Encourage adequate buffers between land uses to protect adjacent or affected residents from potentially incompatible uses.

Policy L1.3.3: Consider existing transportation corridors when determining allowable land uses.

Objective L1.4: Preserve the scenic, rural, and residential equestrian character of the Rio Verde Foothills planning area.

Policy L1.4.1: Discourage commercial, retail, or industrial development in the Rio Verde Foothills planning area for the current 10 to 15 year planning horizon.

Policy L1.4.2: Minimize roadway lighting to preserve rural character and dark night skies.

Policy L1.4.3: Work with the Rio Verde Foothills community to prepare rural development guidelines for landscaping, lighting, and/or signage that reflect the rural community and regional character.

Policy L1.4.4: Encourage continued agricultural uses of land in the Rio Verde Foothills planning area.

Transportation

Goal T1:

Provide an efficient, cost-effective, integrated, accessible, environmentally sensitive, and safe countywide multi-modal system that addresses existing and future roadway networks, as well as promotes transit, bikeways, equestrian and pedestrian travel.

Objective T1.1: Establish a safe, convenient, and efficient system for existing and future roadways while considering the need for equestrian and multi-use trails in the Rio Verde Foothills planning area.

Policy T1.1.1: Develop an arterial street system along the existing grid-based section line pattern. Use Maricopa County's Major Streets and Routes Plan to determine the functional classification of roads.

Policy T1.1.2: Support MCDOT efforts to ensure that new or improved transportation facilities within the community are designed and constructed in a manner consistent with County standards.

Policy T1.1.3: In coordination with MCDOT, explore alternative road standards due to unique drainage conditions in the Rio Verde Foothills area.

Policy T1.1.4: Support the continued maintenance of existing County roadways and the paving of future roads consistent with adopted County design standards, EPA, and MAG standards. Unpaved county-maintained roads will be evaluated for paving if 150 vehicles or more per day use the road, per the County's PM-10 program.

Policy T1.1.5: Preserve necessary right of way (ROW) for roads per current policy as listed in the Major Streets and Routes Plan. ROW is open to the public for use by equestrians, bicyclists, and pedestrians.

Policy T1.1.6: Equestrian crossings and access should be considered in future roadway improvement projects.

Policy T1.1.7: Support efforts to have the community provide all-weather crossings of washes, including low-water crossings, where justified.

Policy T1.1.8: Encourage adequate access for fire and emergency vehicles for all new developments and for lot splits.

Policy T1.1.9: Support efforts to develop scenic corridor design guidelines for Rio Verde Drive in conjunction with City of Scottsdale to protect the scenic environment and adjoining Sonoran desert vegetation.

Environment/Environmental Effects

Goal E1:

Promote development that considers adverse environmental impacts on the natural and cultural environment, preserves highly valued wildlife habitat, minimizes flooding and drainage problems, and protects historical and archaeological resources.

Objective E1.1: Encourage development that is compatible with natural environmental features and which does not lead to their destruction.

Policy E1.1.1: Encourage land uses and development designs that are compatible with environmentally sensitive areas such as the Palo Verde-Saguaro community, floodplains, significant washes, hillsides, wildlife habitat, scenic areas, and unstable geologic and soil conditions.

Policy E1.1.2: Encourage building envelopes and localized grading to minimize blading and cut and fill in environmentally sensitive areas and leave the remaining portion of the lot undisturbed.

Policy E1.1.3: Encourage the preservation of the scenic quality of Rio Verde Drive, McDowell Mountain foothills, and views of the Mazatzal Mountains, Four Peaks, and other prominent mountains in the review of applications for land development.

Policy E1.1.4: To help protect mountain views in the Rio Verde Foothills area, promote the use of buffering, judicious placement of structures, as well as reasonable height on structures and signs associated with special use permit operations.

Policy E1.1.5: Encourage under grounding of all utilities.

Policy E1.1.6: Discourage new development in major 100-year floodplains.

Policy E1.1.7: Support Maricopa County Planning & Development Drainage Review division efforts to help property owners minimize adverse impacts to existing natural washes, erodible soils, desert vegetation, and landforms through drainage guidelines developed for single-lot development in the planning area.

Policy E1.1.8: Encourage the preservation of washes in a natural state by avoiding re-grading, realignment, or channelization of washes.

Policy E1.1.9: Encourage property owners to consult with the Maricopa County Planning & Development Drainage Review division prior to land division to adequately plan for local washes and landforms.

Policy E1.1.10: Encourage property owners to maintain local washes free of debris and to plan development of land so there will be no change of flow of water off the property.

Policy E1.1.11: Discourage block wall perimeter fencing that can interfere with sheet flow characteristics of runoff in the planning area. Encourage open-style fencing.

Policy E1.1.12: Support natural drainage corridors and protective buffering techniques along significant wash systems where new development is proposed, to provide flood control, preserve wildlife corridors, and protect open space.

Policy E1.1.13: Prior to development, excavation, or grading, request that developers submit a letter from the Arizona Historic Preservation Officer stating that the proposed land development will have no effect on historical or cultural resources.

***Objective E1.2**:* Improve air quality, water quality, and reduce noise impacts.

Policy E1.2.1: Support and encourage local and region-wide efforts to preserve air quality.

Policy E1.2.2: Support and foster federal, state, and local surface water and groundwater quality management programs to reduce pollutants in wash/drainage systems and groundwater.

Policy E1.2.3: Discourage the construction of new dirt roads where feasible by encouraging common access that is agreed to by end users. Encourage revegetation of abandoned dirt roads. Support resident efforts to establish improvement districts for heavily used local roads.

