

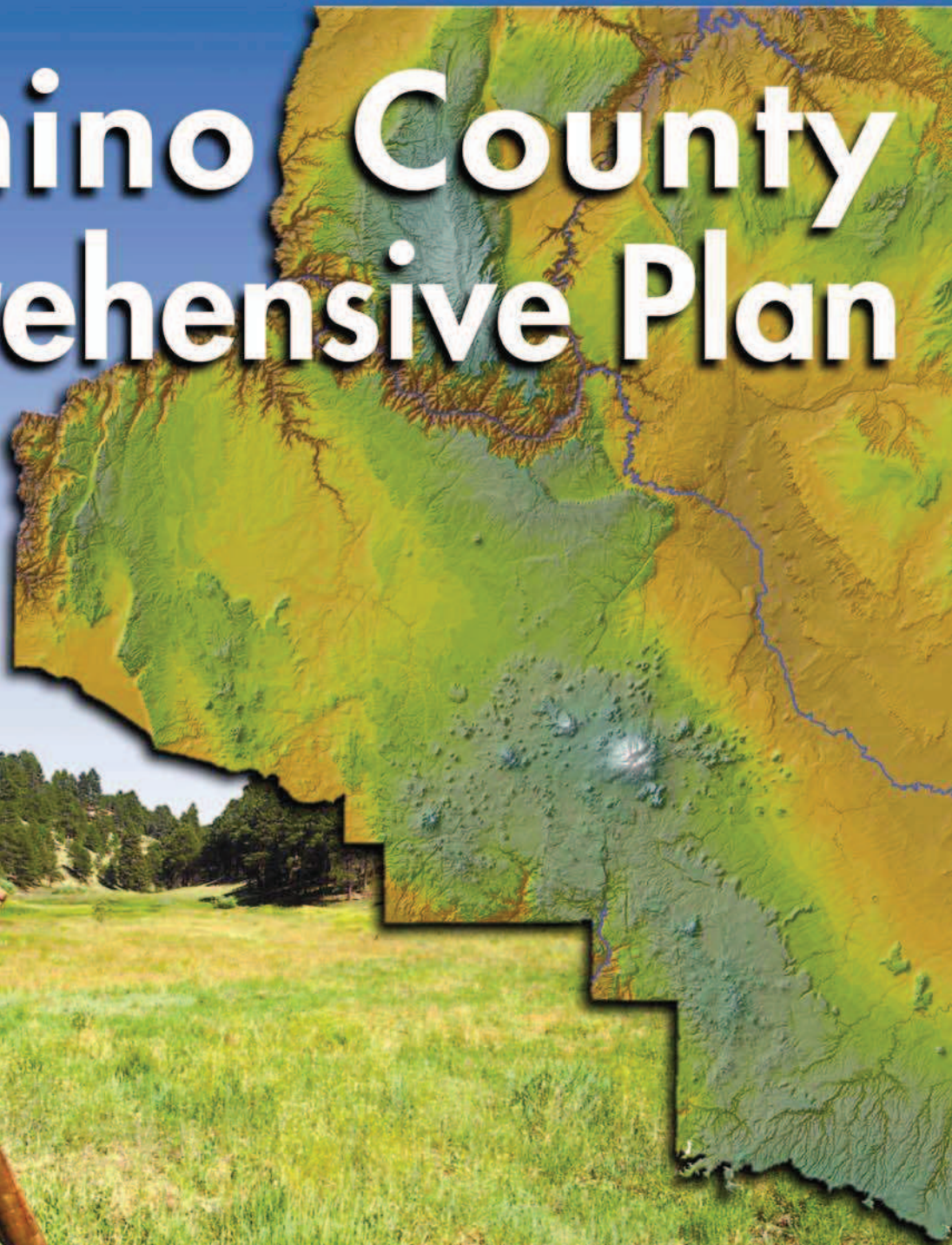
Coconino County Comprehensive Plan

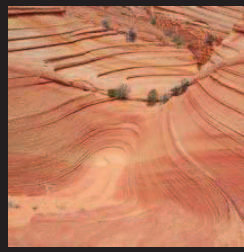


Coconino County Comprehensive Plan



A Conservation-Based
Comprehensive
Planning Partnership





From the Plan's Forward

“The Coconino County Comprehensive Plan serves as **a roadmap for the future** by establishing goals and policies to **direct growth responsibly**, solve problems, and **improve the quality of life** for county residents. ... This plan is driven not only by the issues that citizens have identified as critical, but also by long-range goals based on our vision of the future.”

Award Recognition

2003 Planning Award for Excellence — *American Planning Association's Small Town and Rural Planning Division*

2003 Technical Publication Award for Excellence — *Society for Technical Communication, Southwest Regional Publications, Art, and Online Competitions*

Praise for the Comprehensive Plan

“I especially appreciate the **focus on preservation** of our unique environment and the inclusiveness of all the valued aspects of our county.” —*Coconino County Resident*

“I'm proud to live in such **a forward-thinking county!** Great plan!” —*Coconino County Resident*

“The plan is **positive, proactive, and necessary**. I applaud and commend those who prepared it. Excellent work!” —*Coconino County Resident*

“I am **very impressed** with the ... comprehensive plan. I am not speaking only about content or to the process you have outlined, but also to the way you have chosen to communicate this information to everyone.” —*Candy Owens, Coconino County Recorder*

“The cross-references, quotes and notes, page numbers, and engaging writing style **really add to the effectiveness** of [the plan].” — *Adjudicator for the Society for Technical Communication's Southwest Regional Publications, Art, and Online Competitions*

“This plan meets and exceeds the requirements of Growing Smarter in almost all areas. Overall it was a pleasure to review, as it contains **innovative conservation planning techniques** that will likely be used as a model for similar communities in years to come. It is clearly laid out, well written, and establishes **a compelling purpose and vision** that are followed by defined implementation policies. The plan is easily navigable to those unfamiliar with planning jargon. ... The first chapters give the reader a clear sense of the purpose, background, and process that shaped this plan. [The plan] clearly gives the citizen reader the idea that he or she has a responsibility to be **an active steward of the community's future**.” —*Debra Z. Sydenham, AICP, Arizona Department of Commerce Community Planning Manager*

“An **excellent model** of a community plan.” — *Adjudicator for the Society for Technical Communication's Southwest Regional Publications, Art, and Online Competitions*

Coconino County Comprehensive Plan

On the Web @

<http://co.coconino.az.us/partnership>

The Coconino County Comprehensive Planning Partnership



Coconino County Comprehensive Plan

A Conservation-Based Comprehensive Planning Partnership

*Coconino County, Arizona
Adopted September 23, 2003*



The Comprehensive Planning Partnership

Coconino County Community Development Department

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Flagstaff, Arizona 86001

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Project Development, Plan Review, & Approvals

Comprehensive Planning Partnership project officially initiated January 11, 2002.

Public review draft plan distributed May 29, 2003.

Draft plan approved by the Comprehensive Planning Partnership Steering Committee June 10, 2003.

Draft plan approved by the Coconino County Planning & Zoning Commission July 29, 2003.

Final plan unanimously approved and adopted by Resolution 2003-63 of the Coconino County Board of Supervisors September 23, 2003.

Plan Design & Publication

This is a public document developed by staff of the Coconino County Community Development Department and others of the Comprehensive Planning Partnership.

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The Plan on the Web

Coconino County’s Partnership website: <http://co.coconino.az.us/partnership>





Foreword

One of the most spectacular places on earth, Coconino County is home to the Grand Canyon, Vermilion Cliffs, San Francisco Peaks, and Oak Creek Canyon, among other unique natural features. Each year, it attracts millions of visitors and hundreds of new residents who are drawn to its welcoming communities and open spaces. Residents express widespread satisfaction with Coconino County as a place to live; however, they also want to manage growth and development to ensure that the qualities they value are not destroyed in the process of accommodating change.

This *Coconino County Comprehensive Plan* serves as a roadmap for the future by establishing goals and policies to direct growth responsibly, solve problems, and improve the quality of life for county residents. The *Comprehensive Plan's* main objectives are to:

- Preserve and promote stable, safe, attractive, rural communities where residents share a sense of pride.
- Safeguard the choices residents expect for living, recreation, and circulation.
- Coordinate strategies for economic development, transportation, and affordable housing so that we can better link the places where people work and live.
- Protect our unique natural resources, ecosystems, and habitats.

Not only will the *Comprehensive Plan* guide land use decisions, but it will also serve as a comprehensive reference and blueprint for community programs, as well as for public- and private-sector initiatives. This plan is driven not only by issues that residents have identified as critical, but also by long-range goals based on our vision of the future.

Acknowledgments

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Coconino County Residents

A special acknowledgement to the **hundreds of interested residents** who participated in community open houses, special meetings, public hearings, and other input opportunities between January 2002 and September 2003.



Navigating This Document

1 Background Text: the main “body” of the plan provides information describing the conditions and trends of a particular planning topic.

2 Definitions: many terms or concepts are defined in the margin to provide more detail or clarity to the background text.

3 Graphics: photos, maps, and illustrations provide visual information discussed in the background text as well as highlighting unique aspects of the county.

4 Glossary Terms: words marked in green small caps are defined in the glossary.

1 **WILDLAND/URBAN INTERFACE** is a concern in Coconino County because of the potential for wildland fuels to ignite combustible structures and vice-versa. Destroying homes, property, and trees is just one way that wildfires harm an area. Wildfires can destroy **SUBSIST**, soils, and forest health, disrupting economic stability, transportation corridors, recreation opportunities, water supplies, and scenery, as well as undermining a community's emotional and spiritual well-being.

In Coconino County, the threat of wildfire is unique because of our vast expanses of wildland and unmanaged forest conditions. Instead of open stands of large, widely spaced trees, forests are now overcrowded with unnaturally dense thicket of smaller trees. These stands are more susceptible to catastrophic “crown fires,” which move rapidly from the ground into tree crowns and then spread from crown to crown. These high-intensity fires are more ecologically destructive than the low-intensity fires in healthy, natural forests. The officials recognize that the question is not whether catastrophic wildfires will occur—but when.

Reducing the threat of catastrophic wildfire is a priority in the wildland/urban interface. The geographic extent of this interface should be increased to include areas beyond the forest boundary. As proven during the 2002 Rader-Clabish wildfire, thousands of acres can burn in one day, and wind can transport **EMBERS** and ignite spot fires up to 1.5 miles ahead. Additionally, because so many variables affect fire behavior, no set distance from homes or communities would apply in all situations. Therefore, the potential threat of wildfire should be assessed when considering development in urban interface areas. Since this interface spans several jurisdictions and agencies, interagency cooperation is essential. The U.S. Forest Service, National Park Service, and Arizona State Land Department have undertaken various projects and management actions to help restore natural conditions and prevent catastrophic wildfires. In addition to forest-treatment projects involving thinning and **RESTORED SUBSIST**, these agencies also regularly address recreation and road management to reduce wildfire potential in wildland/urban interface areas. However, agencies can only manage lands under their jurisdiction. To maximize the effectiveness of such actions, corresponding treatments are also necessary on adjacent private lands.

The County not only requires that new developers formulate plans for forest stewardship and fuel **MANAGEMENT**, but it has also adopted safeguards for carrying these plans into the future. These safeguards include attaching requirements, conditions of approval, and financial covenants to **DEVELOPMENT PROJECTS** to help ensure that properties are maintained in accord with the stewardship plans. Other possible actions include adopting advisory or mandatory codes designed to produce more fire-resistant buildings and adopting architectural and site development standards designed to produce more “defensible” and “survivable” structures in urban interface areas.

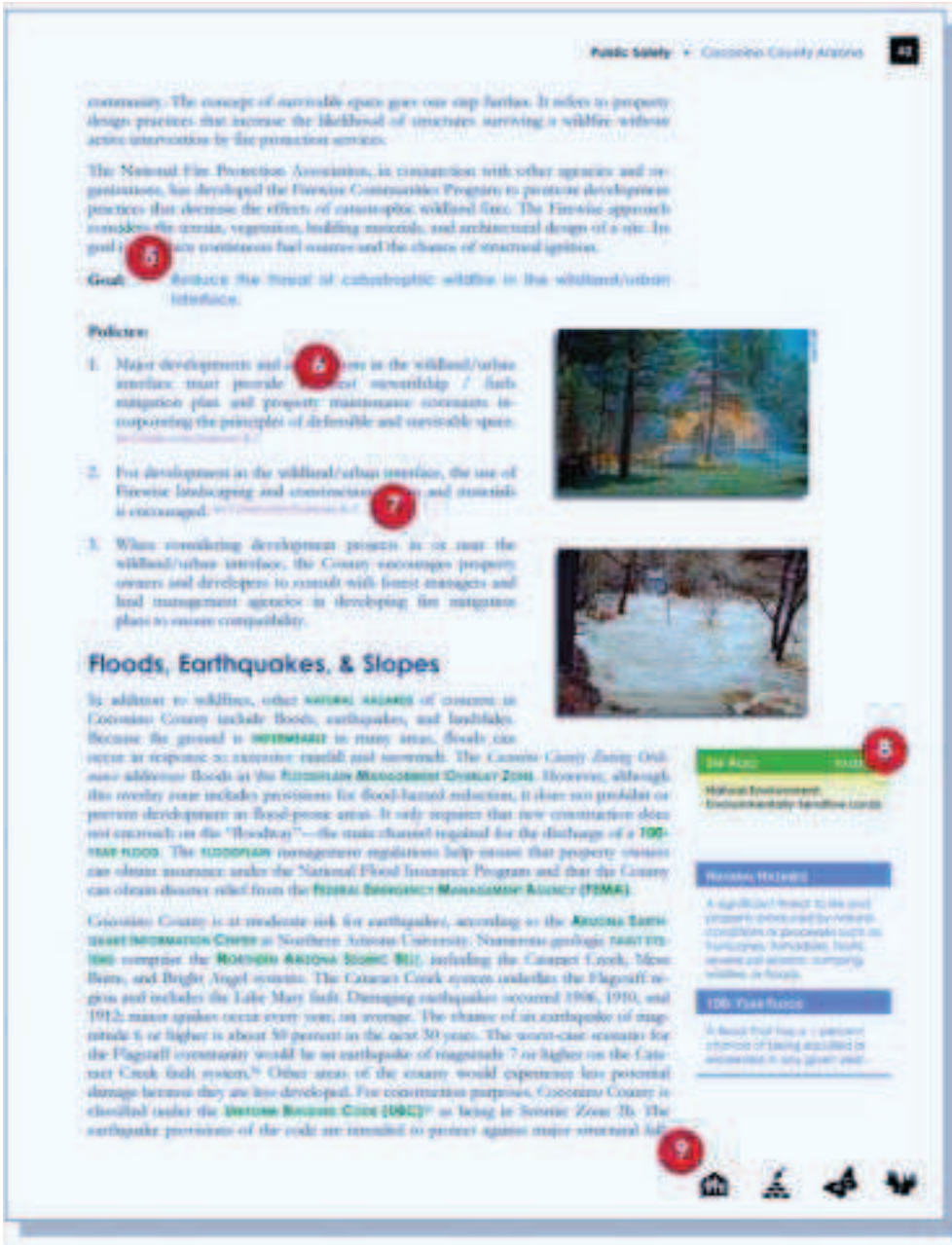
Creating **DEFENSIBLE SPACE** and **SURVIVABLE SPACE** **3** protect structures from fire. Defensible space practices include creating the moisture content of vegetation, decreasing the amount of flammable vegetation, decreasing plant height, and arranging plants to provide adequate spacing. Such practices can significantly increase the likelihood of a home surviving a wildfire; however, the term “defensible” implies that someone will be there to defend it. In reality, if a major wildfire occurs, there will never be enough fire engines to defend every home in the

2 **KEYWORDS**

During writing sessions that the government and wildfire and fuel management would be beyond the fire line. Research often ignites fire line.

3





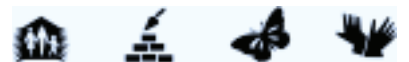
5 **Goal Statements:** a goal for each section is provided to define the relationship between the plan's background text and policies.

6 **Policies:** policy statements for each section provide direction for decision-making.

7 **Conservation Guideline References:** many policies are followed by a reference to the guidelines found in the plan's Conservation Framework.

8 **See Also:** cross-referencing sidebars are provided as links to other, related areas within the plan.

9 **Partnership Logos:** the four symbols reflect *Our Vision for the County* (1. community values; 2. growth & development; 3. conservation & environmental quality; and 4. community partnerships).



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PHILIP CROSBY

"If anything is certain, it is that change is certain. The world we are planning for today will not exist in this form tomorrow."



Coconino County Comprehensive Plan Executive Summary

A Conservation-Based Comprehensive Planning Partnership

Adopted September 23, 2003

Will a community have a future without planning? Of course—the future will come regardless of whether we have a plan. However, planning allows us to make conscious, deliberate choices about our future.

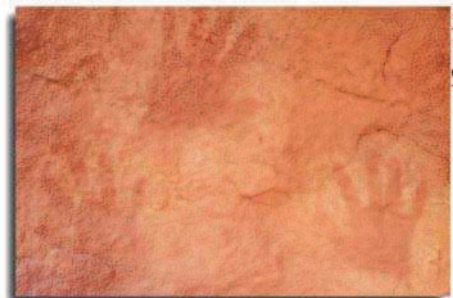
The *Coconino County Comprehensive Plan* provides a blueprint for making such decisions. It serves as a long-range guide for the future, with goals that provide general direction, and policies that specify the location, form, purpose, and acceptable impacts of development. The *Plan* sets a course for balance between growth, development, and conservation.

Use of the Plan

The *Comprehensive Plan* will be used as a decision-making tool by residents, landowners, developers, conservationists, the County Community Development Department, Planning & Zoning Commission, and Board of Supervisors.

The *Plan* does not change existing zoning or solve all of the county's problems; instead, it serves as a handbook for implementing the county vision. It specifies policy guidelines that respect the individual and reinforce community values, support healthy functioning ecosystems, and advocate environmental quality.

Mechanisms for implementing the *Plan* include Zoning and Subdivision Ordinances, zoning maps, Area Plans, and specific “action items” such as research and project development.



J. Ernest Jutte



Fran Regan



Grant Cooper



The Land Ethic

Imagine, for a moment, our remaining unbuilt landscapes and rural community character disappearing. We value our unique landscapes too much to allow them to be cleared and converted to generally uninspiring development. In pursuing the long-term goals expressed in our vision for Coconino County's future, we have an ethical obligation to the land. This obligation, or "land ethic," applies to everyone—not just to the government or to nonprofit organizations, but to private landowners as well. In *A Sand County Almanac* Aldo Leopold tells us:

Whatever may be the equation for men and land, it is improbable that we as yet know all its terms. The answer, if there is any, seems to be in a land ethic, or some other force which assigns more obligation to the private landowner. A land ethic, then, reflects the existence of an ecological conscience, and this in turn reflects a conviction of individual responsibility for the health of the land.

These concepts are integral to the *Coconino County Comprehensive Plan*, which builds on our strength as community and establishes a solid set of conservation guidelines that allows us to achieve our vision. Assuming responsibility for the future of our lands is the first step in encouraging the kinds of quality development that will ensure the county's long-term value as a place of unsurpassed natural beauty and cultural resources.



Our Vision for the Future

The County vision is of livable communities and healthy landscapes where:

- Existing communities accommodate growth while retaining their historic and cultural character
- Integrated conservation design is the standard for new subdivisions and developments
- Planned communities and infill development allow the county to both grow and preserve its landscapes
- Collaborative planning ensures success in addressing issues across jurisdictional lines
- Natural resources are conserved and land is used efficiently
- Land uses are compatible with the unique natural environment
- Environmentally sensitive lands, ecosystems, and habitats are preserved
- Growth is balanced with available water resources
- Residents are assured a variety of transportation choices and modes
- A stable, vibrant economy allows all residents to lead productive lifestyles
- Residents are provided a range of housing and recreational opportunities
- Communities are safe and attractive, and residents share a sense of pride and place



The Conservation Framework

Conservation: The Plan's Basis

Overwhelmingly, people like living in Coconino County because of its beautiful natural environment. Many appreciate the rural lifestyle and cite it as a primary reason for settling and staying here. Comprehensive planning ensures a proactive, coordinated approach to the development of quality communities that exist in harmony with our environment. The *Plan* seeks to ensure that decisions meet human needs while maintaining the county's ecological integrity. Since we are part of nature and our actions affect the health and vitality of ecosystems, we are responsible for the stewardship of our natural resources.



The *Comprehensive Plan* promotes conservation-based planning. Its “Conservation Framework” presents science-based conservation principles and guidelines for ensuring the long-term health of the environment. These principles and guidelines form the basis for developing the policies specified in the *Plan*.

Benefits of Conservation-Based Planning

Comprehensive, conservation-based planning benefits not only our natural environment but also developers, residents, and communities. Why? Because it provides lasting value to current and future residents, ensuring the long-term preservation of our environment while accommodating changes to our dynamic communities. Conservation-based planning increases choices for landowners and developers—choices that create better, more livable communities with significant environmental, ecological, social, recreational, and economic benefits. It allows us to balance the interests of residents, developers, and conservationists in a cooperative, fair manner.

The *Comprehensive Plan* attempts to provide more predictability in the development process. Developers can benefit by looking at how to preserve important natural resources such as water quality, riparian or wetland buffers, and wildlife habitat. Furthermore, conservation-based planning approaches often reduce infrastructure construction costs and mitigation measures. Ultimately, the greatest benefactor is the public, who will save money as costs for infrastructure maintenance decrease and open space is protected.

Guidelines for Decision Making

The following guidelines, which are adapted from research by the Ecological Society of America, link conservation and land use planning. They form the basis of the goals and policies of the *Comprehensive Plan*.

- A. Assess impacts of local decisions in a landscape context.
- B. Make land use decisions that are compatible with the natural potential of the site and the landscape.
- C. Avoid or mitigate for the effects of human use and development on ecological processes and the landscape.
- D. Identify and preserve rare or critical ecosystems, habitats, and associated species.
- E. Minimize the fragmentation of large contiguous areas of habitat and maintain or restore connectivity among habitats.
- F. Minimize the introduction and spread of non-native species and use native plant species in restoration and landscaping.
- G. Conserve use of non-renewable and critical resources.
- H. Avoid land uses that deplete natural resources.
- I. Avoid polluting our communities and environment.
- J. Consider land use decisions over time horizons that encapsulate the natural variability of ecosystems.
- K. Evaluate the effects of land use decisions cumulatively and over time.

THE CONSERVATION FRAMEWORK

- Benefits of Conservation-Based Planning
- Ecological Principles
- Guidelines for Decision Making
- Limitations of Science
- Integrated Conservation Design



BLM



Grant Cooper



John Aber



John Aber



Element Overviews

Natural Environment

NATURAL ENVIRONMENT

Environmentally Sensitive Lands
Wildlife
Vegetation
Forest Ecosystem Health
Soils
Air Quality
Renewable Energy
Sustainable Building

WATER RESOURCES

Water Sources
Water Providers
Water Conservation & Alternative Sources
Water Quality
Regulatory Framework

The people of Coconino County support the protection and stewardship of all our natural resources, as well as the maintenance and restoration of healthy ecosystems. More than any other visible attribute, the condition of these resources reflects how we interact with our environment. The *Comprehensive Plan* addresses concerns about our natural environment by establishing policies that identify, protect, and manage environmentally sensitive areas so that we can continue to enjoy our unique natural heritage. These policies are directed at conserving and managing plant and wildlife communities to ensure that viable populations of all native species survive, maintaining habitat connectivity to prevent landscape fragmentation so that animals can access essential resources and plant communities can flourish, and preventing the spread of nonnative and noxious plant species to promote the health of native species. Policies also address improving the health of our forest ecosystems and protecting life and property from catastrophic wildfires, protecting valuable soil resources and minimizing erosion, minimizing future air pollution so that Coconino County residents continue to enjoy good air quality, and incorporating green building practices and promoting energy efficiency.



Water Resources

The residents of Coconino County and the natural environment need clean water to survive. As growth continues, we envision using creative approaches along with traditional management policies to ensure the long-term sustainability of our water resources. The *Comprehensive Plan* addresses concerns about water by establishing policies that encourage an efficient management and regulatory infrastructure—one that works with all organizations involved in water management. These policies also address groundwater management at a local level and encourage residents to conserve existing water resources, develop alternative sources of collecting and distributing water, and reuse water whenever possible. Finally, they require water-quality monitoring to ensure that sources remain clean.



Public Safety

We envision our communities as safe places to live, work, and play. County residents also want public services and facilities that allow us to maintain our quality of life while preserving our cultural and natural resources. In addition, we not only want to reduce the threat of catastrophic wildfire in the wildland/urban interface, but we also want to maintain high levels of fire protection and public safety in all areas. The *Comprehensive Plan* addresses safety concerns with policies that help us avoid or mitigate the dangers posed by natural hazards and prepare us for disasters with top-notch emergency service and quick, appropriate response. These policies also focus on ensuring that our neighborhoods remain safe and crime-free.

PUBLIC SAFETY

Wildland/Urban Interface
Floods, Earthquakes, & Slopes
Fire Protection
Disaster Response & Management
Local Emergency Response
Law Enforcement

COMMUNITY SERVICES

Utility Services & Corridors
Telecommunications Infrastructure
Solid Waste
Wastewater
Health & Human Services
Education

Community Services

Our county vision includes having adequate public facilities to support desirable land use and development patterns while conserving natural resources. It also involves having high-quality health and human services as well as effective, accessible educational opportunities. The *Comprehensive Plan* addresses community services by establishing policies that provide guidance for siting utility infrastructure in a way that respects our community character, scenic resources, and ecological integrity. It also contains policies that



encourage environmentally compatible solid-waste management and wastewater treatment methods and endorse the best available telecommunications services and infrastructure while ensuring that this infrastructure does not detract from scenic landscapes. Finally, the policies in the “Community Services” Element allow us to coordinate the design, siting, and construction of capital improvement projects in a manner that is timely, orderly, cost-effective, and environmentally sensitive.

Circulation

Another important part of our county vision involves having sufficient transportation infrastructure in rural areas to facilitate safe access for all modes of travel. Our goal is to provide a comprehensive circulation network in a way that minimizes impacts to the natural environment. The *Comprehensive Plan* establishes policies that increase the efficiency and safety of our circulation system while meeting the access and mobility needs of county residents, including needs for non-motorized and alternate modes of transportation. These policies also focus on improving transit service in unincorporated areas, providing infrastructure for alternatives to motorized vehicle travel, and supporting the development of multimodal transportation corridors. Finally, they support air travel while protecting human and natural communities from adverse impacts of aircraft and associated facilities.

Parks & Recreation

Our goal is to offer a variety of parks and recreational opportunities throughout the county for residents and visitors alike. Therefore, we must not only preserve open space but also protect important natural areas and provide stewardship for them. We envision a highly integrated system of passive and active recreational opportunities nested within a community-based network of parks, open spaces, and critical natural areas. The *Comprehensive Plan* addresses concerns about parks and recreation by establishing policies that honor our past by protecting historic resources and archaeological sites. These policies also focus on providing recreational access via a trail system that links communities, public lands, and activity centers while maintaining the integrity of ecosystems. They allow off-highway vehicle use on designated routes but discourage such use where impacts to natural and cultural resources could be significant.

Community Character

The *Comprehensive Plan* seeks to define, preserve, and enhance the quality of the places where we live, work, and enjoy our leisure time. Its goals include protecting the unique characteristics of our communities and providing facilities and services that support community-based activities. To achieve these goals, the *Plan* establishes policies that promote areas of concentrated activity in rural communities and improve the aesthetic character of the county’s commercial, industrial, residential, and gateway areas. It also contains policies that preserve the county’s historic, cultural, and architectural heritage; protect entire ecological landscapes; and enhance scenic vistas, viewsheds, and byways. Other policies encourage the coordination of land use planning, the sharing of resources, and the protection of sacred sites between area tribes and the county. Finally, because we want to continue enjoying natural quiet and dark skies, the “Community Character” Element contains policies for minimizing noise and light pollution.

CIRCULATION

- Roadways
- Public & Private Transit Systems
- Airports & Airspace
- Nonmotorized Circulation
- Infrastructure Design & Development
- Maintenance & Improvements
- Access Management & Safety

PARKS & RECREATION

- Natural Areas
- Trails
- Federal & State Lands
- County Parks & Recreation Areas
- Neighborhood Parks



Grant Cooper



Grant Cooper

COMMUNITY CHARACTER

- Community Design
- Rural Activity Centers
- Tribal Lands & Interests
- Historic & Cultural Resources
- Heritage Areas & Landscape Preservation
- Scenic Vistas & Viewsheds
- Scenic Corridors
- Dark Skies
- Natural Quiet



LAND USE

Landscapes & Open Space
Ranches & Ranchlands
Residential
Commercial
Industrial
Nonconforming Uses
Locally Undesirable Land Uses

GROWTH

Growth Areas
Cost of Development
Capital Improvements
Economic Development

Land Use

Responsible development is consistent with our resource base, enhances our communities, and protects the integrity of our environment. In our vision for Coconino County, we successfully accommodate growth and consciously decide how development should occur. We ensure the county's long-term viability by integrating "conservation design" methods, promoting infill development on vacant parcels, and providing incentives for quality subdivisions. Rather than relying on traditional "single-parcel" approaches, we incorporate well-designed, environmentally responsible, commercial and industrial development within communities and activity centers. This mixed-use approach not only helps create a range of employment opportunities and a stable economy, but it also helps us preserve open space and prevent fragmented landscapes.

Growth

The policies in the *Comprehensive Plan* ensure that new development follows available and planned infrastructure, utilities, and services, and that it is balanced with the available water supply. They also promote sustainable building techniques, along with a range of housing types and choices, and retain public land as open space while making key parcels available for development. Finally, they help ensure that we have an equitable means of paying for the costs associated with growth.

The Planning Partnership

The *Comprehensive Plan* was developed as a community partnership project. The County Community Development Department coordinated with federal and state land/resource agencies, private landowners, and community groups to establish the *Plan's* goals and policies. In addition to the governmental agencies and other organizations that participated in the planning process, it cannot be stressed enough the importance of the participation of property owners, residents, and the general public. With so many important resources to consider, public participation was paramount in developing the *Plan*, and will continue to be in plan implementation.

The *Coconino County Comprehensive Plan* was adopted with unanimous support of the Board of Supervisors September 23, 2003.

Praise for the Comprehensive Plan

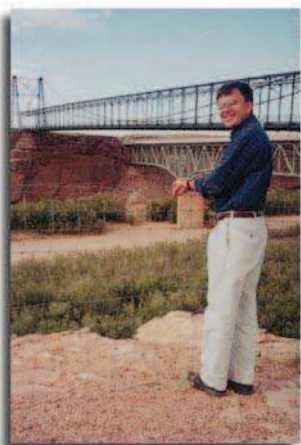
2003 Planning Award for Excellence –*American Planning Association's Small Town and Rural Planning Division*

2003 Technical Publication Award for Excellence –*Society for Technical Communication, Southwest Regional Publications, Art, and Online Competitions*

"The plan is positive, proactive, and necessary. I applaud and commend those who prepared it. Excellent work!" –*Coconino County Resident*

"I especially appreciate the focus on preservation of our unique environment and the inclusiveness of all the valued aspects of our county." –*Coconino County Resident*

"This plan meets and exceeds the requirements of Growing Smarter in almost all areas. ... It contains innovative conservation planning techniques that will likely be used as a model for similar communities in years to come. It is clearly laid out, well written, and establishes a compelling purpose and vision that are followed by defined implementation policies. ... [The plan] clearly gives the citizen reader the idea that he or she has a responsibility to be an active steward of the community's future." –*Debra Z. Sydenham, AICP, Arizona Department of Commerce*

**FOR MORE INFORMATION**

Contact the Coconino County Community Development Department in Flagstaff. The telephone is 928-226-2700 or visit online at co.coconino.az.us.





The Land Ethic

Imagine, for a moment, our remaining unbuilt landscapes and rural community character “gradually disappearing under the blanket of conventional development.”¹ We value our unique landscapes too much to allow them to be “cleared, graded, and converted to standard subdivisions”² and generally uninspired development. In pursuing the long-term goals expressed in our vision for Coconino County’s future, we have an ethical obligation to the land. This obligation, or “land ethic,” applies to everyone—not just to the government or to nonprofit organizations, but to private landowners as well. Aldo Leopold tells us:³

Whatever may be the equation for men and land, it is improbable that we as yet know all its terms. The answer, if there is any, seems to be in a land ethic, or some other force which assigns more obligation to the private landowner.

The land ethic simply enlarges the boundaries of the community to include soils, waters, plants and animals, or collectively: the land. A land ethic, then, reflects the existence of an ecological conscience, and this in turn reflects a conviction of individual responsibility for the health of the land.

Health is the capacity of the land for self-renewal. Conservation is our effort to understand and preserve this capacity. It is inconceivable to me that an ethical relation to land can exist without love, and a high regard for its value. By value, I of course mean something far broader than mere economic value; I mean value in the philosophical sense.

A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.

These concepts are integral to the *Coconino County Comprehensive Plan*, which builds on our strength as community and establishes a solid set of conservation guidelines that allows us to achieve our vision. Assuming responsibility for the future of our lands is the first step in encouraging the kinds of quality development that will ensure the county’s long-term value as a place of unsurpassed natural beauty and unique cultural resources.



ALDO LEOPOLD

"That land is a community is the basic concept of ecology, but that land is to be loved and respected is an extension of ethics."





Our Vision for the Future

Community Values

We take great pride in our county, which continues to attract people with its quality of life, rural atmosphere, and natural beauty. We have access to an incredible system of national parks, forests, and monuments that complements our local, regional, and state recreation areas. Our diverse mix of residents enjoys a rich array of arts and cultural opportunities, as well as a range of employment, housing, and lifestyle choices. We benefit from livable wages, economic prosperity, and first-rate community services, including high-quality health care and educational opportunities. We respect property rights and recognize personal responsibility to the land and our communities. Our relationships with families and friends, which form the foundation of our community, are supported by our service networks.

Conservation & Environmental Quality

We value our distinctive natural landscapes for their beauty, solitude, recreational opportunities, and ecological function; as a result, we work to ensure their long-term health and viability. A thriving system of public and private lands supports diverse native plant and animal communities, healthy riparian areas, grasslands, and ponderosa forests. Our air and water quality are excellent. To safeguard the county’s scarce water resources for future generations, we conserve and reuse whenever possible. Our public policies support the viability of working ranches, protect priority lands, and help conserve our natural resources and rural character.

Growth & Development

We have accommodated growth responsibly by integrating new development in a way that respects the environment, supports community values, and considers the long-term viability of water sources. To help achieve this goal, we rely on planned communities, integrated conservation design, and infill on vacant parcels, offering incentives to those who develop quality subdivisions, use sustainable building techniques, and build in harmony with the land. As a result, residents can choose from a wide range of housing types. New development follows available and planned infrastructure for utilities and services.

Community Partnerships

We draw upon our strength as a community, embracing our diversity and acknowledging our common goals. Private and public interests work together successfully, recognizing that a cooperative approach is necessary to create strong communities and protect the environment we share. Planning activities cross jurisdictions successfully because of the high degree of coordination between the County, cities, towns, and unincorporated communities. We support good resource-management practices, a process that we facilitate by interacting with state, federal, and tribal agencies during the development of each other’s plans and policies. Building on our successes, we create strategic partnerships to implement plans that enhance the values we cherish.



LESTER R. BITTEL

"Good plans shape good decisions. That's why good planning helps to make elusive dreams come true."





The Planning Framework

About This Plan

Coconino County has had a solid history of land use and development planning. The *Coconino County General Plan 1990* (the county’s first **COMPREHENSIVE PLAN**) was adopted in 1974, 10 years after adopting the first **ZONING ORDINANCE** and **SUBDIVISION ORDINANCE**. The county’s next comprehensive plan, adopted in 1990, differed from its predecessor by including **GOALS** and **POLICIES** for future growth and **DEVELOPMENT**. The 2003 *Coconino County Comprehensive Plan* was developed in response to the state’s *Growing Smarter Act of 1998* and *Growing Smarter Plus Act of 2000*, requiring counties to update their comprehensive plans prior to December 31, 2003. This current plan—adopted by Resolution 2003-63 on September 23, 2003—builds on the themes of previous plans and reflects the many changes that have occurred in Coconino County since the mid-1970s.

IN THE PLANNING FRAMEWORK	
About This Plan	5
Coconino County Overview	8
Planning Challenges in Coconino County	9
Growth Alternatives	12
Plan Use	12

The Need for a Comprehensive Plan

Planning allows us to make conscious, informed choices about our future. The *Comprehensive Plan* offers **GUIDELINES** for making such choices and policies for helping us determine the future locations, forms, and acceptable impacts of development. The adoption of this plan signifies that all **LAND USE** decisions must be consistent with the plan’s goals and policies.

Who This Plan is For

This *Comprehensive Plan* benefits county residents by ensuring that land use decisions are rational, democratic, and predictable. It helps landowners, private interest groups, and individual county residents by providing the information they need to evaluate how these decisions fit the county’s goals. Likewise, it helps residents and landowners determine how to achieve their interests in a way that is consistent with these goals. The *Comprehensive Plan* forms the basis for other County plans and regulations.

Public and private agencies, property owners, developers, community groups, and **COMMUNITY DEVELOPMENT DEPARTMENT** planners use this *Comprehensive Plan* in many ways. First, it guides County officials in making decisions about zone changes and developments. Second, residents can use it to understand the County’s position on proposed changes in land use, **ZONING**, environmental regulations, and broader policy issues. Finally, the *Comprehensive Plan* sets policies that promote the County’s role as a model for actions related to capital improvements, road construction and maintenance, environmental protection, land use, and energy use in buildings.



How This Plan Was Developed

SEE ALSO

APPENDIX A

Partnership Project History

CONSERVATION FRAMEWORK

A scientifically-based statement of ecological principles, including guidelines for their consideration in land-use planning.

This *Comprehensive Plan* was developed through the collaborative effort of the Coconino County Comprehensive Planning Partnership, a volunteer group of individuals and organizations staffed by the Community Development Department. The **BOARD OF SUPERVISORS** appointed a project Steering Committee who represented diverse perspectives and met monthly to discuss, review, and approve all sections of the plan. In addition, a five-member Management Team met weekly to set the agenda and prepare materials for the Steering Committee.

Over the course of this 18-month project, the County consulted with representatives of state and federal land management agencies. This Interagency Workgroup met several times throughout the planning process to ensure that the *Comprehensive Plan* would complement and support their land use plans. In addition, an independent, Board-appointed Science Advisory Group guided and reviewed the **CONSERVATION FRAMEWORK** to ensure that the goals and policies of each **ELEMENT** were consistent with the plan's **CONSERVATION GUIDELINES** and overarching conservation objectives. This group's input assures both the Steering Committee and the public that the *Comprehensive Plan* is based on the best available scientific information.

Finally, county residents played perhaps the most important role in developing this plan. As outlined in the project's *Public Participation & Communications Action Plan*⁴, residents were involved from beginning to end, as they participated in the process of defining the county's future vision and goals. Community members learned about planning efforts through over two dozen open houses, the Partnership website, and monthly newsletters; they participated in these efforts by attending open houses and communicating with Steering Committee representatives. Many agencies, groups, and individuals brought a wide range of perspectives to the planning process. The resulting *Comprehensive Plan* strongly reflects the input and support of county residents.



J. Ermsitt Jaffe



Grant Cooper



Why This Plan is Different

This *Comprehensive Plan* integrates conservation from the outset. The Conservation Framework outlines the plan's major premise, which is based on the Ecological Society of America's **PRINCIPLES** for land use planning⁵. The Conservation Framework explains key ecological principles and specifies **CONSERVATION GUIDELINES** for maintaining healthy, functioning **ECOSYSTEMS**. It not only assumes that human beings are integral components of ecosystems, but it also acknowledges our role in shaping these environments. Like its 1990 predecessor, this *Comprehensive Plan* addresses ways to protect our natural **LANDSCAPES** from the adverse effects of unmanaged development. However, it broadens the means of such protection by encouraging greater awareness of conservation and providing specific goals and policies. Conventional zoning practices have focused exclusively on the separation of land uses, prohibiting more creative development patterns. This plan, on the other hand, provides more flexibility to mix different—but compatible—land uses in designated rural **GROWTH AREAS**.

To successfully implement this plan, the County must be able to provide incentives to support recommendations, alter ordinances and regulatory procedures, and establish joint agreements. The goals and policies of this plan consider ways to provide such incentives.



The Plan's Scope

Although our vision extends to the next two decades and beyond, the goals and policies of this *Comprehensive Plan* are intended to serve for 10 years. The plan covers all areas of the county except Native American reservations and incorporated cities and towns. Although the County has no jurisdiction over public lands managed by agencies such as the **U.S. FOREST SERVICE**, the **NATIONAL PARK SERVICE**, and the **BUREAU OF LAND MANAGEMENT (BLM)**, many policies support the collaborative efforts necessary to protect the integrity of these lands.

This *Comprehensive Plan* does not address areas that lie outside County jurisdiction. For example, it does not outline a plan for new schools in each school district; it does, nevertheless, touch on issues such as the effect of new growth and development on schools. The goals and policies of the plan have applicability limited to areas of County influence.

The Relationship to Private Property Rights

Although the *Comprehensive Plan's* policies direct the future development of private lands, they pose no limits on what landowners can do with their properties under their existing zoning.⁶ For example, most **RURAL** areas lie within a zoning district with a minimum parcel size of 10 acres; these landowners can continue to develop in accordance with that zoning. Although this plan does not encourage such development, it recognizes that owners are entitled to those development rights. The same approach holds true for existing commercial and industrial zones. The goal of the *Comprehensive Plan* is to provide more certainty in the development process, thereby maintaining or enhancing the economic viability of private property.

The Relationship to Other Plans

Planning for the future occurs simultaneously at the regional, county, and local levels. Agencies such as the **ARIZONA STATE LAND DEPARTMENT**, Forest Service, BLM, and Park Service develop plans for managing their lands. For example, the State Land Department has been developing conceptual plans for state trust lands, the BLM has been working on plans for the Arizona Strip and the Vermilion Cliffs National Monument, and the Forest Service completed the *Flagstaff/Lake Mary Ecosystem Analysis*,⁷ a major forest plan amendment, in 2002.

The *Flagstaff Area Regional Land Use and Transportation Plan*⁸ (commonly referred to as the *Flagstaff Regional Plan*) was completed and adopted by the Flagstaff City Council and the Coconino County Board of Supervisors in 2001 and approved by Flagstaff voters in May 2002. The *Flagstaff Regional Plan* applies not only to Flagstaff but also to about 460 square miles surrounding the city, encompassing the Flagstaff Regional Planning Area. Like this *Comprehensive Plan*, the *Flagstaff Regional Plan* contains goals and policies to guide growth. Its themes of concentrating development and protecting **OPEN SPACE** are consistent with those of this plan.

By mid-2003, the Board of Supervisors had adopted **AREA PLANS** for 10 communities in Coconino County. An official amendment to the *Comprehensive Plan*, an Area Plan reflects the local residents' future vision. Some Area Plans include a **DESIGN REVIEW OVERLAY** to help developers and the County integrate new commercial buildings into the fabric of the existing community. All Area Plans contain goals and policies for future development, focusing on the unique concerns of the community. These plans can address specific neighborhoods, local roads, community character and land uses. Zone changes and conditional use permits must be consistent with the goals and policies of the *Comprehensive Plan* as well as those of the appropriate Area Plan.



Grant Cooper



USFS

AREA PLAN

An official amendment to the *Coconino County Comprehensive Plan* that reflects the local residents' vision of the future, contains goals and policies for development, and provides guidance for decision makers. An Area Plan may serve a community, specific neighborhoods or rural areas.

DESIGN REVIEW OVERLAY

An overlay district applied to specific geographic boundaries (typically within an Area Plan) which establishes guidelines for new commercial, industrial, public, and semipublic uses. DROs require a review and approval process for exterior design, materials, textures, colors, signs, lighting, fencing, and landscaping but do not apply to single-family residential construction.



Coconino County Overview

Geography



Grant Cooper

Coconino County’s diverse topography is related to a wide range of climatic conditions, vegetation, and wildlife. Located in north-central Arizona, the county encompasses 18,617 square miles (nearly 12 million acres). Elevations range from 1,350 feet at the bottom of the Grand Canyon to 12,633 feet at the top of the San Francisco Peaks. Ponderosa pine and mixed conifer forests dominate the 15 percent of the county that lies above 7,000 feet; piñon-juniper **WOODLANDS** cover most of the 40 percent between 6,000 and 7,000 feet. The remainder of the county, which mostly lies between 5,000 and 6,000 feet, is covered primarily with grassland and scrubland. The county is characterized by canyons, plateaus, cliffs, mesas, cinder cones, mountains, and relatively flat areas.



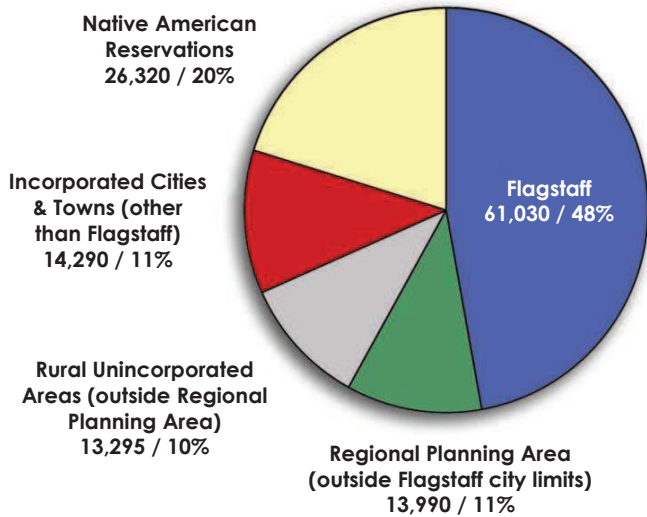
Grant Cooper

Few perennial streams and rivers flow through the county, except for the Colorado River, its tributaries, and a number of streams that drain the Mogollon Rim—Oak Creek, the upper reaches of Sycamore Creek, the upper portion of West Clear Creek, East Clear Creek, and Chevelon Creek. There are few natural lakes in the county; Mormon Lake, Stoneman Lake, and Rogers Lake (although typically dry) are the most prominent. Many man-made lakes are scattered throughout the county; the larger ones include Lake Powell, Lake Mary, Ashurst Lake, Kinnikinick Lake, Long Lake, Blue Ridge Reservoir, Knoll Lake, Bear Canyon Lake, and Woods Canyon Lake.

The county’s physical characteristics have greatly affected human settlement. Topography dictated the alignment of the transcontinental railroad through Flagstaff and Williams, for example. Flagstaff, with its few surface **SPRINGS** and abundant wood for railroad ties, developed first as a railroad and lumber center and later as a sheep and cattle ranching area. Sedona grew around Oak Creek, which supported small-scale farming. This south-central core of the county holds almost three-fourths of its population, with communities elsewhere separated by large unpopulated areas. Fredonia offered farming opportunities along the banks of Kanab Creek. Page was founded during construction of the Glen Canyon Dam. Second-home communities have grown where private land is available. On the Navajo Reservation, populations were once scattered, when sheep played a more important role in the economy; now Navajos gravitate to established communities such as Tuba City, Cameron, Tonalea, and Kaibito. Large areas of the county contain mostly ranches with few residents.

SEE ALSO PAGE 84
Land Use: Landscapes & Open Space

2003 Estimated County Population Distribution



Population

At the time of the 2000 Census, Coconino County had 116,320 residents. Population estimates in 2003 indicate that growth continued at a rate of 3 ½ percent, pushing the county’s population to 128,925 residents. Nearly 60% of the county’s population—an estimated 75,000 people—lives within the Flagstaff Regional Planning Area.⁹

- From 1960 to 2003, the county grew by more than 87,000 residents. This 208-percent increase is nearly 2.5 times the national growth rate for the same period.
- Only about 27,000 residents (21% of the entire county population) live in areas under County jurisdiction; half of these residents live within the Flagstaff Regional Planning Area and half living in the county’s unincorporated, **RURAL** areas.



- Although Native Americans comprised 28.5 percent of the population in 2000, only about 20 percent continue to live on reservations.
- The median age for the entire county in 2000 was 29.6, compared to 34.2 in the state and 35.3 in the nation. The retirement age category has been stable.

Population growth is one indicator of future development needs. Coconino County has grown about 3 percent per year for the last 50 years. Forecasters predict an annual growth rate of about 2 percent in the coming decades, a rate that would result in a population of about 175,000 by 2020. The population distribution between urban and rural areas has not changed significantly since the 1960s.

SEE ALSO APPENDIX B
County Communities Overview

Communities

Coconino County’s incorporated cities and towns include Flagstaff, Fredonia, Page, Sedona, and Williams. A number of smaller, unincorporated communities fall under County jurisdiction for planning and development issues. These communities range in size from about 50 in Mormon Lake and Marble Canyon to over 8,000 in Doney Park; the “mid-sized” unincorporated communities of Valle and Tusayan have about 600 residents. In addition, Native American reservations include many established communities, which range in size from 562 in Tonalea to 8,225 in Tuba City.¹⁰

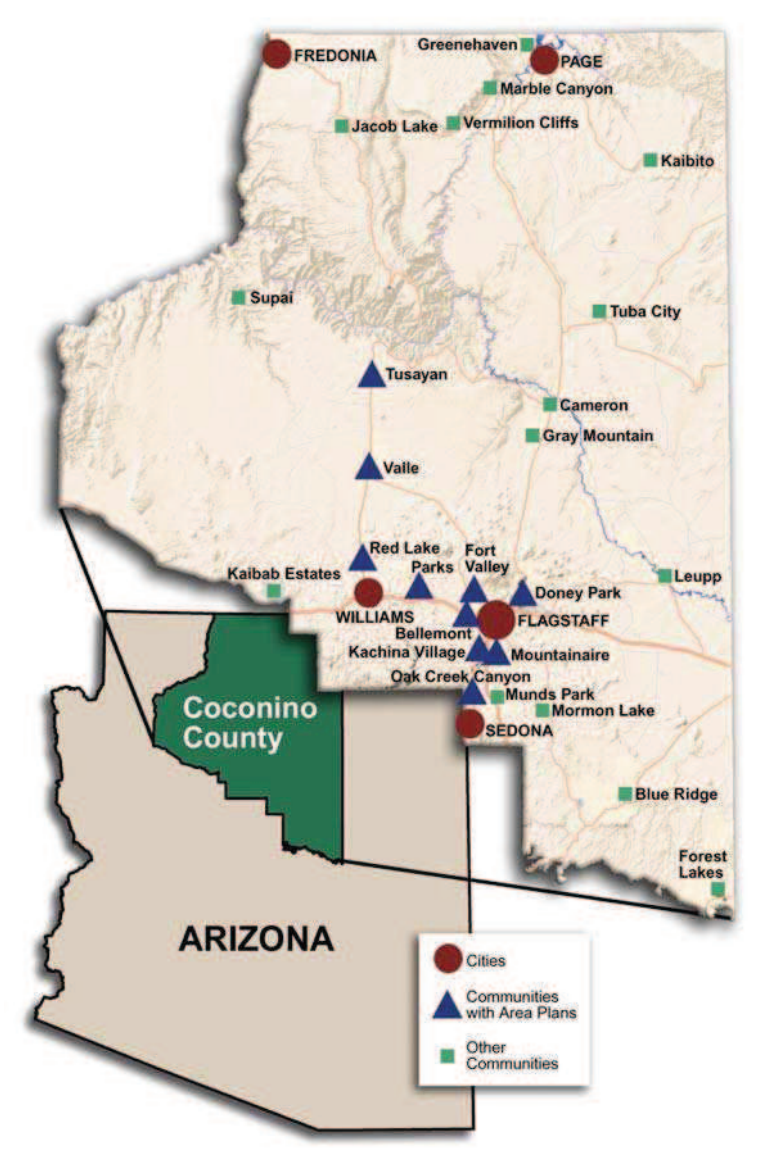
Land Management

Although Coconino County is the largest county in Arizona and the second largest in the United States, it is one of the most sparsely populated. Only 13.3 percent of the county is privately owned. Native American reservations (Navajo, Hopi, Kaibab-Paiute, Havasupai, and Hualapai) cover 38.1 percent of the land area. Federal and state agencies manage the rest of the county’s lands—the Forest Service (28.3 percent), the BLM (5 percent), the State Land Department (9.5 percent) and the Park Service (6.8 percent).

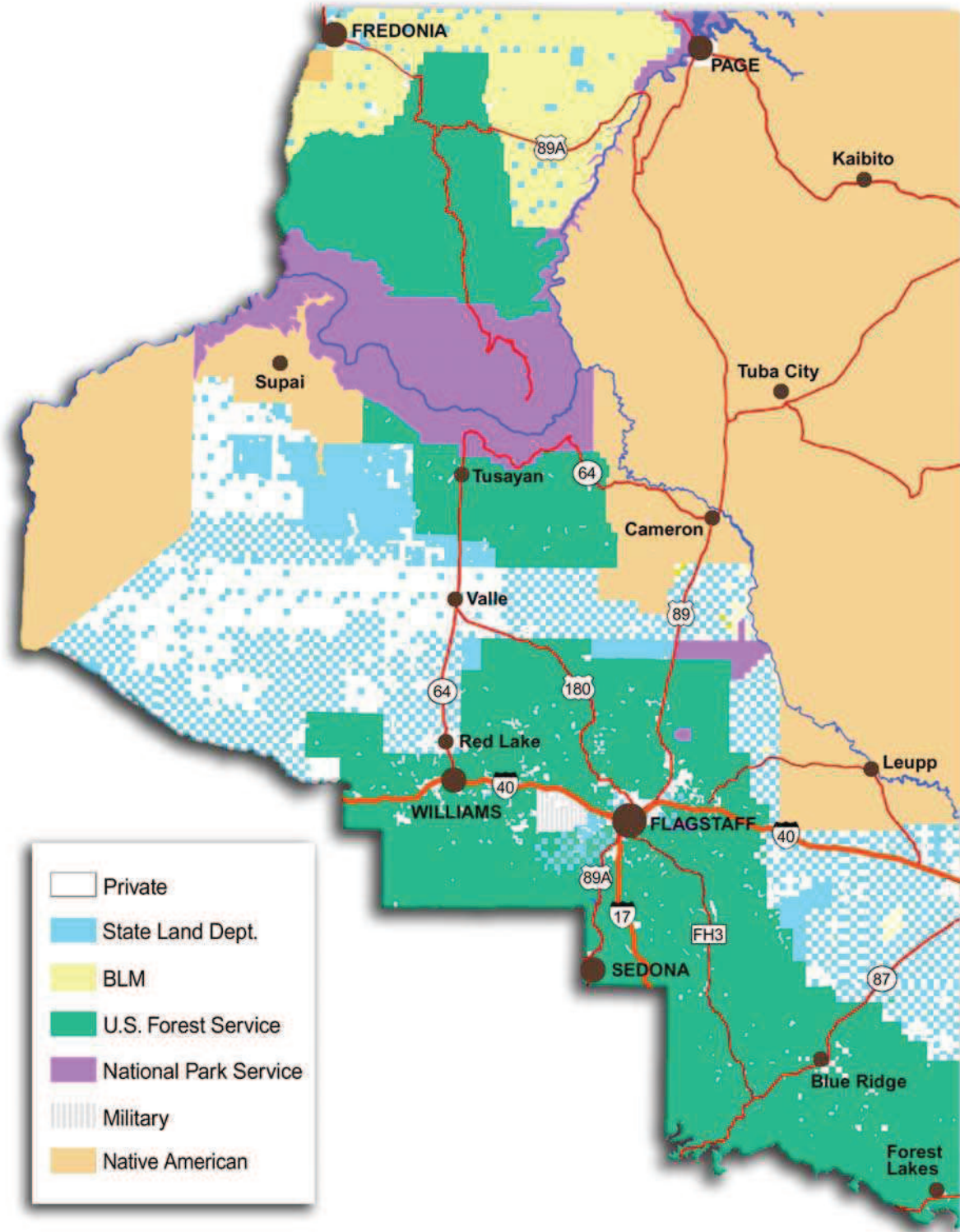
Planning Challenges in Coconino County

Coconino County faces some unique planning challenges—a rapidly decreasing private land base, limited water resources, and public concern that incorporating high-density development will impact the area’s **RURAL CHARACTER**. Developing a plan that serves all of Coconino County is difficult because it encompasses such a large area of diverse people and landscapes. The needs of communities such as Marble Canyon, Forest Lakes, and Kaibab Estates, for example, differ significantly. Developing a uniform set of goals and policies requires that we generalize to some degree and acknowledge that the “one-size-fits-all” approach does not apply here.

Coconino County & Its Communities



Coconino County Land Management Patterns



As the second largest county in the nation, Coconino County encompasses 18,608 square miles—nearly 12 million acres. There are five incorporated cities and towns in the county, more than a dozen unincorporated communities, and several local places. Almost half the county’s lands are managed by state or federal agencies, with an additional 38.1% of the county comprising Native American lands. The remaining portion of the county—a mere 13.3%—is held in private ownership.



Land Constraints

Only 13.3 percent of the land in Coconino County is privately owned, mostly by ranchers with large holdings. Around existing communities, private land is rapidly being developed. Many **SUBDIVISIONS** are nearly built out, including Kachina Village, Mountaineer, Pinewood, and the platted subdivisions in Doney Park. Similarly, **LOT-SPLIT** areas in Doney Park and Fort Valley have been filling in rapidly.

Development also occurs on **INHOLDINGS**—small “islands” of private land interspersed throughout federal holdings. Once these are occupied, pressure mounts to acquire and develop federal or state lands. However, the process for exchanging national forest lands has become increasingly difficult and political because few residents want neighboring federal lands to be developed. State lands can be sold or leased, but adjacent residents view these lands as valuable **OPEN SPACE**. As a result, land prices are escalating rapidly.

In many cities throughout the nation, the rate of land consumption exceeds the rate of population growth. Countywide, this ratio is difficult to calculate because parcel sizes vary, many homes are seasonal, and we lack the data required to correlate building permits and parcel size. The County issued about 300 single family residential building permits annually between 1992 and 2002. If 75 percent apply to year-round residents, the unincorporated county is gaining about 600 new residents each year. If the zoned parcel size is 2½ acres, about 1 square mile would be required for each 600 residents; with 10-acre **ZONING**, 4 square miles would be required. However, many square-mile **SECTIONS** are split into **40-ACRE LOTS** (and subsequently into 10-acre parcels) for second homes, a process that consumes land without adding population.

Growth in the unincorporated county over the last few decades has occurred in platted subdivisions or on parcels created through lot splits. Unfortunately, the County’s authority under state law for reviewing lot-split development is limited to access and minimum zoning requirements. The County cannot assess drainage, the availability of utilities and other infrastructure, connectivity with adjacent properties, and other issues typically considered for subdivisions. This approach to development results in unplanned **WILDCAT SUBDIVISIONS** that usually feature large lots but often lack good roads and infrastructure. Statutory changes to subdivision laws combined with long-term regional planning can help correct the shortcomings of the uncoordinated development practices of the past.

Water Constraints

In many parts of the unincorporated county, water is unavailable or very difficult to obtain. Depth to **GROUNDWATER** typically exceeds 1,000 feet. In some areas, residents share deep wells; others rely on small public **WATER SUPPLY SYSTEMS**. However, many residents must haul water obtained from municipal standpipes, private water companies, and private wells. Water is another area of limited County authority. Although the County can require a subdivider to reveal the source of water for a subdivision, it cannot consider the impact a proposed well might have on other wells in the area or on the environment.

Perceptions About Rural Character

Many residents of unincorporated communities share strong values about preserving the county’s rural character. These perceptions create additional planning challenges because rural character varies widely throughout the county. Each resident defines “rural” differently and desires different levels of amenities. Most residents have chosen to live in communities that already provide the level of infrastructure and facilities that they desire. However, as some areas grow and population increases, new infrastructure and facilities are required to meet demands. “Rural” is a highly revered term because it often equates to personal freedom, and residents are often concerned that nearby higher-density development will negatively affect their lifestyle. Rural values are best defined by communities themselves, either informally or in **AREA PLANS**.



John Aber

SEE ALSO PAGES 88 & 89

Land Use: Residential – Lot Splits and 40-Acre Ranchettes

SEE ALSO PAGE 33

Water Resources

SEE ALSO PAGE 72

Community Character: Community Design



SEE ALSO

PAGE 20

The Conservation Framework:
Integrated Conservation
Design

Unlike the County's previous comprehensive plans, this one strongly emphasizes **INTEGRATED CONSERVATION DESIGN**, which encourages more efficient **LAND USE** through shared open space and smaller lot sizes. Our ability to implement conservation design depends on residents' willingness to change their perception of rural character from one that favors 2½- and 5-acre lots with no open space to one that embraces smaller individual lots with large areas of conserved open space. The application of an integrated conservation design approach provides open space areas that offer environmental and aesthetic values, a significant amenity for subdivision residents.

Growth Alternatives

SEE ALSO

PAGE 95

Growth

A primary concern for Coconino County's future is accommodating growth when all the available private land, especially the land around developing communities, is completely built out. If we do nothing, future development will continue at low densities until private land is no longer available. If this occurs and we have not made accommodations for continued growth, local housing and land costs will increase substantially and newcomers may be forced to move to distant communities, creating "sprawling" conditions and long commutes to work. Options for accommodating future growth include:

- Expanding our **GROWTH BOUNDARIES**, a process that generally requires exchanging federal lands or selling state lands for development.
- Redeveloping, **INFILLING**, and developing at higher densities within existing communities.
- Creating new communities in outlying areas where little or no development currently exists.



Abe Springer



J. Ernest Jutte

Each alternative has pros and cons; some present difficult political choices. Continuing our existing low-density development patterns, for example, hastens land consumption but preserves residents' traditional perceptions of rural character. Many residents have moved to certain areas specifically to enjoy "low-density living." Likewise, exchanging national forest lands and selling state trust lands is unpopular with adjacent property owners. However, in many cases, these state or federal lands occupy areas where transportation corridors and utilities could be logically extended, making them prime candidates for development. Higher-density redevelopment and infilling is also typically controversial with neighbors, even though it reduces land consumption and allows us to protect more open space. Although this *Comprehensive Plan* generally discourages high-density development in remote areas, developers could provide

infrastructure and amenities in new communities such as Bellemont. As a potential long term growth alternative, development of new communities could be considered in areas where land and water are available and where it is feasible to provide utilities.

Plan Use

How the County Uses This Plan to Make Decisions

Many County officials use this *Comprehensive Plan*—the **PLANNING & ZONING COMMISSION**, the **BOARD OF SUPERVISORS**, and planners from the **COMMUNITY DEVELOPMENT DEPARTMENT**. The Commission and Board are responsible for making decisions about zone changes, **SUBDIVISIONS**, and **CONDITIONAL USE PERMITS**; their approval depends on whether the proposed changes are consistent with the **GOALS** and **POLICIES** of this *Comprehensive Plan*, which reflect the plan's **CONSERVATION FRAMEWORK**. County planners typically meet with developers or landowners who wish to submit an application for a proposed project.



Initial discussions include a review of the project’s consistency with the plan’s goals and policies. If the project deviates from these goals and policies, planners may then suggest appropriate modifications. Once the developer or landowner submits an application, a staff member prepares a report to the Commission that includes an analysis of the project’s consistency with the *Comprehensive Plan*, along with related findings. The Commission uses the findings and other information in the staff report in deciding whether to approve the project.

The Commission and Board may also choose to implement the *Comprehensive Plan* by requiring that certain conditions of approval be met either prior to or during construction. These conditions reflect the plan’s goals and policies. They typically include obtaining health and building permits and addressing concerns about **LANDSCAPING**, lighting, roads, parking, grading, drainage, or signs.

The County uses the *Comprehensive Plan* not only to review **ZONING** cases but also to guide decisions about expanding major infrastructure such as roadways or investing in government buildings, parks, and other facilities. It identifies sites for new infrastructure by indicating the probable and/or desirable directions for future growth.



The Role of Ordinances in Plan Implementation

The **ZONING ORDINANCE** and **SUBDIVISION ORDINANCE** are the primary tools for implementing the *Comprehensive Plan*. Both ordinances provide for orderly growth, environmental protection, and adequate facilities and services; both also specify that the approval of a zone change, subdivision, or conditional use permit depends on consistency with the *Comprehensive Plan* and local **AREA PLAN** (where applicable). The ordinances contain detailed development standards for implementing the plan’s policies.



The Role of Geographic Information Systems in Planning

An integrated **GEOGRAPHIC INFORMATION SYSTEM (GIS)** is a valuable tool available for developing and implementing a comprehensive plan. GIS methods allow us to associate areas or points on a map with “attributes” such as land use type, soil type, or habitat type. These attributes are stored in a large database that can be updated and modified as new information becomes available. Most importantly, GIS provides a way to analyze these attributes over large geographic areas, a task that could be extremely difficult and time-consuming using other methods. GIS maps can illustrate existing and projected conditions and communicate planning concepts to residents and decision-makers. They are especially helpful for evaluating land management and policy scenarios and for identifying **ENVIRONMENTALLY SENSITIVE AREAS**.

The Implementation Plan

ACTION ITEMS are specified in the **IMPLEMENTATION PLAN**, a supplemental document to the *Comprehensive Plan*. These items fall into one of four categories—project-specific, administrative, ongoing programs, or collaborative. Project-specific action items include activities like developing informational materials such as a handout on how to revegetate disturbed areas. The administrative category of action items includes all activities related to ordinances, for example, amending an ordinance to implement a specific policy. Ongoing projects or programs include activities like developing and managing a county land trust. Collaborative action items involve relationships with other agencies or groups—for example, working with the Forest Service on forest ecosystem health issues. The County identifies and prioritizes these items to achieve the plan’s goals.

SEE ALSO

Implementation Plan



The *Implementation Plan* will be reviewed annually to track its progress, establish and prioritize action items for the coming year, and identify who is responsible for each action item. This review process will also involve describing the methodology, expected progress, and funding source (Annual Budget or **CAPITAL IMPROVEMENT PROGRAM**) for new action items. Finally, during the annual review, County staff will specify measurable indicators for gauging the progress of action items. These indicators will be included in the Annual Budget and departmental reports.

Amendments



The goals and policies of this *Comprehensive Plan* are not static; as conditions change and new issues emerge, the Board may need to modify them. To be truly effective, this plan requires regular review and updating to incorporate community opinions and to track our progress. A regular review process also motivates us to carry out the plan’s goals and policies. As such, the *Comprehensive Plan* will be reviewed annually to ensure its consistency with our overall vision for Coconino County; it will also undergo a more thorough review and update about every 10 years. These reviews provide opportunities to assess changes in the county, update background data, and change implementation priorities as needed.



Many policies in this plan specify requirements for “major developments” and “large subdivisions,” terms that are left undefined and, as such, are subject to case-by-case interpretation by the **PLANNING & ZONING COMMISSION** and **BOARD OF SUPERVISORS**. These terms refer to subdivisions or commercial complexes that are likely to impact an area significantly—not six-lot subdivisions, five-unit apartments, or small retail stores. The plan’s goal is to require increasingly stringent conditions of approval as project size and potential impacts increase rather than to impose undue burdens on small developers.

Likewise, although the **ARIZONA REVISED STATUTES** specify requirements for reviewing proposed amendments, they leave the definition of “major” to the discretion of each jurisdiction. Coconino County defines a major amendment as any proposed project of 100 acres or more that is substantially out of compliance with one or more goals and policies in this plan or that represents a substantial alteration to the county’s land use mixture and balance.

Amendments to the *Comprehensive Plan* must meet one or more of the following criteria:

- The requested change must benefit the county or a specific community and address conditions that were unforeseen during the plan’s update process.
- Conditions have changed substantially since the last update; such conditions may involve surrounding land uses or economic factors.
- The subject property or concept was misinterpreted or overlooked in the plan.
- The amendment will effectively help us implement the plan’s other goals or the county vision.

Anyone may request amendments to the *Comprehensive Plan*. Although local residents may request minor amendments any time, *Growing Smarter* states that the County should only consider major amendments once per calendar year—in our case, such applications will be accepted up to a specified date before the end of each year.

The *Comprehensive Plan* is also “amended” whenever a new **AREA PLAN** is adopted for a community within Coconino County. Area Plans, which are developed by local residents through a Board-appointed committee, add specificity to the *Comprehensive Plan* for individual communities. More like addendums than amendments, Area Plans can be adopted at any time—they are not subject to the same requirements as those mentioned above for amending the *Comprehensive Plan*.

SEE ALSO

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About This Plan: The Relationship to Other Plans – Area Plans





The Conservation Framework

Introduction

As expressed in the *Coconino County Comprehensive Plan's* vision statement, we desire thriving communities and viable economies that exist in harmony with our unique natural environment. The **CONSERVATION FRAMEWORK** explains why and how conservation-based planning can help achieve this goal. Developed with assistance of an independent Science Advisory Group, this framework provides the context for the plan's **GOALS** and **POLICIES** by detailing relevant scientific **PRINCIPLES** and **GUIDELINES** and explaining their importance to the planning process. By more fully integrating **CONSERVATION** and **DEVELOPMENT**, the *Comprehensive Plan* seeks to ensure that planning decisions meet human needs while maintaining the county's ecological integrity. This Conservation Framework can help developers and residents understand the criteria County planners use in reviewing proposed development projects.

Coconino County features some of the most spectacular **LANDSCAPES** and diverse environments in the Southwest. Its canyons, mountains, forests, **WOODLANDS**, grasslands, and vast **OPEN SPACES** support an incredible range of **ECOSYSTEMS**. These ecosystems contain all the **SPECIES** and **HABITATS** in a given area that interact together with the physical environment to form interdependent natural communities. The species that live here, the habitats they live in, and the complex **ECOLOGICAL PROCESSES** that guide their interactions have developed over thousands of years. They are unique to this area. Sustaining our ecosystems and the processes that maintain them is essential to our communities. In fact, a significant part of our economic activity ultimately depends on the health of these ecosystems—their flowing **SPRINGS** and rivers, clean water, dramatic landscapes, and abundant wildlife.

The principles and guidelines in this framework are based on the premise that humans are integral components of the ecosystem and that we play a crucial role in shaping our environments. Since we are a part of nature and our actions affect the health and vitality of ecosystems, we are responsible for proper **STEWARDSHIP** of **NATURAL AREAS**. Although all species seek food, water, and shelter, humans have the propensity to degrade or destroy entire ecosystems in our quest to achieve desirable standards of living. However, humans also have the ability to understand these ecosystems through science and to apply this understanding to protect the natural world. Ultimately, humans reap the rewards of conservation actions. Only by understanding science-based principles and applying the **CONSERVATION GUIDELINES** can we succeed in creating vibrant, fulfilling human communities that coexist with healthy, productive, natural ecosystems.

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Benefits of Conservation-Based Planning

SEE ALSO PAGE 1

The Land Ethic

SEE ALSO PAGE 20

Integrated Conservation Design

CONSERVATION-based planning provides an equitable way to consider the varied interests of residents, developers, and conservationists in a cooperative manner. It also allows us to create better, more livable communities. Applying conservation-based design concepts to development projects not only makes them more compatible with the *Comprehensive Plan*, but it can also make them more successful and attractive to buyers. Studies show that resale values are about 13 percent higher in conservation-based subdivisions than conventional ones.¹¹ Home buyers are willing to pay more for parcels located adjacent to dedicated **OPEN SPACE**, an important feature of conservation-based development. Providing open space helps protect or improve wildlife **HABITAT**, preserves water resources, and maintains forest health. Perhaps most importantly, when conservation planning is comprehensive in scope, it provides significant environmental, social, recreational, and economic benefits to residents, property owners, real estate professionals, and developers.¹² Conservation-based design methods allow us to meet market needs for quality **SUBDIVISIONS** without incurring additional public expenses or affecting our ability to maximize a property's use. These methods offer developers and landowners a way to capitalize on amenities such as riparian or **WETLAND** buffers, wildlife habitat, and open space.

An important goal of this *Comprehensive Plan* is to give developers and landowners a higher level of predictability. This benefits them by providing the information they need to proactively address issues that could otherwise be time-consuming and costly to resolve. By consulting with County planners and decision-makers before designing new subdivisions, developers can make the review process significantly easier and less risky. This collaborative approach to conservation-based planning ultimately drives our desired development patterns for Coconino County.

Perhaps the greatest ultimate benefactor of conservation-based planning is the general public. Not only will their tax dollars be spent more wisely, but they will also benefit from amenities such as **TRAILS** and bike paths. Conservation-based design substantially reduces the costs associated with long-term infrastructure maintenance and **MITIGATION** measures—especially in **ENVIRONMENTALLY SENSITIVE LANDS**—by leaving more of the site in its natural state. A study by the Urban Land Institute concluded that the cost of roadway improvements for conservation-based developments would be about half the cost for conventional developments.¹³ Many similar studies support this conclusion. Likewise, maintaining natural vegetation and topography can minimize flooding and **EROSION**, filter **POLLUTANTS** from stormwater **RUNOFF**, and allow runoff to **PERCOLATE** into the soil and replenish underlying **GROUNDWATER** supplies.

Conservation-based planning also supports our desire for quality neighborhoods where residents can meet, enjoy our unique **LANDSCAPE**, and see wildflowers, animals, and open spaces. Many national studies cite the availability of pedestrian and bike paths as a top criterion of new home buyers.¹⁴ By looking beyond the boundaries of a single parcel, conservation-based development can unite a community with a system of **GREENWAYS**, trails, and protected natural lands. It can also help ensure that ecologically sensitive areas such as wetlands and **FLOODPLAINS** remain connected to adjacent **RIPARIAN AREAS** and stream corridors. This approach not only offers recreational opportunities and neighborhood amenities, but also maintain habitats and **WILDLIFE MOVEMENT CORRIDORS**.

Overwhelmingly, residents are attracted to Coconino County because of its unique natural environment. Changes to our surroundings need not destroy **HABITAT CONNECTIVITY** or natural communities. Conservation-based planning seeks to protect—and, where possible, to improve and restore—the **ECOSYSTEMS** that we share. To achieve this goal, the goals and policies of this *Comprehensive Plan* are based on a system of science-based ecological principles and **CONSERVATION GUIDELINES**.

MITIGATION

The act of eliminating, reducing, minimizing, or compensating for an impact to the environment using measures that directly or indirectly reduce the impact. Applicants must attempt mitigative actions in the following order: (1) avoid impacts by not taking part or all of a certain action; (2) minimize impacts by limiting the degree or magnitude of the action; (3) rectify impacts by repairing, rehabilitating, or restoring the environment; and (4) compensate for unavoidable impacts by replacing or providing substitute resources or environments.



Ecological Principles

BIOLOGICAL DIVERSITY (or “biodiversity”)—the richness and complexity of life in a given area—is a cornerstone of healthy, vibrant **ECOSYSTEMS** that have the ability to recover from **DISTURBANCES**. Ecosystems respond to land use decisions and to climate fluctuations, which profoundly affect fire cycles, temperatures, and precipitation patterns and amounts. Making land use decisions that protect biodiversity at the genetic, species, habitat, and ecosystem levels is critical to ensuring that our **LANDSCAPES** can adapt to environmental changes.

Changes to an ecosystem can reach a critical point where they cause dramatic reductions in **SPECIES** populations or shifts from one biological community to another over a very short period. This **THRESHOLD** response is the point at which the habitat loses its ability to support species populations at optimum levels. Abrupt declines in populations may be difficult to predict because problems may not be evident until a key threshold is reached or exceeded. Threshold responses can be caused by human-triggered events such as **POLLUTION**; **HABITAT FRAGMENTATION**, conversion, or loss; and overuse of land and water resources. Exercising caution in land use decisions is important because approaching thresholds are not always apparent—nor are their triggers.

Five basic scientific **PRINCIPLES** summarize the essential aspects of healthy, functioning ecosystems: the *Time Principle*, the *Species Principle*, the *Unique Place Principle*, the *Ecological Processes Principle*, and the *Landscape Principle*. These principles, which are detailed below, have been adapted from research by the Ecological Society of America.¹⁵

The Time Principle

Today’s species, habitats, and ecosystems developed over thousands of years; therefore, future species, habitats, and ecosystems will be influenced by decisions we make today. Because the full ecological consequences of decisions we make now may not manifest for many years, our land use decisions must consider potential long-term impacts.

The Species Principle

Because species have specific roles in an ecosystem, they can help us understand its function and health. Species are connected through such processes as predation, competition, and pollination. Native species are organisms that have evolved in a particular place as part of an ecosystem. Non-native or exotic species have evolved in other ecosystems and have been introduced here deliberately or accidentally. They can wreak havoc on native ecosystems by disrupting the delicate balance of native species or by spreading diseases.

The Unique Place Principle

Ecosystems, habitats, and species evolve in a specific place. Not only is their evolution related to local climatic, geologic, and hydrologic conditions, but it is heavily influenced by species interactions and natural processes. These factors create distinctive landscapes that are visually recognizable and have unique qualities and conditions—for example, the Colorado Plateau differs distinctly from the Sonoran Desert. Understanding the natural patterns within ecosystems and habitats is critical to the long-term, ecologically sound use of land.

The Ecological Processes Principle

Natural **ECOLOGICAL PROCESSES**—biotic, physical, disturbance, and cultural—help determine how an ecosystem functions. Biotic processes include the conversion of solar energy into plant material, physical processes include the infiltration of rainwater to underground **AQUIFERS**, and disturbance processes include natural wildfires and floods. Cultural

ECOSYSTEM

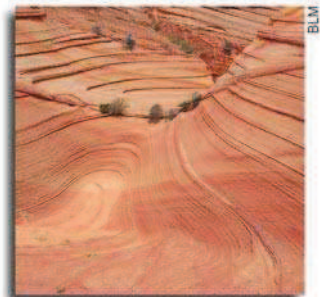
The naturally interacting community of plant and animal species and their physical environment.

LANDSCAPE

The unique patterns, structures, and features such as landforms, vegetation, soil, and waterways that distinguish one part of the earth’s surface from another.



John Aber



BLM



processes, on the other hand, involve human manipulation of the environment for human benefit, such as managing game species.

The Landscape Principle

Ecosystems occur within landscapes and interact in varying ways depending on their size, shape, and location. Consequently, the landscape context is important to the interactions, connectivity, and diversity of habitats and species. Larger habitats generally support a greater diversity of species than smaller habitats of the same type. Significant increases in the distance between habitats can alter or destroy interactions and cause species loss. Connectivity between habitats is considered a threshold dynamic—that is, gradual changes typically have gradual effects until a certain threshold is passed. At that point, effects are dramatic and may be irreversible.



Guidelines for Decision Making

The following **CONSERVATION GUIDELINES**, which are adapted from research by the Ecological Society of America,¹⁶ link **CONSERVATION** science and **LAND USE** planning. They form the basis of the **GOALS** and **POLICIES** that appear in each **ELEMENT** of the *Comprehensive Plan*—in fact, many of the plan’s policies contain specific references to relevant **CONSERVATION GUIDELINES**, and almost every policy relates to one of the guidelines. For some Elements—Land Use and Growth, in particular—all eleven guidelines apply because their policies address the broadest possible spectrum of planning issues and land use decisions. For the Public Safety Element, which mainly addresses the County’s role in providing safety services, only a few guidelines apply because these services typically do not impact natural resources. Some natural resources, such as water, are more subject to cumulative impacts (which **CONSERVATION GUIDELINE K** covers), while others, such as **ENVIRONMENTALLY SENSITIVE LANDS**, are subject to **HABITAT FRAGMENTATION** (covered by **CONSERVATION GUIDELINE E**).

The County’s role in implementing the *Comprehensive Plan* involves applying **CONSERVATION GUIDELINES A** through **K** to land use decisions, particularly when evaluating the anticipated impacts of proposed developments. While each site and situation requires a unique planning approach, these guidelines offer us a predictable, systematic means to enhancing our environment (both natural and built) and avoiding, minimizing, or mitigating the negative impacts of development. These guidelines are especially useful to County planners when conducting preliminary assessments for proposed projects.

A. Assess impacts of local decisions in a landscape context.

Although land use planning occurs at the **LANDSCAPE** level, decisions are often made at the site level. However, because ecosystems and **HABITATS** are dynamic and interactive, land use changes often have effects beyond the boundaries of a site. Using the best available scientific information in making land use decisions will help ensure that the cumulative effects of human use do not compromise the landscape.

B. Make land use decisions that are compatible with the natural potential of the site and the landscape.

Land uses should consider the physical, biological, cultural, aesthetic, and economic constraints of the site and the landscape. Uses that are compatible with the site’s “natural potential”—its water, vegetation, and soil resources—are usually cost-effective in the long term. Incompatible uses, on the other hand, often destroy habitat or degrade re-



sources, ultimately resulting in higher costs. An example of a common but incompatible use is supplementing the natural resources of an area by adding nutrients through fertilization or adding water via irrigation.

C. Avoid or mitigate for the effects of human use and development on ecological processes and the landscape.

We can avoid, minimize, or mitigate the negative impacts of development by applying good planning and design principles at the appropriate scale. At a local scale, siting a structure without considering **ECOLOGICAL PROCESSES** may disrupt **WILDLIFE MOVEMENT CORRIDORS** or destroy a particular habitat. More regional impacts include changes to watershed processes caused by altering drainage patterns as part of a development project.

D. Identify and preserve rare or critical ecosystems, habitats, and associated species.

Rare or critical ecosystems support environmentally sensitive habitats and ecological processes that are key to the overall health and biological diversity of these ecosystems. To understand the factors that affect them, we must inventory critical components—vegetation and soil types, landforms, wildlife, and hydrologic and geologic features, among others. This information is required to make science-based land use decisions.

E. Minimize the fragmentation of large contiguous areas of habitat and maintain or restore connectivity among habitats.

Many ecosystem processes require large areas of unfragmented habitat. If this habitat is fragmented into smaller pieces or disconnected from the larger landscape, it can become threatened, jeopardizing the survival of **SPECIES**. Because some species require different habitats during different seasons, maintaining connectivity is important between different habitat types. In addition, because land management and political boundaries do not define habitats and ecosystems, coordination between planners and resource managers is critical.

F. Minimize the introduction and spread of non-native species and use native plant species in restoration and landscaping.

Non-native organisms often have negative effects on native species, as well as on the structure and functioning of ecological systems. The cost of preventing their introduction and spread can be far less than the cost of restoring the long-term damage they can cause to aquatic and terrestrial ecosystems. Likewise, it can also be less than the cost of controlling non-native species after they become established.

G. Conserve use of non-renewable and critical resources.

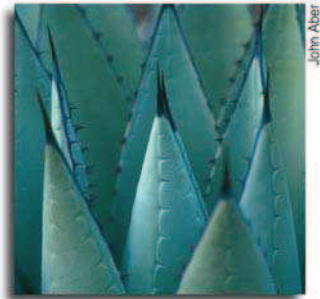
To preserve the long-term health of our communities and economies, it is important to conserve critically important resources such as water and to reduce our reliance on non-renewable resources such as oil and gas.

H. Avoid land uses that deplete natural resources.

Reducing or depleting resources such as water, soil, wildlife, or natural vegetation alters ecosystems in significant and fundamental ways. Depleting these resources disrupts natural processes in ways that are often irreversible.

I. Avoid polluting our communities and environment.

Vibrant communities and ecosystems are either free of pollutants or they contain them at levels that are too low to disrupt natural processes. Land use decisions should limit the levels of **POLLUTION** entering our landscapes.



John Aber



John Aber



Grant Cooper



J. Consider land use decisions over time horizons that encapsulate the natural variability of ecosystems.

Because the factors affecting ecosystems vary, planning must consider the extreme and catastrophic events that occur over long periods. In the case of climate, such events would include floods, drought, and exceptionally high or low temperatures. For example, drought and flood cycles can differ in magnitude and time scale—El Niño/La Niña cycles occur every 7 to 10 years, Pacific Decadal Oscillations¹⁷ occur every 30 to 50 years, tropical storms occur very erratically and infrequently, and long-term climate changes occur over hundreds to thousands of years. The recent return to drier conditions illustrates the importance of not over-committing an important natural resource (such as water) that all organisms need to survive.

K. Evaluate the effects of land use decisions cumulatively and over time.

Long-term changes caused by land use decisions can be delayed and cumulative. Impacts may not be apparent for years or decades; in some cases, we may not recognize them until they reach a **THRESHOLD** when impacts are dramatic. A series of seemingly innocuous, site-specific changes in land use can combine to produce cumulative effects that we cannot attribute to a single, landscape-scale event.

Limitations of Science

Although scientific knowledge is useful, it does not always provide clear, certain, and timely answers to important questions about potential environmental impacts. When certain activity threatens human health or the environment, precautionary measures should be taken regardless of whether all cause-and-effect relationships are fully established. This *Precautionary Principle*¹⁸ recognizes that our understanding of ecosystems is complicated by many factors. Our overall goal is to prevent harm—not to prevent progress. In some instances, we must simply make a “no regrets” decision. In doing so, our decisions should be based not only on the best available scientific information, but also on sound professional judgment and open discussion of both the long-term advantages and consequences.

Ultimately, we need a decision-making framework that minimize risks to people and the environment. Likewise, we can also benefit from a conservation-based planning methodology. Although science cannot always provide definitive answers to land use and development decisions, we can—and should—commit to good planning, collaboration, and foresight. The **INTEGRATED CONSERVATION DESIGN** methods described below offer us an important set of tools for creating quality developments as communities continue to grow.

Integrated Conservation Design

The *Comprehensive Plan* advocates a system of land use planning that reverses the trend of consumptive sprawl. The best methods for achieving this goal involve **INTEGRATED CONSERVATION DESIGN**, a conservation-based approach that offers a wide range of options for developments featuring large parcels of land. Integrated conservation design does not negate the rights of private property owners—it simply offers expanded, more flexible options for development.

Conventional Design Differences

Conservation-based planning differs from the “standard development grid” in two key ways. First, it offers protection for **ENVIRONMENTALLY SENSITIVE LANDS—WETLANDS, RIPARIAN AREAS**, steep slopes, and wildlife **HABITAT**. The value of such environmental amenities is evident from the high percentage (40 percent) of people who purchase golf-course lots



Grant Cooper

INTEGRATED CONSERVATION DESIGN

A development concept that considers site characteristics and layout in the larger context of surrounding parcels. Integrated conservation design preserves important and unique natural features such as open space, viewsheds, scenic corridors, and wildlife habitat.



even though they don't play the game¹⁹; these buyers want the **OPEN SPACE** views associated with such properties. Second, conservation-based planning often integrates recreational amenities such as sports fields and playgrounds into new subdivisions, benefiting entire communities. Imagine a property featuring **FORESTLAND** and an open meadow that provides important wildlife habitat. Conventional development approaches advocate dividing it into individual lots and scattering houses throughout. Integrated conservation design, on the other hand, advocates tucking the houses into forested areas but leaving the meadow **UNDEVELOPED**. Likewise, if the property contains a wetland or **FLOODPLAIN**, conservation-based methods would place any buildings outside of these areas, leaving valuable habitat, open space, or other amenities that all property owners could enjoy.

The process for developing a property using integrated conservation design methods also differs from conventional development processes. In Coconino County, a parcel's **ZONING** determines its permitted density—that is, the number of units allowed “by right” within in a specified area. Developers and engineers typically begin the design process by drawing roads and lot lines on a map. In contrast, conservation-based planning advocates identifying environmentally sensitive areas *before* identifying the most suitable building sites based on factors such as the allowable density and the natural features of each parcel. The next design step entails aligning streets and **TRAILS**. The final step is drawing lot lines.

Options & Incentives

Integrated conservation design methods vary. One approach involves “clustering” development on portions of a property that are not environmentally sensitive and allowing the same net density that would be permitted with a conventional design. This approach not only reduces infrastructure costs, but it also lowers building costs, which are typically more expensive in areas such as floodplains and wetlands.

Another alternative is **TRANSFERRING DEVELOPMENT RIGHTS** to a portion of the property or to an entirely different property. Yet another design approach features dispersed clusters of home sites each with a designated “building envelope,” or the space in which structures are permitted to be built. In this scenario, the land surrounding each site, plus all other undeveloped land, is held in common by all owners for conservation purposes. The home sites are strategically located to minimize impacts on the environment. Many other scenarios are possible; planners should work with property owners and developers to explore creative designs that best apply to a particular area or site.

We also have many possible tools for encouraging the use of integrated conservation design in new subdivisions. One is amending ordinances so they no longer require a zone change when developers want to “cluster” units into a smaller area than what would be permitted under existing zoning. For example, consider a 100-acre parcel with a zoned minimum parcel size of 2½ acres for 40 lots. In this scenario, these 40 lots could be reduced to 1 acre in size and clustered together within an area that takes advantage of a major viewshed or other natural feature, leaving 60 acres of open space.

Example Site Before Development



This example illustrates the design options for an 82 acre parcel. 20% of the site is naturally unbuildable because of wetlands and steep slopes.

Conventional Subdivision Development



Conventional development divides the total buildable portion of the site into equal-sized lots, providing no community open space and eliminating the possibility for habitat connectivity.

Graphics from *Conservation Design for Subdivisions: A Practical Guide to Creating Open Space Networks*, by Randall G. Arendt. Copyright © 1996 by Island Press. Reproduced by permission of Island Press, Washington, D.C. and Covelo, California.



DENSITY BONUS

An additional number of units or development capacity allowed in exchange for providing certain public benefits or amenities, such as parks, open space, or affordable housing.

Another approach for encouraging conservation design is to offer an incentive in the form of a **DENSITY BONUS** for including open space in a development. If 50 percent of our previous 100-acre example is set aside as open space (preferably for public access and use), perhaps the number of units could be increased by 20 percent; if this conservation set-aside covers 60 percent of the property, the density bonus could be increased to perhaps 40 percent. The details of such amendments would be worked out with resident input through the public hearing process that is requisite for all ordinance amendments.

Conventional Development vs. Integrated Conservation Design

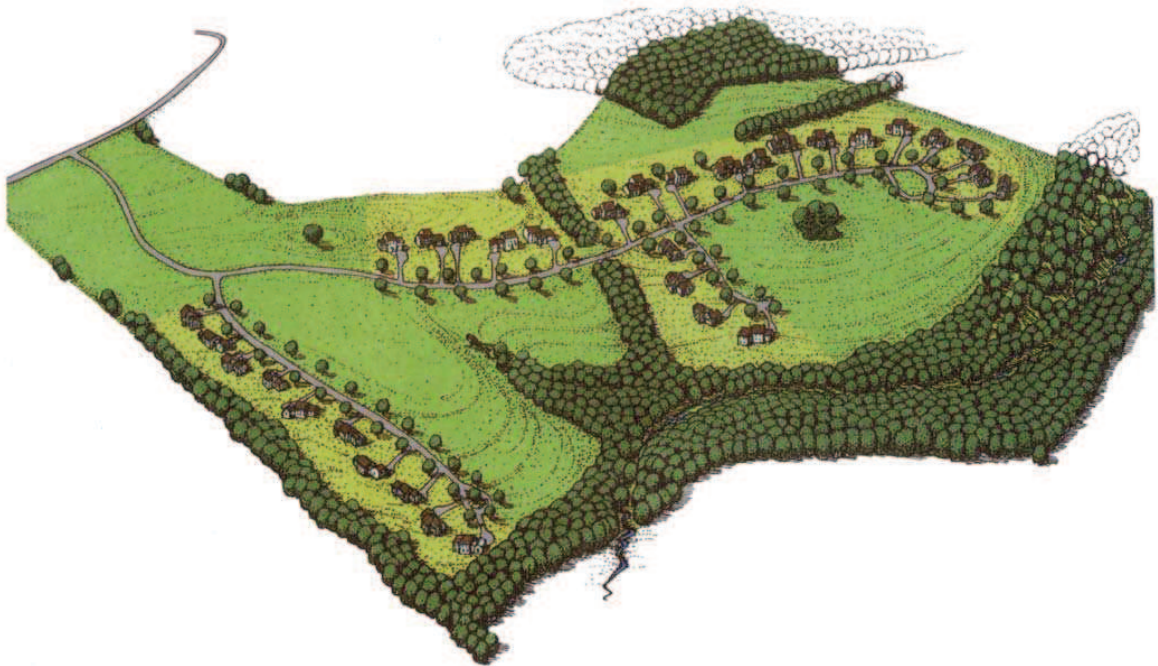


Integrated conservation design (right) accommodates the same amount of development as its conventional counterpart (left)—in this example 32 lots. The difference, however, is that the integrated conservation design provides that 65% of the site be dedicated to open space, a permanent amenity shared by all property owners. Conventional development gives each owner a 2 ½ acre parcel surrounded on all four sides by neighbors—integrated conservation design provides each resident uninterrupted views of the surrounding landscape and access to over 50 acres of land.

Design Applications

Integrated conservation design applies to a wide range of development projects, not just to low-density, high-end subdivisions. Two good examples of successful conservation design for moderately priced homes are found in Doney Park, where zoning density was increased to accommodate open space. Integrated conservation design could also work well for manufactured homes. Regardless of the type of development, integrated conservation design lets landowners maximize the use of their properties while offering the fundamental advantage of protecting a network of conservation and open space lands throughout the county.

Subdivision Development Using Integrated Conservation Design



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The same 82 acre site with 32 homesites using integrated conservation design. Now with 50 acres of open space and connectivity of the regional ecosystems and habitats—a design that requires no additional cost to the developer yet provides substantial benefit to the owners, residents, and the environment.



Natural Environment

Introduction

Coconino County residents take pride in the **NATURAL ENVIRONMENT**. Although our environmental quality is generally excellent, development pressures and human activities continually pose threats. Maintaining healthy natural systems is an investment in our future that supports our quality of life, helps to maintain property values, promotes economic development, and encourages growth in tourism. Residents want to protect the environment but acknowledge the need to balance competing interests. Approaches to large-scale planning and community development must consider limited public agency budgets, private property rights, market demand for certain types of development, and state statutes. Balancing these issues with **CONSERVATION** is a primary planning objective.

This Element characterizes components of our environment that we can enhance or preserve—air quality, forest health, **ENVIRONMENTALLY SENSITIVE LANDS**, vegetation, wildlife, and soils. It also discusses ways to improve our environmental quality using renewable energy sources and **SUSTAINABLE BUILDING** practices. The goals and policies presented in this Element encourage reasonable approaches to environmental protection using the best available information and planning tools.

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The Conservation Framework Relationship

This Natural Environment Element is closely related to the **CONSERVATION FRAMEWORK**; in fact, it provides much of the scientific background required to understand and implement the Conservation Framework’s ecological principles and guidelines. The goals and policies of this Element consider all five ecological principles and eleven **CONSERVATION GUIDELINES**.

Our Vision & Purpose

County residents support the protection and stewardship of natural resources, as well as the maintenance and restoration of healthy ecosystems. The *Coconino County Comprehensive Plan* addresses environmental concerns by establishing policies that identify, protect, and manage sensitive lands so we can continue to enjoy our unique natural heritage. These policies focus on conserving and managing plant and wildlife communities to ensure that viable populations of all **NATIVE SPECIES** survive, maintaining **HABITAT CONNECTIVITY** to prevent landscape fragmentation, and preventing the spread of non-native and noxious plant species. They also address ways to improve the health of our forest ecosystems, reduce catastrophic wildfires, minimize soil erosion and air **POLLUTION**, incorporate “green,” or sustainable building practices, and promote renewable energy sources.



Environmentally Sensitive Lands

SEE ALSO PAGE 43

Public Safety: Floods, Earthquakes, & Slopes

BIOLOGICAL DIVERSITY

The variety and complexity of life and organisms among species, populations, habitats, and ecosystems.

RIPARIAN AREA

An area surrounding a river or stream that supports an ecosystem of wildlife, vegetation, soils, and water.

WETLANDS

Areas that are inundated often enough to support plants and animals adapted to saturated soil conditions.

ENVIRONMENTALLY SENSITIVE LANDS include areas with critical resources—**FLOODPLAINS**, riparian zones, rivers and streams, **WETLANDS**, **SPRINGS** and seeps, and steep slopes. These areas provide **HABITAT** for rare or endangered plant and animal **SPECIES**; in addition, some are important for **GROUNDWATER RECHARGE**. Environmentally sensitive lands require special consideration in the development-design process. Through **INTEGRATED CONSERVATION DESIGN** or similar measures, we can maintain or increase land values by retaining as much of their natural characteristics as possible. Preserving private land for habitat, **OPEN SPACE**, or other nondevelopment purposes may require compensating the owner using a method that reflects the fair-market value of the property. Such methods include purchasing the property outright, exchanging it for other lands, **TRANSFERRING DEVELOPMENT RIGHTS**, or offering property-tax breaks.

Early settlement tended to occur along drainageways and floodplains for practical reasons—these areas provided tillable land for farming and shelter, shade, and a source of water in the arid climate. Today's private land ownership patterns reflect this pattern. Floodplains also provide habitat for a large percentage of native flora and fauna, create **WILDLIFE MOVEMENT AREAS**, and serve as important repositories of **BIOLOGICAL DIVERSITY**. The Federal Emergency Management Agency has designated floodplains for most watercourses, both year-round and ephemeral, on maps showing surface-water elevations during **100-YEAR FLOODS**. Although Coconino County allows development within the 100-year floodplain, minimizing construction in these areas helps protect riparian vegetation and wildlife communities.²⁰

RIPARIAN AREAS are rare in Coconino County. Regardless of whether the drainage contains permanently flowing water, soils in riparian areas are generally deeper and moister than they are in adjacent uplands. Riparian areas facilitate movement and provide food, water, and cover for many species of wildlife. Many land uses compete for riparian resources, challenging **CONSERVATION** efforts. Furthermore, because water is scarce, management decisions often favor human uses (recreation, drinking water, irrigation, and livestock use) over conservation. The potential for conservation action depends on our ability to influence public land-management activities and provide incentives to private landowners for restoring degraded riparian habitats. Oak Creek is the only riparian system in Coconino County with substantial **DEVELOPMENT**. The *Oak Creek Canyon Area Plan*²¹ (originally created in 1984) was largely designed to protect water quality as well as riparian resources.



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WETLANDS are just as uncommon, or perhaps even rarer than riparian areas in Coconino County. Examples include portions of Pumphouse Wash in the Kachina Village area, Rogers Lake, Marshall Lake, Dry Lake (adjacent to the Flagstaff Ranch Golf Club), and Mormon Lake (the largest natural water body in the state). Wetlands are formally delineated by the U.S. Army Corps of Engineers, as specified in the *Clean Water Act*, based not only on the presence of water but also of saturated soils and certain vegetation types. Wetland habitat in Arizona is rare because of the state's aridity, high evaporation and rapid siltation rates, and steep topography. Consequently, it is highly valuable for wildlife. Wetlands typically contains shallow depths of permanent to semi-permanent fresh water, along with abundant plants such as duckweed, cattail, rushes, and sedges. These areas are used for recreation (fishing, canoeing/kayaking, hunting, bird watching), wildlife habitat, water protection, flood retention, groundwater recharge, and a variety of municipal water needs. They occur throughout the state but are particularly notable in the San Francisco Plateau, in ponderosa pine forests at elevations of 6,000 to 7,500 feet, where they range from seasonally flooded flats to deep, permanent marshes.



Widely scattered throughout Coconino County, springs and seeps provide unique habitats for a variety of invertebrates and plants, many of which occur nowhere else in the world. Springs also provide water that supports larger animals. Most springs discharge at mid and low elevations, near the Colorado River and its major tributaries; however, many springs occur at high elevations around the San Francisco Peaks and in areas surrounding Flagstaff, as well as along the Mogollon Rim.

Perennial streams and rivers in Coconino County include the Colorado River, the Little Colorado River, Oak Creek, the upper portion of West Clear Creek, and East Clear Creek and its tributaries. Although highly valued for human uses, areas bordering surface water not only provide habitat, but they also perform important hydrologic functions: discharging floodwaters, filtering stormwater **RUNOFF**, and recharging groundwater.

Steep slopes and ridgelines can also be environmentally sensitive for many of the same reasons mentioned previously. Property owners often desire steep slopes for residential construction because they can offer spectacular views; however, these slopes may contain a wide range of vegetation types and provide valuable habitat for a diversity of bird and wildlife species. Slopes can often have unstable, highly erodible soils, as well.

Goal: **Conserve and enhance the natural qualities of environmentally sensitive lands.**

Policies:

1. The County encourages the protection and restoration of floodplains, springs, riparian areas and the natural conditions of these and other environmentally sensitive lands as opportunities arise and resources become available. *SEE CONSERVATION GUIDELINES: B, C*
2. Development projects, including placement of lots, alignment of roads, and installation of other structures and infrastructure, shall be designed to minimize alteration of natural landforms and native vegetation and maximize conservation of distinctive natural features. *SEE CONSERVATION GUIDELINES: B, C*
3. In order to protect riparian vegetation and wetlands, every effort shall be made to avoid development in floodplains, locate structures on portions of property outside of floodplains, and to utilize floodplain areas for open space, recreation, community amenity sites, or other uses that do not impede the natural functions and processes of flooding. *SEE CONSERVATION GUIDELINES: A, B, C*
4. Integrated conservation design practices, such as open space dedication, conservation subdivisions, and cluster development, are encouraged for new developments so as to conserve sensitive and unique natural areas. *SEE CONSERVATION GUIDELINES: B, D, E*
5. The County promotes the use of conservation tools such as conservation easements, fee-simple acquisition, or cluster development to protect riparian areas, wetlands, and other critical habitats. *SEE CONSERVATION GUIDELINES: B, C, D*



John Aber



John Aber

Wildlife

Coconino County features impressive, grand **LANDSCAPES**, valued not only for their scenic qualities, but also for the wildlife that inhabits them. Many factors impact wildlife survival, including changes in the available **HABITAT**, vegetation, and water, as well as **SPECIES** competition, predators, disease, and parasites. Federally designated **CRITICAL HABITATS** are important components of our landscape and **ECOSYSTEMS** because they protect **THREATENED & ENDANGERED SPECIES (TES)**. Thirteen species were listed in Coconino County in 2002.

The health of a wildlife species is strongly related to the quality of its habitat. Contiguous habitat “patches” are critical to many species that migrate seasonally. These patches can be altered or destroyed by **DEVELOPMENT**, wildfires, roadways, or concentrated human ac-

SEE ALSO **APPENDIX E**
Wildlife Considerations



HABITAT FRAGMENTATION

The division of contiguous tracts of wildlife habitat into progressively smaller patches and isolated areas. Fragmentation often occurs when wildlife movement areas are converted to more narrowly defined corridors; it can sometimes deplete a habitat area.

WILDLIFE MOVEMENT AREA

A broad habitat area that allows animals to move from one region to another in relative safety.

WILDLIFE CORRIDOR

An often limited or constrained area providing connectivity to larger animal habitats.

tivity. **HABITAT FRAGMENTATION** occurs globally and will likely reduce **BIODIVERSITY** and damage ecological processes irreversibly in the near future. Studies show that diversity is greatest when habitat patches are large and contiguous.²²

Animals often require different resources for different activities. For example, birds may nest and forage in different areas. Wildlife activities that require specific environmental components include nesting, calving, foraging, roosting, bedding, and singing. Requirements may differ by life stage or season—for example, during nesting and fledging periods, or during breeding seasons. Migratory birds typically use different habitats within their breeding, migration, and wintering grounds. Habitat use can vary from year to year, often reflecting the availability of resources such as water and vegetation.

Species with large home ranges—the Mexican spotted owl, black bear, mountain lion, pronghorn, northern goshawk, and others—are commonly referred to as “wide ranging.” Some use specific **WILDLIFE MOVEMENT AREAS** and **WILDLIFE CORRIDORS**. Others, like mule deer and Rocky Mountain elk, inhabit forested areas around the county. Known for long seasonal migrations and heavy grazing, these animals cover different areas throughout the year, including agricultural areas, piñon-juniper woodlands, and spruce-fir forests. Mountain lions, which occupy the Mogollon Rim and Kaibab Plateau, are wide-ranging and sensitive to human activity. Bighorn sheep live along the Colorado River in the Grand Canyon and are sensitive to human disturbance by tourists and rafters. Pronghorn and mountain lions are good indicators of the degree of habitat fragmentation around the county.

Although we understand much about wildlife in Coconino County, additional information would help managers and planners—in particular, information about wildlife distribution, habitat use, movement, and population dynamics.

Goal: **Protect wildlife communities and their habitat.**

Policies:

6. The County encourages use of integrated conservation design, creative planning, supportive zoning, and other land use strategies to protect and conserve important wildlife habitat and other environmentally sensitive lands. *SEE CONSERVATION GUIDELINES: B, C, D, E*
7. To reduce degradation of habitat, development projects (including roads and trails) shall be carefully sited to minimize impact to sensitive plant and wildlife species.²³ *SEE CONSERVATION GUIDELINES: C, E*
8. In order to improve watershed conditions, reduce soil loss or damage, protect aquatic habitat, and minimize unnecessary disturbance to wildlife, the County supports the protection of habitat and the closure of unnecessary roads. *SEE CONSERVATION GUIDELINES: C, E, F, I*
9. The County favors projects that protect open space and connective corridors and supports the protection of wildlife watering areas. *SEE CONSERVATION GUIDELINES: C, E*
10. Development projects within ponderosa pine forests should preserve existing meadows for neighborhood open space whenever appropriate and practical. *SEE CONSERVATION GUIDELINES: C, E*
11. The County promotes the protection of threatened and endangered wildlife and vegetative species and their habitats. *SEE CONSERVATION GUIDELINES: D, K*



Grant Cooper



USFS



AGFD



Vegetation

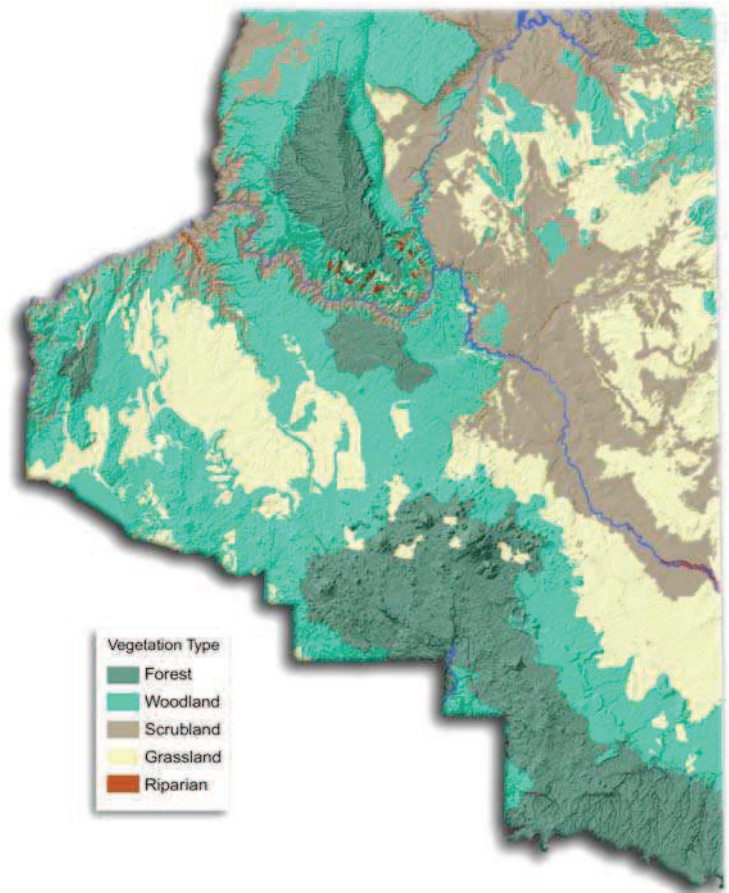
Coconino County's diverse topography creates a range of temperature and precipitation conditions, supporting a broad array of plant communities. The bottom of the Grand Canyon, for example, contains desert shrubs such as yucca, mesquite, and ocotillo, while the San Francisco Peaks feature alpine tundra above tree line. Between these elevations lie grasslands, piñon-juniper **WOODLANDS**, ponderosa pine forests, and mixed conifers (above 9,000 feet in elevation). Coconino County contains the largest continuous stand of ponderosa pine in North America. In addition, **RIPARIAN AREAS** like Oak Creek Canyon support highly diverse natural communities, where deciduous trees like cottonwood, sycamore, ash, maple, alder, and willow prevail. Certain species like Gambel oak provide forage for turkeys, squirrels, and bears regardless of elevation; they also provide nest sites in hollowed out areas. Each plant community may support a range of mammals including elk, lions, deer, antelope, bears, coyotes, and rabbits, as well as turkeys and other local and migratory birds.

Some rare vegetation types cover small areas but are very important ecologically: riparian plants, alpine tundra, mixed conifers, old-growth stands of ponderosa pine, and plants that grow near springs. In 2002, six plants in Coconino County were listed as **THREATENED & ENDANGERED SPECIES** under the federal *Endangered Species Act*, another was listed as a candidate, and two more are protected under separate **CONSERVATION** agreements. Threatened and endangered species are considered in the management of federal lands, state lands, and projects that use federal funds.

Humans have altered Coconino County's **ECOSYSTEMS** profoundly in the last century. In particular, fire suppression has changed our ponderosa pine forests, which contain 10 to 100 times more trees per acre than they did prior to suppression. Other changes related to fire suppression include a decrease in the ground cover that historically carried cool, frequent fires, and an increase in the shrub and mid-story vegetation that carries hot fires through the tree canopy. These changes have caused more destructive wildfires, encroachment of trees into meadows, and epidemic outbreaks of insects and diseases. Intensive grazing by wildlife and livestock has also affected our ecosystems, reducing or removing palatable species and replacing them with less palatable, thorny, or even poisonous species and non-native species. When overgrazing is severe, streamside vegetation deteriorates, banks erode, water quality degrades, and storage capacity declines. As streambeds widen and deepen, depths become shallower; as a result, water temperatures increase and the quality of fish and aquatic invertebrate **HABITAT** declines.²⁴

Our ecosystems have been impacted by the intentional or accidental introduction of **INVASIVE, NON-NATIVE SPECIES**. These plants tend to initially occupy **DISTURBED SITES** and then invade adjacent **NATURAL AREAS**, spreading rapidly and displacing **NATIVE SPECIES**. Their colonization and spread seriously threatens ecosystems; if these plants are not aggressively controlled, many ecosystems risk significant impacts to their biological integrity.

General Vegetation Patterns in Coconino County



INVASIVE, NON-NATIVE SPECIES

A plant species not historically found in the local area. When introduced into an area, these species proliferate, replacing native species and reducing biodiversity.



Invasive, non-native species can disrupt complex ecosystems and their processes, reduce **BIODIVERSITY**, degrade wildlife habitat, jeopardize endangered species, and alter genetic diversity. Cheatgrass, for example, has impacted many Arizona grasslands, and diffuse knapweed, toadflax, salt cedar, and scotch thistle are widespread. Such species can harm horses, livestock, and wildlife; they can also damage meadows and riparian areas, increase fire frequency, and increase the rates at which fire spreads. They tend to occupy severely burned areas, damaged riparian areas, roads and utility corridors, heavily used recreation areas, and other disturbed sites.



NOXIOUS WEEDS are invasive, mostly non-native species identified by the U.S. Department of Agriculture and the State of Arizona to be of particular concern. Other invasive, non-native plants may be identified by cooperative **WEED MANAGEMENT AREAS (WMAs)** such as the San Francisco Peaks WMA and the Arizona Strip WMA, which cooperate with other agencies and involve residents in weed control actions. Invasive, non-native weeds must be addressed on parcel-by-parcel and large-scale bases by land management agencies, roadway stewards, private property owners, and developers.

Goal: Conserve plant communities and improve the health of vegetative ecosystems.

Policies:

12. The County promotes the protection of threatened and endangered vegetative species and encourages the preservation of native, non-invasive vegetation and retention of other significant vegetative features for all new development proposals. *SEE CONSERVATION GUIDELINES: B, H, C*
13. To the extent possible, revegetation and restoration of disturbed areas with native species shall be required. *SEE CONSERVATION GUIDELINES: C, I*
14. The County shall require appropriate action to prevent the spread of noxious weeds prior to implementation of a development project or roadway maintenance. *SEE CONSERVATION GUIDELINES: C, F*



John Abner



John Abner

Forest Ecosystem Health

The U.S. Forest Service manages about 28 percent of the land in Coconino County. Most of this land lies within the Coconino and Kaibab National Forests; the rest lies within the Apache-Sitgreaves and Prescott National Forests. To guide activities on these lands, the Forest Service relies on management plans, which it adopted mostly in the late 1980s and has amended numerous times since. Federal management policies support multiple uses—logging, grazing, mining, and recreation, among others. Recent years have brought increasing attention to forest health, fire hazards, the **WILDLAND/URBAN INTERFACE**, conflicting uses, access and road issues, and the tremendous increase in recreational use. This increased awareness has led to a public, open process for developing new wildland management plans.²⁵

Historic management practices, which fortunately have improved over the last century, often changed wildlife **HABITAT. ECOSYSTEM** scientists generally agree that frequent, low-intensity ground fires helped control tree density, mid-story fuel loads, and accumulation of forest floor litter. Livestock grazing and fire suppression—a classic management objective of previous years—disrupted normal fire cycles, causing “irruptions,” or sudden increases, in tree populations.²⁶ These practices ultimately increased the incidence of extensive and severe crown fires. Today’s fires, often catastrophic in nature, threaten old growth, wildlife habitat, and forest soils. It is estimated that an area may require over 250 years to completely recover after a stand-replacing fire. Because severely burned areas become vectors for undesirable invasive species and noxious weeds, ecosystem changes are significant and often irreversible.

SEE ALSO

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Public Safety: Wildland/Urban Interface



Cooperation between the Forest Service and the local community is essential for improving forest health and ensuring that future development in forested areas meets criteria for property protection and environmental conservation.

Goal: Improve forest health and promote the restoration of forest ecosystems.

Policies:

15. New development in forested areas shall accommodate the connectivity of trails and wildlife corridors to avoid habitat fragmentation and discourage the haphazard development of social or user-created roads and trails. *SEE CONSERVATION GUIDELINES: B, E*
16. The County seeks to protect and preserve old-growth habitat and ecosystems. *SEE CONSERVATION GUIDELINES: D, H*
17. Residents of neighborhoods in wildland/urban interface areas are encouraged to participate in forest planning, management, and restoration efforts. *SEE CONSERVATION GUIDELINES: C, H*



John Aber

Soils

Soil conditions need to be considered in the planning and development process for several reasons. One is to ensure that buildings and structures are adequately supported;²⁷ other reasons focus on soil **CONSERVATION**. Minimizing soil **EROSION**, for example, can help control airborne dust as well as sediment deposition in watercourses. Soil depths must also be adequate for water to infiltrate into the ground and maintain **GROUNDWATER** levels in **AQUIFERS**. Soils host a community of insects, fungi, roots, and bacteria that is integral to every natural **ECOSYSTEM**; disturbances to this ecosystem may affect vegetation and decomposition, promote the colonization of invasive species, decrease water quantity, or degrade water quality.

Coconino County has a range of soil types. Areas northwest and southeast of Flagstaff feature shallow, gravel/silt/clay soil types with numerous rock outcrops. North of Flagstaff, soils consist of shallow to deep accumulations of gravelly clay or cinders that cover areas of ancient volcanic activity. Deeper soils dominate much of the Navajo Reservation. In areas southeast of Fredonia, in House Rock Valley, and west of Tuba City, soils are characterized by shallow clay/silt sands that cover sandstone bedrock.

Soils are also important in controlling floods and drainage. Soils not only provide a mechanism for water infiltration, but they also support vegetative ground cover, which absorbs water. Uncontrolled **RUNOFF** in nonvegetated areas can cause soil displacement and erosion. If the soils within a drainage area are highly erodible, a protective **MITIGATION** plan may be necessary. Such a plan may specify approaches such as slope grading and seeding barren land.

To properly treat and dispose of **WASTEWATER** from septic tanks and leach fields, soils must allow water to **PERCOLATE** at a reasonable rate. Two properties influence percolation: the soil's texture and its structure. If the soil is aerated enough, bacteria will be able to break down the waste material, a filtering mechanism that functions best when wastewater percolates at a medium rate. If percolation occurs too fast, the water table could rise;



J. Ernest Jutte



Grant Cooper



SEE ALSO

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Community Services:
Wastewater

if it occurs too slowly, wastewater could accumulate on the ground and pose a health hazard. “Loam”—soil that contains a mixture of clay, sand, and organic materials—is ideal, but heavy clay and hard rock are unsuitable because they do not adequately filter wastewater. Shallow or unsuitable soils make designing on-site wastewater disposal systems difficult and expensive because conventional septic tank and leach field systems may not be feasible.

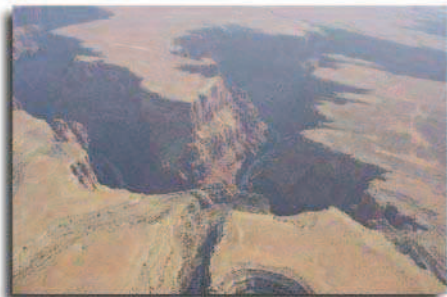
Goal: Protect soil resources and improve soil conservation practices.

Policies:

18. The review process for subdivision and other major development proposals shall consider mitigation measures for drainage, erosion, sedimentation, and related issues for problematic soils and soil types. *SEE CONSERVATION GUIDELINES: B, C, I*
19. The County encourages the conservation of soils to prevent erosion and its impacts. *SEE GUIDELINES: B, H*
20. In areas of shallow or poor soils where standard on-site wastewater systems are not feasible, very low density development, integrated conservation design, a centralized treatment facility, and/or technologically advanced environmentally sensitive systems shall be preferred. *SEE CONSERVATION GUIDELINES: B, I*

Air Quality

Coconino County’s mostly exceptional air quality is one of its most important assets. Maintaining this quality is important, not only for public health but also for protecting views of the Grand Canyon and our scenic areas. Our air quality is high because the county has very little heavy industry; attracting new, nonpolluting industries will help us maintain this standard. Unlike larger **URBAN** areas, carbon monoxide from vehicular emissions is not a serious problem; to date, no standards have been violated, although we may occasionally experience localized problems on winter mornings during peak hours of travel. The **ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ)** is responsible for issuing air quality permits, monitoring air quality, and enforcing regulations. All areas in northern Arizona meet federal standards set by the **U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)**.



Cynthia Lovely

Air **POLLUTION** in Coconino County comes from four sources: dust and other local particulates, prescribed burns, regional haze, and power plants. Occasionally, high-particulate problems originate locally from wind-blown fugitive dust, dust from traffic on unpaved roads, construction activity, and wood stove and

fireplace smoke. Dust from dirt roads generates the most local residents’ concerns; we have little local control over the other sources. **PRESCRIBED BURNS** are necessary to reduce fire risks, improve forest health, maintain wildlife **HABITAT**, and improve grazing resources. ADEQ permits this burning, and fire managers model the smoke dispersion characteristics to determine the best timing for prescribed burns. The regional haze originates outside the county. A multimillion-dollar study was conducted in the 1990s prior to the upgrade of pollution control equipment at the Page power plant.²⁸ This study determined that activities on the west coast cause the largest degradation of air quality in the Four Corners region. Power plants located outside the region also cause air pollution. The most notable of these is the coal-fired generating station at Laughlin, Nevada, which is expected to add pollution-control technologies by 2006.

PRESCRIBED BURNING

The controlled application of fire to wildland fuels in either their natural or modified state, under specified environmental conditions. Prescribed burns are confined to a predetermined area to meet resource management objectives.



Goal: Improve the county's air quality.

Policies:

- 21. Where locally desired, formation of road improvement districts, dust control districts, and road maintenance districts shall be encouraged as a means of solving dust problems and allocating costs to those most affected. *SEE CONSERVATION GUIDELINES: C, I*
- 22. The County, individual property owners, property owners associations, and road maintenance associations are encouraged to provide dust-free surfaces or pursue dust control measures on roadways under their jurisdiction. *SEE CONSERVATION GUIDELINES: C, I*
- 23. Economic development efforts should focus on clean air industries. *SEE CONSERVATION GUIDELINES: H, I*

Renewable Energy

Virtually all the energy used in Coconino County comes from nonrenewable resources. Coal mined in northern Arizona and New Mexico produces electricity, natural gas from Texas produces fuel for heating and cooking, and oil from both national and international sources produces gasoline for motor vehicles.

We can mitigate the environmental impacts of traditional energy production and consumption by adopting good policies. Local government entities, for example, can encourage the efficient use of energy and promote the energy production from clean, renewable sources. They can also model good energy use by properly designing and maintaining government buildings and by using efficient vehicles. Sound energy policies provide both economic and environmental benefits for county residents.

Fortunately, Coconino County has abundant sources of renewable energy that, if developed, would help protect air quality, reduce greenhouse gas emissions, minimize impacts to natural resources, reduce the need for transmission lines, and increase energy security. These sources include passive solar, photovoltaic panels, solar thermal generators, wind, biomass, and geothermal; another renewable fuel that we already use extensively is wood for home heating. The viability of developing these renewable sources depends on how much energy the source can provide and how much it will cost to obtain and transmit it safely.

Sensible policies can also reduce the amount of energy we consume to meet transportation needs. Carpooling, increased use of transit systems, bicycling, and walking are examples of ways to reduce energy consumption in the transportation sector. Land use planning and transportation infrastructure decisions can also affect the amount of energy consumed to meet the county's transportation needs.

Goal: Promote the use of renewable sources of energy.

Policies:

- 24. The County supports efforts to pursue renewable energy production alternatives such as wood biomass energy facilities, landfill methane gas collection, solar electricity, wind power, and other alternative energy technologies. *SEE CONSERVATION GUIDELINE: G, I*



Grant Cooper



John Aber

25. The County encourages and supports public transit initiatives and development of travel corridors for nonmotorized transportation. *SEE CONSERVATION GUIDELINES: G, I*

Sustainable Building

SUSTAINABLE BUILDING

Building techniques and materials that minimize the use of nonrenewable natural resources.

SUSTAINABLE BUILDING, also called “green building” or “intelligent building,” involves implementing various practices that minimize the depletion of natural resources, water and energy consumption, and construction waste. In April 2003, the County adopted a sustainable building program that includes a checklist, a certification program for green builders, education on alternative building techniques, and specific technical guidelines for local owners and builders. Many sustainable building technologies require new codes, standards, and processes that, once adopted, will expedite efficient resource use in Coconino County.



Grant Cooper



Grant Cooper

Sustainable building practices are healthier for the occupants and the environment. They conserve energy and water, limiting environmental impacts. Buildings constructed using these practices have superior indoor environmental quality. They incorporate environmentally sensitive site planning and resource-efficient materials. One example is a hogan (a traditional Navajo dwelling) built using locally harvested, small-diameter logs. Although the trees that supply these logs are often unusable in the timber industry, they must be thinned to maintain forest health and prevent catastrophic wildfires. Many alternative building materials are readily available on the market; alternative building styles, such as earth homes and straw-bale houses, are also available.

An important function of sustainable building is to reduce energy consumption through architectural design. Techniques such as installing more efficient insulation, heating, and cooling systems, placing windows where they can best take advantage of solar energy, and weatherizing can dramatically reduce the amount of energy we consume. Many of these approaches cost less than power from either traditional or renewable sources.

Goal: Promote sustainable building practices and processes.

Policies:

26. The County encourages and supports the efforts of local organizations, developers, and individual residents to utilize sustainable building techniques in their development projects. *SEE CONSERVATION GUIDELINE: G*
27. For the construction of new County buildings and other facilities, the County shall set an example in using designs and specifications that include sustainable building practices and energy conservation techniques. *SEE CONSERVATION GUIDELINES: G, I*



Water Resources

Introduction

The availability of water is one of the most critical factors in planning for the future of our growing county. Adequate supplies of high-quality water are essential for human communities and healthy **ECOSYSTEMS**. Long-term drought cycles are expected to continue impacting supplies in our **SURFACE WATER** and **GROUNDWATER** systems, making our ability to meet the county’s ever-increasing demands more difficult. Managing our water resources is essential. However, the County’s authority is determined by overriding state law that limits its role in assessing the impacts of development on this critical resource. Obtaining greater local or regional control over water issues is one of the County’s biggest challenges.

This Element describes traditional and alternative water sources available in Coconino County, addresses water quality issues, and outlines the benefits of **WATER CONSERVATION**. It also provides an overview of the regulatory framework for water resources and the constraints that the County faces in controlling water issues.

IN THIS ELEMENT	
Water Sources	34
Water Providers	35
Water Conservation & Alternative Sources	36
Water Quality	37
Regulatory Framework	38

SEE ALSO	APPENDIX D
Water Resource Considerations	

The Conservation Framework Relationship

This Water Resources Element is related to the **CONSERVATION FRAMEWORK** because water supplies are not only essential for human life, but also for healthy ecosystems and habitat. Its goals and policies address the role of conservation in this drought-adapted environment, where growth and development are occurring regardless of whether long-term water supplies are readily available.