Objective E1.3: Preserve significant habitat areas for wildlife and desert plant species.

Policy E1.3.1: In conjunction with new development, encourage cooperation with the Arizona Game and Fish Department (AGFD) and the U.S. Fish and Wildlife Service to help prevent encroachment on riparian scrub habitat and/or channels associated with significant local wash systems.

Policy E1.3.2: Support Maricopa County Planning & Development Drainage Review efforts to encourage open fencing (where fencing is needed) across washes.

Policy E1.3.3: Encourage the use of replacement vegetation that is indigenous to the Sonoran desert plant community for development that disturbs that community.

Policy E1.3.4: In conjunction with new development, encourage and support voluntary citizen efforts to salvage and replant cactuses and other desert plants in public spaces, neighborhoods, and abandoned roads.

Policy E1.3.5: Encourage cooperation with the AGFD to protect desert tortoise and other wildlife habitat and minimize disturbance of desert tortoises from development, all-terrain vehicles, and illegal collectors.

Economic Development

Goal ED1:

Promote a growing, balanced, efficient, and diversified economy, consistent with available resources, that enhances quality employment opportunities, improves quality of life, and is sensitive to the natural and cultural environment.

Objective ED1.1: Encourage rural, low-density residential, and equestrian oriented development during the 10 to 15 year horizon of the Rio Verde Foothills Area Plan update, to retain the quality of life and land values enjoyed by this community.

Policy ED1.1.1: Discourage commercial or industrial development.

Policy ED1.1.2: Encourage rural and residential development that is sensitive to the environment, maintains connections to open space, and preserves amenities that attract families and retirees to the planning area.

Policy ED1.1.3: Develop land use guidelines that encourage suitable locations for new residences and help ensure that appropriate access and services are provided.

Policy ED1.1.4: Support the continuation of equestrian-related activities that are compatible with existing uses in the community and that produce income and/or contribute to the economy through direct and indirect expenditures.

Policy ED1.1.5: Encourage special use permit applicants to work with the community to obtain input on the proposal, to help ensure compatible development.

Growth Areas

Goal G.1:

Promote orderly, timely, and fiscally responsible growth in Maricopa County.

Objective G.1.1: Encourage timely, orderly, and fiscally responsible growth within any approved mixed use Development Master Plans.

Policy G1.1.1: Residential development with gross densities greater than 1.0 dwelling unit per acre will be discouraged.

Policy G1.1.2: New Development Master Plan development shall provide evidence of community water and sanitary sewer system, and other necessary public services to meet the needs of future residents.

Policy G1.1.3: New development should demonstrate conservation of significant natural resources and open space areas and coordinate their location with adjacent open space areas.

Objective G.1.2: Ensure that future growth is coordinated in an efficient manner with stakeholder input.

Policy G.1.2.1: Work with residents and other stakeholders in the review of future growth and development.

Policy G.1.2.2: Encourage coordination between developers and school districts for future school site planning.

Policy G1.2.3: Continue to update the Rio Verde Foothills Area Plan with input from local organizations and area residents to determine appropriate growth areas, if any, and make changes as necessary.

Open Space

Goal O1:

Maintain and, where necessary, encourage expanding the open space system for Maricopa County to address public access, connectivity, education, preservation, buffering, quantity, quality, and diversity for regionally significant open spaces.

Objective O1.1: Promote physical and visual public access to natural open space resources.

Policy O1.1.1: Encourage efforts to protect and improve public access to natural open space resources such as the Tonto National Forest, McDowell Mountain Regional Park, the planned McDowell Sonoran Preserve, and the adopted Maricopa County Regional Trail.

Policy O1.1.2: Support efforts to protect and establish points of access to existing and proposed equestrian, hiking, and bicycle trails.

Policy O1.1.3: Promote development that preserves mountain views.

Objective O1.2: Establish regional natural open space connectivity and linkages for both recreation and wildlife purposes.

Policy O1.2.1: Where feasible, work with the Rio Verde Foothills community to establish local trail linkages in new developments.

Policy O1.2.2: Coordinate trail linkages in new developments with drainage easements and other open space projects and/or resources.

Policy O1.2.3: Investigate opportunities for development of trails adjacent to

major washes as interconnected linkages throughout the region.

Policy O1.2.4: Where roads must cross washes, design all road crossings to minimize disturbance to the natural environment, and to accommodate identified trails.

Policy O1.2.5: Encourage preservation of Palo Verde-Saguaro plant communities to serve as major links between regionally significant open space resources and, where appropriate, smaller areas of foothills and flatlands to provide connectivity and transition functions.

Policy O1.2.6: Coordinate with the City of Scottsdale, the Tonto National Forest, McDowell Sonoran Land Trust, Maricopa County Parks Department, and other jurisdictions in planning for future local and regional trails.

Policy O1.2.7: Encourage integration and consideration of the Maricopa County Regional Trail system into future development.

Policy O1.2.8: Promote interconnected trail/natural open space systems as wildlife corridors and for use by hikers, bicyclists, and equestrians while respecting and protecting personal property rights.

Objective O1.3: Protect and enhance environmentally sensitive areas, including existing natural washes, steep slopes, historic, cultural, and archaeological resources; view corridors; sensitive desert; and significant wildlife habitat and ecosystems.

Policy O1.3.1: Discourage development in environmentally sensitive areas, natural washes, identified wildlife corridors, or in densely vegetated Palo Verde-Saguaro habitat.

Policy O1.3.2: Encourage the use of native plant material for all types of landscaping in environmentally sensitive areas, including the Palo Verde-Saguaro plant community.