The *Time* and *Ecological Processes* principles factor into the goals and policies of this Element most strongly. In addition, **CONSERVATION GUIDELINES A, G, H, I, J, & K** are particularly important because they address the long-term consequences we face if we do not manage this precious resource wisely.

Our Purpose & Vision

The residents of Coconino County and the **NATURAL ENVIRONMENT** need clean water to survive. As growth continues, we envision using creative approaches to ensure the long-term availability of our water resources. This Element addresses concerns about water by establishing policies that encourage an efficient management and regulatory infrastructure—one that works with all entities involved in water management. These policies also encourage residents to conserve existing water resources, develop alternative sources of collecting and distributing water, and reuse water whenever possible.



Water Sources

SURFACE WATER

Water found in lakes, ponds, and reservoirs or flowing on the earth's surface within a stream, wash, creek, or other natural drainage channel.

GROUNDWATER

The water stored under the surface in an aquifer that forms a natural reservoir. Groundwater typically discharges via wells or springs.

RECHARGE

The addition to, or replenishing of, groundwater in an aquifer by natural or artificial means.

SEE ALSO

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Water Conservation & Alternative Sources



Grand Canyon Trust

The **ARIZONA DEPARTMENT OF WATER RESOURCES (ADWR)** defines four categories of water supplies: the Colorado River, **SURFACE WATER** (other than the Colorado River), **GROUNDWATER**, and **EFFLUENT**. Colorado River water is classified separately because of the complex legal issues associated with this resource, issues that involve many states and jurisdictions.

Surface water reservoirs have historically supplied a significant portion of the drinking water required for both Williams and Flagstaff. However, because drought conditions lowered reservoir levels dramatically in the late 1990s, these cities rely on deep groundwater sources, like most communities in Coconino County. The City of Flagstaff, for example, obtains much of its water supply from wells in the Lake Mary and Woody Mountain area. Most groundwater in the county is withdrawn from a system of **AQUIFERS** in several different **WATERSHEDS** and basins. These aquifers contain water that may be several thousands of years old. The most significant regional aquifers lie within deep bedrock layers—sandstones, limestones, and shales—at depths of 1,000 to 3,000 feet. These aquifers are slowly **RECHARGED** by rain and snow, which **PERCOLATE** downward from the surface and flows along fractures in the bedrock, sometimes over great distances. For example, some **SPRINGS** that **DISCHARGE** along the Colorado and Verde Rivers originate from groundwater flowing through aquifers in the Coconino Plateau watershed. Because flow patterns are regional in extent, pumping at one location may affect groundwater, springs, or surface water in a different geographical area or jurisdiction.

The impact of climate change on our water supplies is becoming more apparent as historically arid trends continue throughout Coconino County and most of the west.²⁹ The drought cycle that began in 1996 has reduced groundwater recharge and decreased surface water flows, impacting our **LANDSCAPES** significantly. As surface water flows decrease, we must rely more on groundwater sources. Not only does groundwater cost more to provide than surface water, but we face additional costs if we need more wells. The drought also impacts wildlife as well as ranchers who rely on surface water in stock ponds. Climate studies provide important information for water resource planning. Some have examined historical conditions over the past 3,000 years via tree rings; others, such as the USGS' *Precipitation History of the Colorado Plateau Region 1900–2000*,³⁰ address more recent conditions. Long-term records indicate that droughts spanning several decades are likely to occur in the future. Although flood cycles seem to be shorter, they must also be addressed through water resource planning. Not only must we ensure that impoundments are adequate, but we can also benefit from looking at ways to direct floodwaters to groundwater recharge areas.

Like most natural resources, groundwater and surface water do not respect jurisdictional boundaries. Many incorporated jurisdictions have developed their water supplies in aquifers that lie outside their boundaries—the same sources that surrounding unincorporated areas would tap if they were developing water systems. Given the regional nature of groundwater systems, it is critical for incorporated and unincorporated interests to work together.

Goal: **Ensure a water supply for human communities while considering the needs of natural systems.**

Policies:

1. The County should take climatic variables into consideration in planning for water resource needs for the purpose of identifying long-term local and regional water resource strategies. *SEE CONSERVATION GUIDELINES: G, H, J, K*
2. The County encourages the protection of environmentally sensitive lands that rely on surface water and groundwater. *SEE CONSERVATION GUIDELINES: B, C*



Water Providers

Unlike many incorporated cities and towns, Coconino County is not a water provider. However, although some incorporated communities in the county provide water, they typically do not extend service beyond their city or town limits. **HAULING WATER** is a common practice for residents of unincorporated areas, who can haul water themselves or purchase it from a commercial hauler; in some cases, they can also obtain it from water districts and owner cooperatives, shared wells, private water systems, or nonmunicipal public water systems.³¹ State law defines a public water system as one that provides **POTABLE WATER** to at least 15 service connections or regularly serves at least 25 persons for at least 60 days a year. A private system is one that does not meet this standard. Private water companies replace municipal utilities in many unincorporated areas. A number of small water systems serve subdivisions and communities in the county, including Flagstaff Ranch Water Company, Forest Highlands Water Company, Arizona Water Company, and Starlight Water Company.

Hauling water is a common practice among residents in remote areas. The community of Tusayan has relied on hauled water to meet commercial needs for many years. Most municipalities provide water outside their incorporated boundaries via standpipes for bulk water sales by coin or card; this is also true for some nonmunicipal public water systems. In some areas—Bellemont and Valle, for example—wells have been developed primarily for bulk water sales but are not part of a distribution system. The number of residents who rely on hauled water was significant enough to warrant special attention in the *North Central Arizona Water Demand Study Phase I Report* prepared for the **RURAL ARIZONA WATERSHED INITIATIVE**. This report notes: “The study team knows of few other areas where this practice [is] so prevalent, and where growth appears to be fairly robust in spite of the lack of water system connections or easy access to groundwater.”³² Unfortunately, many communities that sell water have adopted drought policies that would restrict sales to county residents.

Importing water from outside sources may be possible in some areas. For example, Canyon Forest Village proposed an elaborate plan to import water rather than rely on local wells. Another option that has been discussed is constructing a pipeline from Lake Powell to parts of the Navajo Reservation and extending it to other areas in the county.

As of 2003, the county only had two water districts—the Forest Lakes Domestic Water District and the Kachina Village Improvement District (KVID). Water districts are formed by area residents to raise money to take over an existing system or to develop a new system. In the early 2000s, interest in water districts was primarily from rural residents looking to develop a community well and standpipe, not a complete distribution system. These residents may have been cut off from sources such as municipalities that restrict outside water sales. Doney Park Water is the only owner cooperative in the county. All customers on the system are members, and an elected Board of Directors and staff run the operation. In some areas, particularly subdivisions, individual lot owners have developed a private system of shared wells. Clear Creek Pines is an example of a **SUBDIVISION** where owners have worked together to develop a well, storage, and line extensions for a limited number of homes. Typically, establishing such a system is easiest in areas where neither the cost to develop a well nor the distance for line extension is cost-prohibitive. **SPRINGS** provide water to many areas, most notably Oak Creek Canyon and the Arizona Strip. They are generally considered groundwater and fall under the same regulations as wells.

SEE ALSO

APPENDIX D

Water Resource Considerations
– Rural Arizona Watershed
Initiative



Goal: Ensure that a range of water types are provided for human use through an efficient and ecologically responsible manner.

Policies:

3. The County shall provide assistance to residents in the formation of water districts.
SEE CONSERVATION GUIDELINE: G
4. The County supports efforts of water utilities to promote conservation measures and demand-side management practices³³. *SEE CONSERVATION GUIDELINE: G*

Water Conservation & Alternative Sources

WATER HARVESTING

The collection of rain or snow-melt for retention and future use or recharge.

RECLAIMED WATER

Wastewater that has been treated for reuse for purposes other than human consumption.

GRAY WATER

Wastewater, collected separately from sewage flow, that originates from a clothes washer, bathtub, shower, or sink, but not from the kitchen sink, dishwasher, or toilet.

WASTEWATER

Used water drained from homes, business, and industries; primarily sewage flow.

If annual growth continues at a rate of 2 to 3 percent in Coconino County, demands on our water supplies will continue to increase. Although developing new water sources will become critical, we must also consider other alternatives to meet these demands. One alternative is conserving water through the use of low-flow plumbing devices, drought-tolerant **LANDSCAPING**, and other approaches that reduce consumption. Another is identifying nonpotable water sources—for example, **GRAY WATER** and treated **WASTEWATER**—that could be “reused” for nonpotable needs such as landscaping, agriculture, golf courses, and parks, along with some commercial/industrial purposes. In 2001, the **ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ)** adopted regulations that allow residential users to reuse gray water, which originates in their household. Although the regulations contain specific rules, no formal review or permit is required. **WATER HARVESTING**, another option, is basically redirecting local surface and building **RUNOFF** and collecting it.

Many users in the county already rely on alternative water systems. Tusayan, for example, became a leader in reusing treated wastewater, or **RECLAIMED WATER**, because of the economics of providing potable water there. In 2002, this community met approximately 40 percent of its needs with reclaimed water. Hotels, restaurants, and at least one multifamily housing complex are “double-plumbed” to use reclaimed water for toilet flushing and landscaping. In 1988, KVID developed a 160-acre **WETLAND** to dispose of its treated wastewater. This wetland not only helps recharge the **AQUIFER** system, but it also provides wildlife **HABITAT** and promotes nesting of migratory waterfowl. The Forest Highlands Water Company purchases KVID’s excess treated wastewater for golf course irrigation. (Forest Highlands also uses its own treated wastewater but does not produce enough for its irrigation needs.) Other golf courses in Flagstaff, Williams, Page, and Pinewood use treated wastewater to meet some, if not all, their irrigation needs. Grand Canyon National Park Airport is also noteworthy because it harvests potable water via its rainwater collection system, which includes a 3-million-gallon tank to store untreated water. Harvesting also occurs on a much smaller scale throughout the county, especially in remote areas, where residents would otherwise have to rely solely on hauled water.



The County can promote water conservation and alternative water sources in a variety of ways—educating the public, developers, and County staff; creating incentives for incorporating conservation elements into development projects; and supporting the use of gray-water systems and water harvesting. In 2001, the County adopted the *Coconino County*

Landscape Ordinance based on **XERISCAPE** principles for new, nonresidential development; this ordinance requires the use of native and/or drought-tolerant plants, based on geographic location. Another technique to consider is reducing impervious surface areas to allow water to **RECHARGE** aquifers instead of becoming runoff. New technologies are constantly emerging that can help us reduce our consumption of this precious resource.



Goal: Promote water conservation practices and the use of alternative sources.

Policies:

5. The County shall strongly encourage reuse of wastewater not only to minimize discharge but also to reduce the use of potable water. *SEE CONSERVATION GUIDELINES: G, H*
6. The County encourages decreased water use and promotes the use of such conservation tools as water saving plumbing fixtures and environmentally sound water harvesting systems. *SEE CONSERVATION GUIDELINE: G*
7. The County shall set an example in new and existing County facilities by utilizing water conservation techniques. *SEE CONSERVATION GUIDELINE: G*
8. Water conservation should be a consideration in approval of all major developments. *SEE CONSERVATION GUIDELINE: G*
9. With new commercial and industrial development, high-efficiency, low-net volume water users are encouraged. *SEE CONSERVATION GUIDELINE: G*
10. The County encourages individual homeowners and businesses to reduce water use, provide for detention of rainwater, and control erosion. *SEE CONSERVATION GUIDELINE: G, I*
11. Where environmentally appropriate, the County encourages the use of alternatives such as treated wastewater and water harvesting for recreation uses and other nonpotable needs. *SEE CONSERVATION GUIDELINE: G*
12. Subject to other jurisdictional authority, the reuse of treated wastewater and gray water should be encouraged wherever possible for both residential and commercial irrigation and for commercial and industrial purposes. *SEE CONSERVATION GUIDELINES: G, I*
13. In conjunction with considerations for dust control, drainage, and maintenance, the County supports alternative paving methods that mitigate the impacts of surface water runoff and conserve water by promoting aquifer recharge. *SEE CONSERVATION GUIDELINES: B, C, G, H, I*



Grant Cooper



Grant Cooper



Abie Springer

Water Quality

The quality of **SURFACE WATERS** in Coconino County—rivers, streams, creeks, lakes, and reservoirs—is generally excellent. ADEQ monitors surface water in a small network of fixed stations. Most of these waters meet drinking water standards that are based on *Clean Water Act* criteria published by the **U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)**. One waterway, Oak Creek, is subject to more stringent standards because it was designated a “unique water” by the state in 1982. This designation ensures that no degradation of water quality results from nearby **WASTEWATER** systems.



The quality of the county's **GROUNDWATER** is also generally excellent, in part because water levels are deep and therefore less vulnerable to **POLLUTION** from surface sources. Groundwater depths of 1,000 feet or more are common throughout the county. However, in a few areas, most notably the Fort Valley area of Flagstaff, water levels are close to the surface. Although shallow aquifers are more susceptible to impacts from on-site wastewater systems, they are generally not used for drinking water.

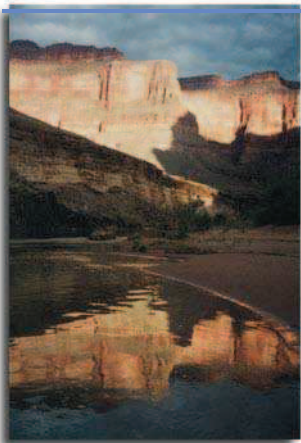
About 20 wastewater discharge permits have been issued in the county through the **NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)**. These permits are processed by ADEQ and issued by the EPA. Permit holders include the Cities of Flagstaff and Williams, Grand Canyon National Park, Tuba City, Cameron, Kaibito, Tusayan, Pine-wood, and Valle Airpark. These permits specify the water quality standards that the holder must meet before it can **DISCHARGE** treated wastewater. They apply only to the wastewater that is discharged to the surface, not to any treated wastewater that is reused for nonpotable purposes such as landscaping.

Concerns are often raised about the impact of septic systems on groundwater. As long as there is a sufficient thickness of soil under leach fields—typically, only a few feet—the potential for pathogens reaching groundwater is minimized. Of greater concern are the nitrates that originate from septic leach fields and other sources. Driven by heavy rains, these nitrates can infiltrate into aquifers, particularly in areas containing loose cinders or faults. Doney Park, a good example of an area containing loose cinders, has not reported an increase in nitrate levels.

NONPOINT SOURCES of pollution also affect surface water and groundwater. The most likely sources of concern include **EROSION** of sediment from disturbed sites; stormwater **RUNOFF** from streets, parking areas, and other impervious surfaces; and surface runoff from **WATERSHEDS** carrying pathogens from recreation, wildlife, and livestock.

NONPOINT-SOURCE POLLUTION

Pollution that originates from many diffuse sources (such as urban areas, parking lots, agriculture, recreation, and construction) and that is carried by rainfall, snowmelt, irrigation, and local runoff.



Goal: **Protect, preserve, and improve the quality of surface water and groundwater.**

Policies:

14. Protection of the quality of surface waters and groundwater shall be a factor in the consideration for approval of residential, commercial, and industrial developments. SEE CONSERVATION GUIDELINES: B, I
15. Development proposals that will affect drainage on adjacent properties, roads, or watercourses shall include a drainage plan addressing the impacts and mitigation measures affecting water quality. SEE CONSERVATION GUIDELINES: A, B, C, H, I
16. To reduce stormwater runoff, the County encourages minimizing impervious surfaces within commercial, industrial, public and semipublic use developments. SEE CONSERVATION GUIDELINES: B, I
17. The County shall set an example of responsible water resource protection by locating its new buildings, roads, and other facilities in such a way as to protect surface water and groundwater quality. SEE CONSERVATION GUIDELINES: B, I

Regulatory Framework

The **GROUNDWATER MANAGEMENT ACT** of 1980 created a number of **ACTIVE MANAGEMENT AREAS (AMAs)** throughout the state. At that time, Coconino County was not considered at risk for **OVERDRAFT** and **WATER TRANSFERS**; consequently, it was not included in an AMA. Outside of established AMAs, the state requires those drilling wells to obtain a permit. It also limits **INTER-BASIN TRANSFERS** through the *Groundwater Transportation Act*.

OVERDRAFT

The removal of more groundwater from an aquifer than is naturally replenished through recharge.



The County has faced substantial limits in its ability to assess the availability of groundwater and the impacts of withdrawing it from wells. It lost two lawsuits in 1988 and 1989, both involving **CONDITIONAL USE PERMITS** for water transfer sites. In each case, neighboring residents raised concerns that nearby large-scale pumping would lower water levels in their wells. The Court determined that the County could not consider this issue in evaluating the permit applications—such issues fall under the jurisdiction of ADWR, which imposes very few requirements on those withdrawing groundwater from deep aquifers outside AMAs. This legal situation clearly limits the County’s ability to assess how growth and development affect its water resources. Obtaining more local authority over groundwater issues would benefit County planning efforts tremendously.

Goal: **To address groundwater management at a local and regional level.**

Policies:

18. In coordination with the appropriate agencies, the County supports activities to create more local/regional authority for groundwater management. *SEE CONSERVATION GUIDELINES: A, G*
19. The County will participate in and pursue programs and activities that address regional water resources conservation and management. *SEE CONSERVATION GUIDELINES: A, B, G*
20. To the extent allowed by state law, availability of water should be a consideration for all major developments and subdivision applications filed in conjunction with a rezoning for higher density. *SEE CONSERVATION GUIDELINES: B, G*



OLIVER WENDELL HOLMES, SR.

"The greatest thing in the world is not so much where we stand, as in what direction we are moving."



Public Safety

Introduction

Public services are required to support a community’s basic needs for fire protection, law enforcement, and emergency response and management. By adopting plans and ordinances and by allocating resources appropriately, the County can promote an effective level of services to satisfy these needs. Collaborative efforts with other agencies, organizations, and community groups also contribute to the safety of residents and visitors.

This Element addresses ways to minimize potential hazards associated with wildfires, floods, earthquakes, and steep slopes. It also presents goals and policies related to safety-related public services—fire protection, emergency management and disaster response (on both the local and regional levels), and law enforcement. The goals and policies presented in this Element are designed to ensure that we plan for adequate services and facilities, either during the land development process or through appropriate government programs.

IN THIS ELEMENT	
Wildland/Urban Interface	42
Floods, Earthquakes, & Slopes	43
Fire Protection	44
Disaster Response & Management	45
Local Emergency Response	46
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The Conservation Framework Relationship

The goals and policies in this Public Safety Element are only marginally related to the **CONSERVATION FRAMEWORK** because most services do not directly impact the **CONSERVATION** of natural resources. Exceptions include the goals and policies related to minimizing hazards associated with the **WILDLAND/URBAN INTERFACE**, floods, and steep slopes.

The *Ecological Processes* principle can help us understand how wildfires occur in Coconino County’s forests. Likewise, **CONSERVATION GUIDELINE K**, which addresses cumulative impacts to the environment over time, is important in managing hazards associated with steep slopes, floods, and wildfires.

Our Purpose & Vision

We envision our communities as safe places to live, work, and play. County residents not only want to reduce the threat of catastrophic wildfire in the wildland/urban interface, but we also want to promote high levels of fire protection and public safety in all areas. The *Coconino County Comprehensive Plan* addresses public safety concerns with policies that help us avoid or mitigate the dangers posed by **NATURAL HAZARDS** and prepare us for disasters with effective emergency service and quick, appropriate response. These policies also focus on ensuring that our neighborhoods remain safe.



Wildland/Urban Interface

WILDLAND/URBAN INTERFACE

The area in and around a community where the immediate or secondary effects of a wildfire would threaten a community's environmental, social, and economic values, causing serious detriment to the area's overall health and viability.

FIREBRANDS

Burning airborne embers that are generated by a wildfire and transmitted by wind beyond the fire front. Firebrands often ignite spot fires.

The **WILDLAND/URBAN INTERFACE** is a concern in Coconino County because of the potential for wildland fuels to ignite combustible structures and vice-versa. Destroying homes, property, and trees is just one way that wildfire harms an area. Wildfires can destroy **HABITAT**, soils, and forest health, disrupting economic stability, transportation corridors, recreation opportunities, water supplies, and scenery, as well as undermining a community's emotional and spiritual well-being.

In Coconino County, the threat of wildfire is serious because of our vast expanses of wildland and unnatural forest conditions. Instead of open stands of large, widely spaced trees, forests are now overcrowded with unnaturally dense thickets of smaller trees. These stands are more susceptible to catastrophic “crown fires,” which move rapidly from the ground into tree crowns and then spread from crown to crown. These high-intensity fires are more ecologically destructive than the low-intensity fires in healthy, natural forests. Fire officials recognize that the question is not whether catastrophic wildfires will occur—but when.

Reducing the threat of catastrophic wildfire is a priority in the wildland/urban interface. The geographic extent of this interface should be increased to include areas beyond the forest boundary. As proven during the 2002 Rodeo-Chediski wildfire, thousands of acres can burn in one day, and wind can transport **FIREBRANDS** and ignite spot fires up to 1.5 miles ahead. Additionally, because so many variables affect fire behavior, no set distance from homes or communities would apply in all situations. Therefore, the potential threat of wildfire should be assessed when considering development in urban interface areas. Since this interface spans several jurisdictions and authorities, interagency cooperation is essential. The U.S. Forest Service, National Park Service, and Arizona State

Land Department have undertaken various projects and management actions to help restore natural conditions and prevent catastrophic wildfires. In addition to forest-treatment projects involving thinning and **PRESCRIBED BURNING**, these agencies also typically address recreation and road management to reduce wildfire potential in wildland/urban interface areas. However, agencies can only manage lands under their jurisdictions. To maximize the effectiveness of such actions, corresponding treatments are also necessary on adjacent private lands.

The County not only requires that new developers formulate plans for forest stewardship and fuels **MITIGATION**, but it has also adopted safeguards for carrying these plans into the future. These safeguards include attaching requirements, conditions of approval, and recorded covenants to **DEVELOPMENT PROJECTS** to help ensure that properties are maintained in accord with the stewardship plans. Other possible actions include adopting advisory or mandatory codes designed to produce more fire-resistant buildings and adopting architectural and site development standards designed to produce more “defensible” and “survivable” structures in urban interface areas.

Creating **DEFENSIBLE SPACE** and **SURVIVABLE SPACE** helps protect structures from fire. Defensible space practices include increasing the moisture content of vegetation, decreasing the amount of flammable vegetation, shortening plant height, and arranging plants to provide adequate spacing. Such practices can significantly increase the likelihood of a home surviving a wildfire; however, the term “defensible” implies that someone will be there to defend it. In reality, if a major wildfire occurs, there will never be enough fire engines to defend every home in the



community. The concept of survivable space goes one step further. It refers to property design practices that increase the likelihood of structures surviving a wildfire without active intervention by fire protection services.

The National Fire Protection Association, in conjunction with other agencies and organizations, has developed the Firewise Communities Program to promote development practices that decrease the effects of catastrophic wildland fires. The Firewise approach considers the terrain, vegetation, building materials, and architectural design of a site. Its goal is to reduce continuous fuel sources and the chance of structural ignition.

Goal: Reduce the threat of catastrophic wildfire in the wildland/urban interface.

Policies:

1. Major developments and subdivisions in the wildland/urban interface must provide a forest stewardship/fuels mitigation plan and property maintenance covenants incorporating the principles of defensible and survivable space. *SEE CONSERVATION GUIDELINES: B, C*
2. For development in the wildland/urban interface, the use of Firewise landscaping and construction design and materials is encouraged. *SEE CONSERVATION GUIDELINES: B, C*
3. When considering development projects in or near the wildland/urban interface, the County encourages property owners and developers to consult with forest managers and land management agencies in developing fire mitigation plans to ensure compatibility.



Floods, Earthquakes, & Slopes

In addition to wildfires, other **NATURAL HAZARDS** of concern in Coconino County include floods, earthquakes, and landslides. Because the ground is **IMPERMEABLE** in many areas, floods can occur in response to excessive rainfall and snowmelt. The *Coconino County Zoning Ordinance* addresses floods in the **FLOODPLAIN MANAGEMENT OVERLAY ZONE**. However, although this overlay zone includes provisions for flood-hazard reduction, it does not prohibit or prevent development in flood-prone areas. It only requires that new construction does not encroach on the “floodway”—the main channel required for the discharge of a **100-YEAR FLOOD**. The **FLOODPLAIN** management regulations help ensure that property owners can obtain insurance under the National Flood Insurance Program and that the County can obtain disaster relief from the **FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)**.

Coconino County is at moderate risk for earthquakes, according to the **ARIZONA EARTHQUAKE INFORMATION CENTER** at Northern Arizona University. Numerous geologic **FAULT SYSTEMS** comprise the **NORTHERN ARIZONA SEISMIC BELT**, including the Cataract Creek, Mesa Butte, and Bright Angel systems. The Cataract Creek system underlies the Flagstaff region and includes the Lake Mary fault. Damaging earthquakes occurred in 1906, 1910, and 1912; minor quakes occur every year, on average. The chance of an earthquake of magnitude 6 or higher is estimated to be about 50 percent in the next 30 years. The worst-case scenario for the Flagstaff community would be an earthquake of magnitude 7 or higher on the Cataract Creek fault system.³⁴ Other areas of the county would experience less potential damage because they are less developed. For construction purposes, Coconino County is classified under the **UNIFORM BUILDING CODE (UBC)**³⁵ as being in Seismic Zone 2b. The earthquake provisions of the code are intended to protect against

SEE ALSO PAGE 24

Natural Environment:
Environmentally Sensitive Lands

NATURAL HAZARDS

A significant threat to life and property produced by natural conditions or processes such as hurricanes, tornadoes, faults, severe soil erosion, slumping, wildfire, or floods.

100-YEAR FLOOD

A flood that has a 1 percent chance of being equaled or exceeded in any given year.



SEE ALSO

PAGE 78

Community Character: Scenic
Vistas & Viewsheds

major structural failures and loss of life. Although new construction codes produce buildings that can resist the effects of ground motion, older structures are at risk.

Constructing buildings on steep slopes is potentially hazardous for several reasons—fires can spread upslope easily, landslides and slumping can occur because of poor soil conditions, and steep, narrow driveways can limit accessibility, particularly for emergency response. Nevertheless, properties on ridgelines and mountainsides often bring a premium because they offer scenic views. Guidance providing development criteria for steep slopes is limited. Although the *Coconino County Subdivision Ordinance* requires lots to have a buildable area that does not exceed 25 percent slope, it does not prevent construction on steeper portions of a lot. Property owners can build on hillsides under code simply by engineering structural foundations for steep slope conditions.

Goal: **Avoid or mitigate the dangers posed by identifiable or predictable natural hazards.**

Policies:

4. Development proposed in geologically hazardous areas or on steep slopes should be done in a manner that poses little or no hazard to health or property. *SEE CONSERVATION GUIDELINES: B, C*
5. Development projects including critical facilities, high density residential, and major commercial and industrial uses shall not be approved in areas subject to high levels of seismic risk and only very low-risk land uses will be considered for approval in such areas.
6. Utility providers are encouraged to strengthen, relocate, or take other appropriate measures to safeguard pipelines, transmission lines, and other utility infrastructure in areas subject to elevated natural hazard risk.

Fire Protection

Although fire protection is available in cities within Coconino County, it is not universally available in rural unincorporated areas, especially in remote outlying areas. Property

owners in such areas may assume responsibility for fire protection on an individual basis if they are not located within a fire district; alternatively, they can join together with other property owners and petition the **BOARD OF SUPERVISORS** to create a fire district. Such districts are funded by a secondary tax assessed on properties within district boundaries; those who create a district essentially agree to tax themselves to provide fire protection.

To some extent, our zoning and subdivision ordinances and our building codes also address fire protection. For example, the *Zoning Ordinance* requires minimum building setbacks, separation between structures, and maximum lot coverage limitations, which help prevent the spread of fire between structures and facilitate emergency **ACCESS**. The *Subdivision Ordinance* requires varying levels of fire protection depending on the type of **SUBDIVISION** and density of **DEVELOPMENT**. Road design standards help ensure emergency access to properties. County building codes address minimum requirements for smoke detectors, **EMERGENCY EGRESS** from structures, and fire separation between buildings or units with different occupancy types.



Grant Cooper



John Aber



Various agencies in the county manage fire protection on their respective lands. Federal agencies with fire management responsibilities include the Forest Service, the Bureau of Land Management, and the Park Service. The State Land Department has responsibility on state trust lands; in addition, it often cooperates with federal agencies and local fire districts to respond to fires on private and public lands. The State Land Department provides technical assistance to private property owners who are developing and implementing plans for fire protection and fuels **MITIGATION**. Many local fire districts also assist property owners in reducing fuels and implementing other proactive fire-prevention strategies, especially in the **WILDLAND/URBAN INTERFACE** areas.

SEE ALSO

PAGE 42

Wildland/Urban Interface

Goal: Provide for a high level of fire protection and safety.

Policies:

7. Development projects shall include adequate fire protection measures, as determined by the Board of Supervisors with input from the local fire district and/or appropriate fire management agencies.
8. The County encourages and supports property owners in forming fire districts, annexation into existing districts, or otherwise organizing formal fire protection organizations pursuant to state law.
9. Property owners are encouraged to utilize Firewise construction and landscape design elements, to maintain defensible space, and to seek technical assistance from their local fire district or the State Land Department for fuels mitigation and fire prevention measures. *SEE CONSERVATION GUIDELINES: B, C*

Disaster Response & Management

Large-scale emergencies and disasters require a coordinated, interagency response. Because major emergencies and disasters can quickly exceed our local capabilities, the County has developed emergency management plans that detail procedures to follow in case of a major flood, fire, hazardous material spill, winter storm, gas pipeline failure, mass casualty, energy or water shortage, earthquake, or mass evacuation. If an incident occurs, the Emergency Services Coordinator helps notify the appropriate emergency response agencies, assists in evacuation activities, and later assists in disaster recovery and mitigation. The Coordinator can also provide valuable input for new developments in identifying hazards and possible mitigation strategies.

Interstate transportation corridors also create a potential for major public safety incidents. As an example, the Burlington Northern Santa Fe Railroad runs about 100 freight trains across the county every day, often carrying hazardous cargo. A derailment could result in a **HAZMAT** incident requiring a coordinated interagency response. When such an incident or other disaster occurs, the Emergency Services Coordinator helps facilitate response and recovery operations.



Goal: Maintain a high level of emergency preparedness.

Policies:

10. Commercial and industrial development projects shall identify all potentially hazardous or toxic materials expected to be utilized, stored, or produced by the development, and detailed plans shall be submitted regarding the use, storage, transportation, and disposal of such materials prior to considering approval of the project. *SEE CONSERVATION GUIDELINE: I*
11. Development projects shall acknowledge existing conditions and/or hazards which may pose a threat to residents—such as proximity to physical hazards—and should mitigate such threats through appropriate site planning, buffering, and other physical design approaches.

Local Emergency Response

Accidents, medical calls, or other incidents are typically handled by local emergency response agencies. Emergency medical services are generally available in unincorporated areas through air and ground ambulance units. In addition, most local fire districts—often the first responders to all types of incidents—provide some level of medical response. Given the geographic extent of the county, emergency response times can vary widely; in the most remote areas, they can be delayed. Residents must accept a certain amount of responsibility for personal safety through emergency medical training in first aid, cardio-pulmonary resuscitation (CPR), and **WILDERNESS FIRST RESPONDER** methods. This training can save lives when professionals are hours away.



Effective emergency response depends largely on how fast responders can locate the situation. Enhanced 911 Service, now recognized as a necessity for public safety, displays the caller's address, along with a map, on the dispatcher's computer screen. It is only effective if streets are named and marked in a way that responders can understand easily. Efforts to standardize street names and addresses countywide began in early 2002.

Ideally, major developments should incorporate at least two points of ingress and egress for adequate emergency **ACCESS**. Where this is not feasible, other mitigation measures may be appropriate. Developers should also consider the availability of local emergency services.

Goal: Ensure emergency services and response to meet residents' needs.

Policies:

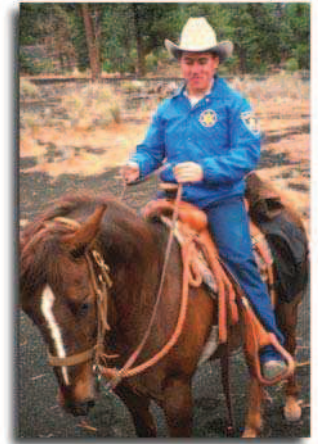
12. The County places a high priority on the rapid and effective identification of properties by public safety personnel and emergency response agencies.
13. The availability of adequate emergency services and emergency access routes shall be considered in the review of major developments and subdivisions.
14. An emergency response mitigation plan shall be incorporated in development projects located in remote areas without nearby emergency medical services.



15. The County encourages emergency medical services and response agencies to locate facilities in communities so as to be accessible to and compatible with surrounding neighborhoods.

Law Enforcement

Coconino County's large geographic extent and widely separated communities create challenges for law enforcement, particularly in unincorporated areas. The Sheriff's Office is the lead law enforcement agency in such areas. Its services include community patrol, traffic enforcement, accident investigation, criminal investigation, civil process, County jail operation, and search and rescue. The Sheriff uses **COMMUNITY-BASED POLICING** to encourage deputies to work actively with the community to identify and solve problems. One aspect of community-based policing is assigning deputies to outlying unincorporated areas. Volunteers supplement the staff of full-time officers, increasing the physical presence of the Sheriff's Office. However, because there will likely never be enough officers to respond immediately to every situation in every corner of the county, residents of remote, outlying areas must accept a certain amount of responsibility for their safety and security. To ensure a reliable provision of services, it is necessary for the Sheriff's Office to work closely with other local, state, and federal law enforcement agencies throughout Coconino County. Effective cooperation and coordination is especially critical in maintaining safe, crime-free rural and wildland areas where tens of thousands of tourists, campers, and hunters congregate throughout the year.



Certain community design approaches can prevent crime by addressing conditions that create public safety concerns. **CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN (CPTED)** involves designing or modifying the physical environment in a way that reduces opportunities for crime and for the fear of crime. Not only can CPTED be cost-effective, but it can also foster a greater sense of community.

As the county's population increases, demands for law enforcement services increase. The most common issues are related to traffic, juveniles, domestic violence, unsafe firearm use, and improper **OFF-HIGHWAY VEHICLE** use. Crime-prevention programs can help relieve the pressure on law enforcement; they include community outreach and education, block-watch, and community-based youth programs. Providing adequate law enforcement services to meet the demands and expectations of an increasing population requires an ongoing assessment of needs and a corresponding commitment of resources.

Goal: **Ensure safe, crime-free neighborhoods and communities.**

Policies:

16. The County places a high priority on providing high quality professional law enforcement services.
17. Incorporating the concepts and principles of CPTED or similar concepts is encouraged for development projects.
18. In the design of development projects, developers are encouraged to consult with the County Sheriff's Office to identify and address potential public safety issues.
19. Residents and homeowner associations are encouraged to accept a certain amount of responsibility for their personal safety and security and to participate as active partners in neighborhood crime prevention programs in cooperation with the County Sheriff's Office.
20. The County encourages and supports the establishment of organized youth activities, including employment training and community service programs as a crime-prevention strategy.



WALT DISNEY

"All our dreams can come true—if we have the courage to pursue them."



Community Services

Introduction

Many entities provide community facilities and services—the County, state and federal agencies, special districts, and the private sector. Maintaining a high degree of coordination between these providers helps ensure that adequate facilities are available and improvements keep pace with **DEVELOPMENT**. By proactively siting facilities and infrastructure, we can help direct the future development patterns proposed in the Land Use Element. Proactive planning will also minimize potential environmental impacts.

This Element addresses community services related to utilities, telecommunications infrastructure, solid waste disposal, and **WASTEWATER**. It also covers the County’s role in promoting infrastructure for health and human services and education. The goals and policies are designed to ensure that we plan for adequate services and facilities, either during the land development process or through appropriate government programs.

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The Conservation Framework Relationship

The goals and policies in this Element are strongly related to the **CONSERVATION FRAMEWORK**. Developing new infrastructure can negatively affect the environment if we do not consider potential impacts during planning. Major utility corridors containing high-voltage power lines and other infrastructure may cause **HABITAT FRAGMENTATION** and disrupt wildlife movement. This Element address ways to conserve valuable water resources by reusing treated wastewater or allowing it to recharge **AQUIFERS**. Another conservation-oriented goal is reducing the amount of solid waste we send to landfills.

All five ecological principles of the Conservation Framework apply to the goals and policies in this Element. In addition, **CONSERVATION GUIDELINES A, B, D, & E** are particularly important to making land use decisions that consider wildlife; likewise, **CONSERVATION GUIDELINE G** addresses the importance of conserving our precious water resources.

Our Purpose & Vision

Our county vision includes having adequate public facilities to support desirable land use and development patterns while conserving natural resources. It also involves having quality health and human services, as well as effective, accessible educational opportunities. The *Coconino County Comprehensive Plan* establishes policies that provide guidance for siting utility infrastructure in a way that respects our community character, scenic resources, and ecological integrity. These policies also encourage environmentally compatible solid-waste management and wastewater treatment methods and endorse the best available telecommunications services and infrastructure.



Utility Services & Corridors

Local utility services are generally critical to development. Public utility companies provide water, electricity, telephone, natural gas, and cable television services under the regulatory authority of the **ARIZONA CORPORATION COMMISSION**. In some cases, utilities are also provided by special **IMPROVEMENT DISTRICTS**. Unlike some municipalities, Coconino County does not provide utilities. However, the County considers the availability of utilities when reviewing **SUBDIVISION** proposals and when siting local utility generating plants, substations, reservoirs, and similar installations through the **CONDITIONAL USE PERMIT** process. It must also consider the effects of infrastructure and natural resource use on the environment.

CONDITIONAL USE PERMIT

A permit issued by the Planning & Zoning Commission for a use that is allowed within a zoning district after a public hearing. With approval, the Commission typically applies certain conditions on the location and operation of this use

Utilities are a consideration in determining appropriate development patterns. For example, in areas that lack public utilities, very low-density development is often considered most appropriate. Conversely, where utilities exist and installing infrastructure is efficient and cost effective, high-density development is generally more feasible. One way to reduce environmental impacts, along with utility and infrastructure costs, is to implement **INTEGRATED CONSERVATION DESIGN** techniques in new developments. Another way is to reduce the need for utility infrastructure through long-term solutions—energy **CONSERVATION**, alternative energy sources, public transportation, and **WATER CONSERVATION**.

Utility providers are included in the earliest stages of the subdivision review process. The County works with them to determine whether utilities are available, whether infrastructure upgrades are needed, and whether additional easements or other improvements are needed. The *Coconino County Subdivision Ordinance* requires that developers provide a certain level of utility infrastructure depending on the subdivision classification, which varies according to average lot size. Subdivisions with the smallest average lot size (and therefore the highest density) require the highest level of utility improvements. As average lot size increases (and density decreases), fewer utility improvements are required. On the other hand, lands developed through **LOT SPLITS** are not subject to the same level of improvements required for subdivisions. In those situations, individual builders work directly with utility providers for line extensions. In remote areas, line extensions, transformers, and other equipment are often cost-prohibitive for individual property owners.

Major utility corridors—those carrying high-voltage power lines, natural gas or coal slurry pipelines, and underground fiber-optic cables—present challenges on a **LANDSCAPE** scale. These corridors cross tribal, federal, state, and private land-management jurisdictions. Although the County typically has no regulatory authority in siting these lines, it participates in the public review process and has historically requested that they follow existing infrastructure routes. These corridors play an important role in development. Because permanent structural improvements are usually impossible in utility corridors and easements, they may limit development. In addition, because of their size and linear orientation, these corridors can cause **HABITAT FRAGMENTATION**, disrupt wildlife movement patterns, and change hydrologic patterns. However, through creative planning and management approaches, corridors can be designed to minimize impacts. They may even be incorporated into developments as amenity features for **TRAILS, OPEN SPACES, or GREENWAYS**.

Goal: Promote the installation of utilities in a manner compatible with community character, scenic resources, and ecological conditions.

Policies:

1. Approval of development projects shall be considered only if public utilities or alternative technologies necessary to serve the use are available or can be provided by the developer.



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2. Utilities infrastructure shall be located in a manner sensitive to environmental and scenic resources. *SEE CONSERVATION GUIDELINES: B, C, E, F*
3. The County encourages placing utility distribution lines underground whenever possible; where above-ground utility infrastructure and facilities are installed, all efforts should be made to minimize environmental, visual, and aesthetic impacts. *SEE CONSERVATION GUIDELINES: A, C, K*
4. The County encourages utility providers to locate new transmission lines, pipelines, and other transcounty utilities in existing infrastructure corridors whenever possible. *SEE CONSERVATION GUIDELINES: A, C, E, F*
5. The County encourages cooperation between developers and the owners of utility corridors to use such corridors for trails, open space, and greenway features. *SEE CONSERVATION GUIDELINES: B, C*

Telecommunications Infrastructure

Efficient telecommunications infrastructure is necessary for public safety, convenience, economic development, and educational outreach through distance learning. In areas without land lines, wireless communication may be the most feasible option for basic telephone service. However, towers and related structures are often considered unsightly when they impact the aesthetic qualities of surrounding landscapes. It is important to balance our need for the best available telecommunications services with the need to protect our valuable scenic resources and maintain neighborhood character.

Under the federal *Telecommunications Act of 1996*, local governments must accommodate telecommunications infrastructure; furthermore, they may not adopt regulations that would ban such facilities or inhibit competition among providers. However, local jurisdictions may regulate the siting of such facilities. Identifying appropriate sites requires collaboration between the County, providers, land management agencies, and the public. It involves identifying technical requirements and exploring ways to limit the number of structures to the minimum necessary for service, mitigate the visual impact of these structures, and minimize impacts to wildlife **HABITAT**.

In 2001, the **BOARD OF SUPERVISORS** amended the *Coconino County Zoning Ordinance* to establish a process, performance standards, and guidelines for siting and constructing wireless telecommunications facilities. These facilities, with a few exceptions, require a **CONDITIONAL USE PERMIT** from the **PLANNING & ZONING COMMISSION**. The ordinance specifies zoning classifications and indicates where such facilities are permitted. It also includes a prioritized list of preferred types of locations, as well as a list of sites which have higher **CONSERVATION** values. Performance standards and design requirements stipulate maximum height, setbacks, color, and materials.

Goal: Promote telecommunications service development while preserving the visual character of communities and landscapes.

Policies:

6. Telecommunication facilities shall be sited in a manner that is in harmony with neighborhood character, scenic resources, wildlife and their habitat, and the surrounding environment. *SEE CONSERVATION GUIDELINES: B, C*
7. The County promotes the conservation of landscape-scale viewsheds through the efficient and effective development of telecommunication infrastructure.

SEE ALSO PAGE 78

Community Character: Scenic Vistas & Viewsheds



Solid Waste



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Managing solid waste is an important consideration in community planning. In Coconino County, we manage solid waste by recycling it or burying it in a landfill, most often the City of Flagstaff's Cinder Lakes Landfill in Doney Park. One major private hauler has also constructed a transfer facility and hauls waste to a landfill in Joseph City in Navajo County. The City offers curbside recycling services and transports recyclables to a materials-recovery facility on Butler Avenue. In unincorporated areas, however, recycling is subject to individual initiative. Some private haulers offer recycling services, and individuals can haul their recyclables to the Flagstaff facility. Efforts are ongoing to increase recycling to reduce the amount of waste hauled to landfills.

The *Subdivision Ordinance* requires subdividers to indicate in their development proposal the distance between the new development and an approved sanitary landfill or solid-waste transfer station. If this distance exceeds 10 miles, the subdivider must form a sanitation district to construct, operate, and maintain a new facility. This requirement may be waived if the subdivision is served by adequate private collection.

Goal: Reduce solid waste and minimize the impact of its disposal.

Policies:

8. In coordination with waste hauling services, residents, and businesses, the County supports efforts to reduce the quantity of solid waste and to maximize the recovery of all recyclable materials. *SEE CONSERVATION GUIDELINES: G, I*
9. Proposed methods of solid waste disposal and recycling must be considered in the planning for major developments and subdivisions. *SEE CONSERVATION GUIDELINES: G, I*

Wastewater

The goal of **WASTEWATER** regulation is to protect **GROUNDWATER**, the environment, and public health. The **ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ)** regulates community wastewater systems and the Coconino County Environmental Health Division regulates on-site wastewater systems—septic leach fields and other systems—as delegated by ADEQ.

Methods for handling wastewater depend on the nature of the site and the density of development. In most unincorporated county areas, individuals have on-site systems. In low-density areas with good soils and deep groundwater, these systems generally work well. However, some areas have poor soil conditions or high seasonal groundwater levels, which can make on-site systems difficult and expensive to develop. Some alternative on-site systems treat wastewater to a higher quality than most community plants. Reusing this treated wastewater—or **RECLAIMED WATER**—on site benefits **WATER CONSERVATION** and **AQUIFER RECHARGE**. Also, federal and state aquifer protection rules allow “cluster systems” to serve several adjacent properties. In addition, **INTEGRATED CONSERVATION DESIGN** techniques can provide benefits in areas where individual on-site systems are difficult or impractical.

A few unincorporated communities are served by centralized wastewater treatment systems, most of which are privately owned and operated. Centralized systems are beneficial for many reasons, especially for high-density development where lot sizes are too small to accommodate individual systems. The disadvantages of centralized systems are that they require a large amount of infrastructure, they are expensive to build and operate, and they sometimes fail, resulting in massive overflows or spills of untreated sewage into the environment. Another negative aspect of centralized treatment systems is that they often discharge the treated wastewater outside of the aquifer where it originated.

SEE ALSO

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Water Resources: Water Quality



John Aber



Using reclaimed water can serve several conservation goals. Reclaimed water can be used to create community amenities or **OPEN SPACE** features. It can also be used to irrigate golf courses, playing fields, and landscaping; to create or enhance **WETLAND HABITAT**; to augment or maintain water flow in streams; and to recharge groundwater. For example, the Kachina Village wetlands project benefits wildlife **SPECIES** and creates amenities such as walking **TRAILS**. It also provides educational and research opportunities, and facilitates a cooperative partnership between the Kachina Village Improvement District (KVID), **NORTHERN ARIZONA UNIVERSITY (NAU)**, Arizona Game and Fish, Ducks Unlimited, and the Northern Arizona Audubon Society, among others.

Goal: Promote environmentally compatible wastewater disposal methods.

Policies:

10. The County encourages the use of environmentally sensitive on-site wastewater treatment systems and cluster systems in conjunction with other integrated conservation design techniques wherever possible in lieu of conventional septic systems. *SEE CONSERVATION GUIDELINES: G, I*
11. Development projects that include centralized community wastewater systems are encouraged to recycle or reuse treated wastewater for environmentally beneficial uses. *SEE CONSERVATION GUIDELINES: G, I*

Health & Human Services

Coconino County provides a broad range of services to groups such as the poor, the elderly, children and youth, and the disabled. The County provides these services through its Departments of Community Services and Health Services. Other service providers include the **NORTHERN ARIZONA COUNCIL OF GOVERNMENTS (NACOG)**, various state agencies, and the private sector.

The County encourages other agencies and the private sector to establish health care facilities, medical facilities, and other human services. Providers should coordinate with the County to ensure that services are appropriately integrated into the communities where they are needed most. The conditional use permit process provides a forum for public review to ensure that siting of new facilities reflects the neighborhood character and enhance public health, safety, and welfare.

A number of public health threats may affect residents exposed through contact with insects, rodents, and wildlife, or through household pets that have contact with such carriers. The Environmental Health Division routinely issues public health advisories when outbreaks occur and provides public information about symptoms and prevention. As population increases in rural areas, the County's role in public education will become more important. Residents in these areas also must accept responsibility for recognizing such hazards and taking preventive actions to protect their homes, properties, and domestic animals from exposure to disease-causing agents.

Goal: Ensure high-quality health and human services.

Policies:

12. In coordination with health and human service organizations, the County promotes establishing health and human services and appropriate facilities in a manner compatible with surrounding neighborhoods and with consideration to both existing and potential future populations. *SEE CONSERVATION GUIDELINES: B, K*



13. Development projects shall avoid creating conditions that increase opportunities for the breeding or proliferation of disease-causing agents carried by insects, rodents, wildlife, or other vectors.

Education

Coconino County offers a wide array of educational opportunities. **COCONINO COUNTY COMMUNITY COLLEGE (CCC)** and NAU offer continuing education. CCC has two campuses in Flagstaff, and one each in Page, Williams, and the Grand Canyon. CCC offers associate degrees within transfer-oriented programs, as well as professional / technical certificates and degrees. NAU offers both undergraduate and graduate degree programs. NAU's main campus is located in Flagstaff, with distance-learning facilities in Page (co-located at the CCC campus) and Tuba City. Students can also take classes at CCC and NAU via instructional television or the Internet. Coconino County has nine school districts, providing services to over 20,000 school-aged children in 2002. There were also 15 charter schools at that time, to which 1,500 students attended. The majority of charter schools are in Flagstaff; others are in Leupp, Alpine Ranchos, and Page. Home schooling has also been a popular alternative for about 1,000 students. Other schools located within county boundaries are operated by tribal governments and the **BUREAU OF INDIAN AFFAIRS**.



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The Coconino County Career Center in Flagstaff provides training for youth and adults who want to enter or re-enter the workforce. Open to anyone, the center offers job listings, computers, phones, and a fax to help job seekers develop applications and resumes. Assistance for low-income customers includes basic education and vocational training.

The County Superintendent of Schools is elected to provide fiscal processing and educational programming support to the schools and residents of Coconino County. Mandated responsibilities include: maintaining teacher and administrator certification records; filing reports with the state school superintendent; keeping a register of and drawing warrants for school district expenditures; providing assistance to school

districts and charter schools on the use of student data, staff development, curriculum alignment, and technology; arranging for election services to school districts; maintaining affidavits of home schooling; and appointing governing board members to fill vacancies. Although not mandated, the County Superintendent also operates an accommodation school for at-risk and detained students and serves as a fiscal/project administrator for several specialized education programs that extend beyond the boundaries of individual school districts.

Goal: Provide for effective and accessible educational opportunities.

Policies:

14. In the review for expansion or development of existing or new schools, considerations should be made so that all areas of the county are adequately served, especially in the large growth areas with high populations of school-aged children. SEE CONSERVATION GUIDELINES: A, B, C
15. The County supports the development and implementation of distance-learning capacity into all educational programs.



Circulation

Introduction

The vast geographic scale and topographic variation in Coconino County make travel a challenge to visitors and local residents alike. These physical characteristics not only influence transportation planning but they also impact our ability to construct and maintain an efficient, affordable **CIRCULATION SYSTEM**. The airports, rail lines, highways, and **TRAILS** move large volumes of materials and millions of people, including nearly 5 million visitors annually to Grand Canyon National Park. Our limited funding resources dictate a continuing emphasis on maintaining existing systems rather than pursuing new roadway construction and other improvements.

This Element provides guidelines for managing and improving the county’s circulation system. The goals and policies strive to balance our need for providing safe and efficient travel opportunities throughout Coconino County with our need to preserve the county’s rural and scenic character.

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The Conservation Framework Relationship

The goals and policies in this Circulation Element are strongly related to the **CONSERVATION FRAMEWORK** because roadways, rail lines, airport facilities, and trails require physical footprints. Without sound, conservation-based planning, this infrastructure can fragment or damage **HABITAT**, limit wildlife movement, introduce pollutants and non-native **SPECIES**, cause adverse hydrologic impacts, and create excessive noise. Conserving natural resources requires that our circulation system incorporate **MULTIMODALISM**.

All five ecological principles apply to this Element. In addition, because of the potential for habitat fragmentation, **CONSERVATION GUIDELINES A, B, C, & E** are especially important. We must also take care to follow conservation guideline F, which addresses nonnative species, during roadway maintenance.

Our Purpose & Vision

Our county vision involves providing sufficient infrastructure in rural areas to facilitate safe access for all modes in a way that minimizes impacts to the **NATURAL ENVIRONMENT**. The *Coconino County Comprehensive Plan* establishes policies that increase the efficiency and safety of our circulation system while meeting the access and mobility needs of residents, including needs for nonmotorized and alternate modes of transportation. These policies also focus on improving transit service in unincorporated areas, providing infrastructure for alternatives to motorized vehicle travel, and supporting the development of **MULTIMODAL CORRIDORS**. Finally, they support air travel while protecting human and natural communities from adverse impacts of aircraft and associated facilities.



Roadways

Coconino County features many types of roadways—federal and state highways, a variety of County roads, U.S. Forest Service roads, and private roads, among others. Our primary, long-distance roadways include federal interstate highways, U.S. highways, and designated State Routes. Two major highways serve crucial circulation roles for Coconino County—Interstate 17, which heads south to Phoenix, and Interstate 40, the only east-west roadway extending across the county. U.S. highways in Coconino County primarily serve north-south traffic.

Circulation System in Coconino County



County roads range from local neighborhood roads to long-distance, intercounty roads. As of 2002, the Coconino County Public Works Department maintained and improved 1,228 miles of road within unincorporated areas. Of these, only 250 miles were asphalt; the remainder were gravel or cinder. The Public Works Department uses a **FUNCTIONAL CLASSIFICATION SYSTEM** to schedule capital improvements and maintenance for County roads, and to plan neighborhood circulation patterns. In 2002, these roads included 75 miles of **MINOR ARTERIALS**, 15 miles of **MAJOR COLLECTOR ROADWAYS**, 112 miles of **MINOR COLLECTORS**, and 1,026 miles of **LOCAL ROADWAYS**. A classification of “local narrow residential street” was added in 2001.

Other roadways and transportation infrastructure in the county are maintained by the Bureau of Indian Affairs, the Bureau of Land Management, the U.S. Forest Service, the National Park Service, the **ARIZONA DEPARTMENT OF TRANSPORTATION (ADOT)**, and incorporated cities.³⁶ In some areas, Coconino County enters into intergovernmental agreements with these agencies to maintain roadways. The County **BOARD OF SUPERVISORS** and staff participate in the planning efforts of these organizations.

Unincorporated county areas also contain hundreds of miles of **PRIVATE ROADWAYS** in residential

areas where properties have been developed through the minor land-division process. They also occur in platted **SUBDIVISIONS** where paving waivers have been approved, in subdivisions that do not desire County maintenance, and in older subdivisions where roadways were never improved to County standards and thus never accepted for County maintenance. By statute, the County cannot improve or maintain private roads.

Land use and circulation are inextricably linked. Population growth increases traffic volumes and vehicle trip lengths; in rural Coconino County, considerable distances often separate residential areas from commercial areas and employment centers. In addition, land uses that generate relatively high traffic volumes, such as convenience stores and restaurants, affect the flow of traffic on adjacent roadways. In areas with low-density residential development, virtually every trip requires the use of an automobile.

FUNCTIONAL CLASSIFICATION SYSTEM

An established roadway hierarchy that accounts for the roadway's purpose, its character given the adjacent land uses, and its role in supporting multimodalism.

SEE ALSO

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Maintenance & Improvements
– Improvement Districts



Goal: Maintain a circulation network that is safe, efficient, and complementary to local communities and the environment.

Policies:

1. The County will coordinate land use and circulation planning activities to encourage comprehensive and efficient land development patterns that support adjacent land uses, complement the character of communities and adjacent neighborhoods, and minimize impacts to the natural environment. *SEE CONSERVATION GUIDELINES: C, E*
2. The circulation system should facilitate the movement of goods, services, and people throughout Coconino County in support of existing economic activity and economic reinvestment.

Public & Private Transit Systems

Transit service is extremely limited within unincorporated Coconino County and outside the boundaries of the **FLAGSTAFF METROPOLITAN PLANNING ORGANIZATION (FMPO)**. Coconino County provides fixed-route service (“Mountain Line”) within the incorporated limits of Flagstaff. It also provides door-to-door **PARA-TRANSIT** service (“VanGo”) for persons with disabilities within Flagstaff as well as in some unincorporated FMPO areas. A 5-year transit plan adopted by the Board of Supervisors specifies improvements to transit service within the FMPO boundary. As of 2002, it included no plans to extend Mountain Line or VanGo service to areas outside the FMPO or to provide additional transit services in other areas of the county.

Fixed-route, intercity service is available in the Navajo Nation between Tuba City and Window Rock. This is the only route maintained by the Navajo Transit System that has a destination within Coconino County. Private intercity transit service is available from Flagstaff to destinations within and outside of the county. In 2003, these private services included vans from Flagstaff to Phoenix and Grand Canyon National Park, and seasonal service between the North Rim and South Rim of the Grand Canyon. The Greyhound bus terminal in Flagstaff provides intercity service to other locations around the country.

Amtrak passenger rail service is available in Flagstaff and Williams. The Southwest Chief leaves each city twice daily—once westbound, en route to Los Angeles, and once eastbound, en route to Chicago. Service from Williams to Grand Canyon National Park is available on the historic Grand Canyon Railway. This train makes one round trip to Grand Canyon National Park daily.

Goal: Improve rural and regional transit service opportunities.

Policies:

3. As communities continue to develop and populations increase, the County supports opportunities to enhance and expand local, regional, and interjurisdictional transit services.
4. Consideration should be given to providing public transit access or sites for future transit infrastructure development in the review of major developments and subdivisions. *SEE CONSERVATION GUIDELINE: K*



Airports & Airspace



Grant Cooper



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Arizona's primary airport system in Coconino County includes commercial airports in Flagstaff, Grand Canyon National Park, and Page. It also includes public-use airports in Tuba City, Williams, and Valle. A few public airports fall under the secondary classification system—Marble Canyon, Cliff Dwellers, and Leupp/Painted Desert. Commercial air service connects the county to Phoenix and other points. Air service also serves an important role in delivering freight and goods that would otherwise travel by truck or rail. Coconino County has no jurisdictional authority over the administration and planning of airport facilities.

Scenic flights over areas such as the Grand Canyon and Oak Creek Canyon are popular with tourists and generate revenue for tour operators. Most fly to Grand Canyon National Park from either Grand Canyon National Park Airport, Page Municipal Airport, or McCarran International Airport in Las Vegas. Park users have expressed concerns about noise generated by flights over **WILDERNESS AREAS**. Congress adopted the *National Parks Overflights Act* in 1987 to provide for “substantial restoration of the natural quiet and experience of the park and protection of public health and safety from adverse effects associated with aircraft overflights.” The **FEDERAL AVIATION ADMINISTRATION (FAA)** implemented regulations on overflights in 1988 and strengthened those rules in 1994. These regulations limit hours of operation, specify permissible flight corridors and minimum altitude requirements, and implement no-fly zones. They continue to be the subject of debate among air tour operators, owners of private aircraft, residents, visitors, and environmental groups.

Goal: Support air travel opportunities while minimizing the impacts on human and natural communities.

Policies:

5. The County supports improved air service at existing commercial airports as a means of moving passengers and goods between both urban and rural communities in Coconino and surrounding counties.
6. As renovations or expansions are proposed for airport facilities (including private airstrips and heliports), compatibility with local land use patterns should be considered and adverse impacts from aircraft noise minimized. *SEE CONSERVATION GUIDELINE: I*
7. To preserve the quality of visitor experiences, the County supports efforts to enforce existing flight restrictions and no-fly zones over national parks. *SEE CONSERVATION GUIDELINE: I*

Nonmotorized Circulation

Opportunities for nonmotorized travel in Coconino County are limited. Although the county features hundreds of pedestrian and bicycle **TRAILS**, they are used almost exclusively for recreational purposes on Forest Service or Park Service lands. Almost all opportunities for pedestrian travel are found within incorporated cities and towns, as well as within the boundaries of the **FMPO**. Likewise, most bicycle commuting is also confined to cities and the FMPO area. Although state and County highways feature no designated bicycle lanes, state law allows bicycle **COMMUTERS** to use widened shoulders unless otherwise posted. However, the great distances between populated areas of the county severely limit bicycling as a viable choice for most people.

SEE ALSO

PAGE 65

Parks & Recreation: Trails



Goal: Improve nonmotorized circulation networks and provide greater opportunity for alternative modes of travel.

Policies:

8. The County encourages development projects to provide infrastructure for nonmotorized travel, and when appropriate for new developments along major roadways, the County shall require the installation of trails and bicycle lanes. SEE CONSERVATION GUIDELINES: G, H
9. In coordination with ADOT, the Forest Service, and land managers and owners, the County promotes the connection of existing neighborhoods and communities (at both a local and regional scale) with trails, nonmotorized, and multimodal facilities.
10. Multimodal and nonmotorized travel facilities should be designed to complement and enhance local community character and provide opportunities for interaction among residents.
11. Where pedestrian and bicycle routes exist on adjacent properties, major developments and subdivisions must maintain connections and continue the cohesive development of the nonmotorized circulation network.
12. The County shall set an example of incorporating pedestrian and bicycle travel infrastructure into the redevelopment or new construction of County collector and arterial roadways, and supports efforts to incorporate nonmotorized facilities into state highway redevelopment projects. SEE CONSERVATION GUIDELINE: G



Infrastructure Design & Development

Economic influences such as logging, ranching, tourism, and recreation have played a role in developing the county's **CIRCULATION SYSTEM**. Historically, much of this system evolved to provide access to agricultural, public, and residential lands—it was not developed in anticipation of new growth areas. Today, the design of circulation infrastructure is based primarily on the *Coconino County Engineering Design & Construction Criteria* manual³⁷, adopted by the **BOARD OF SUPERVISORS** in 1991 and updated subsequently. The manual contains guidelines for designing roadways and accompanying pedestrian, equestrian, and bicycle facilities. Based on the County's **FUNCTIONAL CLASSIFICATION SYSTEM**, these guidelines specify engineering and **RIGHT-OF-WAY** requirements for roadways built through the private development process as well as through capital improvement projects.

The *Coconino County Subdivision Ordinance* contains minimum development standards for circulation infrastructure in platted **SUBDIVISIONS**. Requirements for roadway and nonmotorized transportation improvements depend on the minimum lot size of properties in the subdivision and the functional classification of roadways. Paved roads are required for all new subdivisions, although developers can apply for a paving waiver if lot sizes are 2½ acres or greater. Roadways with paving waivers will not be accepted into the County maintenance system; they must be maintained by a homeowners association using the same criteria as County-maintained roads.

Practically all circulation corridors in unincorporated areas of Coconino County provide infrastructure for only one transportation mode—travel by motorized vehicle. This reality will likely continue for the foreseeable future. Efforts have been made within the **FMPO** boundaries to plan for a more balanced circulation system that includes **MULTIMODAL CORRIDORS**. Amenities such as bike lanes, pedestrian and equestrian facilities, and bus turnouts may not be incorporated into roadway designs for the rural county in the near future. However, adding features such as wide shoulders into reconstruction projects would accommodate these amenities at little or no additional cost in the future.

SEE ALSO PAGE 56

Roadways – Functional Classification System

MULTIMODAL CORRIDORS

Physical, linear areas containing the infrastructure that supports travel by both motorized and nonmotorized circulation.



Goal: Ensure the quality design and development of circulation systems.

Policies:

13. Before considering capacity improvements, the County encourages the preservation, improvement, and (where appropriate) redevelopment or restoration of existing circulation infrastructure. *SEE CONSERVATION GUIDELINES: C, H, K*
14. The County promotes the development of multimodal and public transit opportunities as preferred alternatives to new roadway capacity improvements along highly traveled and congested travel corridors.
15. Circulation infrastructure in major developments and subdivisions should be designed based on the principles of integrated conservation design.
16. In consideration of federal, state, and local environmental requirements, circulation infrastructure should be developed in a manner that promotes energy efficiency, protects air quality, and preserves historic, scenic, cultural, and environmental resources. *SEE CONSERVATION GUIDELINE: G*
17. To protect unique natural areas and preserve wildlife habitat and movement areas, the County encourages creative design of circulation infrastructure improvement projects. *SEE CONSERVATION GUIDELINES: B, C, E*



John Aber

18. Private property owners are encouraged to meet minimum County standards for rights-of-way when private easements are created.

19. The County supports the use of special design features such as interpretive signage, turnouts and landscape treatments for infrastructure that provides access to major tourist destinations.

Maintenance & Improvements

Coconino County is responsible for maintaining and/or improving three types of roadways.³⁸ The first type includes the roads it owns—roads that have been built to County engineering standards, located on County rights-of-way, and accepted by the **BOARD OF SUPERVISORS**. The second type, “cooperative” roads, includes roads located on properties that the County does not own but maintains through intergovernmental agreements with other jurisdictions, including incorporated cities, **ADOT**, the Forest Service, and the Navajo Nation. The third type includes primitive roadways located on easements or **RIGHTS-OF-WAY** that have not been accepted as official County roads, but have been

open since June 13, 1975; the maintenance of these roadways has been “grandfathered” into the system by the Board of Supervisors.

Property owners are responsible for maintaining and improving private roads adjacent to their land. Because these responsibilities are not enforced, however, private road maintenance is generally haphazard or nonexistent. Liability rests with property owners as well; those who neglect roadway maintenance could face legal consequences if someone pursues civil action. Private roads are generally local, with low **AVERAGE DAILY TRAFFIC (ADT)** volumes. Nevertheless, local residents use them every day. These roads often present problems because the public cannot address issues related to dust control, maintenance and snowplowing, and access by emergency vehicles, mail carriers, school buses, pedestrians, bicycles, and equestrians.



John Aber



Coconino County has insufficient financial resources to pave all existing unpaved roadways.³⁹ However, **IMPROVEMENT DISTRICTS** provide a mechanism for property owners to pave, grade, maintain, or otherwise improve all or part of a street. Improvements must adhere to minimum County standards and *Arizona Fire Code* access road standards. In addition, those owning property fronting the roadway must deed the necessary right-of-way to the County. Once improved, these roads are eligible to be accepted by the Board of Supervisors as County roads, which are eligible for perpetual County maintenance. In most cases, improvement districts provide the only way for residents to get County and private roads paved. Another option that residents can use to establish a road maintenance program is forming a type of improvement district known as a Road Maintenance District. To be eligible, residents must improve roads to a minimum, County-defined condition rather than to County road standards. Maintenance is performed by a private contractor under the administration of County staff. Residents pay for this maintenance annually as long as the district exists.

Goal: **Improve and maintain circulation infrastructure while protecting the environment and community character.**

Policies:

20. To support local improvement initiatives, the County encourages the formation of improvement districts for previously developed areas.
21. The County will program improvements which are designed, built, and operated to minimize air, water, and noise pollution and the disruption of natural surface water drainage in compliance with provisions and requirements of applicable federal, state, and local environmental regulations. *SEE CONSERVATION GUIDELINES: C, F, I*
22. The County promotes safety improvement and maintenance projects for circulation infrastructure (including snow and ice removal) which are consistent with conservation and ecosystem protection. *SEE CONSERVATION GUIDELINES: A, C, I*

Access Management & Safety

Protecting the traveling public's safety is a primary objective that the Public Works Department achieves by programming projects for the **CAPITAL IMPROVEMENT PLAN (CIP)**, regularly maintaining roadways, and establishing design requirements for new improvements. Both the Sheriff's Office and the Public Works Department maintain vehicle accident data for County roads to help prioritize programming, adjust maintenance schedules, or otherwise improve potentially unsafe situations. In addition to maintaining roadways, bridge facilities are regularly inspected and maintained to ensure safety.

TRANSPORTATION SYSTEM MANAGEMENT (TSM) is a process that facilitates minor efficiency improvements to enhance the safety and operation of roadways without making major capital investments. One TSM technique, **ACCESS MANAGEMENT**, improves roadway capacity and increases safety by regulating vehicular access to public roadways from adjoining properties. The types of land uses that can thrive along transportation corridors depend on vehicle access. Adding access points to a corridor decreases through-trip mobility because vehicles must turn into traffic, creating possible conflicts. Access management techniques can mitigate these conflicts. Common ones include adding medians, frontage roads, common driveways and parking lots, as well as controlling driveway spacing and improving the circulation patterns within developments adjacent to the roadway. Access management techniques should consider **ADT** volumes and **FUNCTIONAL CLASSIFICATION** of the roadway. In March 2002, the Board of Supervisors approved recommendations in the first access management study⁴⁰ to improve safety in the State Route 64 corridor



IMPROVEMENT DISTRICT

A local unit of government (other than a city or county), authorized and regulated by statute, that is established for road improvements, water control, irrigation, port districts, fire, hospital, sanitary districts, and regional air quality control.

SEE ALSO

PAGE 99

Growth: Capital Improvements



from the City of Williams to Grand Canyon National Park. This study was a joint project between ADOT and Coconino County.

Goal: Provide for safe travel and access to property.

Policies:

23. To ensure the safe and efficient flow of traffic, the County encourages the use of access management techniques to increase safety and supports development of public transit facilities and services in areas of high vehicle congestion.
24. Where not addressed through the CIP, major developments and subdivisions shall pay for necessary circulation improvements to support access to and within the site.
25. To provide adequate access for emergency service vehicles, circulation infrastructure in major developments, subdivisions, and other residential neighborhoods must provide connectivity to adjacent existing and potential future infrastructure.
26. The County will work with developers to improve safety and circulation efficiency for pedestrians and bicyclists when adjacent roadway improvement or property development occurs.

THEODORE ROOSEVELT

"In any moment of decision the best thing you can do is the right thing, the next best thing is the wrong thing, and the worst thing you can do is nothing."



Parks & Recreation

Introduction

Coconino County’s outstanding scenery and healthy natural environment provide diverse recreational opportunities; these amenities also factor strongly into its economy and quality of life. As our population increases, we face a growing need to maintain adequate **OPEN SPACE** and recreational opportunities and to minimize the potential for them to become overused. Key issues include addressing **WILDLAND/URBAN INTERFACE** conflicts, accommodating diverse uses, protecting natural and historic resources, and ensuring that management agencies coordinate with each other. The County Parks and Recreation Department can help ensure that we not only retain our open space, but also that it remains accessible to all users for its scenic, ecological, recreational, and educational values. This Element characterizes the county’s recreational amenities—its **PARKS**, **NATURAL AREAS**, and **TRAILS**—and provides guidelines for managing and improving them.

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The Conservation Framework Relationship

The mission of the Parks and Recreation Department includes preserving our natural resources, historical resources, **WETLANDS**, and open space.⁴¹ Through sound management, we can protect our resources from degradation and preserve the county’s rare and critical **ECOSYSTEMS**, **HABITATS**, and **SPECIES**, along with its **CULTURAL RESOURCES**.

All five ecological principles factor into the goals and policies of this Element. In addition, **CONSERVATION GUIDELINES C, E, & K** are particularly important because they address human impacts to habitat that could result from overuse of recreational areas.

Our Purpose & Vision

Our vision includes offering a variety of parks and recreational opportunities throughout the county. Therefore, we must not only preserve open space but also protect important natural areas and provide **STEWARDSHIP** for them. We envision a highly integrated system of **ACTIVE** and **PASSIVE** recreational opportunities nested within a community-based network of parks, open spaces, and critical natural areas. The *Coconino County Comprehensive Plan* addresses concerns about parks and recreation by establishing policies that honor our past by protecting historic resources and archaeological sites. These policies also focus on providing recreational access via a trail system that links communities, public lands, and activity centers while maintaining the integrity of ecosystems. They allow **OFF-HIGHWAY VEHICLE (OHV)** use on designated routes but discourage such use where impacts to natural and cultural resources could be significant. The policies in this plan strive to balance our need for providing diverse recreational opportunities with our need to preserve the county’s scenic character.



Natural Areas

SEE ALSO

PAGE 84

Land Use: Landscapes & Open Space

OPEN SPACE

A primarily undeveloped landscape that provides scenic, ecological, or recreational values or that is set aside for resource protection or conservation; an area of managed production such as forestland, rangeland, or agricultural land that is essentially free of visible obstructions.

With exceptional features like the Grand Canyon, Oak Creek Canyon, and national forests and monuments, Coconino County has Arizona's highest visitation rate to outdoor parks and recreation areas⁴² and Flagstaff has the highest number of outdoor equipment shops per capita. Given these statistics, the county has great potential for providing unsurpassed outdoor recreation opportunities—both **ACTIVE** and **PASSIVE**—in the form of **PARKS, TRAILS**, and access to **OPEN SPACE**. Outdoor recreation has become increasingly popular. According to the *National Survey of Recreation and the Environment*, hiking and backpacking comprised the second and third fastest growing outdoor recreation activities in 2002. Bird watching was number one.⁴³

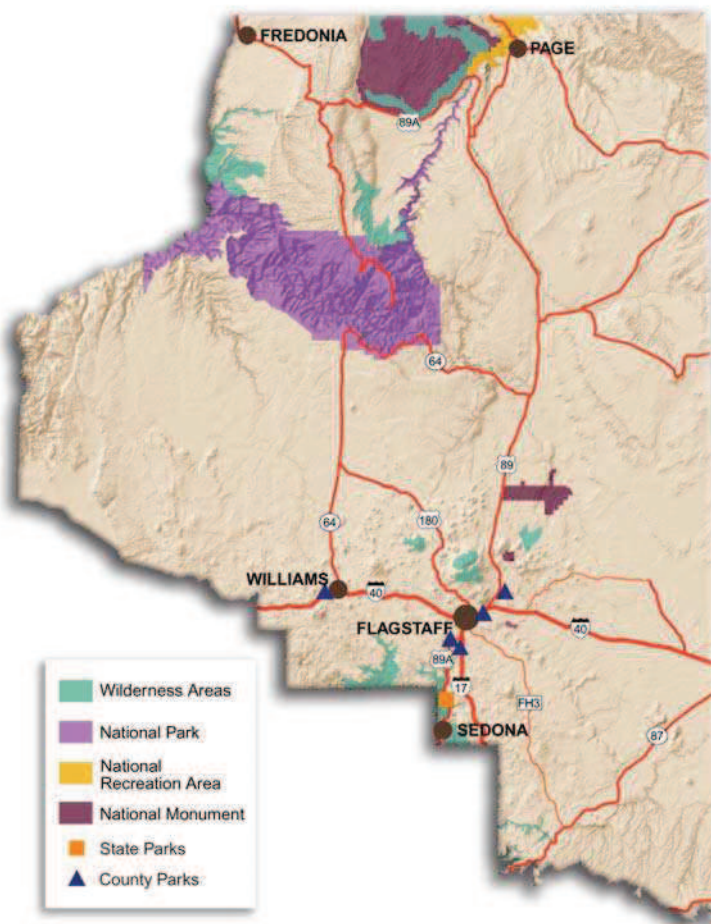
NATURAL AREAS—parks that emphasize the conservation of natural resources—may include linear **GREENWAYS**. Passive recreation activities are permitted in these parks, which may feature amenities such as nonmotorized trails, picnic tables, wildlife observation areas, and **INTERPRETIVE EDUCATION** signs.

Plans are underway to protect unique lands within Coconino County—privately owned land or **STATE TRUST LANDS** that are valuable to wildlife but may be available for develop-

ment.⁴⁴ The **COCONINO PARKS AND OPEN SPACE PROGRAM (CPOS)** looks to fund the acquisition of state trust lands identified as “high priority for retention as open space” by the *Flagstaff Area Open Space and Greenways Plan*.⁴⁵ These lands, which lie outside of Flagstaff's **URBAN GROWTH BOUNDARY**, comprise much of the scenic viewshed and several natural areas surrounding Flagstaff. The City of Flagstaff and Coconino County have also partnered to petition the Arizona State Land Department to reclassify selected state trust lands around Flagstaff, making them eligible for **GROWING SMARTER** grants. These petitions have been submitted under the **ARIZONA PRESERVE INITIATIVE (API)**. However, the funds from *Growing Smarter* and CPOS will be insufficient to acquire all the land designated for open space. Additional funding can be leveraged through partnerships between the County, the City of Flagstaff, community groups, private sources, and, potentially, the federal government.

The County should work with local residents, scientists, and environmentalists to identify lands with the most significant resources and prioritize them. Community stewardship will continue into the future, complemented by research by organizations such as Northern Arizona University's Centennial Forest. The Parks and Recreation Department can manage these lands in a way that allows public access while protecting the resource.

Parks, Monuments, & Wilderness Areas



Goal: Provide for the stewardship of important natural areas.

Policies:

1. The County promotes the protection of important natural resources through collaboration in acquiring, managing, and interpreting natural areas. *SEE CONSERVATION GUIDELINES: B, C, D, E*
2. The County supports access to open spaces for all residents where suitable.

Trails

TRAILS connect people to **PARKS, WILDERNESS AREAS, OPEN SPACE**, neighborhoods, schools, shopping, and work. Popular for recreation, exercise, and commuting, trails are used by walkers, equestrians, hikers, backpackers, runners, birdwatchers, and bicyclists. In Arizona, 77 percent of residents consider themselves recreational trail users.⁴⁶ The county's diverse outdoor recreation opportunities could be enhanced by a comprehensive network of trail systems that features a mixture of recreational and commuter trails linking communities.

In 2000, the Parks and Recreation Department completed an inventory that recorded 168 trails in Coconino County, excluding user-created **SOCIAL TRAILS** that are not recognized or maintained by a land management agency.⁴⁷ Ninety percent of the inventoried trails are managed by federal agencies such as the U.S. Forest Service. Twenty percent—primitive hiking or equestrian trails—lie within designated wilderness areas that are closed to bicycles. Only 17 percent of the trails would be considered urban, or commuter, trails; most of these are part of the **FLAGSTAFF URBAN TRAILS SYSTEM (FUTS)**. Results of the inventory also indicate that most trails are managed for backcountry recreation and may be too challenging or remote for many, reflecting a need to provide a wider range of opportunities for varying abilities, skills, and activities in areas closer to where people live. Of particular concern is the **WILDLAND/URBAN INTERFACE**, where social trails may evolve and create a maze of routes through the forest around a neighborhood. These user-created trails are not maintained and are often poorly located, leading to unwanted ecological, scenic, and social impacts.

The Forest Service began working with Munds Park/Pinewood in 2002 to develop a community trails plan. The resulting plan will develop designated **TRAILHEADS** or forest access points, obliterate unwanted trails, improve existing trails by relocating or redesigning them, establish a logically connected system of trails with clear destinations and linkages, and implement a signage system. This plan is a model for other communities throughout the county. Trail and forest access needs can also be addressed before building a subdivision. Developers submitting proposals could work with the Community Development Department, Parks and Recreation Department, Forest Service, and/or other management agencies to address these needs. In many cases, access can be provided through **TRAIL EASEMENTS** connecting subdivisions to adjacent forestlands.

HISTORIC TRAILS are a unique resource that recounts the travels of early explorers and settlers. These trails enhance tourism, provide educational and recreational opportunities, and commemorate our unique history. Some of the earliest known trails in the county trace the migration corridors of native peoples and the exploratory routes of the Spanish, missionaries, traders, prospectors, soldiers, and settlers. Many of these original corridors were transformed into wagon routes, recreation trails, ranching roads, highways, or train corridors. As of 2002, no trails in the county were designated as National Historic Trails; however, several were under consideration pending the results of studies. The Native American routes that traverse parts of the county are also important resources; they include the Salt Trail, which members of the Hopi Tribe use to enter the Grand Canyon. Only a handful of these trails are known to the public.

SEE ALSO PAGE 58

Circulation: Nonmotorized
Circulation



John Aber



Graff Cooper



Again, partnerships will be essential to identify, protect, and interpret historic trails since the majority cross jurisdictional boundaries. As of 2003, no one had developed a concise list of historic trails or consistent plans across jurisdictions for interpretative education, preservation, or recognition. The County is in a unique position to help coordinate land managers, trail users, neighborhoods, developers, and interest groups in finding common solutions.

Goal: Support a regional system of trails that link communities, public lands, and activity centers.

Policies:

3. The County supports a comprehensive approach to addressing the need for public lands access, continuity of trail networks, provisions for nonmotorized circulation, and resource protection through community trails plans.
4. To protect sensitive natural and cultural resources, the County encourages the identification and development of trails designed to accommodate a high level of use while minimizing impacts to the environment. SEE CONSERVATION GUIDELINES: A, C, D, E, K
5. Development projects must consider and plan for public land access and the design and maintenance of proposed trails, trailheads, and bicycle lanes that meet County guidelines.
6. In coordination with developers, community groups, and land management agencies, the County encourages regional planning of nonmotorized circulation infrastructure and facilities, such as trails and bike lanes, that link destination areas, community activity centers, and where appropriate designated access points to public lands.
7. Partnerships are encouraged among the County, trail managers, trail users, and neighborhoods to improve trail safety and access, user information, volunteer stewardship, linkages between long-distance trails, and recognition of historic trails.

Federal & State Lands



As Coconino County's population has grown, recreational use has surged on both public and private lands.⁴⁸ Recognizing recreation as a land use is important because impacts can be significant in some areas.⁴⁹ Trails and campsites have proliferated in and around populated areas as well as in some heavily visited remote areas. User conflicts have also become a growing concern for land managers. Managing recreational use in a way that minimizes impacts to sensitive areas involves locating facilities appropriately and educating users, particularly in the **WILDLAND/URBAN INTERFACE**, where the County will become the primary provider of recreational opportunities.

Most recreation areas are managed by the federal government, Arizona State Parks, Coconino County, local municipalities, or tribal entities. The federal government manages 54 percent of the 140 sites identified in the *Recreation Resource Inventory*;⁵⁰ most sites involve low intensity uses in the Coconino, Kaibab, or Apache-Sitgreaves National Forests. Municipalities manage 30 percent of the sites; most of these involve higher intensity uses in Flagstaff. The remainder are managed by private, tribal, County, and state entities. The National Park Service manages a variety of sites including national monuments and parks. The



Bureau of Land Management (BLM) and the Forest Service manage vast amounts of undeveloped lands, including **WILDERNESS AREAS** such as Kachina Peaks, Red Rock Secret Mountain, Sycamore Canyon, Paria Canyon, Vermilion Cliffs, and other congressionally designated sites. Virtually all federal land surrounding existing communities is important for **OPEN SPACE** values and recreation.

OHVs present management challenges because the number of users is increasing and vehicles are not always used appropriately. This has not only caused growing conflicts between user groups but also a cumulative degradation of the land. OHVs include sport utility vehicles, pickup trucks, four-wheel-drive and high-clearance vehicles, all-terrain vehicles (ATVs), motorcycles, dune buggies, and snowmobiles. Twenty-one percent of Arizonans consider themselves motorized trail users.⁵¹ Considerable OHV use occurs on lands managed by the Forest Service, BLM, and the State Land Department. OHV users are motivated by the opportunity to observe scenic beauty, enjoy nature, access hunting areas more easily, and escape crowds. They also either enjoy the solitude or the sport and exhilaration of reaching their destination. OHVs also offer recreational opportunities for people with limited mobility such as senior citizens or those with disabilities. Arizona State Parks, the State Land Department, and Arizona Game and Fish Department all have staff dedicated to addressing OHV management and education issues. Arizona State Parks also has an OHV grant program that helps fund management and use projects statewide. Agencies coordinate to share information to address these complex issues more effectively. OHV users and agencies can also work together to address user needs, resource impacts, and user group conflicts. The key to managing OHV use management is improving communication, coordination, and support among agencies and users.

Goal: **Manage recreational uses in a manner that minimizes impacts to communities and the environment.**

Policies:

- 8. The County supports private land managers, management agencies, and citizen groups in their efforts to coordinate planning and maintenance of recreational opportunities that minimize adverse impacts to natural systems and residential areas. *SEE CONSERVATION GUIDELINES: A, I, K*
- 9. The County supports and will assist other agencies with the planning and development of designated OHV routes and educational information that addresses the needs and impacts of OHV users.

County Parks & Recreation Areas

Pressures have increased for additional recreational uses on County, City, and privately owned land. The County Parks and Recreation Department envisions partnering with others to offer a variety of recreational experiences, to provide quality facilities and services, to protect natural and historic areas, and to develop educational opportunities. County **PARKS** can unite people of all ages, ethnicities, and backgrounds.

As of 2002, the Parks and Recreation Department managed six County parks—Fort Tuthill and Sawmill in Flagstaff, Cataract Lake in Williams, Raymond Park and Pumphouse Greenway in Kachina Village, and Peaks View in Doney Park. The County also manages equestrian stables and facilities, campgrounds at both Fort Tuthill and Cataract

WILDERNESS AREA

A congressionally designated area of undeveloped land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions.





Lake, the annual county fair and fairground facility rentals, a performing arts amphitheater, an annual horse racing event, trails at Fort Tuthill, and a segment of the Arizona Trail.⁵²

On November 5, 2002, voters approved a $\frac{1}{8}$ of one cent increase in the county sales tax to fund **CPOS**. The goals of this program are to acquire and protect lands that preserve water quality, **WETLANDS**, forests, wildlife habitat, and other natural areas, as well as parks, trails, historic, and cultural sites. CPOS will fund new facilities: a park in Tuba City, three Navajo interpretive sites, and trails in Fredonia and Doney Park. Proposed **NATURAL AREA** acquisitions include Observatory Mesa, the old growth forest west of Flagstaff (near the Naval Observatory and Arboretum), Rogers Lake, and lands near Walnut Canyon and west of Kachina Village. CPOS will also fund improvements at Fort Tuthill, Cataract Lake, Pumphouse Greenway, Raymond Park, Peaks View Park, and Sawmill Park.

The *Recreation Resource Inventory* identified needs that Coconino County should meet for trails linking communities and public lands, for historic sites and trails, for protecting significant natural areas, and for parks and recreation opportunities in areas not served by cities.⁵³ The County can benefit from developing **LEVEL OF SERVICE STANDARDS**, which would identify population levels that trigger the need for recreational facilities. Management plans should be developed for new parks to establish consistent, high-quality maintenance, operations, and use standards based on those of the National Recreation and Park Association. **USER FEES** may be necessary to offset operational costs for expanded services and programs.⁵⁴

Goal: Plan for and provide a variety of recreational opportunities throughout the county, in both developed parks and natural areas.

Policies:

10. The County shall strive to be a model of exemplary conservation practice in park and facility development, management, maintenance, and operations. SEE CONSERVATION GUIDELINES: A, B, C, G, H
11. The County shall strive to secure reliable funding for the County Parks and Recreation Department to ensure adequate resources for future park and open space management.
12. The County will employ a variety of alternative development and management methods and collaborative efforts to reduce the costs of protecting and acquiring land and trails.
13. In order to ensure that needs of residents are being met, public input will be sought and considered in the development of new park plans.



Neighborhood Parks

NEIGHBORHOOD PARKS, which may be operated by homeowners' associations or neighborhood groups, are developed sites that feature active recreation facilities such as sports fields, basketball courts, skate parks, and playgrounds. As community amenities that provide places for family gatherings, exercise, and relaxation.⁵⁵ Parks can also offer educational opportunities through signage or through historic structures. Access to neighborhood parks is important for young people.

Neighborhood parks can add value to a **SUBDIVISION**. In existing developments, parks can be created by designating nearby open space for recreational park use; alternatively, this open space can be left in its natural state. Open space in new developments could later be developed with park facilities such as basketball courts and picnic tables. Although the County does not operate or manage neighborhood parks, it addresses them through the planning and zoning process.

Goal: Support the development of a variety of neighborhood recreation areas and facilities.

Policies:

14. Recreation facilities shall be viewed by the County as a land use and environmental impacts carefully considered in the review of recreational development projects. *SEE CONSERVATION GUIDELINES: A, B, C, E*
15. In the design of new residential developments, the County encourages developers to set aside neighborhood recreation areas to be maintained by a homeowners' association in areas that will not be served by a public park.



Grant Cooper



PETER DRUCKER

“Plans are only good intentions unless they immediately degenerate into hard work.”



Community Character

Introduction

Coconino County features a rich mosaic of communities, residents, and physical attributes. Residents and property owners have expressed considerable interest in maintaining diverse **LANDSCAPES** and improving the aesthetics of their home. A community’s character is defined by its design, its viewsheds, its gathering places, and its historic and cultural resources, as well as by environmental characteristics such as natural quiet and dark night skies. Maintaining this character is important—not only for promoting economic development and attracting visitors, but also for protecting our living spaces and culturally significant areas. In addition, preserving **RURAL CHARACTER** is a core value of many residents in unincorporated communities.

This Element describes the factors that combine to create community character in our county. It also discusses the ordinances, regulations, and other mechanisms that help us to protect the community characteristics we value.

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The Conservation Framework Relationship

This Element relates specifically to the *Landscape Principle* of the **CONSERVATION FRAMEWORK**, which explores how ecological impacts from human use depend upon the size, shape, intensity, and location of **DEVELOPMENT**. The **CONSERVATION GUIDELINES**—in particular, guidelines **B & C**—address the importance of incorporating conservation design principles, minimizing noise pollution, and preserving scenic vistas, corridors, and viewsheds. They provide the framework for protecting our valued community characteristics by ensuring that new developments are compatible with existing communities and the **NATURAL ENVIRONMENT**.

Our Purpose & Vision

In keeping with our vision for Coconino County’s future, this Community Character Element seeks to define, preserve, and enhance the quality of the places where we live, work, and enjoy our leisure time. Its goals include protecting the unique characteristics of our communities and providing facilities and services that support community-based activities. Its policies promote areas of concentrated activity in rural communities and improve the aesthetic character of the county’s commercial, industrial, residential, and **GATEWAY** areas. They also preserve the county’s historic, cultural, and architectural heritage; protect ecological landscapes; and enhance scenic vistas, viewsheds, and byways. Other policies encourage the coordination of land use planning, the sharing of resources, and the protection of **SACRED SITES** between area tribes and the County. Finally, this Element contains policies for minimizing noise and light pollution.



Community Design

SEE ALSO APPENDIX C

County Communities Overview

DESIGN REVIEW OVERLAY

An overlay district applied to specific geographic boundaries (typically within an Area Plan) which establishes guidelines for new commercial, industrial, public, and semipublic uses. DROs require a review and approval process for exterior design, materials, textures, colors, signs, lighting, fencing, and landscaping but do not apply to single-family residential construction.

Each community has distinct features that contribute to its physical character. Many of these features reflect common values for preserving a community's **RURAL CHARACTER**⁵⁶, appearance, natural resources, **OPEN SPACES**, recreation areas, scenic views, vegetation, architecture, development patterns, and **RURAL ACTIVITY CENTERS**. These features promote quality of life and economic well-being. Preserving them should not prohibit **DEVELOPMENT**; however, the County needs to consider them to ensure that new development fits the existing community fabric.

County residents have demonstrated a desire for well-designed communities through their plans and actions. As of 2002, ten communities had detailed **AREA PLANS**; half included **DESIGN REVIEW OVERLAYS (DROs)** which help to integrate new commercial buildings into the fabric of the existing community or into a desired future vision. Many communities have visions for growth that include enhanced design and building compatibility. We can do more to improve the quality of our physical environment by using natural resources and designing communities in a way that better conserves local **LANDSCAPES**. Improving standards for commercial and residential development enhances a community's image and pride. However, design guidelines should not be cost-prohibitive. As of 2002, the County maintained five separate DROs that require the **PLANNING & ZONING COMMISSION** to review all new commercial, industrial, public, and semipublic development. Review criteria cover architectural style, building materials and colors, overall site design, signage, **LANDSCAPING**, and lighting. The DRO process allows the public to provide input on how to best incorporate structures into the community, starting from the initial stages of development. Communities with DROs include Kachina Village, Mountaineer, Oak Creek Canyon, Doney Park, and Tusayan.



Commercial development patterns vary not only according to the ordinances in effect at the time of development, but also to community needs and targeted business markets. For example, most commercial development in the Marble Canyon/Vermilion Cliffs area targets Grand Canyon visitors, rafters, and fly fishers. Many communities have unique characteristics that help attract tourists. Most commercial uses, whether tourist- or neighborhood-oriented, want the best visibility through signage or unique building features to attract business. However, this need should not detract from the surrounding communities or natural features. For this reason, the County maintains development

standards for commercial, industrial, public and semipublic uses that address landscaping, signage, lighting, parking, setbacks, and screening. Only commercial uses that are developed within a DRO community are reviewed for overall site design, architectural features, building materials, and colors.

SEE ALSO PAGE 88

Land Use: Residential – Lot Splits

SEE ALSO PAGE 20

The Conservation Framework: Integrated Conservation Design

A neighborhood's **ZONING** and land configuration greatly affects its character. In Coconino County, the character of residential developments varies significantly depending on how and when they were created. Areas developed as **LOT SPLITS**, for example, are often haphazard and lack a planned **CIRCULATION SYSTEM** and adequate infrastructure improvements. Likewise, because many **SUBDIVISIONS** created during the land-speculation era of the 1960s and 1970s were poorly planned, they lack the necessary roadway and utility infrastructure. Market conditions determine the type of housing that residents purchase; choices range from large, single-family homes to manufactured homes and travel trailers. Seasonally occupied residences also influence community character. Area Plans encourage “cluster” development and **INTEGRATED CONSERVATION DESIGN**, which exchanges smaller lot sizes for permanently dedicated open space.



GATEWAYS are unique areas that warrant special design considerations. Coconino County has two types—“gateway corridors” and “gateway communities.” Gateway corridors include **ARTERIAL ROADWAYS** that provide access into an existing community or **NATURAL AREA**. These roadways are often desirable for tourist-oriented commercial enterprises because they carry high volumes of traffic. Gateway corridors include Highway 180 or old Route 66 into Flagstaff and Highway 64 going into Williams or Valle. These corridors should be protected from strip commercial development or excessive off-site signage (the County has already prohibited new billboards). Gateway communities include both commercial and residential developments adjacent to national parks, monuments, and recreation areas, as well as along highways leading to such areas. The most prominent gateway community in Coconino County is Tusayan, located adjacent to the Grand Canyon National Park. DRO provisions should be used to evaluate the architectural features and site design for new gateway development. This will help ensure that this development does not detract from natural scenic areas or community character.

Goal: **Develop thriving communities and improve the aesthetic character of commercial, industrial, residential, and gateway areas.**

Policies:

1. At the request of communities and with priority for gateway communities, the County shall assist with the development of DROs to assure a logical arrangement of buildings, provide appropriate screening and landscaping, and maintain compatible building forms and materials. *SEE CONSERVATION GUIDELINES: A, B, C*
2. To preserve rural character and environmentally sensitive landscapes, the County encourages the use of conservation design techniques such as clustering and the transfer of development rights for both residential and commercial development. *SEE CONSERVATION GUIDELINES: A, B, D, E, G, H*
3. The County encourages incorporating sustainable building design guidelines and provisions for the use of alternative energy sources in construction and community design standards. *SEE CONSERVATION GUIDELINES: G, H, I*
4. The County encourages private property maintenance and proactive enforcement of performance standards in both residential and commercial areas.
5. The County encourages developing residential areas in and around gateway communities to provide for residents and for employees of local enterprises. *SEE CONSERVATION GUIDELINE: G*
6. The County favors the use of environmentally sensitive design techniques. *SEE CONSERVATION GUIDELINES: A, B, C, E, G, I*
7. As a means to appropriately accommodate future growth and development, the County shall continue to coordinate with local residents in the preparation, adoption, and/or update of Area Plans that provide more specific policies and guidelines for individual communities and unique geographic areas. *SEE CONSERVATION GUIDELINES: A, K*



John Aber



John Aber



John Aber



8. Development projects should be considered in relation to the existing scale and character of the surrounding area and benefits for the community and county. *SEE CONSERVATION GUIDELINES: A, K*
9. Where feasible, the establishment of intensive land uses within existing communities should be compatible and integrated into the area through appropriate mitigation measures like buffering, density transitions, landscaping, or increased setbacks.
10. The County encourages the preservation of rare and significant natural and historic resources, unique community characteristics, and desirable land development patterns. *SEE CONSERVATION GUIDELINES: A, B, C*
11. Public and semipublic uses shall be approved at locations convenient to the population being served provided that such locations are compatible with the desirable characteristics of surrounding neighborhoods.
12. Public input from individual neighborhoods and communities shall be considered in defining the existing and historical character of those areas.
13. Developers are encouraged to gather and integrate local public input into the early design phase of their projects.



RURAL ACTIVITY CENTER

A centralized, concentrated area of locally oriented commercial, public, and semipublic services and activities.

MULTIMODALISM

A holistic view of circulation in which individual modes work together or within their own niches to provide users with the best choices of service. Multimodalism considers how policies for a single mode affect all other modes.

Rural Activity Centers

RURAL ACTIVITY CENTERS are areas of concentrated activity where community services and circulation infrastructure often converge.⁵⁷ Land uses in these centers are commercial, public, and semipublic; they vary depending on the characteristics and needs of the area. Their aesthetic characteristics include site and building design, signage, lighting, landscaping, and circulation access. Especially along major highways, clustering in one central location is preferred over strip development, which creates a cluttered appearance, causes circulation problems, and negatively impacts **RURAL CHARACTER**.

Because rural activity centers bring many uses together, their supporting infrastructure should promote **MULTIMODAL** and nonmotorized transportation opportunities. Circulation infrastructure must also be considered in the design of adjacent properties. Not only should these designs specify how sites will connect to the existing road network, but they should also address possible shared parking and/or driveway access points. This is an important safety consideration, since the potential for conflicts between vehicles and pedestrians increases in congested areas.

As populations expand, common community gathering places becomes essential for group communication and activities. Facilities that provide common neighborhood space—such as rural convenience stores and post offices—play a role in defining a community's character. Several **SUBDIVISIONS** have included community activity centers in accordance with their development plans. In addition, facilities such as fire stations, churches, and schools effectively serve a double function as local gathering places.

Other than the annual County Fair, few community activities occur on a countywide level because our population is so dispersed. Many activities occur locally, fostering connections between community members and raising a community's visibility as a special place.⁵⁸ Local organizations, recreational opportunities, and activities such as holiday parades, local festivals, and art or antique shows all promote a sense of community. Even in the most rural areas, they should be encouraged whenever possible.



Goal: Support the development of concentrated commercial and civic land uses that meet residents' needs.

Policies:

14. The concentration of commercial, public and semipublic uses in activity centers is desirable and encouraged by the County for the creation of a tight knit, well defined, highly useable area for surrounding residents.
15. Improvements to circulation infrastructure in rural activity centers shall reflect the scale and character of the surrounding neighborhoods.
16. The County supports the development of neighborhood commercial uses, community facilities and activities that generate public interaction.
17. Community facilities and activities that promote a greater sense of community identity and local pride are supported.

Tribal Lands & Interests

Coconino County is unique because many indigenous peoples live here and maintain a strong connection to their heritage and land. These communities are precious resources. The County must work with tribal governments to explore mutually beneficial solutions to development issues. Such cooperation is especially important for protecting tribal interests that might be affected by regional development or development near tribal lands.

Portions of five Native American reservations—Navajo, Hopi, Havasupai, Hualapai, and Kaibab-Paiute—covered 38.1 percent of the total land in Coconino County in 2003. One additional tribe, the San Juan Southern Paiute, was residing on the Navajo Reservation as of 2003 until it could establish a new reservation in the county. Tribes are sovereign nations with independent governments; each has a distinct cultural history and relationship with the land.

Tribes can own both trust lands and **FEE-SIMPLE** (privately owned) lands. Reservation lands are classified as trust lands because the federal government holds them in trust. As such, these lands must comply with certain federal regulations, such as those administered by the **U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)** or those related to the *Americans with Disabilities Act*, even though the tribe may have authority for enforcing them. Trust lands are not subject to local or County authority for planning and **ZONING** purposes. Within reservation boundaries, tribal land allotments can be granted to individual members or families for their personal use. Many tribes also own fee-simple lands. Like other landowners, tribes have the right to sell, give away, trade, lease, or dispose of these lands using any manner of legal conveyance. Fee-simple lands fall under zoning requirements and land use regulations.

The County recognizes that tribes must use their lands to benefit their communities and governments. Consequently, it commits to developing the solid, working relationships that are essential to resolving planning and land use issues in a manner that is mutually beneficial. Tribal governments are like any other local municipality except that their structures vary. Local and tribal governments frequently share resources or work together to provide resources jointly. Maintaining infrastructure can be difficult because equipment and other resources are dispersed through the

SEE ALSO APPENDIX C

County Communities Overview
– Native American Tribes



reservation's vast geographic extent. In such cases, working with local entities who provide such services is beneficial. In 2002, for example, the County had a **MEMORANDUM OF UNDERSTANDING** with the Navajo Nation and the **BUREAU OF INDIAN AFFAIRS** for transferring solid waste and another for maintaining reservation roads. The County can build on its existing level of cooperation with the tribes to establish mutually beneficial partnerships in the future.

Most tribes have culturally significant sites located outside of their reservations. Some of these sites are considered sacred because of their importance to a historical tribal event, a traditional event, or a process. Because significant federal legislation pertains to **SACRED SITES**, they are addressed separately from other archaeological resources. The 1978 *American Indian Religious Freedom Act* protects and preserves the rights of Native Americans to believe, express, and exercise their traditional religions; its provisions grant access to sacred sites on federal land and allow tribes to access sacred objects on federal land. The *National Historic Preservation Act of 1966* includes provisions for preserving tribal historic resources as well as making traditional religious or cultural properties eligible for listing on the National Register of Historic Places. In 1996, President Clinton issued an *Executive Order on Indian Sacred Sites*, which recommends that federal land managers, to the extent practical, accommodate access to and ceremonial use of sacred sites.

This legislation pertains only to federal lands, however. Many tribes consider other lands within Coconino County to be culturally significant. Some of these sites—such as the San Francisco Peaks—are commonly recognized; other locations are held in confidence to protect them from desecration.

Goal: Acknowledge the unique tribal government entities and promote coordination of planning efforts.

Policies:

18. The County encourages expanding cooperation with local tribal governments on all land use planning issues, development projects, and infrastructure development. SEE CONSERVATION GUIDELINES: A, E, F, G, K
19. The County supports preservation of tribal sacred sites and recognizes these resources as assets to our cultural heritage and history.



Historic & Cultural Resources

Historic and cultural/archaeological sites are nonrenewable resources that help establish a community's character. These amenities tell us how land was used historically and how cultures were able to sustain communities in an arid environment with varied climatic conditions. Archaeological resources record the history of ancient peoples—their languages, dress, shelter, food, transportation modes and routes, religions, recreation, governments, and families.

As development continues, it becomes increasingly important to consider how to preserve our history and culture. **HISTORIC PRESERVATION** efforts such as inventorying the county's significant sites are crucial. Inventories leave us with a substantial record of the past detailing how humans interacted with the landscape and each other. Without such inventories, we lack an important tool to protect these resources and we risk their irreparable destruction. Preserving them not only increases opportunities for education and scientific research, but it also offers economic benefits.



Most preservation activities in Coconino County have been completed by land management agencies such as the U.S. Forest Service, the Arizona State Land Department, the Bureau of Land Management, the National Park Service, and tribes. A variety of legislation requires federal and state land managers to inventory and preserve archaeological and historical sites to the degree possible—the *American Antiquities Act of 1906*, the *National Historic Preservation Act*, the *Archaeological Resources Protection Act*, the **NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)**, and the *Native American Graves Protection and Repatriation Act*. On the other hand, few preservation requirements have been established for private lands, either on the state or local level. Arizona passed two laws in 1990 to protect human burials and associated grave goods (such as jewelry or pottery) on both state and private lands. On private lands, owners must notify the Arizona State Museum if they discover human remains or intend to disturb a known burial site. Landowners are encouraged to assist in paying for excavation and reburial, but are not required to do so. Additionally, this law prohibits selling excavated objects.

The *National Historic Preservation Act* established the National Register of Historic Places, the nation's official listing of prehistoric and historic properties worthy of preservation. As of 2002, this register listed 29 structures and archaeological sites, as well as 29 historic districts, in Coconino County. Fifty sites in Coconino County were listed under the *Arizona State Historic Preservation Act*, including portions of old Route 66, various archaeological sites, buildings, bridges and other structures, and historic districts. Still, many resources in unincorporated areas of the county have not been listed. Such resources reflect early settlements and historic land uses through buildings, sites, **HISTORIC TRAILS**, and roads.

Cities and Counties may apply to the **STATE HISTORIC PRESERVATION OFFICE (SHPO)** for **CERTIFIED LOCAL GOVERNMENT (CLG)** status, which makes them eligible for assistance and funding that they can use to create local preservation programs. In 2002, Coconino County had three CLGs: the City of Flagstaff, the City of Williams, and the City of Sedona. The County is not required to be a CLG to recognize historic structures or seek the protection of a property. Most preservation efforts are undertaken by individuals and small groups who focus on specific properties or local landmarks. The County should support private efforts whenever possible by sharing information, helping to coordinate activities, or making the most of existing resources.

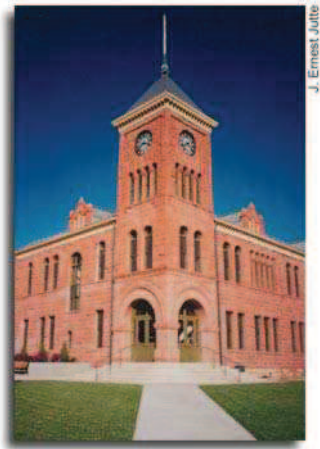
Goal: Protect the county's historic, cultural, and architectural heritage.

Policies:

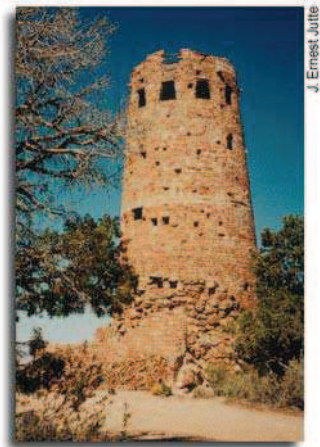
20. The County encourages the preservation and celebration of cultural diversity and creativity as well as the protection of historic and archaeological resources.
21. The County supports the commemoration of local culture and heritage through public art, local exhibitions, and signage to direct and inform residents and visitors about important places and events.

Heritage Areas & Landscape Preservation

Several of the county's unique **HERITAGE AREAS** and vast, uninterrupted landscapes have significant cultural and environmental resources that deserve preservation. Heritage areas include natural features, **CULTURAL LANDSCAPES**, cultural monuments, or **HISTORIC TRAIL** systems; they may also reflect historic land use patterns. Coconino County is home to one of this country's 18 World Heritage Sites—Grand Canyon National Park—designated by the World Heritage Committee of the **UNITED NATIONS EDUCATIONAL, SCIENTIFIC & CULTURAL ORGANIZATION (UNESCO)**. The county also contains a few congressionally designated National Heritage Areas or Corridors that are not national parks but nevertheless are of significant cultural, natural, or recreational importance. As of 2002, Route 66 was under pending congressional legislation for consideration as a National Heritage



J. Ernest Jutte



J. Ernest Jutte



Grant Cooper

HERITAGE AREA

An area or site where cultural monuments, natural areas or features, historic trail systems, or historic land use patterns may have cultural significance, provide a physical link to historic events, or be of exceptional value.

CULTURAL LANDSCAPE

A visual demonstration of traditional interactions between humans and the natural environment over time.



Corridor. Other areas that could warrant future listing at the state or local level include Marble Canyon/Vermilion Cliffs, Oak Creek Canyon, Mormon Lake, and Stoneman Lake.

Goal: Preserve local heritage areas and cultural landscapes.

Policies:

22. Within heritage areas, the County favors development projects that protect and incorporate cultural and natural resources features of the site and surrounding area. SEE CONSERVATION GUIDELINES: B, C
23. The County places a high priority on large landscape preservation especially when planning for new growth areas. SEE CONSERVATION GUIDELINES: A, B, C, E

Scenic Vistas & Viewsheds

A central part of a community’s overall character, natural scenery can have dramatic effects on property values and tourist revenues. As communities develop, it becomes increasingly important to preserve the unique features that distinguish an area—its rock formations, mountain backdrops, forests, **RIPARIAN AREAS**, meadows, or expansive **OPEN SPACES**. To protect these resources, we need to understand how they affect surrounding communities. The first step in this process is identifying the resources, a step that requires public involvement. Tools that can help us achieve this goal include maps, field observations, surveys, and photographs (including aerial photographs). We can also compare past, present, and—through imaging—future environments. After identifying these resources, we can develop tools to maintain and enhance their scenic qualities.



SEE ALSO PAGES 50 & 51

Community Services:
Utilities Services & Corridors
and Telecommunications
Infrastructure

The County needs to consider how proposed development in critical areas affects scenic vistas and viewsheds. Residents have expressed concerns about signage, hillside development, cell towers, utility lines, and the removal of native vegetation. The County is already addressing some of these concerns through ordinances such as the *Wireless Telecommunication Facilities Ordinance*, which provides guidelines for siting cellular towers and antennas.⁵⁹ The County has also prohibited new billboards or other off-site signage, and it coordinates compatible on-site signage through DRO and formal approval processes.

SEE ALSO PAGES 24 & 43

Natural Environment:
Environmentally Sensitive Lands
and Public Safety: Floods,
Earthquakes, & Slopes

Ridgeline development offers scenic views but may impact surrounding residential and **NATURAL AREAS**. This highly visible development presents architectural and grading constraints that can impact an area’s aesthetic and ecological values. Poorly planned roads and driveways leave permanent scars and may cause **EROSION** problems. Structures built on steep slopes can appear massive and detract from the **NATURAL ENVIRONMENT**. Although, as of 2003, the County had no ordinance focusing on ridgeline or hillside development, the *Subdivision Ordinance* specifies requirements for buildable areas on steeply sloped lots, and the *Grading and Excavation Ordinance* addresses building sites and roadways. Sensitive architectural and site design techniques can help reduce the visual impact of hillside structures. These techniques include using “step-down” designs, limiting the height of stem walls or piers, incorporating windows or vegetation, and excavating along landform or natural contours to reduce scarring, erosion, and other physical hazards. However, the most significant safeguard that a hillside development ordinance can provide is incentive for not developing in these areas at all. Such incentives could allow owners to **TRANSFER DEVELOPMENT RIGHTS**; they could also provide tax breaks for those who donate land or easements for scenic and ecological **CONSERVATION** purposes.



Goal: Preserve and enhance the integrity of the county's scenic resources.

Policies:

24. The County favors the underground placement of utilities, wherever feasible and in coordination with ACC guidelines, in all major developments and subdivisions.
25. To reduce impacts on views from surrounding open space, recreation sites, and residential areas, structures and infrastructure shall be planned and built in a manner that minimizes visual impacts on important horizon and ridgelines.
26. The County supports the use of integrated conservation design to reduce impacts on scenic vistas and environmentally sensitive lands by transferring development rights to less sensitive lands. *SEE CONSERVATION GUIDELINES: A, B, C, E*
27. To maintain the county's unique natural beauty, the County supports the protection of undeveloped ridgelines and hillsides through the use of sensitive design and development techniques. *SEE CONSERVATION GUIDELINES: B, C*
28. The County encourages the preservation of natural vegetation and materials and revegetation with indigenous plants on sites disturbed by development projects. *SEE CONSERVATION GUIDELINES: D, F, H, I*
29. The County supports the removal of nonconforming off-site signage.

Scenic Corridors

Coconino County is home to some of the most spectacular scenery in the Southwest, and our roadway system provides direct access into and through many of these areas. The **FEDERAL HIGHWAY ADMINISTRATION (FHWA)** has established programs that officially recognize routes containing intrinsic scenic or historic features. One such program is the National **SCENIC BYWAY** Program. Highways with outstanding scenic, historic, recreational, cultural, archaeological, and/or natural qualities can be designated either National Scenic Byways or All-American Roads. As of 2003, Arizona had no designated All-American Roads and only one National Scenic Byway—SR 67 from Jacob Lake to the north rim of the Grand Canyon, a 42-mile route designated as the “Kaibab Plateau–North Rim Parkway.”

The State of Arizona and the Forest Service administer similar programs. Since 1982, Arizona's Scenic Byways Program has recognized roads that contain exceptional scenic and historic qualities. Six of these are partially or completely located within Coconino County: the Fredonia–Vermilion Cliffs Scenic Road, the Kaibab Plateau–North Rim Parkway, the Sedona–Oak Creek Canyon Scenic Road, the Red Rock Scenic Road, the San Francisco Peaks Scenic Road, and Historic Route 66.⁶⁰

Both the federal and state designations are meant to promote tourism; educate the traveling public about the road's outstanding natural, historic, and visual resources; and encourage the preservation of the quality of surrounding **LANDSCAPES**. Federal and state grant money is available for planning, enhancing, and promoting scenic byways. Before designating a roadway as scenic, the FHWA requires a Corridor Management Plan. In addition, the roadway must meet specific criteria. Likewise, the State of Arizona requires an evaluation report that must ultimately be approved by the Parkways, Historic, and



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John Allen



Scenic Roads Advisory Committee and the State Transportation Board. Because the designation process must be initiated on a local level, it demonstrates a community that values its surrounding landscape and its cultural and historic features.

Goal: Protect and enhance scenic corridors.

Policies:

30. With consideration for countywide issues and the determination of local community priority, the County encourages designations of new scenic corridors with cultural and historic features.
31. Development projects along existing scenic byways must demonstrate compatibility within the context of the scenic byway designation.



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Dark Skies

Because our topography and atmospheric conditions are uniquely suited for astronomical observation, researchers have made substantial investment in observatories. This is especially significant because the number of quality astronomical sites in the United States is decreasing rapidly because of light **POLLUTION**. Coconino County is also home to artist James Turrell's "natural observatory" at Roden Crater, a celebrated project that relies heavily on naturally dark night skies.



Chris Luginbuhl

County residents increasingly value star-filled night skies for their inspirational beauty. To ensure that our skies remain dark, the County and the City of Flagstaff collaborated with local observatories and other dark-sky proponents to develop lighting ordinances that are among the most progressive in the United States. The goal of these ordinances is to cap the overall amount and limit stray light while allowing enough light for safety. (Poorly designed lighting wastes energy and causes glare that decreases visibility and public safety.) Coconino County and Flagstaff have been internationally recognized for these efforts. In 2001, Flagstaff became the first "International Dark-Sky City."

Goal: Preserve dark night skies.

Policies:

32. To preserve dark night skies, the County shall be a model of good outdoor lighting practices, and likewise supports the efforts of others in retrofitting nonconforming and/or inappropriate lighting in a manner consistent with County lighting codes. *SEE CONSERVATION GUIDELINES: I, K*
33. Property owners are encouraged to install only the level of outdoor lighting necessary for safety, security, and utility purposes while limiting light trespass onto neighboring properties. *SEE CONSERVATION GUIDELINES: I, K*
34. Full shielding of all outdoor lighting, installation of low-pressure sodium fixtures, and the use of other best available technologies are encouraged. *SEE CONSERVATION GUIDELINE: I*
35. Areas near existing professional observatories or other dark-sky preserves shall be developed with special consideration for the impacts that development may have on astronomical observing conditions.



Natural Quiet

Another desirable community characteristic is natural quiet. Protecting natural soundscapes is becoming a serious issue in many national parks, **NATURAL AREAS**, and tourist areas. Air traffic over the Grand Canyon, for example, has dramatically altered the natural soundscape of the park, affecting visitors, local residents, and wildlife.

This issue is also important on a countywide level. On a daily basis, most residents are subjected to a wide variety of noise from roads, **OFF-HIGHWAY VEHICLES**, aircraft, railroads, commercial and industrial land uses, and neighborhoods. Residents have expressed interest in developing a noise ordinance that implements time guidelines and reasonableness standards. Noise should be considered when reviewing plans for new commercial and industrial developments, especially those located close to residential, **OPEN SPACE**, or recreation areas. Transportation noise can be mitigated using landscaped buffers or increased setbacks in residential areas adjoining major arterials, highways, and railways.

Goal: **Preserve natural quiet and reduce the effects of noise pollution.**

Policies:

36. The impacts of noise generated by major commercial or industrial uses should be considered when reviewing development projects, especially when adjacent to residential and recreation areas. *SEE CONSERVATION GUIDELINE: I*
37. Major developments and subdivisions shall consider the impacts of adjacent noise generators such as highways, railways, and airports, and mitigate for those impacts where feasible. *SEE CONSERVATION GUIDELINE: I*
38. In order to provide areas of natural quiet for all residents and visitors, the County supports efforts of local communities and the Federal Aviation Administration to establish flight restrictions and no-flight zones over national monuments and wilderness areas. *SEE CONSERVATION GUIDELINE: I*



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DANIEL H. BURNHAM

"Make no little plans; they have no magic to stir men's blood and will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency."



Land Use

Introduction

LAND USE patterns in Coconino County have been shaped not only by **ZONING** and **SUBDIVISION** regulations, but also by physical factors such as topography and water availability. Land ownership, railroad lines, tourist attractions, and Native American reservations have also contributed to land use patterns. Future development will depend on factors such as population trends, employment growth, and water availability.

This Element reflects the overarching principles of the *Coconino County Comprehensive Plan*—it addresses existing and future land uses, characterizes the relationship between **CONSERVATION** and land use, and explores opportunities for creating conservation areas. Its purpose is not to restrict future growth but to manage it in a way that minimizes environmental impacts while offering residents a range of choices.

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Commercial	90
Industrial	92
Nonconforming Uses	93
Locally Undesirable Land Uses	94

The Conservation Framework Relationship

All land use decisions directly relate to the five ecological principles and eleven **CONSERVATION GUIDELINES** specified in the **CONSERVATION FRAMEWORK**. These principles and guidelines provide a concise list of criteria to consider when reviewing **DEVELOPMENT** plans, criteria that will help the County conserve resources and protect natural **ECOSYSTEMS**. The Conservation Framework’s principles and guidelines are important tools for ensuring that future land use decisions promote responsible growth.

Our Purpose & Vision

In our vision for Coconino County, we successfully accommodate growth and consciously decide how development should occur. We ensure the county’s long-term viability by using **INTEGRATED CONSERVATION DESIGN** methods, promoting **INFILL** development on vacant parcels, and providing incentives for quality subdivisions. Rather than relying on traditional “single-parcel” approaches, we incorporate well-designed, environmentally responsible, commercial and industrial development within communities and activity centers. This “mixed-use” approach not only helps create a range of employment opportunities and a stable economy, but it also helps us preserve open space and prevent fragmented landscapes

The policies in this Element ensure that new development follows available and planned infrastructure, utilities, and services, and that it is balanced with the available water supply. They also promote a range of housing types and retain public land as open space while making key parcels available for development.





Landscapes & Open Space

OPEN SPACE reflects primarily undeveloped land that provides scenic, ecological, or recreational values. In many instances, open space is set aside for resource protection or **CONSERVATION**; it may be managed as **FORESTLAND**, **RANGELAND**, or agricultural land. In other cases, land may be designated open space because it requires special management for hazards. Over three-fourths of the nonreservation land within Coconino County is managed by the U.S. Forest Service, the National Park Service, the Bureau of Land Management (BLM), and Arizona State Land Department. Virtually all these lands are open space. Most are heavily used by recreationists, especially Park Service and Forest Service lands. Not only are these lands used by local residents, but they also attract visitors from around the world. Other benefits of preserving our open space include protecting **WATERSHEDS** and water quality, minimizing **HABITAT FRAGMENTATION**, and enhancing our quality of life.

Open space can be preserved for conservation without being purchased in **FREE SIMPLE**. An example is the largest **CONSERVATION EASEMENT** in Arizona, which Babbitt Ranches granted to The Nature Conservancy and Coconino County. Approximately 40,880 acres of the private lands of Cataract Ranch (south of Grand Canyon National Park) will be permanently protected from mining, **SUBDIVISIONS**, and development. Conservation easements allow landowners to retain their property but limit development rights in perpetuity. In most cases, they are purchased for a portion of the land's fair market value, and a third party such as a government agency or a nonprofit land trust holds the easement. As of 2003, Coconino County did not have any nonprofit land trusts dedicated to preserving open space through conservation easement programs. The County will cooperate with nonprofit conservation organizations and land trusts to seek ways to acquire conservation easements.

Another method of protecting open space is allowing some portion of a landscape, rangeland, or ranch to be developed at a higher density to protect other portions. This is a form of **TRANSFER OF DEVELOPMENT RIGHTS (TDR)**. Other states permit TDR to different properties. These rights may be moved or purchased to protect an environmentally sensitive property while allowing higher density elsewhere on another property. Although this technique would likely require amending Arizona statutes, it may be a future option.

Goal: Ensure the preservation of open space.

Policies:

1. The County will work with landowners and agencies to protect open lands for the purposes of preserving scenic viewsheds, preventing the fragmentation of open lands, preserving important wildlife habitat, protecting watersheds, providing buffers between developed areas, and protecting environmentally sensitive lands. *SEE CONSERVATION GUIDELINES: A, B, C, D, E, H*
2. Developers are encouraged to provide natural open space areas within new subdivisions. *SEE CONSERVATION GUIDELINE: C*
3. The County supports use of public open space as a means to distinguish between individual communities.

CONSERVATION EASEMENT

A legal property interest or right granted by the landowner to another party to maintain or limit use of the land to conservation purposes, typically to maintain its natural state and preclude future development.

TRANSFER OF DEVELOPMENT RIGHTS

A transfer of the right to develop or build from one portion of a property to another portion, or from one property to another property.



4. When development of remote inholdings is considered, low-density residential character should be maintained. *SEE CONSERVATION GUIDELINE: C*
5. Development projects within remote inholdings should be consistent with land management plans for surrounding lands, provide a full range of infrastructure and services, and not negatively affect landscape integrity and wildlife habitat. *SEE CONSERVATION GUIDELINES: B, C, E*
6. Open-space zoning shall be maintained for public lands, and when such lands become private through purchase or exchange, zoning changes for future development shall be in conformance with the *Comprehensive Plan*, Area Plans, and other approved plans for adjacent public lands. *SEE CONSERVATION GUIDELINE: B*

Ranches & Ranchlands

Virtually all the federal and state land in the county, except land under Park Service jurisdiction, is used for cattle grazing. In addition, about three-fourths of the county's private land consists of large ranches used almost exclusively for grazing cattle. Less prevalent uses include sheep, buffalo, llama, and ostrich ranching. Nine ranch owners with private land holdings exceeding 10,000 acres each collectively own 1.13 million acres—71 percent of the county's private land.⁶¹

Ensuring the quality of the county's expansive ranchlands is important. The vast landscapes of rural Coconino County are significant not only for their economic, visual, and historical values, but also because they contain large areas of contiguous **HABITAT**. Ranchers are the stewards of large tracts of private land. Protecting working ranches—assuming that they use environmentally appropriate range-management practices—is almost as important in preserving habitat as preserving federal and state lands. Grazing activity is rarely confined to privately owned ranchlands; rather, it extends to state and federal lands through state land leases and federal grazing allotments. Although the principal use of these lands is cattle grazing, other uses include recreation, mining or borrow pits, and logging.

While ranchlands are subject to the same planning and development regulations as other private properties in Coconino County, ranchers are offered an additional method for long-term planning of their property. Ranch owners can petition the **BOARD OF SUPERVISORS** to form a **RURAL PLANNING AREA**, which provides a means of developing incentives to preserve certain portions of the ranches for **CONSERVATION**. The Rural Planning Area concept was added to state statutes as part of the *Growing Smarter* legislation.

Except in a few limited areas, virtually no farmland is used for commercial production in Coconino County. Fredonia has a few small family farms, the north end of the Timberline-Fernwood area features pumpkin and bean farms, and Oak Creek Canyon has a few apple orchards. Historically, considerable potato and bean farming occurred in the Flagstaff area, but most of these areas have been converted to development.



John Aber



John Aber



John Aber

RURAL PLANNING AREA

An area created by petition of owners of a majority of the property to prepare a plan that emphasizes voluntary, nonregulatory incentives for accommodating the continuation of traditional rural and agricultural enterprises; designated by the Board of Supervisors under ARS §11.806.D.3



Goal: Preserve working ranches, unfragmented landscapes, and the county's natural character.

Policies:

7. The County shall work with property owners using a variety of strategies to maintain working ranches as a viable method of land management to maintain open space and preserve landscape integrity. *SEE CONSERVATION GUIDELINES: B, C, E, F, H, I*
8. Private and state lands in checkerboard areas shall be considered in a regional context in order to preserve unfragmented landscapes and to address environmental concerns. *SEE CONSERVATION GUIDELINE: A*



John Aber



John Aber

Residential

Residential uses fall into five categories: agricultural-residential, **40-ACRE RANCHETTES**, single-family residential, multiple-family, and **MANUFACTURED HOME** parks. Most of the **RURAL** county is zoned for agricultural-residential uses, with minimum lot sizes varying from 1 to 10 acres. This **ZONING** accommodates low-density residential uses, as well as light agricultural uses that are related to rural living. It permits one single-family residence or manufactured home per parcel. Most areas surrounding Flagstaff and Williams are characterized by agricultural-residential land uses and are zoned for such, with the exception of some platted **SUBDIVISIONS**, the Parks and Mormon Lake areas, and all rural ranchlands. The single-family residential use allows site-built homes and **MODULAR HOMES** but no manufactured homes. Lot size may vary from 5,000 square feet to 5 acres, but most are between 6,000 square feet and 1 acre. Single-family residential areas occur primarily in platted subdivisions such as Mountaineer, most of Kachina Village, Forest Highlands, most of Pinewood, part of Bellemont, Greengarden, about half of the Blue Ridge area, and Timberline. Multiple-family residential uses occur primarily in incorporated municipalities where water, sewer, and a range of urban services

and facilities are readily available. One notable exception is Tusayan, which contains a number of apartment and dormitory buildings for employees of Grand Canyon National Park and local businesses. Kachina Village also has a few multiple-family duplexes. Manufactured home parks also occur mostly in cities and towns. The approximately 25 parks in the unincorporated county range in size from three units to over 100; all but one are legally **NONCONFORMING**.