Policy O1.3.3: Encourage effective buffers between development and washes.

Policy O1.3.4: Discourage creation of informal trails.

Policy O1.3.5: Identify and implement an open space trails system that is coordinated with the Maricopa County regional trail system.

Policy O1.3.6: Where feasible, encourage trail alignments to correspond to existing trails, paths, utility easements, or roads that have already disturbed the environment.

Objective O1.4: Encourage appropriate natural open space between communities and other land uses.

Policy O1.4.1: Promote transitional land uses around McDowell Mountain Regional Park, the McDowell Sonoran Preserve, the Tonto National Forest, and include open space linkages and public access points.

Policy O1.4.2: Maintain low-density residential land use (not to exceed one dwelling unit per net acre) adjacent to the Tonto National Forest, McDowell Mountain Regional Park, and the planned McDowell Sonoran Preserve, to buffer these public park and preserve areas.

Objective O1.5: Improve quantity, quality, and diversity of open space and recreational opportunities where public access is protected and preservation is encouraged.

Policy O1.5.1: Protect significant cultural resources from degradation by encouraging sensitive development or public acquisition.

Policy O1.5.2: Monitor and coordinate with the Tonto National Forest, State Land Department, and the McDowell Sonoran Land Trust regarding classification, exchange, disposal, and acquisition of lands under their management.

Policy O1.5.3: Support additional monitoring programs of natural open space areas to reduce damage from uncontrolled off-road activities, shooting, and illegal dumping.

Policy O1.5.4: Support community efforts to pursue acquisition of additional natural open space resources via techniques that respect personal property rights.

Objective O1.6: Promote the economic, environmental, and quality of life benefits of natural open space.

Policy O1.6.1: Encourage communication efforts with stakeholders to share information and discussion on current issues and/or projects.

Policy O1.6.2: Discuss and encourage open space preservation with applicants during the land entitlement process.

Policy O1.6.3: Cooperate with neighboring jurisdictions to develop sharded natural open space and outdoor recreation amenities.

Policy O1.6.4: Support efforts to educate residents on the economic benefits of natural open space.

Policy O1.6.5: Support efforts to educate residents on the environmental and quality of life benefits of natural open space.

Water Resources

Goal W1:

Promote development that makes conservative use of renewable water supplies such as effluent, surface water, and Central Arizona Project water when feasible, and that uses groundwater as the primary water source only in the absence of renewable sources.

Objective W1.1: Encourage protection and enhancement of renewable water and groundwater supplies within the framework of state and federal laws, regulations, and guidelines for existing and future needs.

Policy W1.1.1: Support Arizona Department of Water Resources programs, rules, and regulations for new development and for water conservation.

Policy W1.1.2: Support Arizona Department of Environmental Quality standards for effluent treatment and reuse.

Policy W1.1.3: Support citizen efforts to develop a sustainable alternative supply of water in the planning area.

Policy W1.1.4: Support efforts to assure that no underground water supplies are transported out of the Rio Verde Foothills planning area.

Policy W1.1.5: Support the existing practice of hauling potable water as an acceptable water supply in the Rio Verde Foothills planning area.

Goal W2:

Reduce the impacts of development on water quality, land subsidence, and riparian habitat.

Objective W2.1: Encourage voluntary actions and support federal, state, and local regulations and guidelines that protect and preserve the watershed, to safeguard current and future groundwater quality in the planning area.

Policy W2.1.1: Consider incentives and options for preservation of Sonoran desert vegetation and other land conservation practices, to maximize penetration and filtering of surface water runoff into the soil to replenish the local aquifer.

Policy W2.1.2: Support ongoing depth to groundwater monitoring conducted by the Arizona Department of Water Resources to assess water levels and water quality throughout the Phoenix Active Management Area and encourage additional monitoring wells in the planning area.

Policy W2.1.3: Support existing drainage guidelines for single-lot development that help property owners minimize adverse impacts to existing natural washes, erodible soils, desert vegetation, and landforms in the planning area.

Policy W2.1.4: Support existing state aquifer protection rules and county regulations that ban seepage pits and require shallow wastewater disposal systems (shallow trenches) in the planning area, to prevent potential contamination of the aquifer.

Policy W2.1.5: Encourage development that complies with the Arizona aquifer protection program.

Policy W2.1.6: Encourage the use of animal waste disposal methods, pest management practices, and landscape/pasture fertilization methods that reduce the risk of groundwater and surface water contamination.

Cost of Development

Goal C1:

Ensure that new development pays its fair and proportional share of the cost of additional public facility and service needs generated by new development.

Objective C1.1: Develop a method to determine the need for, and assess costs of, new facilities and services required to serve new development in order to maintain service levels.

Policy C1.1.1: Work with other County agencies and affected stakeholders to establish cost sharing programs.

Policy C1.1.2: Seek regional coordination to promote cost sharing for regional services and infrastructure.

Objective C1.2: Adopt and implement level of service standards for new development to help promote consistency and certainty in the cost sharing process.

Policy C1.2.1: Maintain and support Maricopa County's capital improvement programs that help promote service needs and standards.

Policy C1.2.2: Adopt and periodically update level of service standards for new development to maintain viability.

AGENDA FOR ACTION

Purpose

The Maricopa County comprehensive plan promotes vibrant communities by encouraging growth in areas suitable for development, an efficient transportation system, a healthy environment, and a diverse economy. The Rio Verde Foothills Area Plan is intended to reflect the character of the region. Ensuring the plan's success requires an effective implementation program.