Residential **DEVELOPMENT** patterns fall into one of three categories: rural communities, remote subdivisions, and rural, large-parcel agricultural-residential. Rural communities may feature some **NEIGHBORHOOD COMMERCIAL** development; they include Doney Park, Parks, Pinewood, Kachina Village, Mountaineer, and Mormon Lake. Like other subdivisions, remote subdivisions are platted and approved, but they are located far from established communities. Many are surrounded by Forest Service land. In the southeast part of the county, examples include Forest Lakes and Clear Creek Pines, Starlight Pines, Mogollon Ranch, Blue Ridge Estates, and Tamarron Pines in the Blue Ridge area. In the western part of the county, Kaibab Estates north of Ash Fork is an example. Most are second homes. Substandard and mostly **UNDEVELOPED** examples include the Grand Canyon subdivision and Clear Air Estates near Valle. Over time, some remote subdivisions will develop and transform from second-home to year-round residences, becoming communities. Rural, large-parcel development occurs mainly in areas with 40-acre lots.

SEE ALSO PAGE 93

Nonconforming Uses

SEE ALSO PAGES 72 & 74

Community Character:
Community Design and Rural
Activity Centers



A range of housing choices will continue to be available in the unincorporated county. Development featuring 2½- to 10-acre lots is likely to continue to be most common since a greater level of infrastructure, such as paved roads and community **WATER SUPPLY SYSTEMS**, is required for higher densities.

Housing Affordability

The median price of housing in Coconino County doubled between 1987 and 2002. In the Flagstaff area, the median price of a previously occupied three-bedroom house in 2002 was \$185,000; new homes cost about \$100,000 more. Prices are similar in the Blue Ridge and Forest Lakes areas and somewhat lower in the Williams and Ash Fork areas. The median household income at the time of the 2000 Census was \$38,256. Over half of the households in the Flagstaff area cannot afford a median-priced home.

There has been considerable discussion about the County's role in providing **AFFORDABLE HOUSING**. Many factors contribute to the cost of homes. Large lot zoning has resulted in higher land prices, and development costs have increased because easily accessible lands have already been developed. In addition, the cost of installing utilities and infrastructure such as wells and on-site wastewater treatment systems is high. Furthermore, many areas are far from building material suppliers and readily available contractors. The lack of infrastructure for amenities such as water, power, and fire protection tends to support the development of higher density, more affordable housing inside incorporated municipalities where such services are readily available. However, a lack of available land, as well as land prices, are causing developers and those seeking home sites to look outside of cities and towns. Although land in more remote areas can be less costly than land in an established community, the long term costs of utilities, community services, and transportation from a rural location to an urban employment center, for example, can often be greater than any initial savings. In general, the provision of government services becomes more costly as one moves away from developed communities, ultimately decreasing the potential to provide affordable housing in the county.

The County has promoted housing affordability in various ways, such as amending the *Coconino County Subdivision Ordinance* to decrease the minimum required street width and simplify the subdivision process. Other approaches have included encouraging higher densities, clustered subdivisions, and locations for manufactured homes. Potential home buyers can also find help through other programs offered through the **NORTHERN ARIZONA COUNCIL OF GOVERNMENTS (NACOG)**, the Affordable Housing Coalition, and the County. These programs offer down payment and mortgage assistance.

Allowing accessory apartments would also help make owner-occupied housing more affordable as well as provide a new base of rental housing. Designing accessory units that are clearly subordinate to the principal dwelling would eliminate the need for a zoning change from single-family residential to duplex. The County allows accessory units for family or guests, but owners cannot rent them.



Subdivisions

Subdivisions are regulated in Coconino County through the *Subdivision Ordinance*, which was first adopted in 1964. Prior to 1964, subdivision plats required approval by the County Engineer, the Health Department, and the **BOARD OF SUPERVISORS**. The *Subdivision Ordinance* underwent two major revisions—first, in 1974, when the Board adopted a paving standard for subdivision roads, and again, in 1982, when the entire ordinance was rewritten to vary standards by lot size. The *Subdivision Ordinance* contains three important thresholds. For subdivisions with lot sizes of less than 1 acre, a community **WASTEWATER** system is required. In some cases, smaller lot sizes have been allowed to have on-site systems if gross density is no higher than one unit per acre. For subdivisions with lot sizes less than 5 acres, a community water system is required unless a hydrologist or engineer can demonstrate that every lot owner could successfully drill a well. For subdivisions with lot sizes exceeding 5 acres, no water system is required; water can be hauled. Also, in subdivisions with lot sizes exceeding 2½ acres, owners may request a paving waiver for roads, although approval is not guaranteed.



Although the County encourages property owners to go through the subdivision process, it could do more. Standards can be changed; more importantly, the approval process could be streamlined to require less time and effort. In addition, options could be included in the *Coconino County Subdivision Ordinance* and/or *Coconino County Zoning Ordinance* for conservation design.

Lot Splits

LOT SPLIT

A division of land into five or fewer parcels.

40-ACRE LOT DEVELOPMENT

A division of land into parcels of 36 acres or more, designated in the Arizona Revised Statutes as “unsubdivided lands.”

RURAL CHARACTER

The pastoral or rustic setting of a location, as defined by local residents according to their preferences and needs.

State law allows property owners to split property up to five ways without subdivision review and approval;⁶² successive owners can also split until the resulting parcels reach the minimum zoned size. Consequently, many areas are developing through this **LOT SPLIT** (or “land division”) process, which requires minimal roads and utility improvements, rather than through platted and recorded subdivisions. For years, the number of parcels approved through lot splitting has exceeded those approved through the subdivision process.

State law also allows owners to divide land into parcels of 36 acres or more with no County oversight, although they must record a plat and submit a public report. These developments are commonly referred to as **40-ACRE LOT DEVELOPMENTS**. Since current zoning (adopted in 1981) allows for a 10-acre minimum parcel size, each 40-acre lot can be divided into four parcels. These developments contain approximately 3,200 40-acre lots that cover 200 square miles (128,000 acres)—8 percent of the county’s private lands.

Counties have long desired greater control over lot splits so they can address issues related to roads, utilities, and proper drainage, which are often substandard. Residents perceive several advantages to lot-split development: the ability to maintain an area’s **RURAL CHARACTER** and low population density, shorter time frames for approval, and, in some cases, lower initial land costs. Most problems related to lot splits involve roads. Neighbors may feud over easements, maintenance, drainage issues, and traffic. In addition, lot splits often fragment wildlife **HABITAT**, offer no opportunity for preserving **OPEN SPACE**, and disregard topography and other building constraints such as **FLOODPLAINS**.

The County should pursue amending the law or upgrading standards for lot splits. The goals of such changes should be providing decent housing and better **ACCESS** for emergency vehicles, reducing problems related to dust and drainage, and protecting quality of life, ecological integrity, and property values. Options include strengthening road standards, increasing easement widths to allow for proper drainage, requiring road maintenance agreements, and providing incentives for good planning through conservation design.



40-Acre Ranchettes

Ranchers may sell their land for development as 40-acre “ranchettes.”⁶³ This option has become more attractive as ranchers face increasing difficulty in making a living, especially during periods of drought, and as they lose grazing rights on state or federal land. In addition, because state laws make such development easy, a significant number of acres have already been converted. This practice can impact adjacent federal and state lands, especially in **CHECKERBOARD AREAS**. When alternating private sections are developed for residential purposes, the potential for selling the adjacent state sections may increase. The State Land Department has not historically made a practice of selling these sections. However, pressures to do so could mount when these sections no longer generate revenue from grazing leases, when they become difficult to manage, or when the number of access roads to the intervening private sections increases.

Although demand is considerable for certain kinds of 40-acre lots,⁶⁴ this may not be the best use of land. Very low density development over large areas alters wildlife habitat and **MOVEMENT AREAS**. It also causes other environmental problems such as changes to drainages and increased air pollution from dust generated on dirt roads. If all the remaining undeveloped private lands in the county were developed as 40-acre lots, and if the zoning for minimum parcel size remained at 10 acres, about 30,000 of these 40-acre lots could be split into 120,000 lots. At that point, all of the remaining undeveloped private land in the county would be gone. Furthermore, given their distance from established communities, virtually all of these lots would be used for second homes. A much better approach is to offer second home sites that are clustered and smaller in size to accommodate the same number of units with far less land.

Second Homes

The 2000 Census revealed that 17.1 percent of all homes in Coconino County are used for seasonal occupancy. In unincorporated portions of the county, the percentage of second homes is much higher. In Kachina Village and Mountaineer, for example, second homes comprise about one-quarter of all residences; in Pinewood, about 80 percent; and in Blue Ridge and Forest Lakes, nearly 90 percent. As the Phoenix metropolitan area continues to grow, the demand for summer homes will continue to be strong.

Second homes use a significant proportion of the private land base in some areas and require County services despite their seasonal population. Gated communities probably generate more tax revenue than it costs to provide services because they typically supply their own security and road maintenance. However, costs to provide other second-home communities with services such as police protection, solid waste disposal, road maintenance, and snow removal typically exceed tax revenues.

Gated Communities

Approved in 1986, Forest Highlands was the first gated community in the unincorporated county. In 2002, this built-out community included about 820 lots, two 18-hole golf courses, and two clubhouses with swimming pools and other amenities. Flagstaff Ranch Golf Club, approved in 2000, was the second.

Buyers seek gated communities for reasons related to security, sense of place, and unique community features. However, as with most issues, gated communities have pros and cons. They

CHECKERBOARD AREA

An area characterized by a mix of land ownership or land management, often with every other section under different ownership—most commonly, state and private sections.



fill a market demand and a market niche. They typically demand a lower level of public services than other types of development. But they also restrict public access to other lands, lack connectivity to other subdivisions, and make connecting to **TRAILS** more difficult. The *Flagstaff Area Regional Land Use and Transportation Plan* contains a policy to discourage gated communities unless they provide connectivity and public access.

Goal: **Ensure a range of housing alternatives in well-designed communities.**

Policies:

9. The County supports the development of viable opportunities for affordable housing and home ownership, through such means as allowing for manufactured, modular, factory-built homes and accessory rental units.
10. The County encourages design of subdivisions that protect environmentally sensitive portions or special characteristics of the property. *SEE CONSERVATION GUIDELINE: D*
11. The County encourages alternatives to the conventional pattern of 40-acre lot development, for example by allowing the same number of units as allowed by current zoning but in a more dense development on a portion of the property, or by strategic sales of small portions of the overall property in order to retain ranching on the remainder.
12. The County supports integrated conservation design, clustered subdivisions, and density bonuses in order to preserve portions of the property for shared public or open space. *SEE CONSERVATION GUIDELINES: A, B, C, D, E*
13. The County encourages and supports property owners in the development of legal subdivisions rather than lot splits. *SEE CONSERVATION GUIDELINE: K*
14. The County favors extremely low density residential zoning for remote areas. *SEE CONSERVATION GUIDELINE: E*
15. Very low density residential uses shall be maintained in areas without water, utilities, and fire protection.
16. The County supports changes to state law to give counties greater authority over lot splits. *SEE CONSERVATION GUIDELINE: K*



Commercial

Commercial land uses are scattered throughout the county, typically on or near state highways.⁶⁵ Most can be characterized as **NEIGHBORHOOD COMMERCIAL** or tourist/highway commercial. Neighborhood commercial use includes general retail and office facilities, grocery stores, gas stations, restaurants, post offices, and feed stores. Tourist/highway commercial use includes hotels, motels, campgrounds, RV parks, gift shops, and recreational facilities. Convenience stores and some other uses serve both

local residents and tourists. Most regional commercial uses like shopping centers, “big-box” retail establishments, and movie theaters are located in incorporated municipalities.

Residential areas can also feature several categories of commercial land use. One is “Home occupations”—consulting services and other activities that do not draw customers to the place of business. They are secondary to the home’s use as a residence and should be nearly invisible to neighbors. Hundreds of home businesses are scattered throughout the county. The *Zoning Ordinance* also allows cottage industries after a public hearing and approval by the **PLANNING & ZONING COMMISSION**. Business may be conducted



in an outbuilding that customers visit. Cottage industries may also have employees. In some cases, the business activity may be somewhat industrial. This not only allows entrepreneurs to combine home and workplace, but it also allows them to start a business that may grow and move to a commercial or industrial area. One advantage of low-density zoning is that, with **MITIGATION**, such uses can operate with minimal impact on neighbors. Some commercial uses that have been approved in unincorporated residential areas include bed-and-breakfast establishments, feed stores, kennels, and recreational facilities.

Future commercial activities in Coconino County are likely to continue to be either neighborhood commercial or highway commercial. The *1990 Comprehensive Plan* and the ten **AREA PLANS** encourage locating commercial development at major intersections and in existing communities; indeed, most commercial land use has evolved at such locations. The *1990 Comprehensive Plan* also strongly discouraged “strip development” along state highways because it promotes inefficient movement and detracts from an area’s visual character. The *Flagstaff Area Regional Land Use and Transportation Plan* designated several major intersections and commercial areas as **RURAL ACTIVITY CENTERS**, which may include small-scale retail facilities, offices, schools, transit stops, parks or other civic facilities, and other business designed to meet residents’ needs. In most of the unincorporated county, commercial uses serve both residents and tourists. In some locations, however, commercial businesses cater almost exclusively to highway travelers and tourists; in others, they cater almost exclusively to local residents. Considering commercial activity during the development process helps ensure that neighborhood-oriented businesses are convenient to local residents, reducing their need to travel long distances for basic services.

The **RURAL CHARACTER** of low-density residential areas can be best preserved by continuing to encourage mostly neighborhood businesses rather than regional commercial businesses such as shopping malls. The County adopted a *Zoning Ordinance* amendment in 2001 prohibiting retail establishments over 70,000 square feet in rural areas.

Design guidelines for new commercial and industrial uses have been adopted in a number of communities through the Area Plan process. These communities include Tusayan, Doney Park, Oak Creek Canyon, Kachina Village, and Mountainaire. Although the *Fort Valley Area Plan* called for design guidelines, none were developed. Such guidelines can significantly improve the quality of the built environment without severely narrowing architectural choices or increasing costs. Tusayan, in particular, has experienced considerable improvement in the appearance of its commercial core since adopting design criteria.

Goal: **Ensure commercial development that is well-designed and appropriately located within communities and activity centers.**

Policies:

- 17. Commercial development projects shall be designed in a manner that is compatible with the rural character of the area in which the project is proposed.
- 18. Future commercial uses shall be located at major intersections and in existing communities and population centers.

SEE ALSO APPENDIX C

County Communities Overview – Communities With Area Plans

SEE ALSO PAGE 74

Community Character: Rural Activity Centers



19. Within defined commercial activity centers, a range of uses shall be supported that are appropriate for each individual location and community, and may include small scale retail, offices, business and personal services, schools, and parks designed to meet the needs of the area.
20. The County supports locally based neighborhood commercial businesses.
21. Regional commercial uses such as shopping malls and large retail establishments are encouraged to locate within incorporated municipalities in order to obtain a full range of urban services.
22. Large resort commercial⁶⁶ uses should only be sited in appropriate locations that can be adequately served by roads, water, sewer and other public facilities and services, and shall be discouraged from locating in remote areas. *SEE CONSERVATION GUIDELINE: B*
23. In reviewing the environmental impacts of a proposal, the County favors development projects that demonstrate sensitivity to the natural and cultural environment including preservation of views, trees and native vegetation, consideration of wildlife, and conservation of water resources. *SEE CONSERVATION GUIDELINE: B*
24. In order to facilitate efficient and safe traffic movement and to avoid aesthetic problems, strip commercial development is strongly discouraged.
25. Where new commercial or industrial development projects are proposed adjacent to residential areas, adequate buffers shall be required.
26. Rezoning to commercial or industrial shall be discouraged for large tracts of land exceeding the area for which specific uses or site plans have been proposed, and where appropriate, zone changes shall be conditioned on a specific site plan and for specific uses.
27. Design flexibility that results in a mix of compatible land uses is strongly encouraged.
28. The County shall continue to support home occupations and cottage industries that do not intrude on the residential character of neighborhoods.



Industrial

Because most industrial facilities need municipal water, sewer, fire protection, and other services, they are located within cities and towns. As of 2002, areas of heavy industrial zoning and development were located near Winona (76 acres) and on Leupp Road (242 acres) in the Doney Park area. Facilities included a truss manufacturing plant, auto salvage yards, bulk propane storage, a roofing company, and mining activities. A second industrial area, located just west of Flagstaff on Flagstaff Ranch Road (108 acres), features a bottling distribution center and a solid waste company. Bellemont has a large paper products plant, a cabinet shop, a cultured marble plant, and a printing warehouse. A total of 140 acres are industrially zoned in Bellemont. Considerable additional development is possible at both the Flagstaff Ranch Road and Bellemont locations—preferably including warehouse, distribution, and light manufacturing uses that do not require large amounts of water.



Mining has never had a significant economic impact on Coconino County. Mining activity is confined to sandstone quarries north of Ash Fork and to cinder and materials pits throughout the county. However, many mining claims could be reactivated if markets for certain minerals—such as uranium—improve. Most mining activity occurs on state or federal land. On private land, mining is exempt from County **ZONING**.



Mining outside the county directly impacts us. Coal mined in Navajo County is transported by train to the Navajo Generating Station in Page and used to produce electricity. It is also transported to the Mohave Generating Station in Laughlin, Nevada, through a coal slurry line that crosses the county. Because of complex legal and political issues surrounding the use of **GROUNDWATER** for transporting slurry, a pipeline has been proposed from the Colorado River in Marble Canyon to the coal mines.

Goal: Provide for industrial development that is well-designed and environmentally responsible.

Policies:

29. Because of the importance of protecting the natural environment, especially air and water quality, only clean industries are appropriate.
30. The County shall support industrial development projects in areas that are or could be appropriately zoned and where an adequate level of infrastructure exists.
31. Industrial uses are discouraged along scenic corridors or at community gateways. Site design of commercial uses shall enhance and protect the aesthetic quality of community gateways and scenic corridors.

Nonconforming Uses

A **NONCONFORMING USE** is one that was legal prior to 1964, when the *Zoning Ordinance* was adopted, or it was legal prior to the adoption of an amendment or change in zoning classification. According to state law, nonconforming uses can exist indefinitely. Many nonconforming lots that do not meet current minimum lot sizes were created prior to 1964 or 1981, when a new *Zoning Ordinance* was adopted. These lots are legally entitled to building permits. Every amendment to the *Zoning Ordinance*—all 48 between 1981 and 2002—creates a new set of nonconforming situations. For example, when the ordinance was amended in 1986 to prohibit new billboards, all existing billboards became legally nonconforming. Other nonconforming uses include **MANUFACTURED HOME** parks in single-family residential zones, commercial uses such as RV parks in residential zones, single-family residences in commercial and industrial zones, and manufactured homes in zones that allow only site-built homes.

Nonconforming situations comprise a relatively large number of **PLANNING & ZONING COMMISSION** and Board of Adjustment cases. Although such uses are allowed to continue indefinitely, the County issues numerous requests to improve, enlarge, or alter them. And although the *Zoning Ordinance* encourages removing nonconforming uses or bringing them into compliance, this is usually not possible or economically viable. The County's goal is to improve such uses; it also allows for gradually improving nonconforming uses or bringing the property into conformance in stages rather than all at once.

State law also allows nonconforming commercial uses to expand by 100 percent as long as the proposed expansion is on the same property and in the same **ZONING** district. The *Zoning Ordinance* requires a **CONDITIONAL USE PERMIT** for such expansions. The conditional use permits are also required to convert one nonconforming use to another nonconforming use that has less impact on the area.

NONCONFORMING USE

A use or activity that was lawful prior to the adoption, revision, or amendment of the *Zoning Ordinance* or applicable zoning classification that does not conform to present requirements.



Goal: Improve or eliminate the negative impacts of nonconforming uses.

Policies:

32. The County supports the elimination or improvement of nonconforming uses in order to bring properties into conformance and to eliminate land use conflicts.
33. The County supports the conversion of nonconforming uses to legal uses or to other uses that have less impact on the area.
34. Except as allowed by state law, enlargements and alterations that increase the degree of nonconformity are discouraged.

Locally Undesirable Land Uses

LOCALLY UNDESIRABLE LAND USE

A site or facility such as a landfill, communications tower, or and high-voltage transmission line that constitutes a real or perceived nuisance.

LOCALLY UNDESIRABLE LAND USES (sometimes referred to as “LULUs”) feature facilities such as sanitary landfills, wireless communication towers, and high-voltage transmission lines. Most, if not all, of these facilities are essential for basic economic infrastructure or social purposes; however, these facilities are often considered **NIMBY** sites—as in “not in my back yard.” The County strives to site such facilities in a way that minimizes disturbance and maximizes **MITIGATION** to reduce impacts. For example, the County amended the *Zoning Ordinance* in April 2001 to encourage providers to locate wireless communication facilities in disturbed areas or in areas where towers already exist. The resulting *Wireless Telecommunications Facilities Ordinance* discourages towers in scenic viewsheds and residential areas. Although some land uses (like mining) are exempt under state statute, most undesirable land uses can only be approved through a **CONDITIONAL USE PERMIT** and public hearing process.

Goal: Minimize the impacts of locally undesirable land uses on the environment and community character.



Policies:

35. The County shall work closely with applicants for undesirable land uses to minimize the potential impacts on residential areas, rural character and the environment. *SEE CONSERVATION GUIDELINES: B, E, G, H, I*
36. The County promotes better public understanding as to the importance of locally undesirable uses that serve a greater community need.

SIR WINSTON CHURCHILL

“There is no finer investment for any community than putting milk into babies.”





Introduction

Locating future **DEVELOPMENT** wisely is essential to meeting our goals of maintaining **OPEN SPACE** and encouraging logical growth patterns. Methods for achieving these goals include **INFILLING** on **UNDEVELOPED** private land and judiciously using state and federal lands acquired through sale or exchange. Identifying **GROWTH AREAS** not only provides additional certainty to developers, but it also conserves natural resources. Another challenge we face is paying for growth; possible options include assessing **IMPACT FEES** to cover the cost of capital projects associated with new development. Ideally, cost-recovery methods are tied to a **CAPITAL IMPROVEMENT PLAN (CIP)** adopted by the County. Supporting and driving growth are new jobs. Improving job opportunities requires a coordinated regional approach to economic development, with a focus on appropriate employers.

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This Element discusses key factors in designating growth areas, looks at the future of federal and state lands, and examines our options for paying for future growth, including capital improvements planning. It also covers issues related to economic development. The goals and policies of this Element complement those in the Land Use Element—they promote orderly growth in a way that protects the **NATURAL ENVIRONMENT**.

The Conservation Framework Relationship

Because accommodating future growth responsibly hinges on making sound land use decisions, this Element is strongly related to all five ecological principles and eleven **CONSERVATION GUIDELINES** specified in the **CONSERVATION FRAMEWORK**. These principles and guidelines provide a concise list of criteria to consider when reviewing **DEVELOPMENT** plans. They support concentrating new development in or near existing communities to protect **LANDSCAPES** and **HABITATS**, conserve resources, and minimize effects on **ECOLOGICAL PROCESSES**. They also dictate that economic development focus on using local resources and developing new, environmentally appropriate industries.

Our Purpose & Vision

In our vision for Coconino County, future growth and development are accommodated in designated areas that preserve open space and landscapes. The goals and policies of this Element help ensure that growth occurs in areas that have an appropriate level of infrastructure and services. Through capital improvement planning and successful allocation of the costs associated with new growth, residents are assured an acceptable level of government services. A range of economic development opportunities provides a diverse employment base and ensures the county’s continued economic vitality.



Growth Areas

Criteria & Description



J. Ernst, Julie

GROWTH BOUNDARY

A line denoting areas where higher densities are encouraged to accommodate expected growth, usually where infrastructure can be provided. Outside this line, development must occur under the zoning that existed when the boundary was created.

INHOLDING

Private property that is surrounded on all four sides by land managed by the U.S. Forest Service or the Bureau of Land Management.

Arizona's *Growing Smarter* legislation requires that counties with populations exceeding 200,000 devote a section of their comprehensive plan to **GROWTH AREAS**. Specifically, they must identify areas that are suitable for **MULTIMODAL** transportation and infrastructure improvements that apply to concentrated uses. Although Coconino County's population was less than 200,000 as of 2002, identifying future growth areas makes good planning sense. *Growing Smarter* requires policies for mixed-use planning to increase the efficiency of **CIRCULATION SYSTEMS**, to make infrastructure expansion more economical, and to conserve natural resources and open areas.

An **URBAN GROWTH BOUNDARY** was established around portions of the City of Flagstaff; likewise, **RURAL GROWTH BOUNDARIES** were established around the private land base in nearby unincorporated communities—Doney Park, Timberline–Fernwood, Fort Valley, Kachina Village/Forest Highlands, Mountainaire, and Bellemont. In some areas, private **INHOLDINGS** were not included within a boundary because future development was intended to conform to existing **ZONING**. These areas lie within a national forest, farther from established communities; they include Hart Prairie, Rogers Lake, and lands south of Lake Mary Road.

GROWTH BOUNDARIES could be drawn outside of the Flagstaff area as well, particularly for growing communities such as Blue Ridge, Forest Lakes, Mormon Lake, Pinewood / Munds Park, Valle, and the central core area of Parks. Such boundaries would facilitate approval for higher density or commercial development in areas that are already served by infrastructure and in areas where fire protection and other services are available. The availability of infrastructure is the most important criterion for establishing a growth area; rezoning to higher density is discouraged in remote areas where infrastructure cannot be provided by extending existing improvements.

INFILLING is likely to be the method for accommodating growth in the near future. The *Flagstaff Area Regional Land Use and Transportation Plan* and all of the county's **AREA PLANS** call for developing the existing private land base before looking to other lands. When all available private land is occupied, we can accommodate growth using various approaches. One such approach involves expanding growth boundaries; in most areas, this means developing lands that are managed by the Arizona State Land Department or the U.S. Forest Service. Other approaches include redeveloping certain areas to increase their density, developing new communities, and allowing or encouraging growth in communities located at some distance from employment centers (such as Winslow or Ash Fork for those desiring to work in Flagstaff). New growth could occur in other parts of the county—for example, along major highways—within new, mixed-use communities, where infrastructure is provided as part of community development.

State Lands

The State of Arizona holds its lands in trust. It can sell or lease these lands to generate revenue for beneficiaries of the trust, the largest of which is the public school system. In Coconino County, most state lands are leased for grazing; some are leased for commercial and other purposes. Some state lands have been sold in the Flagstaff area. In **URBAN** areas, the state actively leases or sells its lands for future development. Within the Flagstaff urban growth boundary, one section and portions of three others are identified for future development.

Growing Smarter requires that counties confer with the State Land Department “for the purpose of guiding and accomplishing a coordinated, adjusted, and harmonious development of the county.” This agency is required to develop draft conceptual land use plans outlining development in all **STATE TRUST LANDS**. Such a plan was written in 2002 for



Grant Cooper



lands in the Flagstaff urban area. Outside of the incorporated city limits, it identifies most state sections for very low density residential development—in some cases, one unit per 50 acres. In rural areas, the State Land Department has no plans for active disposal and does not intend to develop conceptual plans in the foreseeable future.

As of 2002, no state **SECTIONS** in the unincorporated county were in the likely path of development. A few small portions of sections that could or should be disposed of for development either lie adjacent to existing development (for example, in Grenehaven) or they are already developed (for example, on Route 66, just west of the Flagstaff city limits, and at Twin Arrows). In rural areas, most state sections should be retained as **OPEN SPACE** and leased for grazing or managed for **CONSERVATION** in conjunction with large ranches.

Growing Smarter also established a program to nominate certain state trust lands for reclassification to “suitable for conservation.” The **ARIZONA PRESERVE INITIATIVE** allows state lands with high environmental and open space values to be temporarily reclassified for conservation while municipalities, counties, or other groups raise funds to buy the land.⁶⁷

Of particular concern are the hundreds of state sections in checkerboard ownership areas. Where ranches are sold and platted into 40-acre lots, alternating state sections could increase in value. However, as of 2002, the State Land Department had no intention of selling state trust lands for **40-ACRE LOT DEVELOPMENT**. On working ranches, the state sections are just as important for wildlife and open space values as private lands. Assuming that ranches are managed in a way that preserves environmental values, the best solution may be increasing the length of the lease. As of 2003, leases could be for no more than 10 years.

The Centennial Forest covers a large checkerboard area southwest of Flagstaff that is characterized by a mix of Forest Service and state sections. Most of these state lands are managed for research purposes by Northern Arizona University through an agreement with the State Land Department.

Federal Lands

Forest Service and Bureau of Land Management lands can be exchanged for private lands, a process that has been used extensively over the last half century. Land exchanges can direct growth away from remote or **ENVIRONMENTALLY SENSITIVE LANDS** and focus it near existing communities where infrastructure is available or easy to accommodate. The process is initiated by owners of private inholdings who want to acquire federal land. An environmental assessment must be completed by the federal land management agency, and exchanges are based on equal fair market value. This occurred in the 1990s in Blue Ridge, where isolated private sections were traded for **FORESTLAND** adjacent to existing development. This program allows the Forest Service to consolidate lands, protect important **HABITAT** areas, and free up additional land for growth.

Many private parcels are good candidates for land exchange because they contain **RIPARIAN AREAS**, open meadows, or other environmentally sensitive lands. In addition, some very remote parcels should be acquired to prevent wildlife **HABITAT FRAGMENTATION** and avoid the problems associated with providing services to such areas. Acquiring such lands means giving up federal lands for development. In some cases, these lands can be located in communities outside the county, although retaining some federal lands may be desirable or necessary to accommodate future growth. The *Flagstaff Area Open Spaces and Greenways Plan*⁶⁸ identified forestlands in the Doney Park area as low priority for retention as open space, lands that could eventually be exchanged for future development. There are likely additional lands adjacent to existing communities where growth and the extension of services is logical.



SEE ALSO PAGE 89

Land Use: Residential – 40-Acre Ranchettes



John Aber



Because most federal land lies within the open space zone, a zone change is required for development after the exchange—such changes are not automatic. The property owner typically requests a zoning reclassification based on zoning in the immediate area. This request must be approved by the **PLANNING & ZONING COMMISSION** and the **BOARD OF SUPERVISORS**.

Goal: Concentrate development in designated growth areas while preserving open space and landscapes.

Policies:

1. The County supports designation of rural growth boundaries around existing communities as new Area Plans are developed or as existing plans are updated. *SEE CONSERVATION GUIDELINE: B*



John Aber



2. The County may support higher density residential development and commercial development within growth areas where physical infrastructure and public safety and community services are available.
3. The County strongly supports infill development of vacant lands within existing developed areas before outlying or more remote lands are considered for development. *SEE CONSERVATION GUIDELINE: B*
4. Planned communities with a mix of uses are encouraged where infrastructure and services exist or can be provided.
5. Rezoning to higher density is discouraged in more remote areas where the provision of infrastructure is not a logical extension of existing improvements.
6. The County supports federal acquisition through exchange or purchase of private inholdings surrounded by national forest or BLM lands that are important habitat areas, that contain environmentally sensitive lands, or that would reduce fragmentation. *SEE CONSERVATION GUIDELINES: B, C, D, E*



John Aber

Cost of Development

As of 2002, those developing a **SUBDIVISION** must pay not only for on-site infrastructure but usually for some off-site improvements, such as turn lanes and water lines. However, developers do not pay, other than through the additional general tax revenues generated by the development, for public facilities such as new **PARKS** and **TRAILS**, sheriff's facilities, traffic signals, utility upgrades, schools, and highway improvements. Instead, funds originate from bonds, special districts, **IMPACT FEES**, and/or

dedications. Bonding has funded school improvements, and more recently, park improvements; special districts have funded road improvements.

Coconino County has not yet chosen to assess impact fees on new construction, although it has the legal authority to do so. Such fees could be added to the building permit fee to offset a portion of the cost of the capital projects required to support the new development. Needs are determined via a study that covers the geographic area around the development. Impact fees can only cover the incremental cost of the capital facility that is attributable to each house, and fees must be spent in the area where they were collected to benefit residents. Municipalities around the country charge impact fees to

IMPACT FEE

A fee imposed on new development to help finance the cost of improvements or services necessary for the development.



cover costs for road improvements, police and fire stations, parks, libraries, traffic signals, and many other public services and facilities.

In a rural county where few permits are issued in any given area, it is difficult to implement an impact fee program. Impact fees have been discussed for the Doney Park area to improve roads and parks; however, because few permits are issued there, the fees would pay for a very small percentage of the improvements. Another issue is that impact fees can only pay for improvements related to new development—not existing deficiencies—and the connection between improvements and development is not always clear. Further study is required to determine the feasibility of impact fees and other sources of revenue for future capital improvements. However, given the County’s lack of money for capital improvements, discussions about such fees will continue.

Goal: Ensure an equitable means of paying for the costs associated with growth.

Policies:

7. Development projects shall be required to pay their fair share of off-site improvements and public facilities such as roads and utilities necessary to support the development.
8. Applicants for all new development projects shall assure an adequate level of services including roads, water and wastewater, fire protection and utilities.

Capital Improvements

Capital facilities include a wide range of physical infrastructure and systems needed to support communities. The most basic include transportation infrastructure, water and **WASTEWATER** systems, utilities, libraries, and schools, as well as facilities required for public safety, medical and health care, parks and recreation, and solid waste disposal, among others. Various entities are responsible for capital improvement projects. In the public works arena, for example, Coconino County administers road, drainage, flood control, parks, and transit projects. Other entities—school, fire, and special **IMPROVEMENT DISTRICTS**, as well as private sector organizations—address capital improvements in their respective areas. The *Coconino County Comprehensive Plan* encourages such entities to coordinate in ensuring that facilities are provided in the right places, at the right time.

Typically, **CIPs** identify, prioritize, and schedule capital facility improvements over a certain period—usually 5 or 10 years, but sometimes up to 20 years. This allows local governments to match their capital expenditures with needs of existing and developing communities; in some cases, the CIP can guide development in a preferred direction. In Coconino County, priority is placed on critical infrastructure improvements necessary for public safety and well-being.

Capital improvement planning should consider the overall socioeconomic effects of proposed projects, which should be compatible with the existing community character and should not affect neighborhoods negatively. Scenic, environmental, and other resource-related impacts are also important considerations. Furthermore, generally accepted planning principles call for the logical extension of existing infrastructure to reduce the long-term negative impacts of sprawl, avoid unnecessary leapfrog development, and ultimately provide capital improvements in the most cost-effective manner.



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Goal: Coordinate capital improvements in a timely, orderly, and cost-effective manner.

Policies:

9. The County will set an example in its capital improvement planning process by considering the overall social, economic, energy, and environmental effects of proposed projects. *SEE CONSERVATION GUIDELINES: A, B, C, K*
10. Capital improvements shall be planned for, sited, built, and operated in a manner that provides for the logical extension of existing infrastructure and are compatible with community character, and in harmony with scenic and environmental resources.
11. Private development projects shall ensure that infrastructure improvements are consistent with public CIPs.
12. As deemed necessary to support major developments and subdivisions, developers in cooperation with utility providers shall be responsible for the installation, construction, or upgrade of necessary public utilities without diminishing the level of service to existing residents. *SEE CONSERVATION GUIDELINE: B*
13. As part of the capital improvement planning process, the County will identify and determine the means of dedicating sites and acquiring rights-of-way for future improvement projects. *SEE CONSERVATION GUIDELINE: E*

Economic Development

Future Commercial & Industrial

Historically, the County has not actively sought new commercial and industrial businesses. All five municipalities have economic development programs, and the County works with cities and towns to address land development opportunities in unincorporated areas. For example, it has worked with the Greater Flagstaff Economic Council on economic development projects throughout the county.



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Opportunities are plentiful for acquiring relatively inexpensive land for economic development, especially in the Bellemont area. Unfortunately, investments have not been made in the proper road, water, and **WASTEWATER** infrastructure to fully use industrial-zoned land parcels. Additional opportunities may exist in areas that are undeveloped or not zoned for economic development, such as the Interstate 40 corridor east of Flagstaff toward Winslow. In Williams and Fredonia, land suitable for new commercial and industrial activity has been annexed to provide urban services and reap tax benefits.



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Our best economic development options focus on “basic-sector” industries—those that sell products outside the county and bring income into the local economy from outside. Basic-sector industries create a “multiplier effect” that generates additional retail and service jobs required to support each basic sector job. Because protecting the **NATURAL ENVIRONMENT**, especially air and water quality, is so important, only “clean” industries are appropriate. Likewise, because we have limited water supplies, we can support only industries that use low net volumes of water.



Jobs/Housing Mix

Residents have long expressed concern about the disparity between income and cost of living, especially in the Flagstaff area. Less than half of Flagstaff households can afford the median-priced, single-family home; many spend far more than one-third of their income on housing. In addition to finding ways to provide more **AFFORDABLE HOUSING**, the other solution to this problem is raising incomes and attracting new employers that pay acceptable, **LIVABLE WAGES**.

Locating jobs and housing in close proximity can reduce travel times and dependency on single-occupancy commutes, thereby reducing gasoline consumption and environmental impacts. However, this has become increasingly difficult. Many households have two or more residents with jobs in different locations, a trend facilitated by the availability of major highways. For example, although housing has been developed near industrial areas in Bellemont, those residents will likely work in Flagstaff; nevertheless, the opportunity for mixed uses exists. Our goal is to avoid creating large areas or communities that are exclusively residential, commercial, or industrial.

Enterprise Zone

Enterprise zones provide a way to lure prospective employers to the county through tax incentives. An enterprise zone is a designated area where incomes are lower than the county average and there is a desire to attract new employers. Industries or businesses in enterprise zones can take advantage of income tax credits. Other incentives include property tax reclassification for qualified manufacturing firms. An enterprise zone has been designated in a large part of the county extending from Blue Ridge to Fredonia.

Niche Industries

Certain industries may want to locate in Coconino County because it offers unique products, markets, or local resources, such as the small-diameter trees that are removed from ponderosa pine forests and juniper woodlands to improve their health and reduce fire risk. Another potential niche industry is native seed production, which could benefit developers and homeowners in planting locally appropriate vegetation.

Tourism

Tourism will continue to play a significant role in the economy of the county. Grand Canyon National Park draws approximately 5 million visitors annually, and approximately 3 million people visit Oak Creek Canyon and Lake Powell. Other nationally known attractions such as Sunset Crater, Walnut Canyon, and Wupatki also draw large numbers of tourists. In addition, newly designated national monuments in northern Arizona will draw visitors from around the world as they become known, and recreationists will continue to come here to hike, camp, bike, ride horses, and ski.

We can expand the role of tourism by pursuing opportunities in **ECO-TOURISM**, **ETHNO-TOURISM**, and the combination of tourism, recreation, and education offered through programs such as Elderhostel.

LIVABLE WAGE

A wage that is high enough to allow a greater percentage of the population to qualify for housing.



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ETHNO-TOURISM

Tourism that focuses on the enjoyment of, or education about, indigenous people and cultures.



Goal: Ensure a range of economic development opportunities that offers a diverse employment base and a thriving economy.

Policies:

14. The County encourages the establishment of basic sector industries in Coconino County that are consistent with the rural character of the area.
15. The County supports new industry that preserves significant features of the natural environment and that causes minimal impact on resources. *SEE CONSERVATION GUIDELINES: D, G, I*
16. The County supports livable wages.
17. The County supports niche industries that utilize local resources in an environmentally responsible manner. *SEE CONSERVATION GUIDELINE: G*
18. Locating jobs in mixed-use centers or communities is supported in order to minimize travel times and make access to jobs more convenient. *SEE CONSERVATION GUIDELINE: G*
19. The County supports tourist-related development projects that are designed to minimize human impact on the environment, especially if they are focused on showcasing the county's unique features. *SEE CONSERVATION GUIDELINES: B, H*

EDWARD ABBEY

*"Growth for the sake of growth
is a cancerous madness."*





Glossary of Terms

- 100-Year Flood:** A flood that has a 1 percent chance of being equaled or exceeded in any given year.
- 40-Acre Lot Development** or **40-Acre Ranchettes:** A division of land into parcels of 36 acres or more, designated in the **ARIZONA REVISED STATUTES (ARS)** as “unsubdivided lands.”
- Access:** The means for pedestrians, vehicles, and other travel modes to enter or leave a property safely and effectively.
- Access Management:** A planning technique used to maintain the capacity and safety of roadways by regulating the way vehicles enter and leave adjacent properties.
- Action Item:** A task designed to implement one or more policies and that identifies who will perform the task, when and how the task will be completed.
- Active Management Area (AMA):** Defined under *ARS §45.402* as a geographic area where **GROUNDWATER** is managed to reduce localized **OVERDRAFT** and achieve long-term balance of what is removed and replaced in **AQUIFERS**.
- Active Recreation:** A type of recreation that requires areas and facilities for activities such as softball, baseball, football, soccer, golf, tennis, basketball, and various forms of children’s play. *See also:* **PASSIVE RECREATION**.
- Affordable Housing:** Owned or rented housing costing less than 30 percent of a household’s total gross income, assuming that this income equals the median for a county or an area.
- All-Terrain Vehicle (ATV):** *See:* **OFF-HIGHWAY VEHICLE**.
- Aquifer:** An underground geologic formation that contains sufficient saturated, permeable material to yield significant quantities of **GROUNDWATER** to wells and **SPRINGS**.
- Area Plan:** An official amendment to the *Coconino County Comprehensive Plan* that reflects the local residents’ vision of the future, contains goals and policies for development, and provides guidance for decision makers. An Area Plan may serve a community, specific neighborhoods or rural areas. *See also:* **RURAL PLANNING AREA**.
- Arizona Corporation Commission (ACC):** The state agency with regulatory responsibility for incorporation, securities, railroad and pipeline safety, and utilities.
- Arizona Department of Commerce (ADOC):** The agency that promotes economic, community, and workforce development statewide. ADOC’s Community Development Division provides technical assistance and financing services in the areas of comprehensive planning, infrastructure development, energy efficiency, and rural economic development.
- Arizona Department of Environmental Quality (ADEQ):** The agency with regulatory responsibility for air and water quality, as well as for the storage, treatment, and disposal of solid and hazardous waste.
- Arizona Department of Transportation (ADOT):** The agency responsible for developing, operating, and maintaining the state and federal highway infrastructure.
- Arizona Department of Water Resources (ADWR):** The agency with regulatory responsibility for managing **SURFACE WATER** and **GROUNDWATER** resources in Arizona.
- Arizona Earthquake Information Center (AEIC):** An institution within the Geology Department of **NORTHERN ARIZONA UNIVERSITY** that conducts research and distributes information on Arizona earthquakes.
- Arizona Game & Fish Department (AGFD):** The agency charged with conserving, enhancing, and restoring the state’s diverse wildlife resources and **HABITATS** through aggressive protection and management programs.

NOTE

This glossary of terms has been developed exclusively within the context of the *Coconino County Comprehensive Plan*



- Arizona Preserve Initiative (API):** A program for cities, counties, and other organizations to petition the **ARIZONA STATE LAND DEPARTMENT** to reclassify state lands with high environmental protection or **OPEN SPACE** values for **CONSERVATION**. To qualify, lands must be purchased within 8 years of reclassification.
- Arizona Revised Statutes (ARS):** Laws adopted by the Arizona state legislature.
- Arizona State Land Department (ASLD):** The agency responsible for managing state trust lands and resources to enhance values and optimize economic returns for beneficiaries.
- Arterial Roadway:** Roadways designed to move through-traffic efficiently, at speeds as high as can be reasonably allowed in view of safety considerations and capacity.
- Average Daily Traffic (ADT):** The average number of vehicles passing a fixed point during a 24-hour time-frame; a convention for measuring traffic volume.
- Biodiversity or Biological Diversity:** The variety and complexity of life and organisms among **SPECIES**, populations, **HABITATS**, and **ECOSYSTEMS**.
- Board of Supervisors (BOS):** The five elected officials, each representing a geographic district, that govern Coconino County.
- Bureau of Indian Affairs (BIA):** The federal government responsible for managing the 56 million acres of land held in trust by the United States for American Indians, Indian tribes, and Alaska Natives.
- Bureau of Land Management (BLM):** The federal agency within the U.S. Department of the Interior that administers 262 million acres of America's public lands, located primarily in 12 western states.
- Capital Improvement Plan (CIP:)** An annually updated document that describes transportation, flood control, and park improvements, along with other capital projects and expenditures that are programmed for a set period, usually 5 years.
- Certified Local Government (CLG):** A government entity that maintains a certified historic preservation program, which requires a preservation ordinance and commission, at least a part-time staff person responsible, and a formal way of identifying, registering, and protecting cultural resources.
- Checkerboard Area:** An area characterized by a mix of land ownership or land management, often with every other **SECTION** under different ownership—most commonly, state and private sections.
- Circulation System:** Transportation infrastructure that fulfills access and mobility needs for people and goods.
- Coconino Community College (CCC):** A 2-year post-secondary institution that offers certificate programs, Associate of Arts degrees, Associate of Science degrees plus many other educational and vocational programs. CCC maintains facilities in Page, Williams, Grand Canyon and Flagstaff.
- Coconino Parks and Open Space Program (CPOS):** A program of the Coconino County Parks & Recreation Department to identify and conserve open space, natural areas, and lands with high recreation and scenic value.
- Collector Roadway:** Typically, a rural route of primarily intra-county importance that funnels traffic between local streets and the **ARTERIAL ROADWAY** system. *See also:* **MINOR COLLECTOR** and **MAJOR COLLECTOR**.
- Community-Based Policing:** A law enforcement approach where police officers work directly with residents to actively identify and solve problems in the local community.
- Community Development Department (CD):** The County department responsible for planning and **ZONING**, building permits and inspections, **FLOODPLAIN** management, and special districts.
- Commuter:** A person who travels regularly from one place to another place (for example, from a rural area to a city) and back.
- Comprehensive Plan:** A statement of a community's desired future, intended to serve as the primary decision-making guide for growth and development in a county.
- Conditional Use Permit:** A permit issued by the **PLANNING & ZONING COMMISSION** for a use that is allowed within a **ZONING** district after a public hearing. With approval, the Commission typically applies certain conditions on the location and operation of this use.
- Conservation:** The protection and management of resources and the natural environment to ensure the continued integrity of healthy, functioning **ECOSYSTEMS**.
- Conservation Easement:** A legal property interest or right granted by the landowner to another party to maintain or limit use of the land to **CONSERVATION** purposes, typically to maintain its natural state and preclude future development.
- Conservation Framework:** A scientifically-based statement of ecological principles, including guidelines for their consideration in land-use planning.
- Conservation Guidelines:** A set of eleven scientifically-based guidelines that form the basis of the *Coconino County Comprehensive Plan's* **GOALS** and **POLICIES**.
- Crime Prevention Through Environmental Design (CPTED):** A community planning approach that promotes designing or modifying the environment to reduce opportunities for crime. *See also:* **COMMUNITY-BASED POLICING**.



- Critical Habitat:** A federally designated area that is determined to be essential for the **CONSERVATION**, management, and survival of **THREATENED AND ENDANGERED SPECIES**.
- Cultural Landscape:** A visual demonstration of traditional interactions between humans and the natural environment over time.
- Cultural Resources:** An aspect of a cultural system that is valued by or significantly representative of a culture, or that contains significant information about a culture.
- Defensible Space:** The area between a structure and a potential oncoming wildfire where the vegetation has been modified to reduce the threat of ignition. This area provides an opportunity to “defend” the structure. *See also:* **SURVIVABLE SPACE**.
- Density Bonus:** An additional number of units or development capacity allowed in exchange for providing certain public benefits or amenities, such as parks, open space, or affordable housing.
- Design Review Overlay (DRO):** An overlay district applied to specific geographic boundaries (typically within an **AREA PLAN**) which establishes guidelines for new commercial, industrial, public, and semipublic uses. DROs require a review and approval process for exterior design, materials, textures, colors, signs, lighting, fencing, and landscaping but do not apply to single-family residential construction.
- Developed Land:** Land that has been subjected to construction, reconstruction, conversion, structural alteration, or relocation; mining, excavation, grading, landfill, or significant land disturbance; or any use or extension of the use of land. *See also:* **UNDEVELOPED LAND** and **UNIMPROVED LAND**.
- Development:** Any human-made change to improved or **UNIMPROVED LAND**.
- Development Fee:** *See:* **IMPACT FEE**.
- Development Project:** A project that requires approval by the **PLANNING & ZONING COMMISSION** and/or the **BOARD OF SUPERVISORS**.
- Discharge:** The flow of water in a stream, ditch, or canal, or the outflow of **GROUNDWATER** from a flowing well or **SPRING**.
- Disturbed Site:** An area of land that has been subject to clearing, cutting, excavating, filling, or grading; a site that has altered land topography or vegetative cover.
- Ecological Process:** The interactions among **ECOSYSTEM** components that govern their long-term functioning.
- Ecosystem:** The naturally interacting community of plant and animal **SPECIES** and their physical environment.
- Eco-Tourism:** Tourism that focuses on enjoyment of the environment or natural resources. *See also:* **ETHNO-TOURISM**.
- Effluent:** A discharge of (treated or untreated) wastewater into the environment. *See also:* **WASTEWATER**.
- Element:** A component or “chapter” of a comprehensive plan describing a set of related planning themes.
- Emergency Egress:** An alternate means or path for leaving an area or structure in the event of an emergency.
- Environmentally Sensitive Lands:** Areas characterized by **FLOODPLAINS**, **SPRINGS**, stream corridors, **WETLANDS**, **THREATENED AND ENDANGERED SPECIES** habitat, old growth or rare vegetation, steep slopes, or other critical natural resources as determined by best available science.
- Erosion:** The wearing away of soil and rock by weathering, mass wasting, and the action of streams, glaciers, waves, wind, and underground water.
- Ethno-Tourism:** Tourism that focuses on the enjoyment of, or education about, indigenous people and cultures. *See also:* **ECO-TOURISM**.
- Fault System:** An area characterized by interconnected geologic faults. *See also:* **NORTHERN ARIZONA SEISMIC BELT (NASB)**.
- Fee-Simple Lands:** Privately owned lands.
- Federal Aviation Administration (FAA):** The federal agency charged with primary responsibility for the safety of civil aviation.
- Federal Emergency Management Agency (FEMA):** The federal agency responsible for reducing the loss of life and property and protecting the nation’s critical infrastructure from hazards.
- Federal Highway Administration (FHWA):** The federal agency responsible for developing, maintaining, and funding the federal roadway system.
- Firebrands:** Burning airborne embers that are generated by a wildfire and transmitted by wind beyond the fire front. Firebrands often ignite spot fires.
- Flagstaff Metropolitan Planning Organization (FMPO):** The organization with lead responsibility for developing transportation plans and programs for the greater Flagstaff urban area; consists of City of Flagstaff, Coconino County, and ADOT.
- Flagstaff Urban Trail System (FUTS):** A system of over 20 miles of recreational and alternative transportation pathways within Flagstaff and connecting to surrounding national forest areas.



- Floodplain:** Any land area (typically adjoining a river, stream, lake, or other body of standing water) that is susceptible to inundation by a **100-YEAR FLOOD**.
- Floodplain Management Overlay Zone (FPM):** An overlay zone that establishes regulations for developing in **FLOODPLAINS** to minimize flood-related losses. *See also:* **100-YEAR FLOOD**.
- Functional Classification System:** An established roadway hierarchy that accounts for the roadway's purpose, its character given the adjacent land uses, and its role in supporting **MULTIMODALISM**.
- Gateway:** An entrance into a community or a specific area, typically along a major transportation corridor.
- Geographic Information System (GIS):** A means of displaying and analyzing data associated with points or areas on maps. This data management system may be used to describe land uses or physical attributes such as soil or vegetation type.
- Goal:** A broad statement of desired outcomes to which effort is directed in order to bring a community closer to its overall vision of the future.
- Gray Water:** Wastewater, collected separately from sewage flow, that originates from a clothes washer, bathtub, shower, or sink, but not from the kitchen sink, dishwasher, or toilet. *See also:* **RECLAIMED WATER**.
- Grazing:** The consumption of standing forage (edible plants) by wildlife and livestock on rangelands or fenced pasture. Livestock grazing is usually associated with commercial uses related to ranching.
- Greenway:** A linear open space established along a natural corridor for **CONSERVATION**, recreation, or circulation purposes.
- Groundwater:** The water stored under the surface in an **AQUIFER** that forms a natural reservoir. Groundwater typically **DISCHARGES** via wells or **SPRINGS**. *See also:* **SURFACE WATER**.
- Groundwater Management Act (GMA):** The state legislation that created the **ARIZONA DEPARTMENT OF WATER RESOURCES** for managing **GROUNDWATER** resources in Arizona and established **ACTIVE MANAGEMENT AREAS** and **IRRIGATION NON-EXPANSION AREAS**.
- Growth Area:** An area designated to accommodate future growth and development.
- Growth Boundary:** A line denoting areas where higher densities are encouraged to accommodate expected growth, usually where infrastructure can be provided. Outside this line, development must occur under the **ZONING** that existed when the boundary was created. *See also:* **RURAL GROWTH BOUNDARY**, **URBAN GROWTH BOUNDARY**, and **GROWTH AREA**.
- Guideline:** A statement of considerations that directs the decision-making process. *See also:* **CONSERVATION GUIDELINES**.
- Habitat:** The physical and biological environment where an organism lives. Often characterized by a dominant plant form or physical characteristic, habitat includes such components as cover, food, shelter, water, and breeding sites.
- Habitat Connectivity:** The ability for habitat to provide for the connection to other blocks of similar habitat. Such connectivity can be severed by natural causes, but most often is severed by human modification of the landscape. *See also:* **HABITAT FRAGMENTATION**.
- Habitat Fragmentation:** The division of contiguous tracts of wildlife **HABITAT** into progressively smaller patches and isolated areas. Fragmentation often occurs when **WILDLIFE MOVEMENT AREAS** are converted to more narrowly defined **WILDLIFE CORRIDORS**; it can sometimes deplete a habitat area. *See also:* **HABITAT CONNECTIVITY**.
- Hauled Water:** Water transported by tank from its source to an area where it is otherwise unavailable.
- Hazmat:** Hazardous materials; often references a spill or other incident that releases hazardous materials to the environment.
- Heritage Area:** An area or site where cultural monuments, natural areas or features, historic trail systems, or historic land use patterns may have cultural significance, provide a physical link to historic events, or be of exceptional value.
- Historic Preservation:** The use of measures that foster conditions under which modern society and prehistoric/historic resources can exist in harmony and fulfill the social, economic, and other requirements of present and future generations.
- Historic Trail:** A nationally or regionally significant historic route, along with the remnants and artifacts of its historical use.
- Impact Fee:** A fee imposed on new development to help finance the cost of improvements or services necessary for the development.
- Impermeable:** A term describing a medium such as unfractured rock that cannot transmit water.
- Implementation Plan:** A list of action items designed to accomplish the objectives of a comprehensive plan.
- Improved Land:** *See:* **DEVELOPED LAND**.
- Improvement District:** A local unit of government (other than a city or county), authorized and regulated by statute, that is established for road improvements, water control, irrigation, port districts, fire, hospital, sanitary districts, and regional air quality control.



- Infill:** The development of new housing or other structures on scattered vacant sites within built-up areas.
- Inholding:** Private property that is surrounded on all four sides by land managed by the **U.S. FOREST SERVICE** or the **BUREAU OF LAND MANAGEMENT**.
- Inter-Basin Transfers:** The transfer of water from one **GROUNDWATER** basin to another.
- Integrated Conservation Design:** A development concept that considers site characteristics and layout in the larger context of surrounding parcels. Integrated conservation design preserves important and unique natural features such as **OPEN SPACE**, viewsheds, scenic corridors, and wildlife **HABITAT**.
- Interpretive Education:** Methods of communicating information about the natural and/or **CULTURAL RESOURCES** at a specific site or along a **TRAIL**. Tours, signs, and brochures are a few tools available for interpreting resources.
- Invasive, Non-Native Species:** A plant species not historically found in the local area. When introduced into an area, these species proliferate, replacing **NATIVE SPECIES** and reducing **BIODIVERSITY**. *See also:* **NOXIOUS WEEDS**.
- Irrigation:** A means of providing water to agricultural or landscaped areas, typically involving a system of canals and/or pipes and sprinklers.
- Land Use:** A term describing how land is occupied or utilized.
- Landscape:** The unique patterns, structures, and features such as landforms, vegetation, soil, and waterways that distinguish one part of the earth's surface from another.
- Landscaping:** The placement of vegetative cover, trees, rocks, or other materials to improve environmental quality, mitigate land use impacts, and enhance the visual appearance of development. *See also:* **XERISCAPE**.
- Level of Service Standards (LOS):** A methodology for determining a community's need for new facilities or infrastructure based on existing conditions, demand, population, and land area.
- Livable Wage:** A wage that is high enough to allow a greater percentage of the population to qualify for housing.
- Local Roadway:** A street that provides access to land parcels (primarily residential) adjacent to the collector network and serves travel over relatively short distances. *See also:* **MAJOR COLLECTOR**, **MINOR COLLECTOR**, and **COLLECTOR ROADWAY**.
- Lot Split:** A division of land into five or fewer parcels. *See also:* **SUBDIVISION**.
- Locally Undesirable Land Use (LULU):** A site or facility such as a landfill, communications tower, or and high-voltage transmission line that constitutes a real or perceived nuisance. *See also:* **NIMBY**.
- Major Collector:** A type of roadway that links major areas of development—including regional activity centers and residential, commercial, and industrial land uses—and connects **MINOR ARTERIALS**, **MINOR COLLECTORS**, and **LOCAL ROADS**. *See also:* **COLLECTOR ROADWAY**.
- Manufactured Home:** A dwelling unit built after June 1976 to standards established by the U.S. Department of Housing and Urban Development. Manufactured homes are designed for year-round use.
- Memorandum of Understanding (MOU):** An agreement of cooperation that defines the roles and responsibilities related to an issue over which several organizations have concurrent jurisdiction.
- Minor Arterial:** A type of roadway or transportation corridor that links cities, towns, and other traffic generators. Minor arterials attract travel over long distances, provide inter-county and some intra-county service, and generally connect to other **ARTERIAL ROADWAYS** or **COLLECTOR ROADWAYS**. *See also:* **ARTERIAL SYSTEM**.
- Minor Collector:** A type of roadway that primarily routes traffic from local roads to **MAJOR COLLECTORS** or **MINOR ARTERIALS**. *See also:* **COLLECTOR ROADWAY**.
- Mitigation:** The act of eliminating, reducing, minimizing, or compensating for an impact to the environment using measures that directly or indirectly reduce the impact. Applicants must attempt mitigative actions in the following order: (1) avoid impacts by not taking part or all of a certain action; (2) minimize impacts by limiting the degree or magnitude of the action; (3) rectify impacts by repairing, rehabilitating, or restoring the environment; and (4) compensate for unavoidable impacts by replacing or providing substitute resources or environments.
- Mobile Home:** A dwelling unit built on a permanent chassis prior to June 1976. Designed to be used without a permanent foundation, mobile homes can be transported in one or more sections.
- Modular Home:** A dwelling unit that is preassembled in a factory prior to delivery and final assembly. Built to **UNIFORM BUILDING CODE** standards with the same exterior materials customarily used on site-built dwellings, modular homes have a permanent foundation, a minimum roof pitch of 3 in 12, a width of at least 20 feet width, and at least 1 foot of roof overhang on all four sides.
- Multimodal Corridor:** Physical, linear areas containing the infrastructure that supports travel by both motorized and nonmotorized **CIRCULATION**. *See also:* **MULTIMODALISM**.
- Multimodalism:** A holistic view of **CIRCULATION** in which individual modes work together or within their own niches to provide users with the best choices of service. Multimodalism considers how policies for a single mode affect all other modes.



- National Environmental Policy Act (NEPA):** The legislation passed in 1969 to serve as the country’s “national charter” for protecting the environment. NEPA requires Environmental Impact Statements for all major federal actions that significantly affect the environment.
- National Park Service (NPS):** The federal agency within the Department of the Interior charged with preserving the natural and **CULTURAL RESOURCES** and the values of the national park system.
- National Pollutant Discharge Elimination System (NPDES):** A provision of the *Clean Water Act* that prohibits the discharge of pollutants into waters without a special permit from the **U.S. ENVIRONMENTAL PROTECTION AGENCY**, state, or tribal government.
- Native Species:** A **SPECIES** that originates and occurs naturally in a particular region or environment.
- Natural Area:** Public land set aside to conserve and protect natural resources.
- Natural Environment:** The system of plants, animals, soils, water, and air that supports **ECOLOGICAL PROCESSES**.
- Natural Hazard:** A significant threat to life and property produced by natural conditions or processes such as tornadoes, faults, severe soil erosion, slumping, wildfire, or floods.
- Neighborhood Commercial Use:** A use that generates most of its business from local residents.
- Neighborhood Park:** A developed site that features recreation facilities primarily for local use such as sports fields, basketball courts, and playgrounds, and as a community amenity, provides a place for family gatherings, exercise, and relaxation. Neighborhood parks may be operated by homeowners’ associations, neighborhood groups, or in some cases a local government entity.
- NIMBY:** An expression meaning “Not In My Back Yard” that reflects local opposition to new development proposals or nearby land uses. *See also:* **LOCALLY UNDESIRABLE LAND USE**.
- Nonconforming Use:** A use or activity that was lawful prior to the adoption, revision, or amendment of the **ZONING ORDINANCE** or applicable **ZONING** classification that does not conform to present requirements.
- Nonpoint-Source Pollution:** **POLLUTION** that originates from many diffuse sources (such as urban areas, parking lots, agriculture, recreation, and construction) and that is carried by rainfall, snowmelt, **IRRIGATION**, and local **RUNOFF**.
- Northern Arizona Council of Governments (NACOG):** A nonprofit corporation representing local governments to provide a variety of housing, workforce development, planning, and health and human services in Apache, Coconino, Navajo, and Yavapai counties.
- Northern Arizona Seismic Belt (NASB):** A complex of major geologic **FAULT SYSTEMS** in northern Arizona, including the Cataract Creek, Mesa Butte, and Bright Angel fault systems.
- Northern Arizona University (NAU):** Located in Flagstaff, one of three state universities in Arizona with an undergraduate and graduate enrollment around 18,000.
- Noxious Weeds:** Any parasitic or foreign plant that can injure crops, other useful plants, agriculture, livestock, fish or wildlife resources, or public health; any plant on the Federal Noxious Weed List or the Arizona State Noxious Weed List. *See also:* **INVASIVE, NON-NATIVE SPECIES**.
- Off-Highway Vehicle (OHV):** A motorized vehicle used for travel in areas that are normally inaccessible to conventional highway vehicles. OHVs include dirt motorcycles, dune buggies, jeeps, four-wheel-drive vehicles, snowmobiles, and all-terrain vehicles.
- Open Space:** A primarily undeveloped **LANDSCAPE** that provides scenic, ecological, or recreational values or that is set aside for resource protection or **CONSERVATION**; an area of managed production such as **FORESTLAND**, rangeland, or agricultural land that is essentially free of visible obstructions.
- Overdraft:** The removal of more **GROUNDWATER** from an **AQUIFER** than is naturally replenished through **RECHARGE**.
- Overlay Zone:** A zoning district that encompasses one or more underlying zones and that imposes additional requirements above that required by the underlying zone. *See also:* **FLOODPLAIN MANAGEMENT OVERLAY ZONE** and **DESIGN REVIEW OVERLAY**.
- Para-Transit:** Transportation service for persons who, because of a disability, are unable to use the fixed bus-route system.
- Park:** An area set aside for public enjoyment, typically managed by a government entity. Parks may include facilities for recreation.
- Passive Recreation:** A type of recreation or activity that does not require the use of organized play areas or developed facilities. *See also:* **ACTIVE RECREATION**.
- Percolate:** To flow downward to the water table through the soil or other porous medium.
- Planning & Zoning Commission (P&Z):** A 10-member volunteer citizen’s board in Coconino County responsible for reviewing applications for **CONDITIONAL USE PERMITS**, **SUBDIVISIONS**, rezoning, and public **RIGHT-OF-WAY** abandonment requests. Two members are appointed by each County Supervisor.
- Policy:** A specific, guiding statement that outlines the process for achieving a goal.



- Pollution:** The presence of contaminants in concentrations that degrade the natural environment or impact people's health, safety, and comfort.
- Potable Water:** Water suitable for drinking and cooking purposes.
- Prescribed Burning:** The controlled application of fire to wildland fuels in either their natural or modified state, under specified environmental conditions. Prescribed burns are confined to a predetermined area to meet resource management objectives. *See also:* **THINNING**.
- Primitive Roadway:** Roads located on easements or **RIGHTS-OF-WAY** that have not been accepted for County ownership but have been open to the public since June 13, 1975. Designated by the **BOARD OF SUPERVISORS** under *ARS §28-6706*, primitive roads receive limited maintenance (including snow removal) from the County.
- Principle:** Ecologically, a basic truth concerning the functioning of natural systems.
- Private Inholding:** *See:* **INHOLDING**.
- Private Roadway:** A roadway that is located on an easement or **RIGHT-OF-WAY** and has not been accepted for ownership or maintenance by a public entity.
- Public/Semipublic Uses:** Uses listed in the *Coconino County Zoning Ordinance* such as day care centers, pre-schools, hospitals, churches, educational institutions, libraries and museums, public parks, recreational facilities, and utilities.
- Rangelands:** Grasslands, scrublands, and **FORESTLANDS** that provide **HABITAT** for wild or domestic grazing.
- Recharge:** The addition to, or replenishing of, **GROUNDWATER** in an **AQUIFER** by natural or artificial means.
- Reclaimed Water:** Wastewater that has been treated for reuse for purposes other than human consumption. *See also:* **EFFLUENT** and **GRAY WATER**.
- Right-of-Way:** A strip of land acquired by reservation, dedication, purchase, prescription, or condemnation that is intended to be occupied by a road, cross-walk, railroad, power line, pipeline, water line, sanitary storm sewer, or other similar structure.
- Riparian Area:** An area surrounding a river or stream that supports an **ECOSYSTEM** of wildlife, vegetation, soils, and water.
- Runoff:** The portion of rainfall, snowmelt, or other water that flows along ground surface and eventually collects in basins or contributes to the flow of a stream.
- Rural:** Of or relating to the country, country people or life, or agriculture.
- Rural Activity Center:** A centralized, concentrated area of locally oriented commercial, public, and semi-public services and activities.
- Rural Arizona Watershed Initiative:** A program funded by the state legislature and initiated in 1999-2000 to help rural areas finance studies, projects, and programs related to ground-water resources.
- Rural Character:** The pastoral or rustic setting of a location, as defined by local residents according to their preferences and needs.
- Rural Growth Boundary:** The line on a map marking lands in unincorporated areas that are suitable for rural development. *See also:* **URBAN GROWTH BOUNDARY**.
- Rural Planning Area:** An area created by petition of owners of a majority of the property to prepare a plan that emphasizes voluntary, nonregulatory incentives for accommodating the continuation of traditional rural and agricultural enterprises; designated by the **BOARD OF SUPERVISORS** under *ARS §11.806.D.3*.
- Sacred Site or Sacred Land:** A geographical area or feature deemed sacred because of its traditional cultural or religious significance or its ceremonial use.
- Scenic Byway or Scenic Corridor:** Exceptional roads that are worthy of preservation because they traverse areas with distinctive cultural, historic, natural, or other unique qualities.
- Section:** One of 36 units of land within a given township; usually about 1 square mile (640 acres) in area.
- Semipublic Uses:** *See:* **PUBLIC / SEMIPUBLIC USES**.
- Sheet Flow:** Overland flow that occurs outside of defined drainage channels over large areas at a uniform, shallow depth.
- Social Trail:** An unplanned, unauthorized path that developed informally and is not designated or maintained by an agency. *See also:* **TRAIL**.
- Species:** Plants or animals grouped by common genetic attributes and assigned a scientific name. Species may also have common names.
- Spring:** A point on the earth's surface where **GROUNDWATER** discharges from an **AQUIFER**.
- State Historic Preservation Office (SHPO):** A division of Arizona State Parks that is responsible for identifying and protecting Arizona's prehistoric and historic **CULTURAL RESOURCES**.
- Stewardship:** The long-term responsibility for and careful management of the environment, resources, and land.



- Subdivision:** The division of land into six or more lots, parcels, or fractional interests under 36 acres, for sale or lease, including lands divided as part of a common promotional plan; also, the resulting site of subdivided land. *See also:* **LOT SPLIT.**
- Subdivision Ordinance:** The set of regulations adopted by the **BOARD OF SUPERVISORS** specifying the rules and standards for dividing land.
- Surface Water:** Water found in lakes, ponds, and reservoirs or flowing on the earth's surface within a stream, wash, creek, or other natural drainage channel. *See also:* **GROUNDWATER.**
- Survivable Space:** The area surrounding a structure that has been designed or modified to increase its likelihood of surviving a wildfire without active intervention by fire protection services. *See also:* **DEFENSIBLE SPACE.**
- Sustainable Building:** Building techniques and materials that minimize the use of nonrenewable natural resources.
- Thinning:** Selective removal of trees and/or plants to restore the area to a more natural condition and/or open up a stand that is too thick for safety or management purposes. *See also:* **PRESCRIBED BURNING.**
- Threatened & Endangered Species (TES):** **SPECIES** listed by the **U.S. FISH & WILDLIFE SERVICE** that have declined to a point where federal action is necessary for protection. Endangered species are considered more at risk than threatened species.
- Threshold:** Biologically, a tolerance level of a species or its **HABITAT** that, when exceeded, results in irreversible damage. *See also:* **CARRYING CAPACITY.**
- Trail:** A linear, multiple-use, public-access route for recreation or circulation.
- Trail Easement:** The property interest or right granted to a non-owner to travel across a specific portion of land for a specific or limited purpose.
- Trailhead:** A designated public-access point to a **TRAIL** that may feature informational signs as well as parking and restroom facilities.
- Transfer of Development Rights (TDR):** A transfer of the right to develop or build from one portion of a property to another portion, or from one property to another property.
- Transit:** A transportation mode that moves larger numbers of people than an automobile; generally refers to passenger service provided to the public along established routes with fixed or variable schedules at published fares. *See also:* **PARA-TRANSIT.**
- Transportation System Management (TSM):** Cost-effective methods of improving existing transportation systems by reducing vehicle use, facilitating traffic flow, and improving internal transit management.
- Undeveloped Land:** Land that is not developed or used. *See also:* **DEVELOPED LAND and UNIMPROVED LAND.**
- Uniform Building Code (UBC):** National standards for protecting life and property by regulating the design, construction, quality of materials, use, and occupancy of structures.
- Unimproved Land:** Land in a natural, predeveloped state. *See also:* **UNDEVELOPED LAND.**
- United Nations Educational, Scientific & Cultural Organization (UNESCO):** An organization established in 1946 to contribute to world peace and security by promoting collaboration among nations through education, science, culture, and communication.
- U.S. Environmental Protection Agency (EPA):** The federal agency established in 1970 to consolidate a variety of federal research, monitoring, standard-setting, and enforcement activities related to protecting the natural environment.
- U.S. Fish & Wildlife Service (USFW):** The federal agency whose mission is to conserve, protect, and enhance fish, wildlife, and plants, along with their habitats.
- U.S. Forest Service (USFS):** The federal agency charged with managing public lands in designated national forests and grasslands for multiple use.
- U.S. Geological Survey (USGS):** The federal agency that conducts research to provide geologic, topographic and hydrologic information.
- Urban:** A highly developed area that contains a variety of residential, commercial, industrial, and cultural uses; usually an area where access to infrastructure is readily available.
- Urban Growth Boundary:** The line on a map that is used to mark the separation of land that may become urbanized from rural land and within which urban growth should be encouraged and contained and outside of which urban development should not occur. *See also:* **RURAL GROWTH BOUNDARY and GROWTH AREA.**
- User Fee:** A charge for the use of a product, facility, or service.
- Vacant Land:** *See:* **UNDEVELOPED LAND.**
- Viability:** Biologically, a state where a population maintains its vigor, long-term persistence, and potential for evolutionary adaptation.
- Vision:** An overall image of what the community wants to be and how it wants to look in the future.



- Wastewater:** Used water drained from homes, business, and industries; primarily sewage flow. *See also:* **EFFLUENT.**
- Water Conservation:** Any beneficial reduction in water loss, waste, or use.
- Water Harvesting:** The collection of rain or snowmelt for retention and future use or **RECHARGE.**
- Water Supply System:** The system for the collection, treatment, storage, and distribution of **POTABLE WATER** from the supply source to the consumer.
- Watershed:** The land area that contributes **RUNOFF** to a given stream, river, or reservoir.
- Water Transfers:** The exchange of water or water rights through willing buyers and sellers; also, the physical transfer of water—by truck, pipe, or other conveyance system—from one area to another. Water transfers typically involve movement from one **WATERSHED** to another or from one **AQUIFER** to another.
- Weed Management Area (WMA):** A geographic area with a group of federal, state, city and county managers and other stakeholders formed to address the problem of introduction and spread of invasive, non-native plants.
- Wetlands:** Areas that are inundated often enough to support plants and animals adapted to saturated soil conditions.
- Wildcat Subdivision:** An area developed through a series of successive lot splits.
- Wilderness Area:** A congressionally designated area of undeveloped land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions.
- Wilderness First Responder:** An emergency medical training program designed for persons working or living in remote areas or other environments where immediate medical services, equipment, or 911 assistance are unavailable.
- Wildland/Urban Interface:** The area in and around a community where the immediate or secondary effects of a wildfire would threaten a community's environmental, social, and economic values, causing serious detriment to the area's overall health and viability.
- Xeriscape:** Landscaping incorporating drought-tolerant, low water using, typically native vegetation.
- Wildlife Corridor:** An often limited or constrained area providing connectivity to larger animal **HABITATS.** *See also:* **WILDLIFE MOVEMENT AREA.**
- Wildlife Movement Area:** A broad **HABITAT** area that allows animals to move from one region to another in relative safety. *See also:* **WILDLIFE CORRIDOR.**
- Wildlife Preserve:** A federally designated area set aside to protect wildlife **HABITAT.**
- Woodland:** An area covered with woody vegetation, dominated by small trees such as piñon and juniper. *See also:* **FORESTLANDS.**
- Zoning:** The delineation of districts and the establishment of regulations governing the use, placement, spacing and size of land and buildings.
- Zoning Ordinance:** A set of legally binding provisions adopted by the **BOARD OF SUPERVISORS** to govern **ZONING.** Along with the **SUBDIVISION ORDINANCE,** the *Zoning Ordinance* is used to implement the goals, objectives, and policies of the comprehensive plan.



JOEL BARKER

"Vision without action is merely a dream. Action without vision is merely passing time. Action with vision can change the world."



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Notes

- 1 Arendt, 1996. Reproduced by permission of Island Press.
- 2 Arendt, 1996. Reproduced by permission of Island Press.
- 3 Leopold, 1949.



- 4 The comprehensive planning update project's *Public Participation & Communications Action Plan* was approved by the Coconino County Board of Supervisors on March 19, 2002. Major components of that action plan are outlined in the Partnership project history and methodology appendix.
- 5 Dale et al., 1999.
- 6 Most developable land in this county is privately owned. Although we have a strong tradition of honoring private property rights, we also recognize that limiting the types of land uses on private property is sometimes appropriate. For example, locating a foundry, race track, or slaughterhouse in a residential area would damage the quality of life of those living there.
- 7 USDA Forest Service, 2002.
- 8 City of Flagstaff, Coconino County, et al., 2001.
- 9 U.S. Bureau of the Census and the Arizona Department of Economic Security, Population Statistics Unit, 2003.
- 10 U.S. Bureau of the Census, 2000.
- 11 Arendt, 1999. Reproduced by permission of Island Press.
- 12 Arendt, 1999. Reproduced by permission of Island Press.
- 13 Riggs, 2003.
- 14 Arendt, 1999. Reproduced by permission of Island Press.
- 15 Dale et al., 1999.
- 16 Dale et al., 1999.
- 17 The Pacific Decadal Oscillation (PDO) is a pattern of varying ocean temperatures that dominates in the North Pacific, affecting climate in regions of North America. Changes can be tracked using a PDO index, which represents the variation in North Pacific sea surface temperatures. Studies note two full PDO cycles in the past century: "warm" PDO regimes prevailed from 1925–1946 and again from 1977 through the mid-1990s, and "cool" regimes prevailed from 1890–924 and again from 1947–1976.
- 18 Environmental Research Foundation, 1998. This source indicates that the principle of precautionary action, which has evolved over the past 10 years, features four major parts. First, we have a duty to take anticipatory action to prevent harm—if we have a reasonable suspicion that something bad might happen, we have an obligation to try to stop it. Second, the burden of proof of harmlessness of a new technology, process, activity, or chemical lies with the proponents, not with the public. Third, before using a new technology, process, or chemical, or before starting a new activity, we have an obligation to examine "a full range of alternatives," including the alternative of doing nothing. Fourth, decisions applying the precautionary principle must be "open, informed, and democratic" and "must include affected parties."
- 19 Arendt, 1999. Reproduced by permission of Island Press.
- 20 The Floodplain Management Overlay Zone generally precludes construction from encroaching on the floodway, the area of highest hazard and the main channel required for the discharge of a 100-year flood.
- 21 Coconino County Community Development Department, 1984.
- 22 Simberloff, 1993; Opdam et al., 1985; Lynch and Whigham, 1984; and Hill, 1985.
- 23 "Sensitive species" refers to a broad category of plant and wildlife that refers to federally endangered, threatened, proposed and candidate species as defined by the USFWS, as well as species identified as "sensitive" by other agencies and organizations including the USFS, BLM, and AGFD.
- 24 Fiedler et al., 1996; Harrington, 1996; Miller, 1996; Covington et al., 1994; and Mac et al., 1998.
- 25 Federal forest management and county planning often overlap in the wildland/urban interface. In addition to forest health and restoration thinning, wildland/urban interface issues include managing forest access from private lands, recreational activities (such as walking, biking, horseback riding, and off-road vehicle use), wildlife conflicts, and shooting. Areas of heavy recreational use have been negatively affected by miles of unplanned roads and trails, open dumping, littering, soil compaction, and overuse of riparian areas. The use of forest roads has increased dramatically since the mid-1970s, particularly in neighborhoods in the wildland/urban interface. Strategies for improving forest ecosystem health include controlling access, obliterating or restoring some roadways, establishing managed trails, and controlling off-road travel.
- 26 Cooper, 1960; Kilgore, 1981; Swetnam and Betancourt, 1990; Covington et al., 1994; and Swetnam and Baisan, 1994.
- 27 Soils must be able to support the load of a building structure or road; otherwise, distress will usually occur. Minor distress may cause floor slabs to move, exterior and interior walls to crack, or doors and windows to warp. Large movements can jeopardize a building's structural integrity. Hard rocks like granite, limestone, basalt, and sandstone provide good building and road foundations because they can support a high load per square foot of ground. However, some soils—in particular, clays, volcanic soils, and organic soils—are often unsuitable. Soils fall into two broad categories: coarse grained (sand and gravel) and fine grained (silt and clay). Low-density soils such as fine silts and clays can easily support foundations and floor slabs. However, the moderately to highly expansive clay soils that blanket much of Coconino County can swell up to 10 to 15 percent, even with very small increases in moisture. These soils are not ideal for structures or roads. To prevent structural problems, we must often replace them with granular materials and/or install specialized foundation systems. Although soil conditions can be engineered to fit the desired development, it is best to build on the appropriate soil type.
- 28 Malm, et al., 1989.
- 29 The Palmer Drought Index was used to gather information regarding drought conditions in the Southwest. Developed by Wayne Palmer in the 1960s, this index relies on temperature and rainfall information to calculate changes in the moisture at specific locations. Also known as the "Drought Severity Index," Palmer Drought Index is based on



the supply-and-demand concept of the water balance equation and accounts for the soil local available water content (AWC). It provides standardized measurements of moisture so we can compare conditions between locations over time. It is most effective in forecasting long-term droughts (several months or more). A drought index of 0 is normal, whereas -4 is extreme.

- 30 Hereford, et al., 2002.
- 31 Although, historically, development has typically migrated to areas where water was available, this is no longer the case. Land costs and availability have driven development to areas with no available water, a trend that is exacerbated by the sale of former ranches, which are typically split through the state unsubdivided lands process. Areas such as Valle, Seligman, and Ash Fork have undergone an increasing amount of development since the mid 1990s. They have been primarily served by hauled water.
- 32 Pinkham and Davis, 2002, page 84.
- 33 “Demand-side management” refers to the measures, practices, or incentives that water utilities use to reduce the level of services or to change demand patterns for services.
- 34 Bausch and Brumbaugh, 1997.
- 35 International Conference of Building Officials, 1997.
- 36 NACOG and FMPO are charged with regional transportation planning responsibilities in Coconino County. These organizations distribute federal transportation planning and construction funds to local agencies in their respective areas. Policy decisions regarding circulation infrastructure development and improvement within the County’s regional planning area around Flagstaff are influenced by both City and County provisions.
- 37 Coconino County Department of Public Works, 2001.
- 38 The Public Works Department uses a CIP to schedule and budget roadway improvements. This CIP covers a 9-year period and is updated annually. Projects are programmed by a committee that evaluates needs based on safety, cost, and other factors. The County spends about 90 percent of this CIP budget on road maintenance projects—pavement rehabilitation, intersection improvements, and safety improvements—and 10 percent on “new” projects, which include extending or paving county roads.
- 39 Funds allocated to Coconino County for transportation improvement projects come from two sources: Highway User Revenue Funds (HURF) and Payments in Lieu of Taxes (PILT), also known as “Forest Fee” funds. ADOT allocates HURF money using a statutory formula based on the county’s population and lane mileage. HURF funds include all revenues from motor-fuel taxes and other fees required to register motor vehicles and operate them on public highways; they are the primary funding source for highway construction, improvements, and other expenses. The federal government distributes Forest Fee money to compensate for loss of tax revenues because of the county’s vast acreages of public land; this money can be used only for roads or schools. This funding source is derived from commercial activities on federal lands and distributed to local governments for roads and/or schools. These activities include oil and gas leasing, livestock grazing, and timber harvesting. The County can also apply for federal transportation grants, such as TEA-21, to supplement funding.
- 40 DMJM Harris and Lima & Associates, 2002.
- 41 The County is committed to conserving resources and minimizing the impacts of development and intensive recreational use on natural ecosystems. This commitment has been demonstrated through the environmentally sensitive design of a sports field using artificial turf, which saves over 1 million gallons of water per year while eliminating the need for herbicides and pesticides.
- 42 Arizona State Comprehensive Outdoor Recreation Plan, 2002.
- 43 Interagency National Survey Consortium, 2000.
- 44 Preventing the fragmentation of large contiguous areas of habitat is a goal of preserving open space, natural area parks, and greenways.
- 45 City of Flagstaff, 1998.
- 46 Arizona State Parks Board, 1998.
- 47 Coconino County Department of Parks and Recreation, 2000.
- 48 Recreation of some type occurs on virtually all lands regardless of ownership. Scenic driving, bird watching, wildlife viewing, hiking, horseback riding, and OHV riding are examples of recreational uses that can cross land ownership lines.
- 49 High-use recreational areas are considered land uses, like residential or commercial land uses. Examples of such areas include the Arizona Snowbowl, the cinder hills OHV area, the Wing Mountain snow-play area, golf courses, and a proposed shooting range in Bellemont. Activities such as OHV use may be so intense that they impact the land as much as some types of development. Also, desirable locations can become overcrowded and require higher maintenance.
- 50 Coconino County Department of Parks and Recreation, 2000.
- 51 Arizona State Parks Board, 1998.
- 52 The Arizona Trail is a contiguous corridor that crosses multiple jurisdictions managed under a variety of goals and priorities. This nonmotorized, multiple-use trail celebrates Arizona’s environment, culture, and history. When complete, it will extend across the state almost 300 miles from Mexico to Utah. As of 2002, the Arizona Trail was the only facility dedicated to nonmotorized transportation in the county. It has been used strictly for recreational purposes over most of its segments.
- 53 Coconino County Department of Parks and Recreation, 2000. This inventory showed an uneven regional distribution of certain park types. Of 140 park sites, 23 percent typically feature playgrounds, basketball courts, and/or ball fields. Most of these parks are in the Flagstaff area, with others in Page and Williams. The inventory also revealed



- few wildlife preserves or historic parks with visitor centers—only eight parks in the county focus primarily on protecting and/or interpreting natural or historic resources.
- 54 Historically, the Parks and Recreation Department's primary activities were operating the annual horse races and county fair. The horse races generate 30 percent of the department's revenue. There is concern about potential loss of this revenue, since the horse racing industry has been steadily declining. In 2002, other revenue sources included the general fund (26 percent), the county fair (25 percent), event and facility rentals 18 percent, and others (1 percent).
- 55 Recreation involves youth activities including community, school, and university pools, youth centers, ice rinks, and other facilities. Organizations such as the Boy Scouts, Girl Scouts, 4-H, and the YMCA are important for providing educational and recreational experiences in a group setting. Some of these activities can be provided in community parks.
- 56 The rural nature of the County differs from location to location and the level of rural character desired varies from resident to resident, creating planning challenges. Most residents have selected communities that provide the infrastructure and facilities they require. However, as some areas grow, new infrastructure and facilities must be added to meet area demands.
- 57 In the 2001 *Flagstaff Area Regional Land Use and Transportation Plan* ten rural activity centers were designated in areas of the county outside City limits but within the regional planning area. Examples of rural activity centers in Coconino County include the areas surrounding Cromer School in the vicinity of Silver Saddle Road and Koch Field Road in Doney Park, Pinewood Boulevard and the area east of North Lodge Drive in Munds Park, the junction of Old Route 66 and the Parks Access Road in Parks, and the junction of State Route 64 and US 180 in Valle. Often, these centers serve as gateways to communities and help define the character of surrounding neighborhoods.
- 58 Community character is not only based on the physical features of an area but also on the relationships between residents. Fundamental to a vibrant community is the ability to communicate with one another, work together toward common goals, and enjoy the company of each other.
- 59 This ordinance specifies unfavorable locations for wireless communication infrastructure—state or federally designated scenic corridors, other scenic corridors or vistas, and areas adjacent to residential neighborhoods or culturally significant sites. Because of the complexity involved in each case, a comprehensive viewshed analysis could benefit both providers and the County when reviewing potential development plans.
- 60 The Fredonia-Vermillion Cliffs Scenic Road stretches between Fredonia and Bitter Springs just south of Lee's Ferry, traveling US 89A through Jacob Lake and the Vermillion Cliffs along the Paria Plateau. The Kaibab Plateau-North Rim Parkway is the only scenic byway in Arizona with all three scenic designations; it travels SR 67 from Jacob Lake to the north rim of the Grand Canyon, across the Kaibab Plateau through both the Kaibab National Forest and Grand Canyon National Park. The Sedona-Oak Creek Canyon Scenic Road was the first state scenic byway designated in August 1984; it travels US 89A from near Sedona through Oak Creek Canyon to the top of the Mogollon Rim. The Red Rock Scenic Road, a state scenic byway designated in February 1987, travels SR 179 from Sedona southeast through the Coconino National Forest. The San Francisco Peaks Scenic Road is a state scenic byway designated in January 1990; it travels US 180 from the San Francisco Peaks towards Valle, passing through the Coconino and Kaibab National Forests. Historic Route 66, designated a federal highway in 1926, linked Chicago with Los Angeles. It was officially removed from the US highway system in 1983 but its history dates back to 1857. The remains of this route span the area between Flagstaff and Williams.
- 61 Examples of ranchlands include the I-40 corridor from Twin Arrows east to the county line, both sides of Highway 64 from the Forest Service boundary north of Williams to the boundary south of Tusayan, and Highway 89 from Wupatki north to the reservation line at Gray Mountain.
- 62 Until 1994, the law was three splits, but a legislative change amended the definition of subdivision somewhat in exchange for allowing County review authority for land divisions (lot splits). However, Coconino County had exercised that authority since 1982 when review of land divisions was included in the *Subdivision Ordinance* update.
- 63 A few large ranches have been divided this way—Alpine Ranches northeast of Flagstaff, Woodland Ranch and South Rim Ranch north of Valle, Howard Mesa Ranch south of Valle, Westwood Ranches northwest of Ash Fork, Juniperwood west of Seligman, and Turquoise Ranch west of Winslow.
- 64 This demand varies from relatively inexpensive 40-acre lots north of Williams, to one-acre lots with all improvements in the Blue Ridge area, to exclusive gated golf course communities such as Forest Highlands and Flagstaff Ranch Golf Club.
- 65 Sites of commercial activity include interchanges on I-17 at Munds Park/Pinewood and Kachina Village, and on I-40 at Parks, Bellemont, Winona, and Meteor Crater. On state highways, commercial sites include businesses on Highway 180 at Schultz Pass and Snowbowl Roads; on Highway 89 at Burris, Silver Saddle, Campbell, and Cope-land in the Doney Park area and at Grenehaven; on Highway 64 at Sunset Strip, Red Lake, Valle, and Tusayan; at several locations along Highway 89A in Oak Creek Canyon and in the Marble Canyon areas; at Clints Well on Highway 87; and at Forest Lakes on Highway 260.
- 66 "Resort commercial" refers to a use that is characterized by motels, hotels, or various styles of residential uses designed for occupancy of limited duration, in conjunction with service commercial and recreational uses.
- 67 At the time of the *Comprehensive Plan* adoption, petitions for API conservation lands designation had been submitted for state sections in the Flagstaff area near Walnut Canyon National Monument and Rogers Lakes; another petition for Observatory Mesa was being considered for submittal.
- 68 City of Flagstaff, Coconino County, et al., 1998.







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Appendix A: Partnership Project Summary

How It All Began

Arizona Growing Smarter legislation, which sets a 10-year time frame on comprehensive plans, provided the initial motivation for updating the county plan. It was a small group of citizens, however, who really pushed for a substantive plan update. Representing such diverse interests as development, ranching, and the environment, these initial partners were inspired to strike a balance between development and environmental protection. That group encouraged the County's Department of Community Development to consider undertaking a major rewrite process. The driving force was a desire to protect some of the vast landscapes of the county while providing more certainty to developers and private property owners about where future development should occur.

In February 2001, Coconino County, Northern Arizona University, and the Grand Canyon Trust sponsored Steve Frisch from the Sierra Business Council (the impetus behind the Placer County, California conservation plan) to talk to the community as part of NAU's Building for Community series. As a small business owner, Frisch was able to convey to the audience the economic value of protecting and preserving the environment and conveyed to participants a level of excitement about conservation planning. A small group including the County, NAU, ranchers, building association, utility providers and environmental organizations began meeting to discuss how such a plan could be done for Coconino County. At about the same time, the County Parks and Recreation Department was about to embark on an open space and greenways plan, and County planners recognized that the Comprehensive Plan adopted in 1990 was due for an update.

Over the next few months this diverse group of interested citizen representatives worked with the County to outline a plan for how conservation and open space planning could be integrated into the comprehensive plan update. The group developed a concept paper, a management strategy, and a public participation plan. The idea for the planning effort was endorsed by the County Board of Supervisors in late 2001.

The Arizona Growing Smarter Act

The State of Arizona experienced high population growth rates throughout the 1990s. In response to concerns about the effects of such growth, new community planning legislation was passed by the state legislature. Commonly known as the 1998 *Growing Smarter Act* and 2000 *Growing Smarter Plus*, key provisions of the Acts include: required elements for comprehensive plans; mandatory zoning conformance with comprehensive plans; and more effective public participation in the planning process.

Per House Bill 2361, the purpose of *Growing Smarter* was "to more effectively plan for the impacts of population growth by creating a more meaningful and predictable land planning process, to increase citizen involvement in the land planning process, to directly acquire and preserve additional open space areas within this state...[and to] address various statewide growth management issues...". The aim was to ensure that future development occurs "in a more rational, efficient and environmentally sensitive manner that furthers the best interests of the state's citizens by promoting the protection of its natural heritage without unduly burdening its competitive economy."

Threshold populations were established to implement *Growing Smarter*, such that counties over 125,000 are required to address the topics of land use, circulation, and water. Furthermore, counties over 250,000 must also have elements regarding planning for open space acquisition and preservation, planning for growth areas, environmental planning, and cost of development. Because the 2000 census population of Coconino County was 116,320, no specific elements were required; nevertheless, this update of the Coconino County comprehensive plan does consider most of the elements required in the *Growing Smarter* legislation for larger counties.



Partnership Organization & Structure

In January 2002, after a full year of preliminary relationship building, organizing, and planning, the Coconino County Planning Partnership officially kicked off. Organizationally, the County Community Development Department staffs the Partnership. The Board of Supervisors appointed a Steering Committee initially consisting of 17 community members representing such diverse and important perspectives as Arizona Public Service Company (APS), The Diablo Trust, Northern Arizona University, Northern Arizona Building Association (NABA), Babbitt Ranches, Northern Arizona Association of Realtors, The Nature Conservancy, the Grand Canyon Trust (GCT), Coconino Community College, the Museum of Northern Arizona, small business owners, and tribal interests. The Steering Committee met monthly and discussed, reviewed, and approved all sections of the plan.



Coconino County Comprehensive Planning Partnership

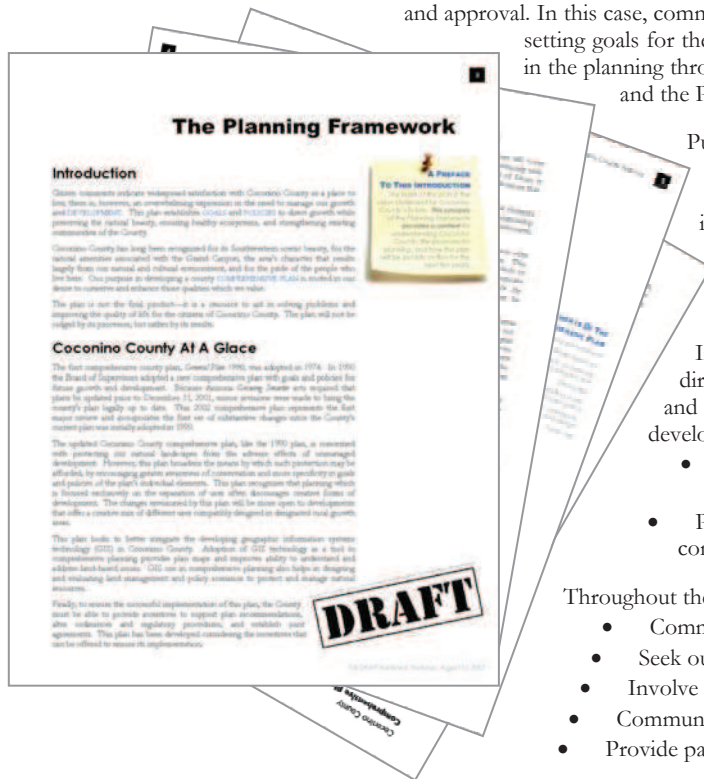
Staff of the Community Development Department worked with the Management Team, a smaller group consisting of representatives of the Community Development Department and the Parks and Recreation Department, APS, NABA, and GCT. The Management Team met weekly to set the agenda and prepare materials for the Steering Committee. A Geographic Information Systems (GIS) team met periodically to produce maps for the plan and to discuss integrating digital scientific information into the county's GIS system and analysis capabilities.

One important aspect of the process was convening representatives of the state and federal land management agencies operating in the county. The interagency working group met several times throughout the planning process to ensure that the plan would be consistent with and supportive of their land use plans. The wildlife working group's efforts drew upon their collective knowledge and expertise to identify key wildlife movement corridors that should be preserved. Their work will continue beyond the end of the planning process. Interagency working group organizations include the U.S. Forest Service, BLM, USGS, U.S. Fish & Wildlife Service, the National Park Service, Arizona State Land Department, Arizona Department of Transportation, and Arizona Game and Fish Department.

Finally, an independent, Board-appointed Science Advisory Group guided and reviewed the Conservation Framework and ensured that the goals and policies in each section of the plan are consistent with the conservation guidelines and support the overarching conservation goals. The scientific review provided assurances to the Steering Committee and the public that it was based upon the best available scientific information.

Public Participation in Developing This Plan

The plan is unique for several reasons. Often "government" develops a plan and then seeks public comment and approval. In this case, community leaders invited "government" to participate in defining the vision and setting goals for the future of the county. Community members have been intricately involved in the planning through the Steering Committee representatives, a series of public open houses, and the Partnership website, and frequent newsletter mailings.



Public participation in the development of the Coconino County comprehensive plan exceeded the minimum requirement of state law. While Arizona's *Growing Smarter* legislation describes some requisite public involvement procedures, the Partnership team developed their own public outreach plan early in the process. Formally, the project's *Public Participation & Communications Action Plan* was adopted by the Coconino County Board of Supervisors on March 19, 2002.

Involving people in the planning process requires a commitment to work directly with the public throughout the process and to ensure that public issues and concerns are consistently understood and considered. This plan has been developed with two core values in mind.

- The public shall have a voice in decisions about actions that affect their lives and property.
- Public participation includes the promise that the public's contribution will influence decisions.

Throughout the comprehensive plan development process, the Partnership worked to:

- Communicate the interests and meet the needs of all participants.
- Seek out and facilitate the involvement of those potentially affected.
- Involve participants in defining how they contribute to the process.
- Communicate to participants how their input affected decisions.
- Provide participants with the information to participate in a meaningful way.



The initial public outreach strategy was to post information to the internet. Using the County website as a framework, announcements and draft text was posted following each month's Steering Committee meetings. Developing the unique "Partnership" site bolstered support and provided greater access for those unable to attend project meetings. Ultimately the site was used to post the adopted version of the Comprehensive Plan.

One of the most effective tool that was used to "get the word out" was the development and distribution of project mailings. The names of participants at community open houses held in 2002 provided the basis for developing a Partnership mailing list, to which names of community leaders, key County officials, and representatives of a large number of organizations were added. After an initial full-color project newsletter (highlighting comments from the open houses and the concept for the plan's vision statement), a project "toolkit" (folder) was developed and included a welcome letter, the county vision, the plan's table of contents, and an introduction. Each month as the Steering Committee reviewed and approved text, a four-page "newsletter" insert was sent to the over 800 project stakeholders. After nearly a year of mailings, the public had their personal summary of the plan's text and goal statements in just 38 pages.

As an additional outreach strategy, in June 2003 the Planning Partnership added four pages to the annual Coconino County "report to citizens." The insert explained the concepts, contents, and implications of the Comprehensive Plan. 60,000 copies of the report—including postage-paid reply/comment cards—were sent to all households and businesses in the county.

By the time the final draft of the complete plan was sent to the County Board of Supervisors for approval, many citizens had participated in the planning process, either directly through their attendance at one of the several community open houses, by sending in written comments, or by reviewing draft text as it was being developed. The Partnership team greatly appreciated the time and effort provided by Coconino County citizens in developing the Comprehensive Plan.

The 18-month planning effort officially began in January 2002. The project remained on-schedule and was completed on time with Steering Committee approval of the plan in June, 2003.



Appendix B: Coconino County Profile

REFERENCE NOTE

Information in this Coconino County profile has been provided by the Arizona Department of Commerce and reprinted from the Coconino County profile with permission. 2003 data was provided by the Arizona Department of Economic Security.

Coconino County At-A-Glance

County Seat: Flagstaff. Other Incorporated Cities: Williams, Page, Fredonia, and Sedona.

2003 Estimated Population: 128,925. Labor Force: 63,175. Unemployment Rate: 5.5%.

Major Industries: Services, Retail Trade, Public Administration. Best Paying: Public Administration; Transportation & Public Utilities; Finance, Insurance & Real Estate.

Sources: Population Estimates, Population Statistics Unit, Research Administration and 2002 Preliminary Special Unemployment Report, Arizona Department of Economic Security. 2003 population estimates were released July 1, 2003 and are included in the population figures below.

County Historic Overview

Coconino County, carved out of Yavapai County, was created by the 16th Territorial Assembly in 1891. That same year, an election was held to determine the permanent county seat. Flagstaff, which had been designated the temporary county seat, won out over Williams by a vote of 419 to 97. Flagstaff remains the county seat. The original county courthouse—with various additions and renovations—is still in use.

Coconino County lies in the central region of northern Arizona, which was crossed by Spanish expeditions during the 16th, 17th and 18th centuries, and by fur trappers and traders in the 1820s and 1830s. Cattle and sheep ranching started in the 1870s and, when the railroad began serving the area a decade later, the lumber business boomed. The county is a year-round center for outdoor activities.

With 18,608 square miles, Coconino is the second largest county in the United States and the largest in Arizona, but is one of the most sparsely populated. It is characterized by rugged mountains, deep canyons and thick forests of pine, spruce, piñon, aspen and oak. Within its borders are many scenic sites—the most popular and impressive is the Grand Canyon. Other attractions are Oak Creek Canyon, Sunset Crater Volcano National Monument, prehistoric Indian ruins at Wupatki, Walnut Canyon, the Navajo National Monument, the San Francisco Peaks (Arizona’s highest point at 12,633 feet), and Lake Powell (with 1,960 miles of shoreline).

Indian reservations comprise 38.1 percent of the land and are home to the Navajo, Hopi, Paiute, Havasupai and Hualapai tribes. The U.S. Forest Service and Bureau of Land Management control 32.3 percent of the land; the state of Arizona owns 9.5 percent; other public lands comprise 6.8 percent; and the remaining 13.3 percent is owned by individuals or corporations. The central corridor of Coconino County has been designated as an Enterprise Zone, as well as the central corridor of the City of Flagstaff.

Population Trends

	1960	1970	1980	1990	2000	2003*
Arizona.....	1,302,161	1,775,399	2,716,546	3,665,228	5,130,632	5,629,870
Coconino County	41,875	48,326	75,008	96,591	116,320	128,925
Flagstaff	18,214	26,117	34,743	45,857	52,894	61,030
Fredonia.....	643	798	1,040	1,207	1,036	1,105



Page.....	2,960	1,439	4,907	6,598	6,809	7,150
Sedona+	N/A	702	1,778	2,384	2,963	3,125
Williams	3,559	2,386	2,266	2,532	2,842	2,910
Unincorporated Areas^	16,499	16,884	30,274	38,013	49,776	53,605

Source: U.S. Census Bureau and Arizona Department of Economic Security, Population Statistics Unit. *Estimated. +Portion within Coconino County. ^Including Native American Reservations.

Percentage Growth

	1960-70	1970-80	1980-90	1990-2000	1960-2003*
Arizona	36%	53%	35%	40%	332%
Coconino County.....	15%	55%	29%	20%	208%
Flagstaff	43%	33%	32%	15%	235%
Fredonia	24%	30%	16%	(14%)	72%
Page.....	(51%)	241%	34%	3%	142%
Sedona+	N/A	153%	34%	24%	345%~
Williams	(33%)	(5%)	12%	12%	(18%)
Unincorporated Areas^	2%	79%	26%	31%	225%

Source: U.S. Census Bureau and Arizona Department of Economic Security, Population Statistics Unit. *Estimated. +Portion within Coconino County. ~Since 1970. ^Including Native American Reservations.

2000 Population in Unincorporated Places of Coconino County

Bitter Springs	547	Mountainaire	1,014
Cameron.....	978	Munds Park.....	1,250
Doney Park.....	8,960	Parks.....	1,137
Grand Canyon Village.....	1,460	Supai.....	503
Kachina Village.....	2,664	Tonalea.....	562
Lechee.....	1,606	Tuba City.....	8,225
Leupp.....	970	Tusayan.....	562
Moenkopi.....	901		

Source: U.S. Census Bureau and Arizona Department of Economic Security, Population Statistics Unit.

Density

	2003 Population*	Land Area~	Persons per Sq. Mile
Arizona	5,629,870	113,635	49.5
Coconino County.....	128,925	18,617	6.9
Flagstaff.....	61,030	63.6	95.6
Fredonia	1,105	7.4	149.3
Page.....	7,150	16.6	438.7
Sedona+	3,125	6.4	488.3
Williams.....	2,910	43.5	66.9
Flagstaff Regional Planning Area	75,020	525.0	142.9
Regional Planning Area outside City.....	13,990	461.4	30.3
All Unincorporated Areas^	53,605	18,480	2.9
Unincorporated Areas outside Regional Plan.....	39,615	18,018	2.2

Source: U.S. Census Bureau and Arizona Department of Economic Security, Population Statistics Unit and local sources. *Estimated. +Portion within Coconino County. ~In square miles. ^Including Native American Reservations.

Population Composition

Race (% of total)	Coconino County	Arizona
White.....	63.1%	75.5%
African American.....	1.0%	3.1%
Native American	28.5%	5.0%
Asian or Pacific Islander	0.9%	1.9%
Other.....	6.5%	14.5%
Totals	100.0%	100%
Hispanic or Latino*	10.9%	25.3%

Source: U.S. Census Bureau, April 1, 2000 Census. * Persons of Hispanic heritage can be of any race.



Age (% of total)*	Coconino County	Arizona
0-14.....	23.7%.....	22.5%
15-24.....	19.5%.....	14.3%
25-44.....	29.2%.....	29.5%
45-64.....	20.7%.....	20.9%
65+	7.0%.....	13.0%
Median Age	29.6 years.....	34.2 years

Source: U.S. Census Bureau, April 1, 2000 Census. *Percentages equal more than 100 due to rounding.

Households

Housing Units	Coconino County	% of total	Arizona	% of total
Total Housing Units	53,443.....	100.0%	2,189,189.....	100.0%
Occupied Housing Units.....	40,448.....	75.7%	1,901,327.....	86.9%
Vacant Housing Units	12,995.....	24.3%	287,862.....	13.1%
For Seasonal, Recreational, or Occasional Use.....	9,155.....	17.1%	141,965.....	6.5%

Housing Tenure	Coconino County	% of total	Arizona	% of total
Owner-Occupied.....	24,835.....	61.4%	1,293,556.....	68.0%
Renter-Occupied	15,613.....	38.6%	607,771.....	32.0%

Housing by Type	Coconino County	% of total	Arizona	% of total
Total Households	40,448.....	100.0%	1,901,327.....	100.0%
Family Households	26,946.....	66.6%	1,287,367.....	67.7%
Nonfamily Households	13,502.....	33.4%	613,960.....	32.3%
Average Household Size	2.80.....		2.64	
Average Family Size.....	3.36.....		3.18	

Source: U.S. Census Bureau, April 1, 2000 Census.





Appendix C: County Communities Overview

Incorporated Cities & Towns

Flagstaff

The City of Flagstaff is located at the intersection of I-40 and I-17 and has been a transportation hub since its inception. The town was established in 1881 with the arrival of the railroad. Flagstaff is the seat of government for Coconino County, with many of the county functions operated from there. The city occupies about 63½ square miles and sits at approximately 7,000 feet in elevation. Population growth has been fairly steady over the last five decades with a total population of 52,894 per the 2000 census, which indicates a 15.3 percent population increase since 1990, and a doubling of the city’s size over the past forty years. Economic activities are centered on government, education, transportation and tourism.

Fredonia

Fredonia is the most northern town in Coconino County located at the intersection of U.S. Hwy 89A and State Highway 389 near the Utah border on the Arizona Strip. The town includes 7.4 square miles and sits at approximately 4,800 feet in elevation. Fredonia is the largest town in the Coconino County portion of the Arizona Strip but the population declined from 1,207 in 1990 to 1,036 in 2000.

Page

The City of Page is located in the northern portion of the county near the Utah border off Highway 89 adjacent to Lake Powell. Named for John C. Page, Commissioner of the Bureau of Reclamation under Franklin Roosevelt, Page was originally developed due to the Glen Canyon Dam project which started in the early 1950s. The City of Page was incorporated on March 1, 1975 including 16.6 square miles on Manson Mesa. Today the economic structure supporting Page depends largely on tourism drawn by the Lake as well as the Salt River Project Navajo Generating Station. The 2000 census reports that there are 6,809 residents within the community.

Sedona

The City of Sedona is located in both Coconino and Yavapai Counties at the intersection of State Routes 89A and 179. The city includes about 19 square miles, of which half is under the jurisdiction of the US Forest Service, and is at approximately 4,500 feet in elevation. Sedona was incorporated on January 4, 1988 and assumed zoning authority on July 1, 1988. Coconino County still administers the floodplain management program for the portion falling within the county boundaries which includes the uptown commercial area and adjacent residential areas. Sedona has also seen rapid growth in recent decades, with a population of 10,192 in 2000.

Williams

The City of Williams is located 30 miles west of Flagstaff on Interstate 40 at the base of Bill Williams Mountain in the Kaibab National Forest. The City was founded in 1882, incorporated in 1901 and was named for Bill Williams, a scout for the Santa Fe Trail and a local hunting party guide. The city includes 43.5 square

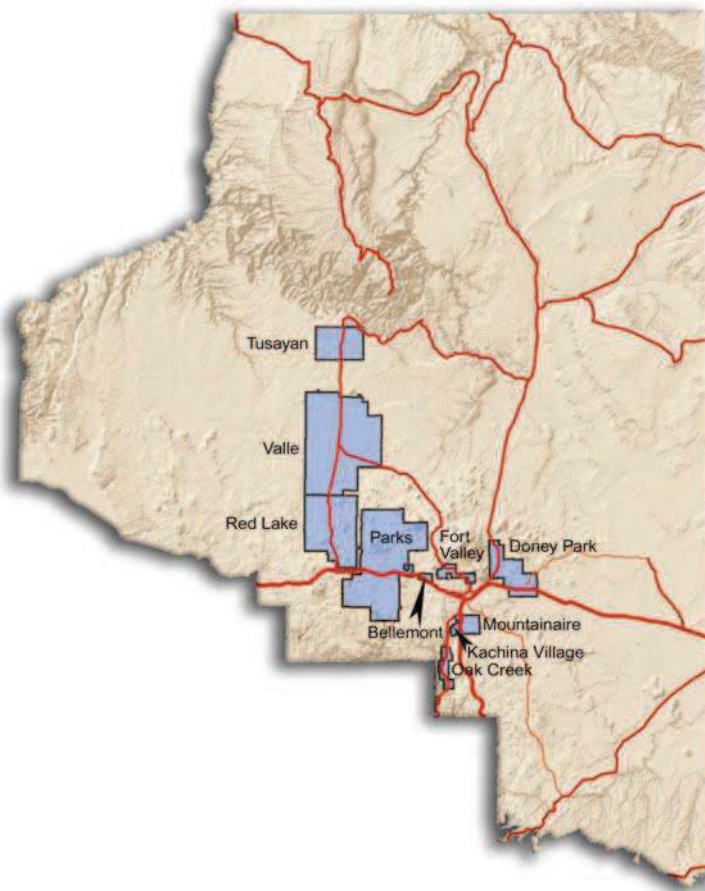
SEE ALSO
For a map of Coconino County and its communities, turn to page 9 of the Comprehensive Plan



miles and sits at 6,780 feet in elevation. The City is well known for its connection with historic Route 66 as well as a gateway community for travelers to the Grand Canyon approximately 58 miles to the north. Previously, ranching and lumber were the primary economic forces, while today tourism provides the majority of revenue to the area. Over the last decade the City of Williams has grown from a population of 2,532 in 1990 to a population of 2,842 in 2000.

Communities With Area Plans

Area Plans in Coconino County



Bellemont

The Bellemont area is centered around the interchange on I-40 8 miles west of Flagstaff, and includes all private lands approximately 1.5 miles east and west of the interchange, and is bordered on the south by the railroad and the north by national forest lands. Camp Navajo, an Arizona National Guard base, is located south of the railroad. Topography is generally flat, and most private land is open meadow with ponderosa pine forest around the periphery. The area has a mixed-use zoning classification under the Planned Community (PC) Zone, which designates specific properties for heavy commercial, light industrial and residential uses. Existing commercial uses include a truck stop, motel, motorcycle dealership, and restaurant. Industrial uses include a paper-products converting plant, publishing company, cabinet shop, and cultured marble manufacturing plant. Residential uses include a 213-lot residential subdivision approved in 2001, and a 12-space mobile home park. Although utilities are available and access is good, a considerable amount of undeveloped property remains. Development was slow until the mid-1990s when activity started to pick up. Development constraints include floodplain areas affecting some properties and poor soils resulting in constraints with onsite wastewater disposal. There are two private water companies in the community, both of which are drawing from relatively shallow aquifers; the capacity of the aquifers is not known. The Bellemont Area Plan was adopted by the Board of Supervisors on July 1, 1985.

Doney Park, Timberline, & Fernwood

The Doney Park/Timberline/Fernwood area is the largest unincorporated community in the county and consists of about 60 square miles located northeast of Flagstaff extending from Camp Townsend at the southwest corner to Lenox Park at the north end and east to Winona. The area is notable for its large meadows, or parks, with ponderosa pine forest along the west and southern edges and piñon-juniper woodlands throughout much of the remainder. About 30 percent is privately owned, with the remainder under Forest Service

jurisdiction. The predominant land use is large lot residential, with about 60 percent of the parcels being 2 ½ acres. Neighborhood commercial areas are located at a few of the major intersections. Growth has been fairly rapid over the last 20 years, with population increasing from about 3,500 in 1980 to 5,500 in 1990 and 8,000 in 2000, an annual increase of over 4 percent. The number of new homes constructed each year has varied from 60 to 100. Complete build-out of the area, which is forecast to occur around 2015, will result in a population of about 15,000. The Board of Supervisors adopted a County Area Plan and design review guidelines for the area in 2001, which was an update of a previous plan adopted in 1988. The intent of the Area Plan is to retain the large lot rural character and predominantly residential land uses.

Fort Valley

The Fort Valley area encompasses about 14 square miles and is located northwest of Flagstaff on both sides of Highway 180. The area extends from the city limits on Fort Valley Road out to Bader and Roundtree Roads. Route 180 is one of the most scenic corridors in the county offering spectacular views from both directions of the San Francisco Peaks. The southern portion of Fort Valley is characterized by ponderosa pine forest, and north Fort Valley consists of open meadows. About half of the land is private, and current zoning in most of the area is for 2-acre parcels. Population has grown from about 350 in 1980 to 500 in



1990 to about 700 in 2000. There are about 470 homes, and given current zoning, room for about a doubling of that number. Commercial uses exist at three nodes: one just north of the city limits; one near Schultz Pass Road; and the third at Snowbowl Road. The Board of Supervisors adopted a County Area Plan in 1990 that emphasized protection of the rural character and existing zoning. Fort Valley is one of the few areas of the county where most residents have their own well, and a concern about aquifer viability was one factor leading to the desire for low density development.

Kachina Village

Kachina Village is located on the west side of Interstate 17 approximately six miles south of Flagstaff. The planning area encompasses approximately 6 ½ square miles including Kachina Village, Forest Highlands Unit Five, and approximately four square miles of national forest land extending south to Kelly Canyon and west to Pumphouse Wash. Originally intended as a vacation home community in 1965, Kachina Village has evolved into a suburb of Flagstaff primarily occupied by full time residents. There is a mix of housing types ranging from mobile and manufactured homes to site-built single family residences and several duplex rental units. Existing commercial uses include a convenience store and real estate office. Recreational facilities include Raymond County Park and Pumphouse Greenway. Typical construction in the early years included modest cabins and trailers. More recent construction has typically included more substantial homes occupied by full time residents. According to the 2000 Census, there were 2,664 residents and 1,376 dwelling units in the Village. Kachina Village is nearly built-out with the exception of a handful of lots and a 36-acre parcel of undeveloped land. Forest Highlands Unit Five includes an 18-hole golf course and vacation homes in an exclusive gated community with very few full time residents. The area is heavily forested with ponderosa pine, and a large natural wetland area known as Dolan Meadow sits at the head of Pumphouse Wash, a major tributary and headwaters of Oak Creek. A County Area Plan and Design Review Overlay for Kachina Village were adopted in 1997.

Mountaineer

The Mountaineer area includes land east of Interstate 17 and south of the City of Flagstaff. This area is limited to five private inholdings within the National Forest including the Mountaineer subdivision consisting of 140 acres under medium density residential zoning, and surrounding properties under large lot rural residential zoning. Within this area the 2000 Census reported 556 housing units and a total population of 1,014. This area originally consisted of summer homes and has more recently converted to a year round community due to close proximity to Flagstaff. There have been problems with inadequate septic systems, water shortages and adverse road conditions, which continue to be addressed. A few parcels with commercial zoning have yet to be developed. The Area Plan identifies preferred conditional uses (primarily neighborhood services) from the County Zoning Ordinance for the Commercial General Zone. The natural environment is typical of the Flagstaff area with sections of dense ponderosa pine and open meadows. A County Area Plan and Design Review Overlay guidelines for the Mountaineer Community were adopted by the Board of Supervisors on December 16, 1991.

Oak Creek

The Oak Creek area includes both sides of Highway 89A from the corporate limits of the City of Sedona north to Pumphouse Wash south of Flagstaff. This area represents one of the few riparian habitats in the County and the Oak Creek Canyon Area Plan focuses on preservation of this precious resource. Oak Creek is designated a “unique water of exceptional circumstance” by the State of Arizona. There are a wide variety of housing types, property development standards, and commercial development in the Canyon. However, there is a recent trend of tearing down the older, smaller cabins to build new, larger houses that are changing the historic character of the Canyon. Occupants tend to live in the Canyon on a seasonal basis although year round inhabitants are becoming more common. Commercial uses vary from resorts and motels to restaurants, convenience stores, arts and crafts shops, as well as a trout farm. The Area Plan includes policies for development and redevelopment that address floodplains, slopes, and impervious surfaces. The Plan was amended in 1989 to address redevelopment and emphasizes maintaining the historic and environmental qualities inherent in the Canyon, while limiting human impact. The County has worked with the Forest Service in identifying private parcels in the Canyon which would be suitable for exchange for National Forest lands. A County Area Plan and Design Review Overlay for the Oak Creek Canyon were adopted by the Board of Supervisors on February 6, 1984 and amended in 1989.

Parks

The Parks area encompasses 265 square miles north and south of I-40 between Belmont and Williams. Of the total area, approximately 30 square miles is private land, approximately one square mile is state trust land, and the remainder is national forest. The 30 square miles of private land consists of widely scattered sections intermixed with national forest land. The area is characterized by ponderosa pine forests, open prairies, and piñon-juniper woodlands punctuated by volcanic mountains. According to the 2000 Census, the population was 1,137. The community of Parks sits roughly at the center of the planning area, but resi-



dents tend to identify more with their immediate neighborhood community, such as Government Prairie, Spring Valley, Elk Springs, Pittman Valley, Maine Townsite, and Garland Prairie. Early settlement was primarily related to ranching and farming, and a distinctly rural character and very low density development remain hallmarks. Water is scarce, occasionally occurring in springs and shallow aquifers in a few locations, but effectively out of reach in the deep regional aquifer characteristic of most of the area. The County Area Plan was completed and adopted for the Parks area on September 17, 2001.

Red Lake

The Red Lake area extends north 14 miles from the Williams City limits. Highway 64 bisects the area with boundaries extending five to six miles to the east and west encompassing about 40,000 acres of private land within a 150 square mile area. The Highway 64 corridor provides views of surrounding mountains including Bill Williams, Kendrick, Sitgreaves, and the San Francisco Peaks. The area is typical of a high desert chaparral community with woodlands of ponderosa, piñon, and juniper, and was historically used for ranching activities. Several residential subdivisions were platted in the 1960s and early 1970s, and with the exception of subdivisions with 1- and 2-acre lots, the area is primarily zoned for 10 acre minimum parcel size. Water is one of the major factors affecting future growth in the Red Lake area, as there is no local water source. There are only two existing commercial uses along Highway 64 which provide services to travelers on their way to the Grand Canyon. Highway 64 is the primary travel route to the South Rim of the Grand Canyon and has some potential for scenic highway status. Thus the visual character of development along this corridor is of critical concern. A County Area Plan for the Red Lake Community was adopted by the Board of Supervisors on September 21, 1992.

Tusayan

The Tusayan area extends from the core community one mile north to the Grand Canyon National Park boundary, four miles south, and five miles on either side of Highway 64. This community has served as the gateway to Grand Canyon National Park since its inception and depends upon tourism for economic sustainability. The 2000 Census reported that there were 562 residents in the community and 313 housing units. Tusayan presents a unique situation with a restricted private land base and extremely high land values being held by only a few property owners. Significant issues for the community include limited and expensive water, limited housing for employees, and developing a sense of community. This area has seen major changes in the overall appearance of the community since adoption of the Design Review Overlay. Tusayan has also become a leader in re-use of treated effluent for non-potable needs. A County Area Plan and Design Review Overlay for the Tusayan Community were adopted by the Board of Supervisors on June 19, 1995. The vision as stated in this Area Plan is for Tusayan to be recognized as a model for environmentally conscious communities, as well as a location from which tourists base their Grand Canyon experience.

Valle

The Valle area extends from the Red Lake Plan boundary at Howard Lake north to the Kaibab National Forest boundary, and approximately 7 miles west and 8 miles east of Highway 64. The area is characterized by high desert terrain with vast, scenic vistas in all directions. The Valle area is sparsely populated in relation to the total land area (approximately 300 square miles). In 1990 the population consisted of 123 residents, with the 2000 Census reporting 553 residents. Population growth can largely be attributed to a new manufactured home park at the Valle Airport as well as increased development in Woodland Ranch. These developments primarily provide housing for employees of businesses in Tusayan. The only commercially developed area is in the vicinity of the junction of Highway 180 and 64, which include several trading posts, a motel complex with restaurant and convenience market, mini storage, and a small amusement park. Valle businesses rely primarily on tourists traveling to the Grand Canyon. Although the area is very sparsely populated, there are over 8,000 platted subdivision lots within Valle as a result of subdivisions created in the 1960s and 1970s. Growth has been limited by a lack of basic services such as phone, water, and electric, and by an absence of a local economy. Outside of Grand Canyon subdivision, most private land is zoned 10 acre minimum parcel size, allowing single family residential use and agricultural ranching uses. A County Area Plan for the Valle Community was adopted by the Board of Supervisors on October 18, 1999.

Communities Without Area Plans

Alpine Ranchos

This community is located approximately 15 miles northeast of Flagstaff between Doney Park and the Navajo Reservation. The area is a checkerboard of state trust lands and private 40-acre parcels, some of which have been split into 20- or 10-acre parcels. This community is separated from the Doney Park community by Forest Service land and is categorized as very remote, rural residential with limited utility infrastructure available. The natural environment is characterized by cinder cones, piñon-juniper vegetation, and spectacu-



lar views towards the Hopi Reservation. Alpine Ranchos represents an area of the county like many others where residents have a sense of camaraderie in their desire to be left alone.

Blue Ridge, Happy Jack & Clints Well

This area includes three place names but has been more recently categorized as the Blue Ridge area stemming from the Blue Ridge Ranger District. Blue Ridge is located in the southeastern portion of the county, and is accessible via Lake Mary Road/Forest Highway 3 and Highway 87. The natural environment includes areas of dense ponderosa pines and open park meadows along the edge of the Mogollon Rim. Residential subdivisions in the area date back to 1963, with many recent additions. Subdivisions include Clear Creek Pines, Starlight Pines, Blue Ridge Estates, Pine Canyon Estates, Tamarron Pines, and Mogollon Ranch. The earlier subdivisions are under zoning that permits both manufactured and site built homes, however, newer subdivisions allow only site built homes and require design review approval by homeowner's associations. Commercial uses are extremely limited and are oriented towards tourists traveling in the area.

Gray Mountain

This area is located approximately 40 miles north of Flagstaff along Highway 89. The natural environment is rural high desert. The majority of uses in the area are tourist-oriented including a hotel, restaurant, curio shop, and convenience market with gas sales. As of 2002, a cellular tower has also been located in the area. Surrounding areas include private ranchland and state trust land with the Navajo Reservation to the north.