The Rio Verde Foothills action plan identifies both long- and short-term measures that can help implement the plan's goals, objectives, and policies. While some of the activities require actions for a specific period of time, most will require ongoing efforts. In addition, successful plan implementation will require close cooperation, coordination, and communication between public and private agencies, as well as citizens and other concerned interests. Each of these groups will play an important role in plan success, and Maricopa County encourages their continuing participation. **Table 24** details the Rio Verde Foothills Action Plan, and is organized as follows:

Action	Lists actions necessary to implement the area plan
Description	Describes the action in detail
Elements Involved	Lists the elements of the area plan that will be implemented
Timeline	Details when particular actions will take place
Department/Agency	Identifies County departments and/or partnering agencies

Involved in plan implementation, which include the following:

MCP&DD	Maricopa County Planning and Development Department
MCDOT	Maricopa County Department of Transportation
MCESD	Maricopa County Environmental Services Department
FCDMC	Flood Control District of Maricopa County
MCPARKS	Maricopa County Parks Department
COMM DEV	Maricopa County Community Development
SCOTTSDALE	City of Scottsdale
CITIZENS	Interested residents and landowners in Rio Verde Foothills planning area
PRIVATE AGENCIES	Includes private and non-profit organizations such as chambers of commerce, interest groups, homeowners associations, civic organizations, land trusts, etc.
DEVELOPERS	Homebuilders and related organizations operating within the planning area
AGFD	Arizona Game and Fish Department
RURAL METRO	Rural Metro Fire Department
STATE LAND DEPT	Arizona State Land Department
USFS	U.S. Forest Service

Table 24 - Action Plan

Action	Description	Plan Element	Participants	Timeline*
Rural development guidelines	Create rural development guidelines for issues such as landscape, signs, and/or design and incorporate into planning documents	Land Use Economic Development Cost of Development	MCP&DD MCDOT CITIZENS DEVELOPERS COMM DEV	
Scenic corridor overlay	Prepare scenic corridor guidelines for Rio Verde Drive	Land Use Transportation Environment/ Environmental Effects	MCP&DD MCDOT CITIZENS PRIVATE AGENCIES SCOTTSDALE	
Fire protection plan	Form a regional workgroup to discuss and prepare a fire protection plan	Environment/ Environmental Effects Growth Areas Cost of Development	MCP&DD CITIZENS PRIVATE AGENCIES RURAL METRO USFS	
Trails	Identify and implement an open space trails system that is coordinated with the Maricopa County Regional Trail System and Tonto N.F.	Land Use Transportation Environment/ Environmental Effects Economic Development Open Space	MCP&DD FCDMC MC-PARKS CITIZENS PRIVATE AGENCIES DEVELOPERS SCOTTSDALE USFS	
Level of service standards	Analyze and support level of service standards for infrastructure and services	All	All Maricopa Co.	
Update area plan	Update area plan to maintain viability	All	All	

* Conceptual timeline where each column represents one year, beginning with YR 2005.

AMENDMENTS

Amending the Area Plan

Area plan amendments may be filed with or without rezoning requests or development master plan applications. Arizona Revised Statute §11-829A states that all applications for zoning changes in the unincorporated Maricopa County must be in compliance with the county's comprehensive plan and/or adopted area plan.

Plan amendments should not occur in an uncontrolled manner, and should only be allowed after careful public review and evaluation. The statutory requirements which guide area plan adoption will be followed for all requested amendments. The term amendment will apply to both text and map revisions.

All proposed amendments are evaluated based on the following criteria:

1. Whether the amendment constitutes an overall improvement to the adopted plan, and is not solely for the good or benefit of a particular landowner or owners at a particular point in time.
2. Whether the amendment will adversely impact all or a portion of the planning area by:
    - A. Altering acceptable land use patterns to the detriment of the plan.
    - B. Requiring public expenditures for larger and more expensive public improvements to roads, sewer, or water systems than are needed to support the planned land uses.
    - C. Adversely impacting existing uses because of increased traffic.
    - D. Affecting the livability of the area or the health and safety of present and future residents.
    - E. Adversely affecting the natural environment or scenic quality of the area in contradiction to the plan.
3. Whether the amendment is consistent with the overall intent of the adopted plan.
4. The extent to which the amendment is consistent with the specific goals and policies contained in the adopted plan.

The requirements and guidelines necessary for Area Plan amendments are the same as those for the Maricopa County comprehensive plan. Therefore, any change in comprehensive plan amendment requirements and guidelines will apply to the area plan amendment process.

AMENDMENTS

Maricopa County, private individuals, or other agencies may initiate plan amendments. It is the burden of the party requesting the amendment to prove that the change constitutes a plan improvement. Conversely, it is not Maricopa County's burden to prove that an amendment should be denied.

APPENDIX

APPENDIX A – GLOSSARY OF TERMS

Alluvial: General term for riverbed, floodplain, lake, estuary, and mountain base sediments laid down in relatively recent geologic times.

Annexation: Incorporate an area/territory into a city, service district, etc.

Area Plan: Plans adopted by Maricopa County for specific subareas of the unincorporated County. Area plans provide basic information on natural features, resources, and physical constraints that affect development in a planning area. They also contain detailed land use designations which are used to review specific development, service, and facility proposals.

Arterial: Street providing traffic service for large areas. Access to adjacent property is incidental to serving major traffic movement.

Agriculture: Any use of land for growing, harvesting, and sale of crops or animals. Also includes uses which are ancillary to the growing and harvesting of crops or animals, which is the exclusive or primary use of the lot, plot, parcel, or tract of land; processing crops to a generally recognizable level of marketability; or the open range grazing of livestock.

Aquifer: Saturated underground formation of permeable materials capable of storing water.

Basic Sector Employment: Industries that sell products to consumers outside of a particular city or region.

Buffer: Method of separating incompatible uses; examples include opaque fencing, vegetated berms, and dense landscaping.

Capital Improvement Program: Board of Supervisors approved timetable or schedule of future public improvements to be carried out during a specific period. These improvements are listed in order of priority together with anticipated costs and finance methods.

Cluster Development: Development design that concentrates buildings in areas of a site to allow remaining land to be used for recreation, common open space, and / or preservation of environmentally sensitive features.

Community: Group of individuals living in a common location sharing common interests.

Comprehensive Plan: Document containing guidelines for growth and land development within a jurisdiction. Also contains policies regarding public services, benefits, and regulations.

Developed Recreation Site: Distinctly defined area where facilities are provided for concentrated public use (e.g. campgrounds, picnic areas, boating sites, and interpretive facilities).

Density: Numeric average of families, individuals, dwelling units, or housing structures per unit of land, usually referred to as total dwelling units per acre.

Density Bonus: Allowing additional development on a parcel in exchange for items of public benefit such as affordable housing, recreation sites, infrastructure expansion, open space, etc.

Dwelling Unit: Room or group of rooms (including sleeping, eating, cooking, and sanitation facilities) that constitutes an independent unit, occupied or intended for occupancy by one household on a long-term basis.

Endangered Species: A type of animal or plant listed as threatened according to the federal Endangered Species Act.

Environment: All the factors (physical, social, and economic) that affect a population.

Floodplain: The channel and the adjacent areas of a natural stream or river which has been or may be covered by floodwater.

Floodway: The channel of a watercourse and portion of the adjacent floodplain that is needed to convey the base or 100-year flood event without increasing flood levels by more than one foot and without increasing velocities of flood water.

Floodway Fringe: The areas of a delineated floodplain adjacent to the Floodway where encroachment may be permitted.

Floor Area Ratio (FAR): The zoning control number that regulates the total square footage of floor area allowed on a lot. For example, a FAR of 1.0 on a 10,000 square foot lot would allow a building with a maximum of 10,000 square feet of floor area, with 1 story, covering the entire lot, or two stories of 5,000 square feet for each floor, each covering ½ of the lot.

Goal: An ideal future end, condition or state related to the public health, safety, or general welfare toward which planning and planning implementation measures are directed.

Groundwater: Water that is stored beneath the land surface in cracks and crevices of rocks, and in the pores of geologic materials that make up the earth's crust.

Habitat: The typical place(s) occupied by a species or organism.

Housing Unit: A house, apartment, mobile home or trailer, group of rooms, or single room occupied as a separate living quarter or, if vacant, intended for occupancy as a separate living quarter. Separate living quarters are those in which the occupants live and eat separately from any other person in the building and which have direct access from the outside of the building or through a common hall.

Incorporated City: Area(s)/neighborhood(s) joined together for the purpose of self-government.

Infrastructure: Facilities and services needed to sustain a particular type of development. This includes water and sewer lines, streets, electrical power, fire and police stations, etc.

Jobs-Housing Balance: An attempt to balance the number and types of jobs with the amount and cost of housing.

Landfill: A site for disposal of solid wastes. At specific intervals, a layer of soil covers the waste and a process of deposit and compaction is repeated to reduce nuisances and hazards to public health and safety. The purpose is to confine wastes to the smallest practical area, and reduce them to the smallest practical volume.

Land Use: Occupation or use of land or water area for any human activity or any purpose defined in the Comprehensive Plan.

Multi-modal: Accommodating a variety of transportation modes, such as buses, automobiles, rapid transit, rail, bicycles and pedestrians. A multi-modal transportation hub is a facility for the transfer of passengers and/or goods between different modes of transportation.

Natural Resources: Elements relating to land, water, air, plant and animal life, and the interrelationship of those elements. Natural resources include soils, geology, topography, floodplains, vegetation, wildlife, surface and groundwater, and aquifer recharge zones.

Neighborhood: Area of a community with characteristics that distinguish it from other community areas and which may include distinct demographic characteristics, schools, social structure, or physical boundaries.

Neighborhood Park: Recreation site developed for active and passive activities which is designed to serve one or a few neighborhoods within a short walking or driving distance. Typical equipment and facilities in a neighborhood park include playground equipment, playing fields, picnic tables, landscaping, and on-site parking. Neighborhood parks are generally smaller than community parks, and typically lack the variety of recreation facilities available in a larger park.

Non-attainment Area: Areas that do not meet the National Ambient Air Quality Standards (NAAQS) for one or more pollutants. Such pollutants include lead, oxides of nitrogen, sulfur dioxide, ozone, carbon monoxide, and PM10.

Nonbasic Sector Employment: Industries that sell products to consumers within a particular city or region.

Objective: A condition that is an intermediate step toward attaining a goal. An objective should be achievable and, when possible, measurable and time specific.

Open Space: Publicly or privately owned lands maintained in their natural state. Open Space lands are generally comprised of mountains and foothills, rivers and washes, canals, vegetation, wildlife habitat, parks, and preserves.

Particulates: Small particles suspended in the air and generally considered pollutants.

Permeability: Rate at which water runs through soil.

Planning: Establishment of goals, policies, and procedures for social, physical, and economic growth and order.

PM10: Airborne particulate matter of 10 microns or less in diameter. PM10 is the result of agricultural and construction operations, suspended dust, tire abrasion from vehicles traveling on roads, and natural occurrences such as wind storms.