Greenehaven

Greenehaven consists of 491 acres bordered on the north by the Arizona-Utah state line. The area is located on the western side of Lake Powell and has views of Wahweap Bay, Castle Rock, Lone Rock, and other features along the Bay. Development of this community began in 1980 with a rezoning to Planned Community and creation of a master plan for a mixed use community encompassing resort, residential, commercial, and light industrial uses. Originally state trust land, the area is now entirely surrounded by Glen Canyon National Recreation Area lands. The mobile home portion of this development was in existence prior to development of the surrounding area for single family home construction. Since the initial master plan was submitted, areas have been subdivided for single family homes, condominiums, and commercial uses. Single family homes are the most prevalent form of development with the exception of the mobile home subdivision. Attached town homes have recently been built and the commercial areas have seen only development of a convenience market with gas sales and a boat storage facility.

Forest Lakes

The Forest Lakes area consists of the 11-unit Forest Lakes Estates subdivision located in the southeast corner of the county in the area once known as Mertzville. The subdivision has 975 lots platted between 1965 and 1970, with a majority of the subdivision under one acre minimum residential zoning and commercially-zoned properties along Highway 160. Commercial uses in the area include RV parks, a restaurant, a convenience store and gas station, and rental cabins oriented to recreational activities. Zoning in 2002 allowed for both manufactured and site-built housing. Historically, the area consisted of travel trailers and modest site-built cabins for summer use by Phoenix area residents. Recently, land values have significantly increased and there has been an increase in larger site-built homes with year round residents. Some residents have requested an Area Plan to incorporate concerns for law enforcement, fire protection, and the provision of other community services, as well as to control future land use.

Kaibab Estates West

This area is located in the western portion of the County approximately 50 miles west of Flagstaff off Interstate 40 and just north of the community of Ashfork, which is located in Yavapai County. Development consists of a 12,000-acre ranch that was divided into 1- to 5-acre parcels in the 1960s. Slightly rolling terrain with scrub and juniper as the primary vegetation types characterizes the natural environment, which was zoned and planned for areas of commercial, multi-family, and rural residential. Development has not occurred as was originally planned, however. There is little to no commercial development, other than a few stone yards that operate quarries outside of the subdivision, and a few cottage industries including feed sales. Many of the commercial and multi-family zoned parcels have been rezoned to agricultural residential. The subdivision does provide some electric and phone utilities, roads are cindered, onsite septic systems are used, and water must be hauled from nearby Ashfork.

Mormon Lake

An Area Plan was initiated in conjunction with the Coconino National Forest in 1997 for the Mormon Lake community but it was never completed due to concerns of area property owners. The plan was to focus on



a 15 square mile area west of Lake Mary Road, including the southern and western portions of Mormon Lake Road and extending one and one half miles north of the lake. Mormon Lake Village is located at the south end of Mormon Lake, a natural drainage and ponding area approximately 30 miles south east of Flagstaff. The lake itself is seven miles long running north and south and three and one half miles wide, and when full, is the largest natural lake in Arizona. Large portions of the land in this area are impacted by floodplain and wetland requirements. The Mormon Lake area consists of a limited private land base surrounded entirely by National Forest Service lands. Uses in the area include a lodge/restaurant, trailer park, summer cabins and residential uses, youth camp, and other recreational uses. Subdivisions in the area date back to 1927 when the Mormon Lake Townsite was platted.

Munds Park

The Munds Park community is located approximately 15 miles south of Flagstaff on both sides on Interstate 17. Development in the area began with the Northernaire subdivision in 1958 and continued with the Oakwood subdivision in 1967 and the Pinewood subdivision between 1968 and 1974. There is a mix of housing types including areas designated for manufactured housing and areas set aside for site-built and modular homes. These residential subdivisions were created around a golf course within the pines and surrounded by national forests. A commercial corridor runs through the community along Pinewood Boulevard on the east side of the interstate and includes a motel, gas stations, post office, realty offices, restaurant, and plant nursery. Along the west side of the highway separated from residential subdivisions by I-17 are an RV park, church, restaurant, and gas station.

Tuba City & Cameron

Tuba City and Cameron are unique communities because they contain small private inholdings with historic trading posts on the Navajo Nation. The Cameron trading post still exists where it was constructed in the early 1900s after construction of a suspension bridge across the Little Colorado River. The total inholding includes just over 100 acres of land. The trading post was originally used by local tribes in order to barter goods. Over time as interest grew in the Grand Canyon and as roads in the area improved, Cameron became popular for other travelers. Today the site includes the original trading post plus a lodge, RV park, restaurant, post office and gift shop. Tuba City, located in the westernmost portion of the Navajo Nation near the junction of State Highways 264 and 160 was originally settled by Mormons. In 1903 it was discovered that the town site was built on Indian land and the government bought all improvements except for an 80-acre parcel of land. This private land has since been subdivided into the Babbitt's Moenave Center. Several uses occur within this subdivision including a mobile home park, concrete batch plant, offices, motel and restaurant, and service commercial uses.

Winslow West

There are two developments in this area situated near the west end of the City of Winslow. The first is Hopi Hills subdivision, which was created in the late 1960s early 1970s. The subdivision abuts the Coconino and Navajo County line south of I-40 approximately one mile from the City of Winslow. The natural environment is characterized as a dry upland desert with sparse vegetation, with the subdivision consisting of 58 acres of land divided into 235 lots averaging 7,000 square feet. Only one unit of the proposed two-unit subdivision was approved due to the requirement that roads be constructed prior to submittal of final plat. The area is designated for mobile and manufactured homes. The second development includes Turquoise Ranch which consists of 40-acre parcels in the General Zone located near Interstate 40 and Highway 99 about 7 miles west of Winslow and about 50 miles east of Flagstaff.

Vermilion Cliffs, Marble Canyon, Cliff Dwellers & Badger Creek

These areas are located on the Arizona Strip approximately 120 miles north of Flagstaff at the edge of the Vermilion Cliffs Wilderness Area. All four sites are accessed via Highway 89A which is also a designated scenic route. Marble Canyon includes 60 acres north of Highway 89A and 113 acres south of the highway surrounded by lands managed by the National Park Service and Bureau of Land Management. Only a small portion is developed with a motel, restaurant, trading post, post office, gas station, air strip, and residences for managers and employees. Vermilion Cliffs is where Lee's Ferry Lodge is located which includes 10 acres in the Resort Commercial Zone developed with a lodge, restaurant, fishing supply and jewelry/metal art store and employee housing. Badger Creek is located adjacent to Vermilion Cliffs and encompasses 38 acres of land split into 27 parcels ranging in size from one to three acres primarily developed with residential single family homes, and a commercial warehouse used for a local river outfitter. Cliff Dwellers includes: a 24-acre parcel in the Resort Commercial Zone occupied by a lodge, restaurant, fly shop, gas sales and employee housing; a river company warehouse; three large undeveloped parcels of land surrounding the lodge; seven 40-acre parcels of which one has been developed; the Cliff Dweller Homeland subdivision consisting of six undeveloped 5-acre lots; and one 20-acre parcel occupied by a single family residence.



Private Golf Communities

As of 2002, there were two private golf course communities located within the County—Forest Highlands and Flagstaff Ranch. Forest Highlands was developed between 1986 and 1995 on approximately 1,100 acres with 820 homesites. The development is located approximately five miles south of Flagstaff off Highway 89A. The natural environment is typical of the Flagstaff area with large stands of ponderosa pine and open meadows. The community includes guarded access, two 18-hole golf courses, two clubhouses, a health and fitness center, individual neighborhood parks as well as its own trail system. Flagstaff Ranch is a 410-acre community about five miles west of Flagstaff off old Route 66 and I-40 and includes guarded access, golf course, clubhouse, community center, 210 custom homesites, 83 patio homesites, and 60 condominium units. This community has increased fire safety by developing a fire mitigation plan that regulates site development and building materials through the homeowner's association and local fire department.

Native American Tribes

Navajo

Only a small portion of the total Navajo Nation, originally created in 1868, is located within Coconino County. The entire Navajo Nation encompasses a total of 14 million acres and is home to over 200,000 people. That portion of the reservation located within Coconino County represents 27.7 percent of the reservation's total land area. The 2000 Census reported that there were 23,216 tribal members residing in the Coconino County portion of the reservation with a total of 5,736 occupied dwelling units. The Navajo, or Diné in their native tongue, are related to the Athapascan language group. The Diné People were not identified as the Navajo until the 18th Century. Farmers and herders of Northern New Mexico who migrated around the 15th Century are the ancestors of today's Navajo Tribe. The Navajo practiced a nomadic hunter/gatherer lifestyle until the 19th Century when lifestyle dependence shifted to herding and maintaining livestock introduced by Spanish explorers. Today the tribe's economy has diversified but varies from location to location. In some areas, especially those in Coconino County, ranching continues to provide a livelihood for many tribal members.

In 1989 the Navajo Nation purchased the 491,000-acre Boquillas Ranch located in western Coconino County directly adjacent to the Hualapai Reservation. The land remains in fee simple ownership and has been a working ranch since purchase. To date no requests have been made for these lands to be reclassified as tribal trust lands. It is possible they can be sold for development in the future, which could have a significant impact on the amount and type of development that occurs within that area of the county.

The Navajo Nation is unique to the tribes within Coconino County due to its vast size and style of tribal government. The tribal government is currently headquartered in Window Rock, Arizona with an 88-member council representing 110 separate chapters. There are 13 chapters that are either entirely or partially located in Coconino County. There is a potential for more control to shift from the Window Rock council directly to the individual chapters due to the Local Governance Act of 1998. This Act allows each chapter to develop its own government after developing an approved management system, and to regulate land use with an approved comprehensive plan. Many chapters within Coconino County are working on such plans in order to establish local control. This process has spurred additional communication and coordination of resources between individual chapters and the county.

Hopi

The Hopi are the westernmost Puebloan Indian tribe, an ancient culture and probably related to the earliest inhabitants of what is now Coconino County. The tribe settled on three remote mesas at the southern edge of Black Mesa because of water availability and the safety this area provided. The Hopi have occupied areas within the County since at least 500 to 700 AD. The village of Oraibi is the oldest continually occupied village in the United States and has been in existence since 1100 AD. Today the Hopi reservation is surrounded entirely by the Navajo Nation and falls over portions of both Navajo and Coconino counties. The reservation makes up 4.1 percent of the total land area within Coconino County. The 2000 Census reported that 1,003 tribal members of a total population of 6,815 resided within the Coconino County portion of the reservation. The Hopi are known as agricultural people and have been called the world's greatest dry-land farmers. It is believed that early settlers survived in this arid climate based on farming techniques copied from the Hopi. Beyond farming, the tribe is also known for outstanding artisans making cloth, jewelry, pottery, and Katsina dolls. In the early 2000s, the Hopi Tribe was presented with \$50 million from Congress for purchasing additional land. A maximum of 500,000 acres purchased with this money can be taken into trust status, excluding anything within a five mile buffer of an incorporated town or city. To date the tribe has applied to Congress for 300,000 acres to be taken into trust status. Lands purchased and included in this request consist of a mix of both private and state lands located in the County southeast of Flagstaff. If and when these lands are taken into trust status, development would no longer be subject to county regulation.



Havasupai

The Havasupai reservation is the only one entirely within Coconino County and is located at the southwest corner of Grand Canyon National Park. The village of Supai is the tribal center of the 188,000-acre reservation, which was created in 1880 and significantly enlarged in 1974. The reservation is composed primarily of canyon lands on the south side of the Grand Canyon and occupies approximately 1.4 percent of Coconino County. The 2000 Census reported there were 503 Havasupai that remain on the reservation with approximately 160 dwelling units. Havasupai are known as traditional guardians of the Grand Canyon. The name Havasupai translates to “people of the blue green waters,” which is derived from the four waterfalls located nearby that maintain a bluish green color from limestone dissolved in the water. Historically, the Havasupai farmed, ranched and hunted on the plateau in summer and moved into the canyon during winter where they grew corn, beans, and squash. Today the tribe is the largest employer on the reservation and the main occupation is working for tribal enterprises related to tourism.

Hualapai

The Hualapai reservation was created in 1883 and includes a million acres along 100 miles of the Colorado River and Grand Canyon. The reservation extends into three counties including Coconino, Yavapai, and Mohave. That portion of the reservation located in Coconino County represents approximately 4.7 percent of the County. The tribal center of the Hualapai reservation is Peach Springs in Mohave County. The 2000 Census reported there were 1,353 Hualapai on the reservation with only two tribal members identified as residents of the Coconino County portion of the reservation. The Hualapai are considered part of the Pai, meaning “people,” which include the Havasupai and Yavapai. The Pai people are related to the Yuman language group, which were typically located on or near the Colorado River. The Hualapai Culture dates back to 600 A.D. Today the principal economic activities for tribal members include tourism, cattle ranching, timber sales, and arts & crafts. Tribal, public school, state, and federal government services provide the majority of full time employment.

Kaibab-Paiute

The Kaibab-Paiute reservation covers over 120,000 acres on the Arizona Strip north of the Grand Canyon along Kanab Creek. There are five villages within the reservation boundaries including Kaibab, Steam Boat, Juniper Estates, Six Mile, and Red Hills. The Kaibab reservation falls over portions of both Mohave and Coconino Counties, in addition to Southern Utah. That portion of the reservation located in Coconino County represents less than 1 percent of the County. The 2000 Census reported only one tribal member as a resident of the Coconino portion of reservation lands. The Kaibab-Paiute are members of the Southern Paiute Nation, which are part of the Uto-Aztecan language group. The Southern Paiute people moved to this area around 1100 AD from the Great Basin. Today the principal economic activities for this tribe are centered on tourism and livestock.

San Juan Southern Paiute

The San Juan Southern Paiute are a newly recognized tribe with approximately 250 members currently residing in and around Tuba City on the Navajo Reservation. The tribe is currently in the process of petitioning the Bureau of Indian Affairs (BIA) for tribal lands. For years the San Juan Southern Paiute have been administratively considered part of the Navajo Tribe but are culturally distinct from their Navajo neighbors. The Southern Paiute traditional territory included southern Nevada, northern Arizona, and southern Utah until they lost their land in the 1800s. The tribe was a hunter-gatherer society that later developed farming techniques. Today tribal members depend on raising livestock and subsistence farming of a small number of crops. The tribe is also known for its hand-woven baskets and traditional weaving techniques. The future location of any tribal trust lands could have an impact on the County depending on their location and the types of uses that may occur on site to support the tribe.



Appendix D: Water Resource Considerations

Growing Smarter Requirements

Arizona State Legislation that influences planning for water in Coconino County includes the “Growing Smarter” Act of 1998 and “Growing Smarter Plus” Act of 2000. Both of these acts included requirements for an Environmental Planning Element for county comprehensive plans. ARS § 11-821.C.3 requires counties with a population of over 125,000 to address planning for water resources, and makes it optional for counties under that threshold. The 2000 census for Coconino County was 116,320 so this element is not mandatory. The County will undoubtedly face compliance with this requirement in the next update to this plan if the same population thresholds apply. Because of the importance of water, The County made a decision to include a water element in this plan even though not required.

Some of the requirements of this statute will require further research. The statutory requirement for an analysis of how future growth projected in the County plan will be adequately served by the legally and physically available water supply (or a plan to obtain additional necessary water supplies) will require a separate, more detailed study. Some of the information on existing systems is compiled in this appendix. There are also a number of ongoing studies that could help in providing detailed information on available surface water, groundwater, and effluent supplies, as well as more reliable methods for demand forecasting (projections of future demand that can be made on a system-wide or customer-class basis).

Arizona Groundwater Management Act

The Arizona Groundwater Management Act (GMA) of 1980 was, in part, the result of legal questions over transport of water and overdrafting of groundwater in the southern part of the state, and thus the law included specific regulatory agendas for those areas. The law created four initial Active Management Areas (AMAs) where the most stringent restrictions apply, and two Irrigation Non-Expansion Areas (INAs) in rural farming areas where groundwater overdraft was of concern but was less severe than in AMAs. An Irrigation Non-Expansion Area is a geographical area that has been designated as having insufficient groundwater to provide a reasonably safe supply for the irrigation of the cultivated lands at the current rate of withdrawal. Since adoption of the GMA, one additional AMA and one INA have been established.

AMAs are created through legislation, by petition of property owners within a defined area followed by a vote (ARS § 45-415), or by declaration of the Director of ADWR pursuant to statutory criteria (ARS § 45-412.A). The primary purpose of Arizona’s five AMAs has been to address significant overdraft in these areas with a goal of “safe yield” by the year 2025. Per state standards for management areas, safe yield is defined as the “long term balance between the annual amount of groundwater withdrawn in the AMA and the annual amount of natural and artificial recharge.”

Significant aspects of AMAs include establishing groundwater rights and permits, prohibiting new agricultural irrigation, creating water management plans including mandatory conservation measures, a requirement for measuring and reporting water pumped from all non-exempt wells, and payment of a management fee for all groundwater withdrawals. A sixth key aspect of AMAs is the requirement for proving an “assured water supply” for any new subdivision. The AMA standard for assured water supply requires a developer to demonstrate that the water source is of sufficient quantity and quality to sustain the proposed development for 100 years, that the proposed use is consistent with the management plan and achievement of the AMA management goal, and that the water provider has the financial capability to construct water supply systems to serve the proposed development.



Assured vs. Adequate Water Supply

There is a significant difference between the AMA requirements of proving an assured water supply for any subdivision, and the application of an adequate water supply standard for areas outside of an AMA. The primary difference is that it is not necessary to actually prove an adequate water supply in order to subdivide land outside of an AMA, it is merely an advisory process. To obtain a certificate of water adequacy outside of an AMA, similar criteria are used regarding physical availability, quality, and financial capability. However, subdivisions may proceed with an inadequate supply, although notice of inadequacy must be included in sales materials.

Some counties have adopted ordinances that require subdividers obtain a Designation or Certificate of Water Adequacy, which states that water supplies will be available for 100 years. At least two issues would affect Coconino County's ability and/or desire to pass a similar ordinance. First, groundwater below 1,200 feet is precluded from being certificated or designated as an adequate water supply under the *Water Adequacy Rules*. This requirement affects a significant part of the county because water level commonly exceeds this depth. In addition, requiring developers to prove adequacy could motivate them to circumvent the subdivision process, resulting in more lot splits.

Rural Arizona Watershed Initiative

Funded annually by the state legislature, the Rural Arizona Watershed Initiative was started in 1999-2000 to help rural areas finance studies, projects, and programs related to groundwater resources. By August 2002, seventeen watershed groups had been created pursuant to this program. An "alliance" includes representatives from each of these groups to keep informed on a statewide basis. Four studies include watersheds that are at least partially within Coconino County. The intended outcome of these studies is the creation of a database and comprehensive assessment of existing geologic, hydrologic and related data, and an understanding of technical information regarding the inter-relatedness of geologic and hydrologic science. The intent is that with this information, better forecasting can be done to assess the supply and demand situation.

The Coconino County Board of Supervisors through this initiative created the Coconino Plateau Water Advisory Council in 2000. The Council is comprised of local agencies and jurisdictions that manage land within the Coconino Plateau Watershed, which encompasses roughly the central area of Coconino County. The general geographic boundaries focused on by the Council are described as "being roughly defined" as follows: bordering the Colorado River on the north, Cataract Canyon drainage on the west, the cities of Flagstaff and Williams on the south, and the Western Agency of the Navajo Nation on the east. ADWR, Grand Canyon National Park, Coconino and Kaibab National Forests, USGS, Havasupai Tribe, Navajo Nation, the cities of Flagstaff, Williams, and Page, and the Tusayan community have entered into a Memorandum of Understanding (MOU) to pursue a regional water study. Other entities continue to express interest and be incorporated into the council.

There is a technical subcommittee of this council whose role is to provide oversight for a study of the current status of water supplies and to identify alternatives that could be implemented to help meet future demands. The Bureau of Reclamation is the lead agency on this study, which is intended to be a comprehensive appraisal of all water resources in the Coconino Plateau Region with demands projected to 2050. The study will also include alternatives for meeting demands including, but not limited to, conservation, water demand-side management (the measures, practices, or incentives that water utilities use to reduce the level of services or to change demand patterns for services), effluent reuse, gray water, and augmentation through additional supplies.

The *North Central Arizona Water Demand Study Phase I Report*, commissioned by the Council and completed in June 2002 (by the Rocky Mountain Institute and Planning & Management Consultants, Ltd., Snowmass, Colorado), provides extensive information about existing water resources, efficiency and conservation measures, and alternative supplies within the study area. The *Phase I Report* expresses concerns with the way demands have been calculated in previous plans and reports, and sets forth suggestions and a plan for more reliable demand forecasting methodology. A Phase II report is expected to continue with additional data collection and further analysis. These reports, along with other reports and further studies for this region, are to be incorporated into the Bureau of Reclamation study.

Other Watershed Initiative efforts that affect water in Coconino County are the Upper and Middle Verde Watershed, Mogollon Highlands of Central Arizona, and the Arizona Strip. Coconino County areas included in the Upper and Middle Verde Watershed are the areas north of Ash Fork, and areas around Parks and Flagstaff that drain into Sycamore Creek and Oak Creek. The Mogollon Highlands includes areas around Blue Ridge, where the County has experienced significant growth since the mid 1990s, and Forest Lakes Estates at the southernmost tip of the County. The Arizona Strip includes roughly the area from Marble Canyon to Fredonia.



Surface Water Issues

Surface water laws differ from groundwater laws. To obtain a surface water right, the applicant must propose a beneficial use, and approval is subject to any prior appropriation claims by others. Beneficial uses are defined under ARS §45.181 as a use of water that provides a benefit and includes domestic, municipal, irrigation, stock watering, water power, recreation, wildlife (including fish), artificial groundwater recharge, and mining uses. In 1977, the legislature passed the *Stockpond Water Rights Act* to recognize previously unrecorded stockponds—ponds that store no more than 15 acre-feet of water for livestock and wildlife use. This act addresses the surface water diversions associated with these ponds, diversions that may otherwise augment the supplies of downstream users. The law distinguishes surface water from sheet flow, or localized runoff. This distinction is important because surface water rights typically do not apply to sheet flow.

Tribal Water Rights

A related regional issue is Indian water rights, which ADWR considers one of the most important issues in Arizona today. The Little Colorado River system, which includes areas in Coconino County, is undergoing a lengthy adjudication process, which is addressing claims to water rights by the Hopi and Navajo tribes, and others. A related issue is tribal reliance on certain sources of water. This became a significant issue with the proposed Canyon Forest Village development adjacent to Tusayan in 1999 and 2000. Of critical concern to the Havasupai was the impact significant groundwater withdrawal would have on springs in the Grand Canyon where they make their home.

Water Systems Summary

It would be impossible to review all of the water systems in the County in this Plan. However, there are some significant systems that are worthy of note for either their uniqueness or variety in service. Municipal systems are included in this review even though municipalities are not included in the jurisdictional authority of the Comprehensive Plan.

As a historical reference, the following table provides data from the *Arizona Water and Wastewater Residential Rates 1999 Survey* by the Water Infrastructure Finance Authority of Arizona.

The textual information on the subsequent pages is derived from more current studies and informal research by staff of the Community Development Department.

Water Suppliers Summary Table: 1999 Survey of Residential Rates

Owner	Ownership Type	Watershed	Revenue \$1000/year	Residential users	Other users	Total users	Total gal water sold (mills.)	Gals sold (1000s) per Cust.	Base \$/month	Charge 7750 gals \$/month	Total \$/month
Arizona Water Company / Pinewood	Investor	Verde		All Div. Counsl.		0			\$16.21	\$26.57	\$42.78
Bellemont Water Company	Investor	Verde	\$41	2	5	7	10	1457	\$20.00	\$14.34	\$34.34
Clear Creek Pine Community Protection Association	Other	NA	\$7	60	-	60	no report		\$5.83	\$-	\$5.83
Doney Park Water S/W Avg-Blk 2	Investor	Lower Little Colorado	\$1,511	2478	107	2585	187	72	\$18.75	\$38.55	\$57.30
Flagstaff	City	Lower Little Colorado	\$10,374	13377	1731	15108	NA	NA	\$6.48	\$23.28	\$29.76
Flagstaff Ranch Water Company, Inc.	Investor	Lower Little Colorado	\$18	30	-	30	3	92	\$18.00	\$19.91	\$37.91
Forest Highlands Water Company	Investor	Verde	\$298	499	17	516	32598	63175	\$20.00	\$15.50	\$35.50
Fredonia	Town	Colorado River	\$179	528	45	573	NA	NA	\$16.50	\$-	\$16.50
Grand Canyon Caverns	Investor	Colorado River	NA	NA	-	0	NA	NA	\$5.00	\$16.88	\$21.88
Greenehaven Water Company	Investor	Colorado River	\$34	156	2	158	13	83	\$9.00	\$10.13	\$19.13
Heckethorn Water Company	Investor	Lower Little Colorado	\$18	35	8	43	5	113	\$25.25	\$18.76	\$44.01
Junipine Community Property Owners Association	Investor	Verde	NA	NA	-	0	NA	NA	\$-	\$19.38	\$19.38
Mormon Lake Water Company	Investor	Lower Little Colorado	\$42	140	1	141	2	16	\$26.00	\$-	\$26.00



Owner	Ownership Type	Watershed	Revenue \$1000/year	Residential users	Other users	Total users	Total gal water sold (mills.)	Gals sold (1000s) per Cust.	Base \$/month	Charge 7750 gals \$/month	Total \$/month
Mountain Dell Water	Investor	Lower Little Colorado	\$39	93	-	93	6	62	\$19.00	\$28.69	\$47.69
Oak Creek Utility Corporation	Investor	Verde	\$10			0	0		\$18.00	\$19.38	\$37.38
Page	City	Colorado River	\$600	2284	349	2633	NA	NA	\$4.00	\$5.94	\$9.94
Ponderosa Utility Corporation	Investor	Verde	\$186	496		496	23	47	\$17.25	\$21.70	\$38.95
Starlight Water Company, Inc.	Investor	Lower Little Colorado	\$47		-	0	NA	NA	\$13.25	\$10.62	\$23.87
Stoneman Lake Water Company	Investor	Verde	NA	NA	NA	0	NA	NA	\$10.00	\$5.25	\$15.25
Tusayan Water Development Association, Inc.	Other	Colorado River	\$461	2	12	14	24	1743	NA	NA	NA
West Village Water Company	Investor	Lower Little Colorado	\$37	52	14	66	NA		\$26.00	\$39.14	\$65.14
Williams	City	Colorado River	\$583	851	228	1079	NA	NA	\$6.21	\$20.99	\$27.20
Winslow West Water Company	Investor	Lower Little Colorado	\$2	5	-	5	NA		\$6.00	\$2.38	\$8.38
Totals			\$14,487	21088	2519	23607	32871	66860	\$306.73	\$357.39	\$664.12

Municipal Water Systems In Coconino County

Flagstaff

The City of Flagstaff domestic water supply comes from three sources—Upper Lake Mary, the Inner Basin of the San Francisco Peaks, and groundwater wells. Upper Lake Mary has a capacity of five billion gallons of surface water, and the reliable annual yield is 855 million gallons. The Inner Basin is considered a surface water supply with shallow wells capturing snowmelt with a reliable annual yield of 241 million gallons. Groundwater is pumped from six wells near Lower Lake Mary, ten wells in the Woody Mountain well field, and two wells on the city’s east side. Water is 1,000-2,000 feet deep, and the reliable annual production capacity is 3,554 million gallons. There are three standpipes for private and commercial water haulers. Standpipe sales in 2000 totaled less than 1 percent of total consumption for the City.

The City also has reclaimed water available for sale. In addition to water lines that distribute it to limited public facilities in the city such as parks and school playing fields, there are hydrants located for haulers as well. Some of the proposed future uses of the reclaimed water include recreational activities such as snow-making for skiing at Snowbowl and winter time filling of Lake Mary for fishing.

Williams

Williams has historically relied on surface water reservoirs, Dogtown Reservoir, Kaiabab Lake, Cataract Lake, City Dam, and Santa Fe Dam, but in 2002 these reservoirs were down to 8 percent of capacity and the City drilled wells to meet demand. The wells are at a depth of over 3,000 feet. Due to the increased costs of obtaining and providing water the City has raised the costs to both city residents and haulers. The City has instituted a card system and limited the number of cards available; only previously existing customers were allowed to obtain a card. City residents had been subsidizing county residents who were purchasing and hauling water, but in 2003 the City raised its price for water from \$6 for the first 1000 gallons and \$3 per 1000 after that to \$17.95 per 1000 gallons.

Page

The City provides all water services in Page, as well as providing treated water to the adjacent LeChee Chapter of the Navajo Nation. At the present time, Page obtains all its water from Lake Powell via intakes located on the dam approximately 250 feet below the water’s surface. Four pumps move the water 1,200 feet uphill via a single water line to the city’s water filtration plant. The capacity of the Lake Powell pumps is about 5.3 MGD, somewhat less than the drinking water plant capacity of roughly 6 MGD. The distribution system includes 4.5 MG of storage capacity for treated water. Some of the treated wastewater evaporates in the storage ponds; most is sent to the municipal golf course for irrigation use. There is no known rainwater harvesting or graywater reuse in Page.



Fredonia

In 2003 there were 540 users on the City of Fredonia's water system. The City receives its potable water via a 12-mile pipeline from Water Canyon, Utah. Most of the area's surface water is collected in the winter months (snow pack) and subsequently stored in the City's 25 million gallon reservoir. Based on an estimated 2 percent annual growth rate in the number of users, the City is in the process of using Community Development Block Grant funds to upgrade the current pipeline by installing a secondary system for a culinary water supply. The City also has plans to build a second reservoir for an additional 25 million gallons of storage capacity. Aside from residential users, USFS is the largest user of the City's water supply during times of forest fire. Construction companies, contractors, and ranchers make up the remaining user list. The Fredonia Town Council and the community Water Board host conservation education programs twice a year.

Sedona

The City of Sedona is served by a private water company (Arizona Water Company) and the source is wells.

Unincorporated Community/Area Water Supply

Unincorporated Flagstaff Area systems

The Heckethorn Water Company, Mountain Dell Water, Inc., and West Village Water Company provide service to County islands within the City of Flagstaff corporate limits (see descriptions below). Pine-Del, which is a subdivision just south of the City's boundaries, is actually served by city water. It is currently the city's position that new service will not be provided to any county islands or areas outside the city limits without annexation. This is significant for areas that are being developed just outside the city limits, such as the Lockett Ranches property off Highway 180 and northwest of Buffalo Park. This area is being primarily developed through the County lot split process (although three tracts have gone through a subdivision platting process). The ultimate number of lots could be about 225 with most being served by shallow onsite wells.

Within the greater context of Flagstaff, Heckethorn Water Company is a small water supplier. The Company maintains one well with a system storage capacity of 16,000 gallons. There are about 44 customers served by this company with no plan for system expansion.

Mountain Dell Water, Inc. serves about 80 residential customers in a small county island and a few homes in the City of Flagstaff not served by the municipal system. The system is fed by two wells, each at about 1,300 feet, with a combined capacity of about 40,000 gallons. As the area is mostly built out, there are no plans for expansion of the water system. The Mountain Dell Homeowners' Association has been active in promoting water conversation among the system's users.

The West Village Water Company maintains 62 water system connections—34 residences, 18 businesses, and 10 standpipes. Operating exclusively from one 1,620-foot deep well, the system maintains a capacity of 98,000 gallons. From the standpipes, the water company sells only to long standing customers, and while the opportunity exists, the company is not presently looking to expand service.

Doney Park

Doney Park Water provides water to a majority of area residents and businesses. Some residents choose not to pay for line extensions and then haul water, and there are very few individual wells due to depth to water. DPW has six wells ranging in depth from 1,581 to 1,781 feet. There are 29 storage tanks with a total capacity of 4 million gallons (June 2002 Phase I plan). Doney Park Water has calculated its ability to provide service within their service boundaries based on the County's current zoning, and thus the ability to consider rezonings that would rely on this water system are further restricted.

Flagstaff Ranch Water Company

The Flagstaff Ranch Water Company serves an area that was rezoned to Planned Community in 1983. It is adjacent to the City of Flagstaff's western boundary. Shortly after the rezoning the water system was developed with a single well and 595,000 gallon storage tank. The area served includes Westwood Estates (a total 80 lots that are not all currently developed), Flagstaff Ranch Golf Club (master planned residential golf course community-525 residential units approved), and the Flagstaff Ranch Business Park between I-40 and Route 66. There are currently limited industrial uses in the business park, but there is the potential for additional industrial and for highway commercial uses. Treated wastewater effluent will be used on the golf



course, with estimates that the effluent will provide 10-15 percent of irrigation needs. A surface drainage system to direct runoff to golf course has also been integrated into the design.

Forest Highlands

Forest Highlands Water Company serves a private residential golf course community with two golf courses (36 holes) and 820 residential lots. Treated wastewater is used for golf course irrigation, providing only part of the irrigation needs. Some of the treated wastewater is coming from the adjacent Kachina Village subdivision through an agreement between Forest Highlands and the Kachina Village Improvement District.

According to the June 2002 Phase I report, water rights concerns have kept Forest Highlands from reusing runoff, and instead water is pumped to adjacent national forest land to infiltrate and recharge the groundwater. According to the same report, in the summer of 2002 FHWC asked customers to voluntarily comply with the City of Flagstaff's mandatory restrictions for home landscaping.

Kachina Village

The Kachina Village Improvement District (KVID) provides water (and wastewater) service to the subdivision. Although a separate district, KVID is administered by the County and is in the Water and Wastewater division of County Public Works Department. There are five wells with a static water level of 650-1100 feet. There are four storage tanks with a capacity of 910,000 gallons. KVID provides a standpipe for water used for dust control, but it is not for sale to haulers. According to the Phase I Report Appendix, "One of the wells apparently experiences a drop in water level when Forest Highlands' wells are pumping heavily to irrigate that development's golf course." KVID has a conservation-based rate structure. There are educational flyers provided with the monthly bills and KVID distributes a quarterly newsletter.

Mountaineire

The Mountaineire subdivision and surrounding areas are served by a private water company, Ponderosa Utility. The service area includes development along Old Munds Highway just east of I-17 in the Mountaineire vicinity. The source is groundwater, and a standpipe for hauled water sales is available.

Fort Valley

Private individual or shared wells in this area are at a shallow depth (200 feet or less) in perched aquifers. There have been concerns about well stability in dry years, and about contamination from onsite wastewater systems. Some residents rely on hauled water from the City. There was a study done in the mid-1990s to assess concerns by area residents that septic systems were contaminating their wells. The results were inconclusive, although the high water level of the area warranted conventional systems no longer permissible.

Bellemont

Bellemont has historically been an important source for private and commercial water haulers, with two systems available, but they reportedly began having problems in the early 2000s. Bellemont Water Company on the south side of I-40 also provides water to some industrial and commercial users. The Bellemont Travel Center system no longer offers standpipe sales as it is owned by the developer of a new subdivision and the water is being directed for that use. Navajo Army Depot primarily relies on springs and very shallow wells. They have started looking to outside sources for hauling water.

Parks

Parks residents primarily haul water (individually or from commercial haulers), although there are some residents who have relatively shallow wells in perched aquifers. Due to the reduced availability of water from Bellemont and Williams, Parks has begun looking at a local community well. One well drilled on commercial land has been approved for water sales. The Parks Water Association was established to pursue the development of a non-profit water supply, storage and standpipe system for the Parks area.

Oak Creek Canyon

There are a mix of water sources serving residents in Oak Creek Canyon. Most are individual and served by either wells or springs. The Twin Springs Terrace Water Users Association and the Oak Creek Water Company are the area's two water system providers.



Mormon Lake

The Mormon Lake Lodge operates a water system that provides water to the Mormon Lake Townsite. Another system also relying on groundwater serves the Tall Pines subdivision.

Forest Lakes

The Forest Lakes Water Improvement District serves the subdivision with 832 active connections and a potential to serve all 966 lots. There are four operational wells, with the depth to water at 450', and there are 650,000 gallons of storage capacity. The FLWID charges an annual fee of \$319 and does not have individual meters.

Starlight Water System

The Starlight Water System serves Starlight Pines and Starlight Pines Ranchettes, Pine Canyon, Blue Ridge Estates and Tamarron Pines. There are wells in each subdivision, with the depth to water at 600'-800'. Expansion would be possible to Clear Creek Pines Units 8 and 9 if they went through the appropriate process.

Mogollon Ranch

The Mogollon Ranch subdivision, located north and east of Starlight Pines, is served by 17 private systems, each serving 15 lots.

Gray Mountain

Gray Mountain is served by a private company, Anasazi Water Company.

Winslow West

Located at the county line, west of the City of Winslow, the Winslow West area is comprised of the Hopi Hills and Turquoise Ranch subdivisions. Although there was a branch water line previously from the City, water service was converted a number of years ago to the Winslow West Water Company. Other than the information provided in the 1999 Residential Rates Survey, there are no current estimates as to the systems present or potential future capacities.

Greenehaven

The Greenehaven subdivision is served by the Greenehaven Water Company, which also provides wastewater service. The original well serving this area was drilled in 1972, producing 600 GPM pumped to a 500,000 gallon reservoir. The ultimate water system development for this area has been calculated to have a design flow of about 1.35 million gallons per day. By 1992 the Greenehaven development had been approved by the Arizona Water Commission to use a water supply of 600 gallons per minute for 100 years.

Pinewood/Munds Park

The Arizona Water Company provides water to the Pinewood subdivision. The total storage capacity is 1.24 million gallons, derived from three wells (depths at 1252, 1332, and 1413 feet). As of August 2003 data, there were 2,833 customers in the Pinewood/Munds Park area, including a few on the western side of I-17. Although the community is surrounded by national forest, the water system could support additional customers should residential densities increase or infill occur within the subdivision. While water is occasionally sold to commercial haulers, there are no measures to encourage water conservation within the community.

Tusayan

There are two private water systems that supply the community with water. There are three wells at a depth of over 3000 feet—with water levels at 2400 feet—that serve about two-thirds of the community's needs; the balance is hauled. Tusayan has a very aggressive program of utilizing reclaimed wastewater, with double-plumbing of commercial buildings such that treated wastewater is used for toilet flushing. There is a system of reclaimed water lines throughout the community serving the commercial uses as well as providing all water for landscaping.

Tuba City

Tuba City is served by the Navajo Tribal Utility Authority.



Appendix E:

Wildlife Considerations

Introduction

This appendix contains background information and methods, as well as recommendations for seven planning areas as determined by a group of wildlife experts convened by the County. Because of limitations of space within the Coconino County Comprehensive Plan itself, the wildlife group was not able to include all information deemed pertinent in that document. This appendix contains some of that information. Additional substantive information is presented in a separate Wildlife Reference Document.

This appendix and the reference document contain information that the wildlife group considered an important part of the County Plan that the County should use in their planning activities. The information presented represents the consensus opinion of the core group of wildlife biologists as gathered, discussed, debated, and agreed upon over a period of eight months (August 2002-April 2003).

Methods Used

Coconino County convened a group of wildlife experts on August 23, 2002, to assist with the preparation of the County Comprehensive Plan. This initial meeting was attended by the following persons: R.V. Ward (Grand Canyon National Park); Rick Miller (Arizona Game and Fish Department [AGFD]); Debbie Wright (AGFD); Paul Beier (Northern Arizona University); Shaula Hedwall (U.S. Fish and Wildlife Service); Michele James (Grand Canyon Trust [GCT]); Jack Metzger (Diablo Trust); Jackie Marlette (on temporary contract with Coconino County), and Steve Fluck (GCT).

The group was initially charged with expanding the Vegetation and Wildlife subsections of the Natural Environment section of the Comprehensive Plan. As a part of this effort, the group discussed the additional information that should be used to guide the Comprehensive Plan. This included descriptions of habitat, wildlife movement areas, springs, seeps, areas of importance topographically, and other places and habitats of importance to wildlife. The County clearly stated that the Comprehensive Plan's jurisdiction included state and private land only.

The workgroup began by examining 10 planning areas that the County had already identified. These are the areas for which there are adopted community area plans. It was understood that some areas between these planning areas were of importance to wildlife, and these were identified and drawn onto maps by the core group. Paul Beier of NAU, who formed the South Coast Missing Linkages Project in California, suggested that the wildlife group identify focal species that are sensitive to fragmentation. Thus, the process the group used was species based, but included the identification of habitat important to these species, or to species in general. The workgroup also attempted to identify threats to these species, particularly as they related to actions on state and private land.

The group identified, in the form of maps and with the use of area descriptions, what is currently known about the selected focal species and their habitat within the identified planning areas. Because the County indicated that the maps used to guide the Comprehensive Plan could be changed, the group felt that this approach would allow for the necessary flexibility. The wildlife group did not want to be locked into a particular set of information for the long term when this information is expected to change (with development, new research, additional information, etc.).

At subsequent meetings, the group discussed a strategy to meet the County's timeline, which included creating an initial list of focal species and determining priorities for planning areas. The core group of biologists



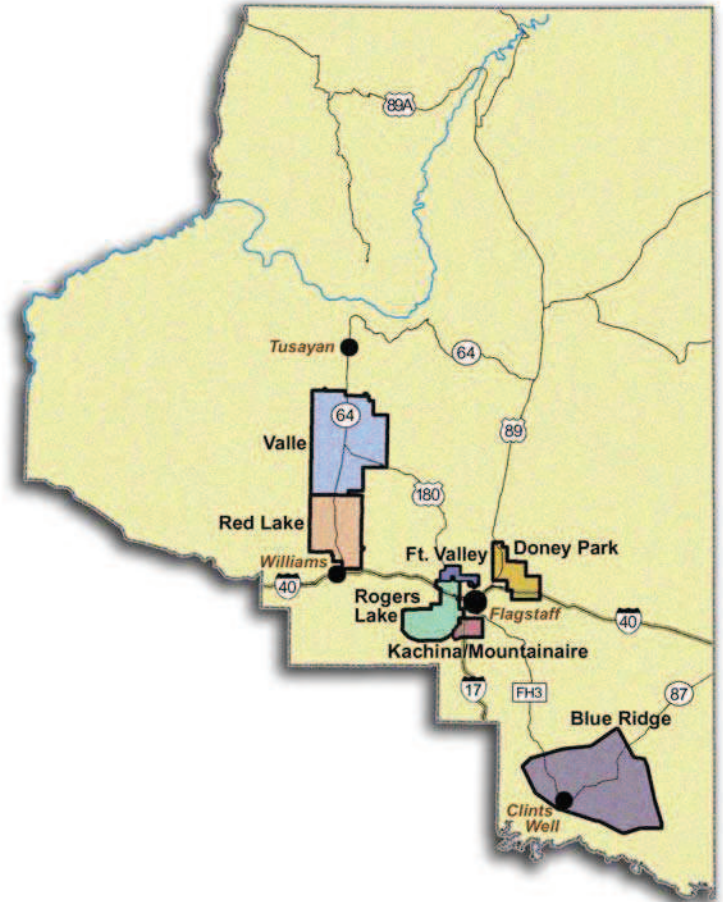
who consistently participated in the process consisted of: Debbie Wright and Rick Miller from the Arizona Game and Fish Department, Shaula Hedwall from the U.S. Fish and Wildlife Service, Michele James from the Grand Canyon Trust, and Larry Stevens from the Grand Canyon Wildlands Council. Other regular participants in the group included Jack Metzger from Diablo Trust, Bill Towler, Coconino County Community Development Director, Steve Fluck, GIS specialist from Grand Canyon Trust, and Jackie Marlette, GIS specialist on contract with the County.

This core group drafted an extensive revision of the Vegetation and Wildlife sections including a thorough summary of vegetative types represented in the County, a summary of fish, wildlife, and plants, their habitats, and threats to these habitats. In addition, the group worked to produce maps and summaries of wildlife movement areas and important wildlife habitat within the County. This initial work (“Phase I”) considered the wildlife and habitat within the ten areas for which community areas plans have been developed. Four additional “planning areas” were determined to be of importance by the group. The work-group prioritized the areas based on a combination of the rate and amount of development and the importance and uniqueness of wildlife habitat in a given planning area.

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Wildlife Planning Areas



Priority 1

- Doney Park
- Red Lake
- Fort Valley
- Valle

Priority 2

- Kachina/ Mountaineire
- Rogers Lake
- Blue Ridge

Priority 3

- Parks
- Bellemont
- San Francisco Peaks

Priority 4

- Tusayan
- Oak Creek
- Munds Park

The wildlife group was able to complete initial work on seven of the planning areas (see above map). Within these planning areas, the wildlife group identified movement areas and important wildlife habitat for an initial list of 16 “focal species:”

- | | | |
|-----------------|---------------------------|--|
| • Pronghorn | • Badger | • Mexican vole |
| • Mountain lion | • Northern goshawk | • Neotropical migrants |
| • Elk | • Gunnison’s prairie dog | • San Francisco Peaks groundsel |
| • Black bear | • Mexican spotted owl | • Flagstaff pennyroyal and/or other plants |
| • Mule deer | • Tiger salamander | |
| • Turkey | • Leopard frog (northern) | |

Due to time limitations, the group gathered information on most, but not all, of the above species for the completed wildlife planning areas.



The wildlife group discussed plans to continue the momentum of this effort (termed “Phase I”) in a more extensive and thorough review of wildlife movement areas and important habitat across the entire County. This second phase (Phase II) would include additional representatives from land management agencies, academia, and other interested members of the public. The County has indicated their willingness to utilize additional information gathered by the group in the future for planning purposes.

Work focused on gathering information from Arizona Game and Fish wildlife managers and habitat specialists, federal land management agencies, and researchers, as well as tapping the knowledge of the wildlife group. This information was placed onto planning area maps by the specialists and then digitized for use in a GIS system. Area descriptions of each planning area were produced; these include a list of specific recommendations for use by the County. GIS maps representing the findings of the group were provided to the County for use in their planning.

Detailed descriptions of the wildlife planning study areas are included in the Wildlife Reference Document. Explicit limitations and qualifications of the information is also defined.

Results & Considerations

While each of the seven examined planning area differs somewhat from other planning areas, several overriding issues arose during the Wildlife Group’s inquiries. This in turn, resulted in consistent suggestions offered from the Wildlife Group to the County on means to address these issues. See the Wildlife Reference Document for a more detailed and thorough description of the issues.

Gunnison’s prairie dog and pronghorn antelope habitat protection were two overarching issues that arose as a concern in the majority of planning areas. Both of these species have declined conspicuously in northern Arizona due to a variety of factors including habitat alteration caused by housing developments and changes in habitat structure and composition.

In many of the planning areas, wildlife movement areas were identified. Each of the movement areas differed depending on location and associated wildlife use. Protection of the connectivity offered in these movement areas and prevention of further fragmentation arose as overriding recommendations from the Wildlife Group.

Protection of water sources such as springs and lakes in the planning areas was an overriding suggestion by the Wildlife Group. Restoration of degraded springs and riparian vegetation was also recommended.

The presence of non-native plant species is a concern in the examined planning areas. While information is limited in some areas, primarily due to lack of information, if left unchecked these plants can spread very quickly. These infestations are more difficult to control and eradicate when they become large.

Several questions and data gaps arose for each planning area. These included the need for detailed vegetation maps and the inventory of the planning areas to determine the occurrence of focal species and identification of movement areas. This information would assist the County, as well as wildlife specialists, in locating important areas to be aware of for planning purposes.

Habitat Descriptions Overview

Coconino County is highly diverse in topography, ecosystems, and climate. The region contains the high southern margin of the Colorado Plateau, but is deeply incised by the Colorado River in Glen and Grand Canyons, and has an elevation range of 366-3850 meters (1,200-12,633 feet) (Grand Canyon Wildlands Council 2003). Ecosystems vary from hot desert shrublands, intermediate and Plateau elevation grasslands and shrublands, to coniferous woodlands, and ponderosa pine and mixed conifer and aspen-dominated Plateau and montane forests, as well as tundra habitat above treeline in the San Francisco Peaks (Grand Canyon Wildlands Council 2003). Detailed descriptions of habitats in Coconino County as well as narrative of common threats to habitat can be found in the Wildlife Reference Document.

The term *habitat* relates to the notion of presence of a species to attributes of the physical and biological environment (Morrison *et al.* 1992). In its simplest sense, habitat is the place containing resources needed for survival and reproduction. *Habitat use* is the manner in which a species uses a collection of environmental components to meet life requisites. Habitat use can be regarded in a general sense, or broken into specific acts or needs such foraging, nesting, or roosting (Block and Brennan 1993). *Habitat suitability*, the ability of habitat to provide necessary resources for an individual to survive and ultimately reproduce, varies temporally and spatially. Environmental changes result in unique arrangements of resources and, hence, different habitat. Temporal variations result from natural changes such as vegetation succession, fire, flood, or weather, or from anthropogenic change such as agriculture, urbanization, or water development (Block and Brennan 1993). Regardless of the underlying cause, it is critical to recognize that the environment changes constantly resulting in unique arrangements of resources and, hence, different habitats (Block and Brennan 1993).



Habitat selection/preference is the innate and learned behavioral responses that allow an individual to distinguish among various components of the environment resulting in the disproportional use of environmental conditions to influence survival and ultimate fitness of individuals (Block and Brennan 1993). Habitat selection is influenced by many factors, including interactions between individuals of the same and different species, competition, predators, disease, and parasites (Block and Brennan 1993). Species often require unique resources for different aspects of their life. For example, nest sites may occur in areas altogether different from where food resources are located. Types of activities that require specific environmental components include nesting, calving, foraging, roosting, bedding, and singing, among others. Seasonal changes in habitat use also occur. Requirements can differ by stages within a season, for example, during nesting and fledging periods, or between seasons, such as breeding and nonbreeding (Block and Brennan 1993). Migratory birds typically use different habitats on their breeding, migration, and wintering grounds. Use of habitat can vary from year to year as well. This often reflects the distribution of available resources. Vegetative structure, the layering of the canopy or the horizontal dispersion of patches, is a factor in determining where and how species use resources. Plant species composition also influences the distribution of species.

Another important habitat concept is *use versus preference*. It is often assumed that when a species or individual uses a particular habitat type this means that is the habitat of preference. In reality, this is not always the case. For instance, the Chiricahua leopard frog, a Federally threatened species, was once found in riparian areas in central and southern Arizona. With the significant alteration of riparian habitat in the state, this frog is currently largely found using habitat present in human-created stock tanks.

Some species require large areas in which to fulfill their life history requirements. This area is called a *home range*. For instance, the home range of a single Mexican spotted owl in northern Arizona has been measured to be between 702 and 2386 acres in size. Within their home range, owls may use very different types of habitat for nesting and foraging.

Species with large home ranges are commonly referred to as *wide-ranging species*. Other examples of these species in Coconino County are black bear, mountain lion, pronghorn antelope, and northern goshawk, among others. Besides having large home ranges, some of these species utilize specific movement corridors or areas. Bears for instance are known to use the steep canyons south of Flagstaff as an east-west movement corridor. Mountain lions are found on the Mogollon Rim and Kaibab Plateau and are very sensitive to human activities. Many raptors migrate long distances in the spring and fall and utilize thermal drafts over the Grand Canyon.

Some species are considered habitat specialists. For instance, the nesting southwestern willow flycatcher requires dense habitat along streams, rivers, and other wetlands where cottonwood, willow and other riparian trees are present. Nesting only occurs when these conditions are present in a certain juxtaposition and density. Some plant species are narrowly endemic and grow only under certain specific conditions. The Brady pincushion cactus for instance, grows only on Kaibab limestone ships overlying soils derived from the Moenkopi Formation.

Some species use habitats that are present only in certain areas and in small quantities. There are many examples of *unique habitats* in Coconino County including riparian areas, seeps and springs, alpine tundra, canyons, and caves. Riparian areas exist at all elevations within the County from the stream bands and wet meadows near the San Francisco Peaks to the shoreline of the Colorado River at the bottom of the Grand Canyon. While riparian areas only comprise a small amount of the land area in Coconino County, they typically support a proportionally large amount of species compared to surrounding habitats. Because riparian areas are rare habitat that is important to wildlife, they are essential and special features to conserve.

Springs and seeps in Coconino County are also unique habitats. They host a variety of invertebrates and plants, many of which are found nowhere else in the world. For example, Vaseys paradise spring is one of three springs in the Southwest where the endangered and endemic Kanab ambersnail is found. Some plant species, such as the Navajo sedge, are reliant upon springs for their survival. Springs support larger animals as sources of water as well. Seeps and springs are widely scattered throughout the County. The heaviest concentrations of springs exist at mid and low elevations and near the Colorado River and its major tributaries, however there are a fair amount of springs in higher elevations around the San Francisco Peaks and in areas surrounding Flagstaff.

Tundra habitat is present in only a small amount in Coconino County on the San Francisco Peaks (approximately 2,457 acres). Two species are endemic to the San Francisco Peaks tundra habitat type: a buttercup (*Ranunculus inamoenus* var. *subaffinis*), and the San Francisco Peaks groundsel (*Senecio franciscanus*). Only the water pipit (*Anthus spinoletta*), the Lincoln sparrow (*Melospiza lincolni*), and the deer mouse (*Peromyscus maniculatus*) are known to breed in the tundra region of the San Francisco Peaks.

As stated previously, canyons provide movement corridors for wide-ranging species such as black bears. Canyons also often provide a cooler microclimate for species that require cooler areas for nesting. The Mexican spotted owl nests in canyons within Coconino County, including the Grand Canyon.

Caves offer respite from factors such as heat, precipitation and predation, and they attract many species of wildlife. Species such as small rodents, insects, ringtails, owls, hawks, mountain lions, bears and California condors have all been known to use caves or mines. Many of these species live and reproduce in these struc-



tures, and may utilize them year-round. In addition, some caves and mines have been used by these species for many years. Caves can provide stable temperature and humidity conditions for bat maternity roosts and hibernacula. Large and complex caves may offer a range of temperatures with cold air or warm air traps. Even small caves with no dark zone may be used by bats for night roosting.

Threats to Habitat

Environmental changes result in unique arrangements of resources and different habitats. It is important to note that these changes often benefit species of wildlife and plants, but can also threaten them. Threats to wildlife and plants and their habitats are complex and varied. They also change over time and can be cumulative; what is not now a threat to a particular species, may become one in the future, and vice versa. In this section, broad categories of threats are outlined.

Often, historic management changed habitat and the use of that habitat by wildlife. Examples include fire suppression and overgrazing which have significantly changed the structure and composition of forests in Coconino County. Ecosystem scientists generally agree that frequent, low intensity fires played a significant role in maintaining relatively open conditions in southwestern ponderosa pine forests by controlling tree population and forest floor litter accumulations (Cooper 1960, Kilgore 1981, Swetnam and Betancourt 1990, Covington et al. 1994, Swetnam and Baisan 1994). Human-caused changes, such as historic livestock grazing and fire suppression, have disrupted normal fire cycles and resulted in irruptions, or sudden increases, in tree population. This in turn has led to steadily increasing accumulations of fuel on the forest floor, reduced tree vigor, and conversions of vegetation from fire adapted species to fire intolerant species. In ponderosa and dry mixed conifer forests, unnaturally high fuel accumulations and densities of small trees are resulting in increasingly large and severe crown fires. These fires, often catastrophic in nature, threaten human and ecological values including old-growth forests, habitats for the threatened Mexican spotted owl and the sensitive northern goshawk, and forest soils. Many severely burned areas show little or no sign of recovery as a ponderosa forest, and vectors for undesirable exotic and noxious weeds. Catastrophic wildfire is now considered a major threat to some species of wildlife, such as the Mexican spotted owl (U.S. Fish and Wildlife Service 1995).

Other modifications traceable to the change in the normal fire cycle include a decrease of understory vegetation, epidemic insect and disease outbreaks, and increased potential for, and instances of, destructive wildfires. Despite the relative consensus among scientists and natural resource professionals that continuation of this situation is intolerable, methodologies appropriate for restoration of “natural” forest ecosystem function and process are the subject of considerable debate (Fiedler et al. 1996, Harrington 1996, Miller 1996, Covington et al. 1994).

Grazing by livestock undoubtedly affects species composition by reducing or removing palatable species and replacing them with thorny, less palatable, or even poisonous species and Nonnative species. Mac et al. (1998) suspect a significant trend in the reduction of biodiversity in these forest ecosystems is a function of fire suppression and grazing, but recognize that further research is needed. Riparian areas can be significantly affected by grazing. With heavy grazing, whether by elk or livestock, stabilizing vegetation deteriorates, banks are eroded, water storage capacity declines, water quality declines, streambeds become wider and stream depths shallower, water temperatures increase, and fish and aquatic invertebrate habitat quality declines (Mac et al. 1998).

The historic extermination of species considered predators to livestock in the late 1800s and early 1900s has resulted in the loss or reduction of large predators in the County such as the gray wolf and mountain lion. While the Mexican gray wolf has recently been successfully reintroduced in eastern Arizona, the current range of the wolf in the Southwest does not yet approach its historic range.

Most declines and extirpations of aquatic species in the Southwest can be traced to the construction of dams, either for water storage or flood control, and to other development on or near waterways, such as diversion structures. Dam building and water diversion have significantly degraded most major river systems, causing dire consequences for native fishes (Mac et al. 1998). In current times as well as historically and prehistorically, people and animals congregated along riparian areas. Following settlement by European Americans, livestock congregated there too. Urban areas often occur in riparian areas, and ownership of riparian areas is overwhelmingly private. When free-flowing water is impounded or diverted from the main channel by dams, diversions, irrigation, or channelization, the nature of the riparian landscape changes. These structures have decreased or eliminated the shifting of river channels that historically created mosaics of riparian vegetation. With less flooding, there is less channel shifting and less suitable habitat for establishment of cottonwood seedlings. Modification of historical disturbance regimes results in a decline in diversity of native species because competitively superior nonnative plants may invade such as tamarisk (salt cedar) and Russian olive.

Exotic species (also called Nonnative or alien) are a significant threat in the County. Exotic plants such as tamarisk, knapweeds, and cheatgrass have characteristics that allow them to spread rapidly once established. Examples of these characteristics are high seed output, rapid seedling growth, vigorous vegetative reproduction, and long distance seed dispersal. These and other characteristics may provide them with competitive



advantages over native species. The invasion and spread of exotic species is a serious threat to ecosystems, and if exotics are not actively and aggressively managed, ecosystems are at risk of losing a portion of their biological resources. Exotic species have the ability to disrupt complex ecosystems, reduce biodiversity, degrade wildlife habitat, jeopardize endangered species, and alter genetic diversity.

Habitat fragmentation is generally defined as the division of contiguous tracts of wildlife habitat into progressively smaller patches (Harris 1984). Fragmentation of habitat is the major global environmental change occurring today and the one most likely to devastate biodiversity and ecological processes in the near future (Simberloff 1993). Numerous studies have detailed the positive relationship between wildlife diversity and large patch size (Ambul and Temple 1983, Burgess and Sharpe 1981, Forman et al. 1981, Whitcomb et al. 1981). An equal number of investigations has shown that a reduction in habitat size results in a decrease in species diversity and richness, regardless of the number of individual, smaller sized fragments that are created out of the preexisting “whole” (Hill 1985, Opdam et al. 1985, Lynch and Whigham 1984, Harris 1984, Forman et al. 1976).

Beier and Noss (1998) define a corridor as a linear habitat, embedded in a dissimilar matrix, that connects two or more larger blocks of habitat and that is proposed for conservation on the grounds that it will enhance or maintain the viability of specific wildlife populations in the habitat blocks. They define passage as travel via a corridor by individual animals from one habitat patch to another. Connectivity declines with human modification of the landscape (Godron and Forman 1983). Corridors are an attempt to maintain or restore some of the natural landscape connectivity (Noss 1987). The continuing severance of natural linkages in many landscapes suggests that active strategies to combat the process and the consequences of fragmentation must proceed quickly, with or without “sufficient” data (Noss 1987).

Where connectivity is severed or restricted, barriers can often be identified. Barriers to movement and threats to connectivity as determined in the Missing Linkages Project for the state of California include (in order of percent of linkages threatened): urbanization, roads, agriculture, invasive species, logging, water diversions, vineyards, recreation, grazing, mining, off-road vehicles (ORVs), military activities, flow regime, border/fencing, wind turbines, railroads, habitat conversion, petrol extraction, harbor development, fuel breaks, wild horses, domestic dogs, water quality, power lines.

Timber harvest can result in fragmentation of habitat and can threaten regionally rare forest types such as subalpine conifer, aspen, late-seral (mature and old growth) ponderosa pine and late-seral pinyon juniper woodlands in northern Coconino County. Timber harvest may degrade habitat quality for wildlife dependent on these rare vegetation types for all or part of their life history. Timber harvest targeting the largest, most valuable trees should not be confused with ecological restoration of frequent-fire adapted forest types (ponderosa pine and drier mixed-conifer forests), which selectively removes small trees for the purpose of safely reintroducing surface fires.

Construction of roads, power lines and pipelines may result in fragmentation of wildlife habitat in Coconino County. Isolated patches of forest habitat are subject to a unique series of environmental perturbations. Wind exposure is but one example of this series. Small patches are highly susceptible to disproportionate amounts of storm damage in the form of fallen trees. High winds along the edges of these patches destroy bird nests in far greater numbers than that which occurs in forest interiors (Towle 1999). Continuous penetration of the forest edge by wind can create a drier interior that in turn can lead to changes in vegetation composition and patterns. These changes may negatively effect certain wildlife species.

Under natural conditions an unbroken forest is composed primarily of interior habitat. Forest interior species are frequently completely dependent on these relatively cooler, darker, more humid conditions. When forest dominated landscapes are fragmented by highly linear transportation corridors, the remaining fragments may not only be too small to support populations of interior species, the ratio between the interior and edge may favor species which prefer the latter. Even among species that may prefer edge habitat, corridors often prevent necessary dispersal. Wegner and Merriam (1979) demonstrated that deer mice (*Peromyscus* spp.), chipmunks (*Eutamias* spp.) and other small vertebrates were reluctant to cross corridors where they may be subject to increased predation. These and other species can become trapped in smaller patches where food and cover is limited, escape from external threat may be impossible, and mate selection is limited or non-existent.

Paradoxically, the most effective mitigation measure one can take to reduce these impacts is to further reduce the smaller patch size to the greatest extent possible. In this way the contiguous, unbroken fragment from which the “island” or patch was separated remains at its maximum size and productivity. In essence, if two fragments are to be created, the smaller one fragment is in relation to the other, the less will be the long-term disruption of wildlife habitat values (DeSanto and Smith 1993).