Policy: Specific statement that guides decision making. Policies are statements of intent for actions to be taken in pursuit of a given objective.

Population Density: The number of people in a given area. Population density may be obtained by multiplying the number of dwellings per acre by the number of residents per dwelling.

Potable Water: Water suitable for drinking.

Protected Species: Any species or subspecies subject to excessive taking and with significant threats or declining populations making it illegal to take them under the auspices of a hunting or fishing license.

Regional Park: Recreation area of 200 or more acres offering passive recreation opportunities such as hiking, camping, picnicking, and climbing, but has no facilities for organized forms of recreation.

Right-Of-Way: Strip of land occupied or intended to be occupied by transportation and public facilities, such as roadways, railroads and utility lines.

Riparian Area: Ecosystem associated with bodies of water, such as streams, lakes, or wetlands, or is dependent upon the existence of perennial, intermittent, or ephemeral surface or sub-surface drainage.

Rural: When used in the context of this Plan, rural areas are those intended for residential development on no greater than one acre lots, characterized by the lack of urban services and infrastructure.

Rural Residential: Single family residence on a 1 or more acre parcel, and may include mixed residential and agricultural use.

Scenic Corridor: A roadway with recognized high quality visual amenities that include mountain vistas, open country, or city.

Subdivision: Improved or unimproved land divided into 6 or more lots, parcels, or fractional interests for immediate or future sale or lease. Subdivided land includes a stock cooperative and lands divided or proposed to be divided as part of a common promotional plan (as defined by A.R.S.§32-2101-50).

Subsidence: The gradual, settling or sinking of the earth's surface with little or no horizontal motion. Subsidence is usually the result of water extraction from underground supplies and not the result of a landslide or slope failure.

Threatened Species: Any species or subspecies that is likely to become endangered within the foreseeable future because of serious problems and populations are (1) lower than they are historically or (2) extremely local and small.

Urban: When used in the context of a Maricopa County Area Plan, includes development with densities exceeding one residential unit per acre and accompanying nonresidential and public development.

Wastewater: Includes sewage and all other liquid waste associated with human or animal habitation, or from production manufacturing or processing operations.

Watershed: The entire area that contributes water to a drainage system or stream.

Zoning: Classification of land into specific categories that govern the use, placement, spacing, and size of land and buildings corresponding to the categories.

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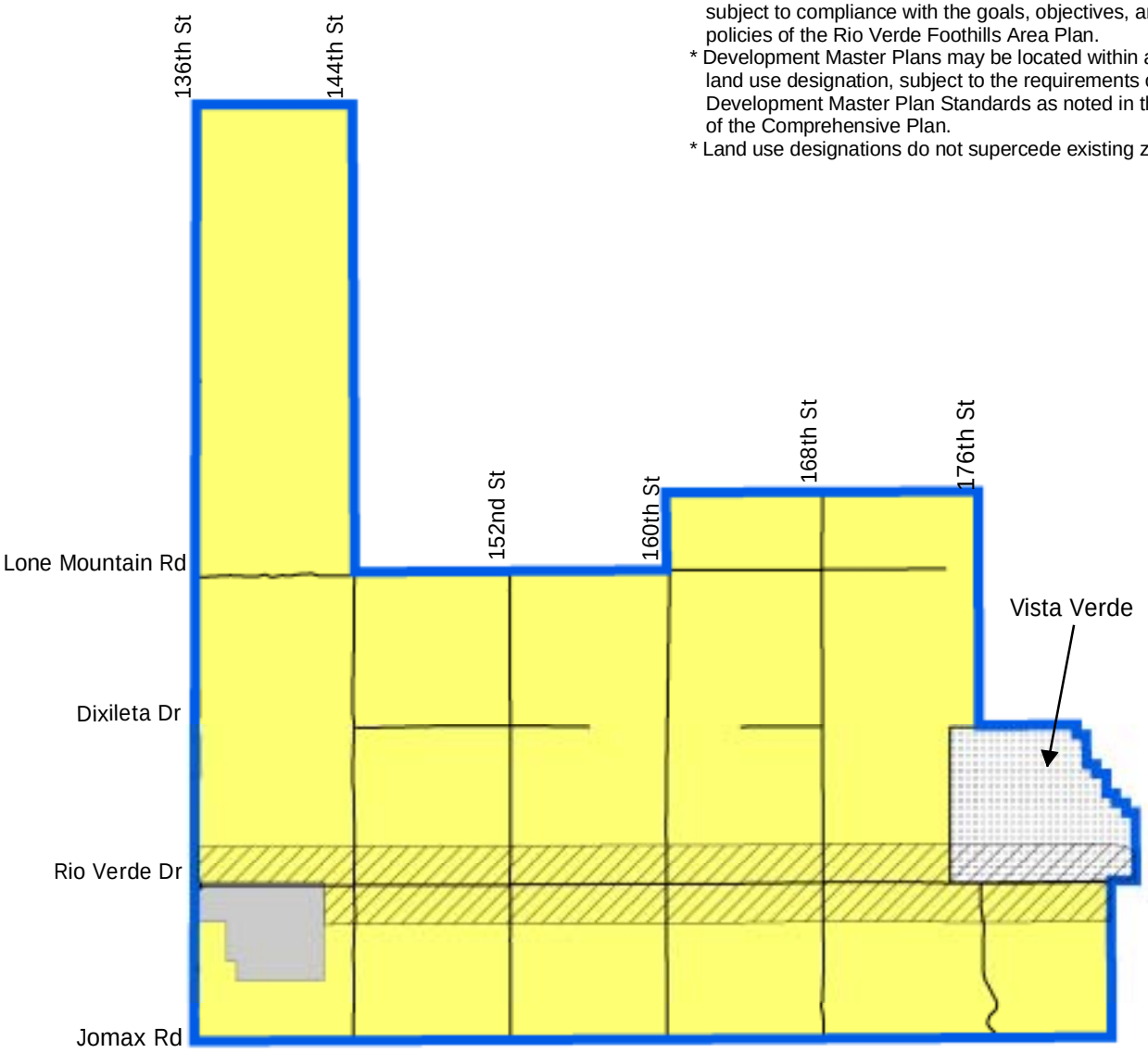
NOTES

* The determination of land use on any specific parcel is subject to compliance with the goals, objectives, and policies of the Rio Verde Foothills Area Plan.
* Development Master Plans may be located within any land use designation, subject to the requirements of the Development Master Plan Standards as noted in the text of the Comprehensive Plan.
* Land use designations do not supercede existing zoning.



Future Land Uses

- Rural Residential (0-1)
- Arterial
- Planning Area Boundary
- Proposed Scenic Corridor
- Development Master Plan
- Incorporated Area

Draft Future Land Use

Draft: May 5, 2005

Figure 16

0 0.5 1 2 Miles

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APPENDIX B – ZONING DISTRICT CATEGORIES

(Note: Existing zoning districts in the planning area are illustrated in Figure 17)

Zoning Districts	Density	Permitted Uses
Rural Residential		
Rural 190	1 du/4.36ac (190,000 sq. ft.)	Residential, agricultural activities
Rural 70	1 du/1.6 ac (70,000 sq. ft.)	Residential, agricultural activities
Rural 43	1 du/1ac (43,560 sq. ft.)	Residential, agricultural activities
Single Family Residential		
R1-35	1du/35,000 sq. ft.	Residential
R1-18	1du/18,000 sq. ft.	Residential
R1-10	1du/10,000 sq. ft.	Residential
R1-8	1du/8,000 sq. ft.	Residential
R1-7	1du/7,000 sq. ft.	Residential
R1-6	1du/6,000 sq. ft.	Residential
Limited Multiple Family Residential		
R-2	1du/4,000 sq. ft.	Multi-family dwelling
Multiple Family Residential		
R-3	1du/3,000 sq. ft.	Multi-family dwellings
R-4	1du/2,000 sq. ft.	Multi-family dwellings
R-5	1du/1,000 sq. ft.	Multi-family dwellings
Commercial		
Planned Shopping Center (C-S)		Retail and service businesses w/ development site plan approved by the BOS
Commercial Office (C-O)		Professional, semi-professional and business office
Neighborhood Commercial (C-1)		Food markets, drugstores and personal service shops
Intermediate Commercial (C-2)		Hotels and motels, travel trailer parks, restaurants, and some commercial recreation and cultural facilities
General Commercial (C-3)		Retail and wholesale commerce and commercial entertainment
Industrial		
Planned Industrial (Ind-1)		Business and manufacturing activities w/ development site plan approved by the BOS
Light Industrial (Ind-2)		Light industrial activities w/ development site plan approved by the BOS
Heavy Industrial (Ind-3)		Heavy industrial activities w/ development site plan approved by the BOS

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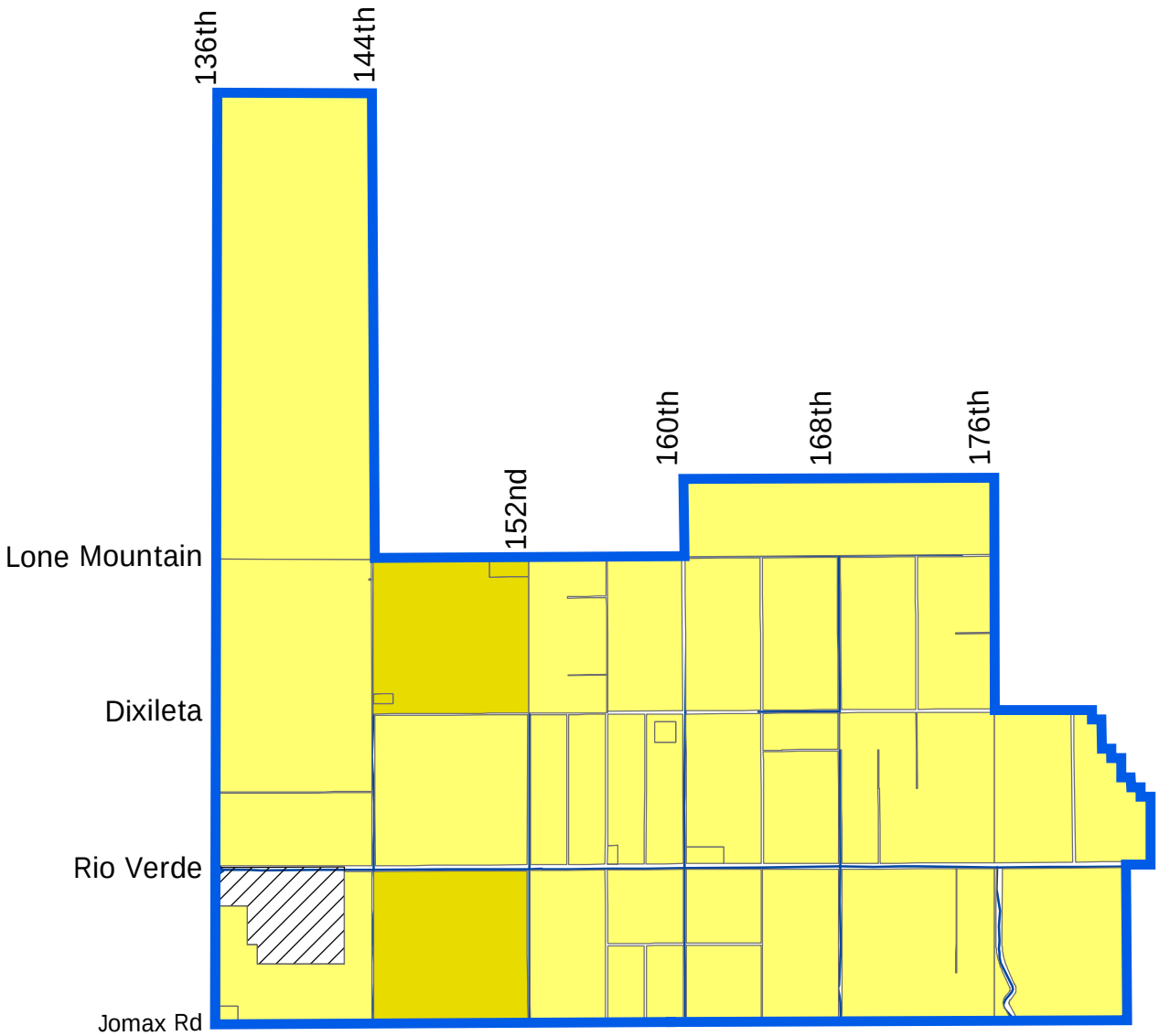

Zoning Category

- RURAL-190
- RURAL-43
- Incorporated Area
- Planning Area Boundary
- Arterial Streets

0.5 0 0.5 1 Miles

Existing Zoning

Figure 17

Maricopa County Planning and Development Department

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APPENDIX C – LAND REGULATIONS

In addition to zoning districts, other public and private techniques and guidelines are used to accommodate development. Such techniques include:

1. *Hillside Development Standards (HD):*
   Allows the reasonable use and development of hillside areas while maintaining its unique character, identity, and image. This district applies to development on slopes of 15 percent and greater.

2. *Senior Citizen Overlay (SC):*
   Provides for planned residential development designed specifically for residency by older populations.

3. *Planned Development Overlay (PD):*
   Establishes a basic set of conceptual parameters for the development of land and supporting infrastructure, which is to be carried out and implemented by precise plans at the time of actual development.

4. *Special Uses (SU):*
   Allows a class of uses that are otherwise prohibited by the Ordinance.

3. *Temporary Uses (TU):*
   Allows a class of uses for a specific period of time.

4. *Conditional Uses (CU):*
   Allows a class of uses based on unique circumstances.

5. *Unit Plans of Development (UPD):*
   Provides for for large scale development where variations in lot size, dwelling type and open space is warranted due to topographic or other considerations.

6. *Subdivision Regulations / Administrative Guidelines:*
   Method which helps ensure adequate traffic circulation, lot design, water supply, fire protection, sewage disposal, utilities, drainage, flood protection, community facilities, and the conveyance of land by accurate legal descriptions.

7. *Uniform Building Code (UBC):*
   Establishes standards for building construction and site preparation.

8. *Maricopa County Health Code:*
   Includes development regulations for domestic water supply systems, refuse collection and disposal, sanitary sewage treatment systems, and mobile home parks. Additional regulations include vector control, bathing places, food handling establishments, childcare facilities, kennels, pet shops, and air pollution control.

9. *Private Land Use Controls:*
   Many developers use private land controls to supplement government regulations. These controls are known as covenants, conditions, and restrictions (CC&Rs). CC&Rs are contained in the deed to property or are otherwise formally recorded and may include deed restrictions, which are limitations in the deed to a property that dictate certain uses that may or may not be made of the property.

APPENDIX D – ACRONYMS

ADEQ	Arizona Department of Environmental Quality
ADMP	Area Drainage Master Plan
ADOT	Arizona Department of Transportation
ADWR	Arizona Department of Water Resources
API	Arizona Preserve Initiative
AGFD	Arizona Game and Fish Department
A.R.S.	Arizona Revised Statutes
ASLD	Arizona State Land Department
BLM	Bureau of Land Management
BOS	Board of Supervisors
CAP	Central Arizona Project
CC&Rs	Covenants, Conditions, and Restrictions
CIP	Capital Improvement Program
CRC	Community Retail Center
DES	(Arizona) Department of Economic Security
DMP	Development Master Plan
DSP	Desert Spaces Plan
EPA	Environmental Protection Agency
FAR	Floor Area Ratio
FCDMC	Flood Control District of Maricopa County

APPENDIX

GPDA	General Plan Development Area
GPEC	Greater Phoenix Economic Council
I.U.P.D.	Industrial Unit Plan of Development
MAG	Maricopa Association of Governments
MCDOT	Maricopa County Department of Transportation
MCESD	Maricopa County Environmental Services Department
MCP&DD	Maricopa County Planning and Development Department
NRC	Neighborhood Retail Center
NRPA	National Recreation and Park Association
RDA	Rural Development Area
ROSS	Regional Off-Street System (Plan)
RPTA	Regional Public Transportation Authority
SHPO	State Historic Preservation Office
TAZ	Traffic Analysis Zone
TSP	Transportation System Plan
USA	Urban Service Area
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
WCMP	Water Course Master Plan
WWTP	Wastewater Treatment Plant