Roads also impact wildlife and habitat. Roads and road traffic (from standard vehicles to off-highway vehicles) has been shown in innumerable scientific studies to have various negative effects on various species. One of the greatest impacts of roads is their effect on the ecology of natural landscapes. Roads have changed the composition of vegetation, the dispersal and movement of animals and the flow of water and nutrients. Roads can also fragment and isolate populations of animals and plants, displace individuals, reduce breeding success, alter migration and behavior, increase pollution, serve as vectors for weeds, pests, and pathogens, alter the hydrology of watersheds, and also results in direct mortality. The cumulative im-



pacts of these changes across vast landscapes are difficult to measure, but undoubtedly critical in the long term.

Mitigation measures have been shown in a number of studies to be effective in reducing the impacts of habitat fragmentation caused by roads. Culverts, underpasses, overpasses and one-way gates can facilitate wildlife movement across transportation corridors (Reed et al. 1975; Singer and Doherty 1985; Leedy and Adams 1982). Ungulates and other large animals acquire knowledge of the location of such structures and adjust movements accordingly (Singer 1978; Reed et al. 1975). Reed et al. (1975) and Reed (1981) have noted that larger underpasses are used more frequently. Their research suggests minimum dimensions of approximately 14x14 ft. with natural dirt flooring. Underpasses can also significantly reduce highway-caused mortality of deer and other wildlife. Box culverts and/or underpasses along Interstate Highway 80 in Wyoming reduced road kills of mule deer by 90% (Leedy and Adams 1982).

Human-induced global warming threatens to change patterns of temperature, humidity and precipitation shaping the composition and distribution of biotic communities in Coconino County. As climate changes, native species composing biotic communities will migrate or adapt to more hospitable environments causing biotic community composition to change and generally migrate upslope. Isolated, endemic, imperiled or poorly dispersed species and populations—those least capable of migrating or adapting—are generally most threatened by these changes.

Species Descriptions Overview

The Endangered Species Act of 1973, as amended, includes two classifications of species, those that are “endangered” and those that are “threatened.” A species may be classified for protection as endangered when it is in danger of extinction within the foreseeable future throughout all or a significant portion of its range. Endangered species in Coconino County at this time include the black-footed ferret, Mexican gray wolf, California condor, southwestern willow flycatcher, California brown pelican, Kanab ambersnail, humpback chub, Razorback sucker, Brady pincushion cactus, and Sentry milkvetch. The Gila chub is proposed for listing as an endangered species. A proposed species is one for which a Federal Register notice has been published proposing the species for listing as threatened or endangered. The species is not considered threatened or endangered until the final rule is published.

A threatened classification is provided to those animals and plants likely to become endangered within the foreseeable future throughout all or a significant portion of their ranges. Threatened species in Coconino County at this time include the bald eagle, Mexican spotted owl, Apache trout, Chiricahua leopard frog, Little Colorado spinedace, Navajo sedge, San Francisco Peaks groundsel, Siler pincushion cactus, and Welsh’s milkweed.

A candidate species is one for which the Fish and Wildlife Service has on file sufficient information on biological vulnerability and threats to support a proposal to list as endangered or threatened but for which the preparation and publication of a proposal is precluded by higher-priority listing actions. Candidate species in Coconino County at this time include Fickeisen plains cactus, and yellow-billed cuckoo.

Often when a species is placed on the list of candidates, there is an attempt to develop a candidate conservation agreement. The purpose of a conservation agreement is to determine a plan to implement conservation measures for the candidate species, and thus to preclude listing as threatened or endangered. There are currently two species in Coconino County with conservation agreements: Arizona bugbane and Paradine (Kaibab) plains cactus.

In addition to the above classifications of imperiled species as determined by the U.S. Fish and Wildlife Service, there are sensitive species that are determined by other agencies and organizations including the U.S. Forest Service, Bureau of Land Management, and Arizona Game and Fish Department. The U.S. Fish and Wildlife Service also maintains a list of species called “species of concern.” Two of the better known include the northern goshawk and peregrine falcon.

Some species are considered to be of special management concern by the Arizona Game and Fish Department, meaning that something about their life cycle or their habitat makes them more sensitive to human development, logging, grazing, roads, weather, and so on. These species include pronghorn antelope, turkey, squirrels, neotropical migrants, some plants with very restricted ranges, and wide-ranging species such as mountain lion and black bear.

Hunting is an activity that is regulated by the Arizona Game and Fish Department. In Coconino County, all public land and state land is open to hunting except National Parks, private land that has been posted, or any Arizona Game and Fish Commission approved closed area. Hunting on Tribal lands is not regulated by the Arizona Game and Fish Department.

Coconino County supports a wide array of biota, including numerous endangered and ecologically important indicator species. Here we briefly describe each species or species group, along with its legal status, life history, distribution, habitat affiliations, population status, threats, and associated management goals and needs.



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Appendix F:

Plan Adoption Resolution

Resolution No. 2003-63

A Resolution of the Coconino County Board of Supervisors Adopting the Coconino County Comprehensive Plan

WHEREAS, Arizona Revised Statutes (ARS) §11-821.A requires the Board of Supervisors to adopt a comprehensive, long-term county plan to guide and accomplish a coordinated, adjusted and harmonious development of the county; and

WHEREAS, ARS §11-824.D affirms that upon adoption, the plan shall be the official guide for the development of the county; and

WHEREAS, ARS §11-824.B states that county comprehensive plans are effective for up to ten years from their adoption; and

WHEREAS, the first Coconino County General Plan was adopted by the Board of Supervisors in 1974, replaced by the County Comprehensive Plan adopted on April 2, 1990, and subsequently readopted on December 18, 2001; and

WHEREAS, under direction of the Board of Supervisors, the Coconino County Community Development Department began in January 2002 to update the county comprehensive plan to more fully address the range and breadth of social, physical, economic, environmental, and demographic changes that have affected Coconino County since the 1990 plan was adopted; and

WHEREAS, the directive of the Board of Supervisors was to develop an innovative, conservation-based county comprehensive plan to harmoniously serve the interests of county residents, the environment, and future growth; and

WHEREAS, a broad spectrum of private individuals, community leaders, and organization and agency representatives came together as the Comprehensive Planning Partnership to assist in the planning process; and

WHEREAS, in order to ensure a fair and equitable public input process in developing the new county comprehensive plan, the Board of Supervisors on March 19, 2002 adopted a public participation and communications action plan as outlined in ARS §11-806.E.1; and

WHEREAS, copies of the proposed comprehensive plan were distributed for review and comment to municipalities, agencies, and interested persons as required by ARS §11-806.H; and

WHEREAS, in compliance with ARS §11-822 the Planning & Zoning Commission held a duly noticed public hearing on July 29, 2003 and unanimously recommended approval of adoption of the new comprehensive plan; and

WHEREAS, in accordance with ARS §11-823 the Board of Supervisors held a duly noticed public hearing on September 16, 2003;

NOW, THEREFORE, BE IT RESOLVED by the Board of Supervisors of Coconino County as follows:



Section 1: Adoption of the Comprehensive Plan. The Coconino County Board of Supervisors HEREBY ADOPTS and APPROVES the Coconino County Comprehensive Plan. This plan supersedes the 1990 Comprehensive Plan.

Section 2: Consistency with Statutes. In adopting the Coconino County Comprehensive Plan, the Board of Supervisors HEREBY FINDS, DETERMINES, and DECLARES that every reasonable effort has been made to comply with Arizona Revised Statutes and Arizona Growing Smarter legislation.

Section 3: Public Comment. The Board HEREBY AFFIRMS that it considered, to the best of its ability, all public testimony and all relevant information provided to it; and that the comprehensive plan adopted by this resolution represents the Board's best effort to accommodate the diverse and competing needs of residents, property owners, and social and economic components of the county's population and workforce.

Section 4: Plan Contents. The Board of Supervisors of Coconino County HEREBY FINDS, DETERMINES, and DECLARES that the adopted comprehensive plan:

- A. Contains a thorough and adequate treatment of land use, development, and environmental resource conservation issues.
- B. Includes a wide variety of policies to conserve the natural resources of the county, to insure efficient expenditure of public funds, and to promote the health, safety, convenience, and general welfare of the public.
- C. Represents an advancement in the county's planning practices through the plan's conservation guidelines of assessing impacts of local decisions in a landscape context; making land use decisions that are compatible with the natural potential of the site and the landscape; avoiding or mitigating for the effects of human use and development on ecological processes and the landscape; identifying and preserving rare or critical ecosystems, habitats, and associated species; minimizing the fragmentation of large contiguous areas of habitat and maintaining or restoring connectivity among habitats; minimizing the introduction and spread of non-native species and using native plant species in restoration and landscaping; conserving use of non-renewable and critical resources; avoiding land uses that deplete natural resources; avoiding pollution of our communities and environment; considering land use decisions over time horizons that encapsulate the natural variability of ecosystems; and evaluating the effects of land use decisions cumulatively and over time.

Section 5: Coordination of Plans. The Board HEREBY FINDS, DETERMINES, and DECLARES that through the efforts of the Comprehensive Planning Partnership, every reasonable effort has been made to ensure maximum coordination of plans in the county as required by ARS §11-806 subsections E and G. The Board AFFIRMS that the adopted comprehensive plan is compatible with the Flagstaff Area Regional Land Use and Transportation Plan; the Board FURTHER DECLARES that both plans shall be used, as applicable, by the Planning & Zoning Commission and Board of Supervisors in determining findings for land use decisions. Furthermore, the Comprehensive Plan is consistent with the adopted community area plans that have been approved as amendments to the plan.

Section 6: Implementation and Reporting. The Board HEREBY AFFIRMS the importance of implementation measures to realize more fully the intent of the comprehensive plan. The Board DIRECTS the Community Development Department to begin work on the designated implementation plan. Immediate actions to be undertaken may include the preparation of revised zoning, subdivision and other ordinances necessary to implement the new comprehensive plan. In accordance with the procedures outlined in the implementation plan, the Board FURTHER DIRECTS the Community Development Department to review the plan annually and file an annual report with the Board reviewing the status of the comprehensive plan and its implementation. This process should occur concurrently with the county's annual workplan and budget process.

Section 7: Primacy of the Comprehensive Plan. The Board of Supervisors HEREBY FINDS, DETERMINES, and DECLARES that the approved comprehensive plan represents the County's officially adopted policy for the growth, land use, development, and protection of Coconino County.

Section 8: Severability. The Board of Supervisors HEREBY FINDS and DECLARES that it has adopted this comprehensive plan in its entirety. In the event that any court declares any part of this comprehensive plan to be null and void, the remaining portions shall remain in full force and effect. The Board declares that it has adopted this plan as if it had adopted each phrase, sentence, and element thereof separately.

Section 9: Passage and Adoption. The Chair of the Board of Supervisors of Coconino County shall sign, and the Clerk of the Board shall certify to the passage and adoption of this Resolution, and thereupon the same shall take effect and be in force.

APPROVED and ADOPTED this 23rd day of September 2003, by the Board of Supervisors of the County of Coconino, Arizona.

Matthew G. Ryan, *Chair, Coconino County Board of Supervisors*





Implementation Plan

Introduction

This addendum to the *Coconino County Comprehensive Plan* lists proposed action items to facilitate the plan’s implementation. Rather than providing a set of finely tuned policies for use in reviewing development proposals, this Implementation Plan offers strategies that can be refined to determine budget priorities, plan for capital improvements, or help develop annual workplans. It considers the needs of end users as well as those who will apply these strategies.

IN THE IMPLEMENTATION PLAN	
Introduction	IP 1
Using the Implementation Plan	IP 1
First-Year Implementation Priorities	IP 3
Additional Long-Term Action Items	IP 5

Annual Review

The Comprehensive Plan will be reviewed annually to track the County’s progress in implementing these action items and to establish new action items for the upcoming year. This process will occur concurrently with the annual workplan and budget process. It will entail:

- Reviewing and reporting on the progress the County has made toward implementing the Comprehensive Plan.
- Identifying new action items.
- Prioritizing the remaining and new action items for the upcoming year.
- Describing who is responsible for implementing each action item, what steps are required, and how long these steps are expected to take over the next year.
- Identifying whether to include items in the budget, the Capital Improvement Program (CIP), or a departmental work plan.

This process will produce an annual Implementation Plan. Every 10 years, the Comprehensive Plan will be reviewed and updated to ensure that it is still consistent with the overall community vision. This review will also allow us to assess changes in the county and update background data and implementation strategies.

NOTE

This Implementation Plan reflects action items presented at the time of the September 2003 Comprehensive Plan adoption

Using the Implementation Plan

The list of proposed action items is organized by Element. Action items have been numbered for reference. In addition, the column labeled “Element: Section” identifies the applicable Element and section of the Comprehensive Plan using acronyms that correspond to the plan’s table of contents—for example, “NE:ESL” refers to the Environmentally Sensitive Lands section in the Natural Environment Element. Four additional columns are provided to further describe considerations for carrying out each action item.

ACTION ITEM

A task designed to implement one or more policies and that identifies who will perform the task, when and how the task will be completed.



Start Priority

This corresponds to the anticipated start date for the proposed action item. Although many actions are ongoing or require long-term support, the start date can help determine priorities for annual workplans and budgets.

- 0: Ongoing
- 1: 1–2 years
- 2: 3–5 years
- 3: 6–10 years

Type

There are four primary types of action items:

- Admin:** Administrative activities are done as a normal part of County business. For example, administrative activities for the Community Development (CD) Department include amending ordinances or updating building codes.
- Collab:** Collaborative efforts involve building relationships with agencies and groups. An example of a collaborative effort would be working with the U.S. Forest Service (USFS) on forest ecosystem health issues.
- Program:** Program-related activities require an ongoing human component to develop and administer them. Items in this category would include developing and managing a county land trust or programming activities such as reviewing County emergency plans.
- Project:** Projects are tangible products that have a beginning and an end. Generally one-time activities, projects go beyond work that is done as part of daily business. An example would include developing a handout on how to revegetate disturbed areas.

Who

Information in this column specifies the party responsible for initiating and/or implementing the proposed action item—County Community Development Department staff or other agencies, organizations, or departments:

- BOS:** Board of Supervisors
- CD:** Community Development Department
- DSC:** Dark Skies Coalition
- ES:** Emergency Services Coordinator
- FD:** Fire Districts
- GFEC:** Greater Flagstaff Economic Council
- GFFP:** Greater Flagstaff Forests Partnership
- HS:** Health Services Department
- NABA:** Northern Arizona Building Association
- NRCS:** Natural Resources Conservation Service
- P&R:** Parks & Recreation Department
- P&Z:** Planning & Zoning Commission
- PW:** Department of Public Works
- SAG:** Science Advisory Group
- SDC:** Special Districts Coordinator
- SDR:** Sustainable Development Roundtable
- TS:** Transportation Services Department

Other agency abbreviations can be found in the Comprehensive Plan's glossary.

Limitations

This column lists special considerations that may limit or prohibit the follow-through of an action item—for example, limited money or staff, politics, legislative constraints, or other challenges like coordinating large interagency projects.



First-Year Implementation Priorities

<input checked="" type="checkbox"/> Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/> 1. Seek permanent funding to create a new Comprehensive Planning Coordinator position in CD. The primary responsibility of this person will be managing comprehensive planning and implementation programs.	CP	1	Admin	BOS, Budget Dept	\$
<input type="checkbox"/> 2. Hold training programs for P&Z Commissioners, and the BOS on how to better interpret the Comprehensive Plan and use it to make more informed decisions.	CP	1	Program	CD, BOS, P&Z	staff, \$
<input type="checkbox"/> 3. Develop hardcopy and internet outreach materials that detail the Comprehensive Plan and development process. Materials may include FAQs, descriptions of major themes, checklists and guidelines for planning and development, and fact sheets describing the benefits of planning.	CP	1	Project	CD, interns, NAU, consultants	staff, \$
<input type="checkbox"/> 4. Amend the subdivision ordinance and explore ways to create a “fast-track” approval process for small subdivisions to discourage property owners from pursuing lot splits.	CP	1	Admin	CD, BOS, dvpt community, landowners	politics
<input type="checkbox"/> 5. Amend the zoning and subdivision ordinances and the sustainable building program to encourage, offer incentives, and, in some cases, permit by right the following practices: integrated conservation design and clustering for subdivisions, cluster development in all residential districts, and granny flats in residential districts. These amendments could also allow the exchange of increased density bonuses for conservation easements.	CP	1	Admin	CD, P&Z, BOS, dvpt community, Bldg Div, NABA, SDR	staff
<input type="checkbox"/> 6. Develop green building incentives for new construction and for remodeling projects; also, help develop a green building checklist and a list of certified green builders and subcontractors, as well as a recognition program for green building projects.	NE:SB	1	Project	CD, Bldg Div, SDR, Sust Bldg Prgm, NABA, builders, contractors	staff
<input type="checkbox"/> 7. Pursue studies related to <i>Growing Smarter’s</i> requirements for water resource planning—specifically, an inventory of available surface water, groundwater, and effluent supplies, along with an analysis of how these or other supplies will serve future growth.	WR:WS	1	Project	CD, tech experts, USGS, ADWR, Water Alliance Group	staff, data, \$
<input type="checkbox"/> 8. Initiate and coordinate work with other local, state, and federal agencies to establish the necessary authority for the local/regional management of groundwater.	WR:RF	1	Collab	CD, ADWR, County Supervisors Assoc.	interagency coop
<input type="checkbox"/> 9. Compile studies to assess how local surface and groundwater supplies can be improved by sound watershed management; subsequently, amend ordinances to incorporate recommendations for improved groundwater recharge.	WR:WS	1	Project	CD, tech experts, NAU, Water Alliance Group, BOS	staff, data, \$
<input type="checkbox"/> 10. Research/consider adopting an ordinance that specifies land use controls for environmentally sensitive lands. The ordinance may include development standards for slopes and ridgelines, wetlands and riparian areas, floodplains, and critical wildlife habitat.	NE:ESL	1	Admin	CD, GIS, BOS, SDR	politics, staff



<input checked="" type="checkbox"/>	Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/>	11. Identify, develop a database, and map all floodplains, riparian areas, and wetlands to use for site reviews in conjunction with the zoning ordinance and, potentially, with an environmentally sensitive lands ordinance.	NE:ESL	1	Project	CD, GIS, consultants, NAU, Army Corps of Engineers	staff, \$
<input type="checkbox"/>	12. Consider offering tax incentives (for example, taxing property at a lower agricultural rate) for lands protected through conservation easements.	NE:ESL	1	Program	CD, BOS, Budget Dept, Assessor, landowners	staff, \$, politics
<input type="checkbox"/>	13. Research/consider adopting a fire mitigation and wild-land/urban interface ordinance.	NE:FEH	1	Admin	CD, BOS, ES, FD, USFS, SDR	politics
<input type="checkbox"/>	14. Work with private land managers, AGFD, ASLD, and others to prevent fragmentation of wildlife movement areas by analyzing the cumulative impacts of development; maintaining vegetative cover, open space, and native grasslands; retaining state lands; preventing the acquisition or exchange of federal lands; and minimizing land disturbances.	NE:W	1	Program	CD, AGFD, ASLD, USFW, SDR	interagency coop
<input type="checkbox"/>	15. Initiate a northern Arizona land trust that could accept conservation easements and/or purchase land for open space.	LU:LOS	1	Project	CD, P&R, SDR, landowners	politics, staff, \$
<input type="checkbox"/>	16. Research the feasibility of enabling legislation for implementing a TDR program; subsequently, adopt a TDR ordinance.	LU:LOS	1	Project	CD, State Legislature, BOS	politics, staff
<input type="checkbox"/>	17. Develop methods and materials for one-on-one talks with large property owners about alternatives for maintaining the long-term economic value of their property. Topics may include Rural Planning Area plans, estate plans, and integrated conservation design strategies.	LU:RR	1	Program	CD, landowners, financial consultants	staff, \$
<input type="checkbox"/>	18. Identify industries that use or showcase the county's unique resources and possibly develop a program with NACOG, GFEC, and/or chambers of commerce to support the development and expansion of these basic-sector industries.	G:ED	1	Program	CD, NACOG, GFEC, chambers	staff, \$



Additional Long-Term Action Items

<input checked="" type="checkbox"/> Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/> 19. Develop a plan implementation advocacy group to assist in the identification of new action items and to help carryout components of the Implementation Plan.	CP	1	Program	CD, SDR	staff
<input type="checkbox"/> 20. Review each Area Plan within 5 years of adoption and update each within 10 years, or as changing conditions dictate.	CP	0	Program	CD	
<input type="checkbox"/> 21. Prepare and maintain a prioritized list of communities that want or need an Area Plan and incorporate this into program work schedules, and subsequently assist communities in the coordination and preparation of Area Plans and updates.	CP	1	Admin	CD, BOS	
<input type="checkbox"/> 22. Host an annual benchmarking retreat with members of the Steering Committee, Interagency Workgroup, and other participants of the Comprehensive Planning Partnership.	CP	1	Program	CD, community reps	staff, \$
<input type="checkbox"/> 23. Develop a science “consultant” list (based on research and experience) for all County departments.	CP	1	Project	CD	staff, data
<input type="checkbox"/> 24. Explore opportunities with CD staff for continued work by a SAG and for a semiannual, benchmarking retreat.	CP	1	Program	CD, SAG	staff
<input type="checkbox"/> 25. Research conservation plans, ordinances, and implementation documents/case studies of other jurisdictions and organizations and draw lessons that could be applied in the county.	CP	1	Project	CD, P&R, NAU	staff
<input type="checkbox"/> 26. Coordinate open meeting sessions to present current planning topics, innovations, or development trends for citizens, developers, builders, municipal planners, and local leaders.	CP	2	Program	CD, interns, NAU, SDR	staff
<input type="checkbox"/> 27. Develop resource materials describing the plan’s vision and contents for use by the BOS and presentation at community meetings and county events; materials could include videos, DVDs, or internet information.	CP	1	Project	CD	staff, \$
<input type="checkbox"/> 28. Develop a summary of the plan’s main ideas with a map, list of goals and policies, and a plan “compliance checklist” (including ideas for how to use the comprehensive plan in putting together a successful development proposal).	CP	1	Project	CD	staff, \$
<input type="checkbox"/> 29. Continue contributions to the annual countywide newsletter detailing the past year’s planning successes and target action item priorities for the coming year.	CP	0	Project	CD	
<input type="checkbox"/> 30. Coordinate with NAU’s Center for Sustainable Environments to organize recognition/awards programs for “smart growth” or “high-performance” initiatives that promote plan policies. Endorsements could be given, for example, by The Nature Conservancy or NABA for “good planning” projects.	CP	2	Program	CD, NAU, NABA, SDR	staff
<input type="checkbox"/> 31. Seek NAU graduate students to conduct research and project-based action items as individual or class projects.	CP	0	Program	CD, NAU	



<input checked="" type="checkbox"/>	Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/>	32. Develop programs with high schools and NAU’s Geography and Public Policy program to conduct “Planners for a Day” where students have an opportunity to role-play and understand the job of a community planner.	CP	2	Program	CD, NAU, high schools	staff
<input type="checkbox"/>	33. Develop programs and outreach materials to foster community awareness of community development and planning. Programs may be coordinated with the American Planning Association’s “World Town Planning Day” (November), or through displays at the County Fair and similar community activities/events. For special planning projects, a photo, essay, and/or poetry contest could be organized.	CP	2	Program	CD, school districts	staff, \$
<input type="checkbox"/>	34. Develop resource materials describing basic county planning practice; formats could include a citizens’ manual, a kids’ coloring book, and a “Planning for Dummies” booklet.	CP	2	Project	CD	staff, \$

Natural Environment

<input type="checkbox"/>	35. Participate in developing and implementing large-scale plans for preserving, protecting, restoring, and managing important riparian areas, wildlife habitats, wetlands, springs, and other environmentally sensitive lands; work with landowners to find alternatives to developing on environmentally sensitive lands.	NE:ESL	0	Collab	CD, AGFD, USFW, SDR, NAU, enviro groups, landowners	staff
<input type="checkbox"/>	36. Amend the zoning ordinance to support creative designs that cluster development away from floodplains and riparian areas.	NE:ESL	1	Admin	CD, dvpt community	politics
<input type="checkbox"/>	37. Match the resources of other agencies (where possible) in efforts to protect open space. For example, the state’s Open Space Acquisition Program and federal farm and ranch protection programs could be considered as a funding source.	NE:ESL	0	Program	CD, P&R, landowners	politics, \$
<input type="checkbox"/>	38. Support inventories, monitoring, and research that addresses questions about wildlife distribution, habitat use, movement, population dynamics, and the effects of development on wildlife and habitat.	NE:W	0	Collab	AGFD, USFW, NAU	data
<input type="checkbox"/>	39. Use studies of indicator species to support the conservation of wildlife habitat in the design of residential development projects and roads, to the extent possible.	NE:W	0	Program	CD, AGFD	
<input type="checkbox"/>	40. Support land management agencies, landowners, and developers to pursue land exchanges or acquisitions that benefit wildlife and protect unique habitats.	NE:W	0	Collab	CD, USFS, BLM, AGFD, ASLD, USFWS, landowners	politics
<input type="checkbox"/>	41. Consider developing an access/road management plan and subsequently consider closing and/or upgrading County roads to improve watershed conditions and minimize wildlife disturbances.	NE:W	3	Admin	CD, PW	politics
<input type="checkbox"/>	42. Support land management agencies and landowners in restoring springs and wetlands and preventing damage to, and restoring dry and wet meadows caused by recreational use and unnecessary roads.	NE:W	0	Collab	AGFD, USFS, USFWS, landowners, GFFP, Coconino Sportsmen	politics



<input checked="" type="checkbox"/>	Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/>	43. Support efforts to better accommodate wildlife crossings along major roadways and efforts to protect habitat connectivity in wildlife movement areas and associated grasslands.	NE:W	0	Collab	CD, PW, ADOT, AGFD, USFWS	data
<input type="checkbox"/>	44. Amend subdivision and zoning ordinances to promote wildlife friendly fencing methods.	NE:W	2	Admin	CD, AGFD	\$
<input type="checkbox"/>	45. Develop incentives to mitigate impacts to pronghorn habitat and historic prairie dog colonies. Incentives could encourage landowners to avoid or minimize development in such areas or to purchase or conserve land outside developments to mitigate habitat loss.	NE:W	3	Project	CD, AGFD, USFW, landowners	data, inter-agency coop, \$
<input type="checkbox"/>	46. Research the translocation of prairie dog colonies as a feasible approach to preventing species loss.	NE:W	2	Project	NAU, AGFD	politics
<input type="checkbox"/>	47. Develop resource materials to educate the public about prairie dogs and their habitat.	NE:W	2	Project	CD	staff, data, \$
<input type="checkbox"/>	48. Develop resource materials describing the county’s ecosystem types highlighting special considerations for development.	NE:V	2	Project	NAU, SAG	staff, \$
<input type="checkbox"/>	49. Amend the landscape ordinance to require planting native vegetation in areas where the ground has been disturbed, including areas of single family residential development.	NE:V	2	Admin	CD	politics
<input type="checkbox"/>	50. Develop resource materials describing how to revegetate disturbed sites and areas.	NE:V	2	Project	CD	staff, \$
<input type="checkbox"/>	51. Promote education efforts for builders, real estate agents, and property owners on revegetation of disturbed areas.	NE:V	0	Program	CD, NABA	
<input type="checkbox"/>	52. Develop resource materials describing where to obtain native seed and how to eliminate noxious weeds.	NE:V	2	Project	CD	staff, \$
<input type="checkbox"/>	53. Eliminate noxious weeds on county-owned property.	NE:V	0	Program	PW, PR, Facilities	staff, \$
<input type="checkbox"/>	54. Promote education efforts to prevent the spread of noxious weeds.	NE:V	0	Program	CD, PW	
<input type="checkbox"/>	55. Support efforts of Weed Management Areas.	NE:V	0	Collab	CD, PW	
<input type="checkbox"/>	56. Participate in collaborative forest ecosystem health planning, management, restoration, and thinning efforts.	NE:FEH	0	Collab	USFS, NAU, CD, GFFP, SDR	\$
<input type="checkbox"/>	57. Support efforts to establish neighborhood “Friends of the Forest” volunteer groups.	NE:FEH	0	Collab	CD, community groups	staff
<input type="checkbox"/>	58. Support management strategies in the wildland/urban interface, emphasizing scenic quality, neighborhood recreation, wildlife habitat, and fire protection.	NE:FEH	0	Collab	CD, USFS, ASLD, landowners	
<input type="checkbox"/>	59. Consider adopting an ordinance and support efforts to require the removal of bark-beetle infested and dead trees.	NE:FEH	1	Admin	CD, landowners, FD	enforcement, \$
<input type="checkbox"/>	60. Consider an ordinance amendment to require building envelopes (a designated area of a site in which all buildings must be placed) that protect soils and native vegetation.	NE:S	2	Admin	CD, SDR, Bldg Div, dvpt community	
<input type="checkbox"/>	61. Develop a soil index that outlines criteria for construction/development suitability.	NE:S	2	Project	CD, NRCS	staff



<input checked="" type="checkbox"/>	Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/>	62. Encourage and support efforts of NRCS to complete and update county soils maps that identify critical or problematic soils.	NE:S	0	Collab	NRCS	data, \$
<input type="checkbox"/>	63. Continue to help fund the application of dust-suppression materials in road maintenance districts and provide technical and financial assistance to new road improvement districts.	NE:AQ	0	Program	PW, CD, Budget Dept.	\$
<input type="checkbox"/>	64. Amend the subdivision, zoning, and grading ordinances to require dust evaluation and mitigation prior to and during the review and approval processes for subdivisions and major developments.	NE:AQ	2	Admin	CD, dvpt community	politics
<input type="checkbox"/>	65. Support efforts to reduce airborne pollutants originating inside and outside the county.	NE:AQ	0	Collab	HS, CD	
<input type="checkbox"/>	66. Consider amending the building code to require EPA-approved stoves for new construction.	NE:AQ	2	Admin	CD, Bldg Div	
<input type="checkbox"/>	67. Apply for grants and awards programs such as EPA's "Livable Communities." The EPA program, for example, recognizes innovations for Green Building practices, integrated community planning, integrating smart growth principles into planning, mitigating the impacts of sprawl, community education; and waste reduction and materials reuse.	NE:AQ	0	Program	CD, NAU	staff
<input type="checkbox"/>	68. Consider an ordinance that allows environmentally friendly alternatives to paving parking lots while still providing dust suppression.	NE:AQ	1	Admin	CD	
<input type="checkbox"/>	69. Develop incentives and public outreach/education materials for the replacement older wood stoves and encourage the installation of low-emission wood-burning stoves when approving construction permits	NE:AQ	1	Project	CD	staff, \$
<input type="checkbox"/>	70. Consider amending the building code to include provisions for an energy code (i.e. provisions to encourage development of renewable energy technologies, follow sustainable building practices, and use energy efficiently).	NE:RE	1	Admin	CD, Bldg Div, NABA	staff, data
<input type="checkbox"/>	71. Promote the use of energy efficient and/or alternative fuel vehicles for County activities.	NE:RE	2	Admin	PW, Budget Dept.	\$
<input type="checkbox"/>	72. Develop incentives and/or consider offering a building permit "rebate program" for construction that incorporates energy efficient, conservation-type utilities and infrastructure such as the installation of composting toilets.	NE:SB	2	Project	CD, Bldg Div, NABA, HS	\$

Water Resources

<input type="checkbox"/>	73. Develop a drought mitigation plan.	WR:WS	1	Admin	CD, municipi- palities, ADWR, ES	staff, inter- agency coop
<input type="checkbox"/>	74. Participate in ongoing committees, municipalities, and agencies to evaluate the viability and impact of alternative water supplies and to pursue studies addressing regional water supply issues.	WR:WS	0	Collab	CD, municipi- palities, experts	staff
<input type="checkbox"/>	75. Evaluate local and regional trends in water consumption to develop water policy.	WR:WS	2	Project	CD, tech ex- perts	staff, data



<input checked="" type="checkbox"/>	Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/>	76. Collaborate with appropriate agencies/organizations to evaluate methods for groundwater recharge.	WR:WS	0	Collab	CD, tech experts	staff, \$
<input type="checkbox"/>	77. Amend ordinances to allow alternatives to paving parking areas in order to enhance groundwater recharge.	WR:WS	1	Admin	CD, PW	
<input type="checkbox"/>	78. Amend ordinances to require that proposals for all major development specify water conservation measures such as low-flow plumbing fixtures, on-site harvesting, water reuse, and appropriate landscaping.	WR:WP	2	Admin	CD, Bldg Div, dvpt community, HS	politics
<input type="checkbox"/>	79. Provide technical assistance to citizens in the formation of water districts.	WR:WP	0	Program	CD	staff
<input type="checkbox"/>	80. Develop resource materials describing water availability, conservation, and related topics for residents who haul water.	WR:WP	1	Project	CD	staff, \$
<input type="checkbox"/>	81. Develop and adopt countywide conservation standards, citing USGS precipitation records.	WR:WCAS	1	Admin	CD, P&R, USGS	staff, politics
<input type="checkbox"/>	82. Participate with agencies/organizations to develop a database of water conservation methods and to develop a public education program on water issues.	WR:WCAS	0	Collab	CD, municipalities, ADWR, NACOG, NAU	staff, data
<input type="checkbox"/>	83. Adopt green building standards that include incentives for water conservation and graywater systems.	WR:WCAS	1	Admin	CD, SDR, HS, Bldg Div, NABA, ADWR, NAU	staff
<input type="checkbox"/>	84. Adopt County facility planning and construction guidelines for water conservation.	WR:WCAS	1	Admin	BOS	other facilities criteria, \$
<input type="checkbox"/>	85. Encourage and support ADEQ and HS to conduct a countywide study of how on-site wastewater systems impact water quality.	WR:WQ	0	Collab	CD, HS, ADEQ	staff
<input type="checkbox"/>	86. Require drainage reports for subdivisions and major developments specifying how runoff will be accommodated and environmentally sensitive lands that rely on surface water and groundwater will be protected.	WR:WQ	2	Admin	CD, dvpt community	politics
<input type="checkbox"/>	87. Participate in efforts to develop TMDL (total maximum daily load) plans for streams in naturally sensitive areas.	WR:WQ	0	Collab	CD, ADEQ, NACOG	data, politics
<input type="checkbox"/>	88. Collaborate with landowners, agencies, and organizations to identify and protect environmentally sensitive areas that rely on surface water and groundwater.	WR:WQ	2	Admin	CD, landowners, tech experts	staff, data
<input type="checkbox"/>	89. Pursue state designation as “unique waters of exceptional significance” for certain county creeks and rivers.	WR:WQ	2	Project	CD, HS, ADEQ	data
<input type="checkbox"/>	90. Participate in existing programs to identify, monitor, and mitigate activities that generate nonpoint-source pollution.	WR:WQ	0	Collab	CD, NACOG, ADEQ	interagency coop
<input type="checkbox"/>	91. Collaborate with ADWR to pursue authority for considering groundwater impacts associated with proposed developments.	WR:RF	0	Collab	CD, ADWR	staff, interagency coop
<input type="checkbox"/>	92. Collaborate with agencies/organizations to address the role of surface water–groundwater continuity in protecting flows in springs and streams.	WR:RF	0	Collab	CD	staff, data



<input checked="" type="checkbox"/> Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/> 93. Develop resource materials describing Firewise landscaping and construction, fuels mitigation, and the principles of defensible and survivable space.	PS:WUI	0	Project	CD, GFFP, NABA	staff, data, \$
<input type="checkbox"/> 94. Develop a coordinated, countywide, pre-suppression plan.	PS:WUI	1	Admin	ES, FD	interagency coop
<input type="checkbox"/> 95. Assist in the establishment of centralized burn pits, compost pits, or other facilities where residents can dispose of yard waste and forest debris.	PS:WUI	1	Program	PW, CD, GFFP	\$
<input type="checkbox"/> 96. Collaborate with GFFP and other organizations to explore commercial opportunities for reuse of small diameter timber and biomass material.	PS:WUI	0	Collab	PW, CD, GFFP	\$
<input type="checkbox"/> 97. Consider adopting ordinances or guidelines to increase the fire resistance of buildings and properties.	PS:WUI	1	Admin	CD, Bldg Div, NABA, FD	politics
<input type="checkbox"/> 98. Require covenants for property owners in new forested subdivisions to maintain their property in accordance with applicable stewardship plans, fuels mitigation plans, and the principles of defensible and survivable space.	PS:WUI	1	Admin	CD, homeowners, dvpt community	enforcement
<input type="checkbox"/> 99. Support efforts of USFS and BLM to manage dispersed recreational opportunities/sites near communities in the wildland/urban interface.	PS:WUI	0	Collab	CD, USFS, BLM	
<input type="checkbox"/> 100. Develop resource materials describing forestry and tree service consultants who can produce and implement plans for forest stewardship and fuels mitigation.	PS:WUI	2	Project	CD, GFFP	staff, \$
<input type="checkbox"/> 101. Periodically review and update the floodplain management overlay zone.	PS:FES	0	Program	CD, PW, County Eng	\$
<input type="checkbox"/> 102. Consider adopting hazard management zones to identify areas that are susceptible to faulting, liquifaction, settlement, and slope instability because of seismic activity. Subsequently, require a geotechnical study for development proposals that demonstrates the feasibility of building in hazard management zones and describing necessary mitigation techniques.	PS:FES	2	Admin	CD, GIS, ES, USGS, PW, County Eng, Bldg Div	staff, coordination
<input type="checkbox"/> 103. Assist property owners form fire districts by providing technical assistance in the petitioning process, as well as subsequent administrative and legal support, to the extent permitted by state law.	PS:FP	0	Program	CD, SDC, FD, County Attorney	
<input type="checkbox"/> 104. Reject waiver requests for the fire protection provisions of the subdivision ordinance.	PS:FP	0	Program	P&Z, BOS, FD	politics
<input type="checkbox"/> 105. Enforce zoning regulations and property development standards for storing combustible materials outdoors and incorporate minimum building setbacks and separation.	PS:FP	0	Program	CD	staff
<input type="checkbox"/> 106. Enforce the applicable minimum road standards for all building sites to facilitate emergency access.	PS:FP	0	Program	CD, PW	staff
<input type="checkbox"/> 107. Adopt the Uniform Fire Code and create the position of County Fire Marshall to enforce it.	PS:FP	1	Admin	BOS, Bldg Div, FD	politics
<input type="checkbox"/> 108. Research opportunities for establishing fire protection services in areas outside fire districts.	PS:FP	2	Project	CD, FD	staff



<input checked="" type="checkbox"/>	Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/>	109. Periodically review and update the County Emergency Management Plans and Procedures regularly to reflect current threats and best management practices for responses.	PS:DRM	0	Program	ES	staff
<input type="checkbox"/>	110. Develop resource materials describing evacuation procedures and individual responsibilities in the event of an emergency.	PS:DRM	1	Project	ES, FD	staff, \$
<input type="checkbox"/>	111. Involve ES in the development review process to address the storage, transport, or use of hazardous materials, as well as any potentially catastrophic hazards directly associated with the development. Incorporate comments or requirements into project approval as appropriate.	PS:DRM	0	Program	CD, ES	inter-dept coop
<input type="checkbox"/>	112. Adopt level-of-service standards for emergency response under various development scenarios; develop a means to disclose emergency response conditions for areas that do not meet a level-of-service.	PS:LER	2	Admin	CD, GIS, ES, Sheriff, FD	interagency coop
<input type="checkbox"/>	113. Promote public education in emergency first aid, and encourage residents, especially in remote outlying areas, to obtain emergency first aid, CPR, wilderness first responder, and similar emergency medical training.	PS:LER	0	Program	HS, FD	interagency coop, \$
<input type="checkbox"/>	114. Adopt a standard countywide system of street naming and addressing.	PS:LER	1	Admin	GIS, BOS	politics
<input type="checkbox"/>	115. Ensure that all street identification signs are consistent with the provisions of the FHA's Manual of Uniform Traffic Control Devices.	PS:LER	0	Program	PW	
<input type="checkbox"/>	116. Periodically assess public safety needs to address increased development and allocate the resources necessary to maintain a high level of law enforcement services.	PS:LE	0	Program	BOS, Sheriff	politics, staff, \$
<input type="checkbox"/>	117. Support efforts of law enforcement agencies in implementing neighborhood watch training programs, especially in areas of limited emergency response.	PS:LE	0	Collab	Community groups, Sheriff	\$
<input type="checkbox"/>	118. Involve the County Sheriff's Office in the earliest stages of the review process for new subdivisions and major developments, incorporating input into project approval where appropriate.	PS:LE	0	Program	CD, Subdvn Rev Committee, Sheriff	inter-dept coop

Community Services

<input type="checkbox"/>	119. Involve utility providers in the earliest stages of development review, incorporating their requirements into project approval.	CS:USC	0	Program	CD, utility providers	interagency coop
<input type="checkbox"/>	120. Collaborate with other government and private entities and utility companies to site long-distance utility corridors in a way that best serves anticipated development patterns and future land uses while protecting environmental, historic, and scenic resources.	CS:USC	0	Collab	CD, utility providers, SHPO	interagency coop
<input type="checkbox"/>	121. Collaborate with service providers, landowners, and managers to plan for and identify acceptable locations for telecommunications towers and related infrastructure while meeting the technical needs of the industry.	CS:TI	0	Collab	CD, utility providers, landowners	interagency coop



<input checked="" type="checkbox"/>	Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/>	122. Encourage telecommunications service providers to work cooperatively with each other and collaboratively with the County in providing reliable, competitive coverage.	CS:TI	0	Program	CD, utility providers	interagency coop
<input type="checkbox"/>	123. Amend the zoning ordinance to include requirements such that approval of telecommunications towers shall be considered only with the commitment of at least one service provider to locate on the structure.	CS:TI	1	Admin	CD, utility providers	politics
<input type="checkbox"/>	124. Provide recycling services/facilities at all solid waste transfer stations and other strategic locations throughout the county.	CS:SW	1	Program	PW	\$
<input type="checkbox"/>	125. Require solid waste disposal and recycling plans for major developments.	CS:SW	1	Admin	CD, HS	
<input type="checkbox"/>	126. Facilitate recycling and waste reduction through a variety of means such as educational efforts.	CS:SW	1	Program	PW	\$
<input type="checkbox"/>	127. Encourage and support efforts of ADEQ to promote the beneficial use of treated effluent.	CS:W	0	Collab	CD, HS, ADEQ	interagency coop
<input type="checkbox"/>	128. Develop and promote standard designs for alternative wastewater and gray water systems.	CS:W	1	Project	HS, ADEQ	staff
<input type="checkbox"/>	129. Encourage residents to minimize exposure to disease-causing agents carried by insects, rodents, and wildlife by maintaining their properties, managing their domestic animals, and taking other preventative measures.	CS:HHS	1	Program	CD, HS	inter-dept coop, \$
<input type="checkbox"/>	130. Support efforts of health and human service providers to coordinate with each other to lower costs and avoid duplication.	CS:HHS	0	Collab	HS	interagency coop, \$
<input type="checkbox"/>	131. Collaborate with other government agencies and the private sector to promote cost-effective health and human services.	CS:HHS	0	Collab	HS	interagency coop, \$
<input type="checkbox"/>	132. Develop level-of-service standards for health and human services and consider them during development review.	CS:HHS	1	Project	HS, CD	politics
<input type="checkbox"/>	133. Periodically assess the adequacy of existing health and human service programs and the necessity for expanding or developing new programs.	CS:HHS	0	Program	HS	politics, staff, \$
<input type="checkbox"/>	134. Develop resource materials describing diseases associated with rural environments and lifestyle—how to recognize potential hazards and symptoms, and how to prevent infection.	CS:HHS	2	Project	HS	staff, \$
<input type="checkbox"/>	135. Involve school districts when reviewing proposals for major developments and subdivisions to ensure that adequate resources and infrastructure are available.	CS:E	0	Program	CD, school districts	interagency coop
<input type="checkbox"/>	136. Collaborate with education/training service providers and the business community to ensure that adequate workforce development opportunities are available.	CS:E	0	Collab	school districts, comm. college, prvt sector	interagency coop

Circulation

<input type="checkbox"/>	137. Collaborate with other transportation facility providers to coordinate planning, construction, and maintenance of circulation infrastructure, and work to improve connectivity between infrastructure under County and other jurisdictions.	C:R	0	Collab	PW, USFS, BLM, BIA, ADOT, municipalities	interagency coop
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<input checked="" type="checkbox"/>	Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/>	138. Maintain representation of elected officials and County staff in transportation planning activities with NACOG and FMPO.	C:R	0	Collab	CD, NACOG	staff
<input type="checkbox"/>	139. Conduct an annual analysis of the CIP that includes objective scoring to program new projects.	C:R	0	Program	PW, Budget Dept, CD	
<input type="checkbox"/>	140. Facilitate an annual meeting with utility companies to present and discuss the CIP.	C:R	1	Program	PW, Budget Dept, utility providers	
<input type="checkbox"/>	141. Promote the use of creative design techniques to protect wildlife and the natural ecosystem from degradation associated with infrastructure improvements.	C:R	1	Project	PW, ADOT, NAU	politics, \$
<input type="checkbox"/>	142. Develop and maintain minimum design standards for new roadways to promote the construction of safe, nonmotorized travel facilities including provisions considering mobility needs, access, adjacent land uses, trail or sidewalk infrastructure, signage, pavement markings, or other treatments into roadway improvements to increase their efficiency.	C:R	1	Admin	PW, CD, ADOT	other facilities criteria, \$
<input type="checkbox"/>	143. Collaborate with other government and private entities to provide public transit services for transit-dependent populations.	C:PPTS	0	Collab	TS, NACOG	
<input type="checkbox"/>	144. Support the efforts of tribal governments to establish and maintain intercity public transit service between Native American reservations and surrounding communities.	C:PPTS	0	Collab	CD, TS, Tribes	
<input type="checkbox"/>	145. Research the feasibility of developing a regional transit system in conjunction with NACOG.	C:PPTS	1	Project	TS, NACOG	staff, politics
<input type="checkbox"/>	146. Collaborate with NACOG and FMPO to secure increased financing from the state and federal governments for expanded para-transit service.	C: PPTS	0	Collab	TS, NACOG	
<input type="checkbox"/>	147. Review proposals for airport facilities to ensure compatibility with local land use patterns and Area Plans.	C:AA	0	Program	CD, FAA	
<input type="checkbox"/>	148. Collaborate with local communities and ADOT in unincorporated areas to apply for federal enhancement funding that could be used to construct facilities for bicycle and pedestrian travel.	C:NC	0	Collab	CD, PW, ADOT	interagency coop
<input type="checkbox"/>	149. Develop standards for constructing trails and bike routes.	C:NC	1	Project	PW, CD, P&R	
<input type="checkbox"/>	150. Research and develop a handbook on how to design pedestrian-friendly, bike-friendly subdivisions.	C:NC	2	Project	CD, PW	staff, \$
<input type="checkbox"/>	151. Consider amending the subdivision ordinance to include standards for determining when sidewalks or other alternatives—such as unpaved trails away from streets—are appropriate.	C:NC	1	Admin	CD, PW, PR, dvpt community	politics
<input type="checkbox"/>	152. Collaborate with incorporated municipalities to integrate bike lanes and ensure a continuous regional system.	C:NC	0	Collab	CD, PW, municipalities	
<input type="checkbox"/>	153. Utilize infrastructure management systems (decision making processes that helps municipalities make cost-effective decisions concerning the maintenance and rehabilitation of infrastructure in a systematic way), such as a Pavement Management System, to help identify preservation and improvement projects for County roadways.	C:IDD	1	Admin	PW, Budget Dept, GIS	other facilities criteria, \$



<input checked="" type="checkbox"/>	Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/>	154. Collaborate with relevant agencies/organizations to make special considerations for interpretive signage, turnouts, landscape treatments, viewshed protection, and natural/cultural resource preservation for projects in gateways to major tourist destinations.	C:IDD	0	Collab	PW, ADOT, NPS	interagency coop, \$
<input type="checkbox"/>	155. Encourage developers to meet minimum County standards for private circulation infrastructure that could be later dedicated to public use.	C:IDD	0	Program	CD, PW	politics
<input type="checkbox"/>	156. Collaborate with local communities and ADOT to ensure that new infrastructure development provides for bike lanes, connects local and rural routes, and links nonmotorized travel between community activity centers, rural recreation points of interest, and OHV trails.	C:IDD	0	Collab	PW, ADOT, municipalities	interagency coop
<input type="checkbox"/>	157. Maintain a comprehensive inventory of transportation infrastructure, monitor system performance, and maintain a regular traffic counting program to better manage these facilities.	C:MI	0	Program	PW	data, \$
<input type="checkbox"/>	158. Develop resource materials describing dust control products and techniques for unpaved roadways.	C:MI	2	Project	PW, CD	staff, \$
<input type="checkbox"/>	159. Provide technical assistance to residents who desire circulation infrastructure improvements, including measures to control dust.	C:MI	0	Program	PW, SDC	staff
<input type="checkbox"/>	160. Provide administrative, technical, and financial assistance to property owners (where appropriate) seeking to establish improvement districts and/or implement projects.	C:MI	0	Program	SDC, PW, CD	staff, \$
<input type="checkbox"/>	161. Develop resource materials describing the benefits and responsibilities of improvement districts.	C:MI	2	Project	SDC, PW, CD	staff, \$
<input type="checkbox"/>	162. Adopt an ordinance to minimize the introduction, movement, and proliferation of nonnative invasive plants through techniques such as visual inspection, washing, and use of staging areas for construction.	C:MI	2	Admin	PW	enforcement
<input type="checkbox"/>	163. Collaborate with construction crews in maintaining safe, adequate, and convenient access through all work sites for nonmotorized traveler when improvements are made to the circulation system.	C:MI	0	Collab	PW, ADOT	
<input type="checkbox"/>	164. Prioritize projects that improve the safety of high-accident locations as part of the CIP process.	C:AMS	0	Program	PW, Budget Dept	
<input type="checkbox"/>	165. Pursue state and federal safety funding to improve substandard bridge facilities and areas where accident rates are high.	C:AMS	0	Program	PW	staff
<input type="checkbox"/>	166. Maintain and update a database of accidents that occur on County circulation facilities.	C:AMS	3	Program	PW, Sheriff, Budget Dept	\$
<input type="checkbox"/>	167. Collaborate with ADOT to complete and implement access management plans for U.S. 180, U.S. 89 and other highways.	C:AMS	0	Collab	PW, CD, ADOT	interagency coop
<input type="checkbox"/>	168. Work with developers and landowners to achieve safe, legal access for all properties in accordance with state law.	C:AMS	0	Program	PW, CD, land-owners	
<input type="checkbox"/>	169. Consider amending the subdivision ordinance to require provisions for bus stops or pullouts at the entrance to new subdivisions and in areas of expected growth.	C:AMS	1	Admin	CD, PW	



<input checked="" type="checkbox"/>	Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/>	170. Develop resource materials describing standard agreements for sharing driveways to assist property owners in implementing access management techniques.	C:AMS	1	Project	CD, PW, ADOT	staff, \$
Parks & Recreation						
<input type="checkbox"/>	171. Collaborate with relevant agencies/organizations to identify, protect, manage, and interpret natural resource areas; where possible pursue opportunities to acquire and preserve important natural areas in need of protection.	PR:NA	0	Collab	P&R, USFS, ASLD	
<input type="checkbox"/>	172. Collaborate with ADOT to identify, prioritize, and develop trails and bike lanes that provide routes for nonmotorized circulation.	PR:T	0	Collab	P&R, CD, PW, ADOT	interagency coop
<input type="checkbox"/>	173. Collaborate with community groups and other agencies to develop trails plans that address public lands access and internal circulation needs.	PR:T	0	Collab	P&R, CD, PW, community groups	
<input type="checkbox"/>	174. Maintain an interagency and interdepartmental team to review trail planning strategies.	PR:T	0	Program	P&R, PW, CD, USFS	inter-dept coop
<input type="checkbox"/>	175. Develop a model for community trails plans.	PR:T	1	Project	P&R, USFS, ASLD	staff
<input type="checkbox"/>	176. Develop resource materials describing the county trail system, trailhead information, and a “trails etiquette” teaching toolkit.	PR:T	2	Project	P&R, USFS, community groups	staff, \$
<input type="checkbox"/>	177. Develop standard conventions for trail easement language, recording, and management to ensure consistency; subsequently, develop a database of recorded trail easements.	PR:T	1	Project	P&R, CD, PW	inter-dept coop
<input type="checkbox"/>	178. Assist in the coordination of volunteer trail groups in partnership with land managers, homeowners’ associations, and other organizations; some groups may be organized to protect, manage, and interpret historic trail corridors.	PR:T	2	Program	P&R, USFS, BLM, commu- nity groups, trail users	staff
<input type="checkbox"/>	179. Collaborate with appropriate agencies/organizations to complete cross-jurisdictional trails such as the Arizona Trail.	PR:T	0	Collab	P&R, USFS, ASLD, State Parks	staff, \$, interagency coop
<input type="checkbox"/>	180. Create an OHV advisory group, create educational information that addresses the needs and impacts of OHV users, assist agencies in planning and developing designated OHV routes, and consider developing designated dirt bike, OHV, and motocross facilities to combat the problems associated with the haphazard development of such areas.	PR:T	1	Program	P&R, CD, ASLD, USFS, State Parks	staff
<input type="checkbox"/>	181. Collaborate with landowners and managers to ensure a coordinated approach to the provision and management of recreational opportunities.	PR:FSL	0	Collab	P&R, BLM, ASLD, USFS, landowners	
<input type="checkbox"/>	182. Collaborate with landowners and managers to determine the level and types of recreational uses that are appropriate immediately adjacent to neighborhoods and communities; assist in the planning and development of such areas.	PR:FSL	0	Collab	P&R, USFS, ASLD, BLM, landowners	interagency coop
<input type="checkbox"/>	183. Complete a master plan for County parks, trails, and natural areas.	PR:CPRA	1	Admin	P&R, NAU	



<input checked="" type="checkbox"/>	Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/>	184. Pursue partnerships with agencies, community organizations, recreational user groups, and volunteers to provide stewardship to parks and recreation sites; such group would work to manage, maintain, and improve recreational facilities. Consider establishment of a nonprofit “Friends of the Park” organization.	PR:CPRA	2	Program	P&R, community groups, NAU, NPS, SDR	interagency coop, staff
<input type="checkbox"/>	185. Develop recreational opportunities based on level-of-service standards in or near unincorporated communities.	PR:CPRA	1	Program	P&R	
<input type="checkbox"/>	186. Develop management plans (including considerations for interpretive education) for County parks, natural areas, and recreation facilities that incorporate best management practices into the management, operation, and use.	PR:CPRA	0	Program	P&R, NAU	staff
<input type="checkbox"/>	187. Consider local public input when developing new park plans to ensure that needs of residents are being met.	PR:CPRA	0	Program	P&R	
<input type="checkbox"/>	188. Conduct a countywide parks and recreation needs assessment and recreational use studies.	PR:CPRA	2	Project	P&R, NAU, interns	staff, \$
<input type="checkbox"/>	189. Consider instituting impact fees for parks and recreation improvements.	PR:CPRA	3	Admin	P&R	politics, \$
<input type="checkbox"/>	190. Construct, upgrade, and maintain County parks and recreation facilities to nationally accepted standards.	PR:CPRA	0	Program	P&R	\$
<input type="checkbox"/>	191. Develop evaluation criteria for prioritizing land acquisitions and park developments.	PR:CPRA	1	Project	P&R	staff, politics, inter-agency coop
<input type="checkbox"/>	192. Consider an ordinance amendment to require an environmental assessment for proposed golf courses and other active recreational facilities.	PR:NP	2	Admin	CD	politics
<input type="checkbox"/>	193. Develop incentives and/or consider adopting requirements for developers to set aside a tract for a neighborhood park and/or open space.	PR:NP	2	Project	CD	staff, \$, politics

Community Character

<input type="checkbox"/>	194. Work with developers on their public participation plan to help them identify the parties they should notify before submitting applications.	CC:CD	0	Program	CD	
<input type="checkbox"/>	195. Develop incentives to help property owners preserve unique natural and historic resources.	CC:CD	1	Project	CD, SDR, SHPO, land-owners	\$
<input type="checkbox"/>	196. Consider adopting a nuisance ordinance and proactively enforcing zoning ordinances pertaining to property maintenance.	CC:CD	1	Admin	CD, home-owners	politics
<input type="checkbox"/>	197. Consider local public input in the analysis of development projects for community facilities.	CC:RAC	0	Program	CD	
<input type="checkbox"/>	198. Develop guidelines for pedestrian and bicycle infrastructure improvements including safety standards within activity centers. These standards, which would be applied to adjacent roadway improvements or property development, may include trail or sidewalk infrastructure, bike lanes, signage, or pavement markings.	CC:RAC	2	Project	CD, PW	
<input type="checkbox"/>	199. Collaborate with tribes to coordinate the goals and policies of this plan with their planning efforts.	CC:TLI	0	Collab	CD, tribal govts	



<input checked="" type="checkbox"/>	Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/>	200. Provide technical assistance as feasible and encourage consultation with local tribal governments in the development of tribal-owned, non-trust lands.	CC:TLI	0	Program	CD, tribal govts	
<input type="checkbox"/>	201. Develop a mechanism for staff to consult with tribes on cultural sites, concentrations of tribal resources, and/or potential development projects that are close to tribal lands or may have regional impacts. Guidelines may include incorporation of potential contacts, preferred method of communication, and timelines for tribal response.	CC:TLI	1	Program	CD, tribal govts	
<input type="checkbox"/>	202. Collaborate with tribal governments to exchange data, information, and research on natural resources in order to increase communication about their use, depletion, and enhancement.	CC:TLI	0	Collab	CD, tribal govts	staff, inter-agency coop
<input type="checkbox"/>	203. Collaborate with local tribal governments on cost-sharing initiatives and increased sharing of resources, such as roadway maintenance.	CC:TLI	0	Collab	CD, tribal govts, PW, Budget Dept.	
<input type="checkbox"/>	204. Conduct a countywide historic and cultural resource inventory.	CC:HCR	3	Project	CD, SHPO, NAU, interns	staff, \$
<input type="checkbox"/>	205. Amend the subdivision regulations to require archeological studies for major developments, beginning with a literature review that discloses archeological sites and information sources.	CC:HCR	2	Admin	CD	politics
<input type="checkbox"/>	206. Amend the zoning ordinance and building codes to encourage the preservation of historic structures.	CC:HCR	2	Admin	CD, SHPO	politics
<input type="checkbox"/>	207. Pursue the designation of the County as a Certified Local Government for historic preservation.	CC:HCR	3	Project	CD, SHPO	
<input type="checkbox"/>	208. Provide technical assistance for preserving cultural resources on public and private properties; research the NPS's "Save America's Treasures" and similar grant programs.	CC:HCR	3	Program	CD, SHPO, NPS	staff
<input type="checkbox"/>	209. Promote cultural education and expanded cultural opportunities for residents.	CC:HCR	3	Program	CD, SHPO	
<input type="checkbox"/>	210. Encourage communities to work on local historic area designations by providing detailed information on the area's history and cultural significance.	CC:HALP	3	Program	CD, community groups, SHPO	staff
<input type="checkbox"/>	211. Establish criteria for and document changing landscapes to provide resources for historic, cultural, and ecological preservation activities. Subsequently, develop a prioritized inventory of landscapes worthy of preservation, similar to the Flagstaff Open Spaces and Greenways Plan.	CC:HALP	2	Project	CD, P&R, SHPO	staff, \$
<input type="checkbox"/>	212. Conduct an inventory of heritage areas that includes the important features to be preserved or protected and collaborate with landowners on state and national designations for heritage areas of historical significance.	CC:HALP	3	Project	CD, SHPO, landowners, NAU, interns	staff, \$
<input type="checkbox"/>	213. Conduct a visual assessment survey to identify important ridgelines and viewsheds.	CC:SVV	2	Project	CD, GIS, NAU, interns	staff, \$
<input type="checkbox"/>	214. Develop resource materials describing examples of good ridge and slope development to show builders.	CC:SVV	2	Project	CD, NABA	staff, \$
<input type="checkbox"/>	215. Consider amending the zoning ordinance to include design standards that protect the aesthetic quality of hillsides.	CC:SVV	1	Admin	CD	staff



<input checked="" type="checkbox"/>	Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/>	216. Collaborate with ADOT to conserve the character and natural features of state and federally designated scenic byways.	CC:SC	0	Collab	CD, PW, ADOT	interagency coop
<input type="checkbox"/>	217. Conduct a visual analysis of scenic resources.	CC:SC	2	Project	CD	staff, \$
<input type="checkbox"/>	218. Pursue “International Dark Skies [County]” status.	CC:DS	1	Project	CD, DSC, NAU	
<input type="checkbox"/>	219. Develop incentives and public outreach/education materials for using the best available lighting practices in residential and commercial applications.	CC:DS	1	Project	CD, DSC	staff, \$
<input type="checkbox"/>	220. Collaborate with ADOT and utility providers to ensure the preservation of the dark night skies through appropriate street and facilities lighting.	CC:DS	0	Collab	CD, utility providers, ADOT, DSC	interagency coop
<input type="checkbox"/>	221. Develop incentives and public outreach/education materials for residents and businesses with legally nonconforming lights to upgrade to County standards.	CC:DS	1	Project	CD, DSC, utility providers	staff, \$
<input type="checkbox"/>	222. Consider amending the standards for commercial and industrial development to address noise impacts, perhaps through maximum levels or mitigation standards.	CC:NQ	3	Admin	CD	politics
<input type="checkbox"/>	223. Consider amending the subdivision ordinance to address noise impacts from adjacent uses, including arterial roads and highways, and to require mitigation where feasible.	CC:NQ	3	Admin	CD	politics

Land Use

<input type="checkbox"/>	224. Develop methods to encourage conservation easements—for example, by allowing development or other economic land uses on portions of the property to preserve its overall value.	LU:LOS	0	Program	CD	staff, data
<input type="checkbox"/>	225. Assist owners of private inholdings in exploring all alternatives to development, including exchange for federal land elsewhere.	LU:LOS	0	Program	CD, landowners, BLM, USFS	
<input type="checkbox"/>	226. Coordinate with federal and state agencies, and private landowners in the development of their management plans and proposed development activities.	LU:LOS	0	Collab	CD, USFS, BLM, ASLD, landowners	staff, politics, interagency coop
<input type="checkbox"/>	227. Collaborate in the exchange of information among the County, ASLD, USFS, and BLM of proposed zone changes, conditional use permits, or development projects on any private inholding in order to.	LU:LOS	0	Collab	CD, USFS, BLM, ASLD	interagency coop
<input type="checkbox"/>	228. Use tools such as partnerships, donations, easements, TDRs, and the purchase of development rights to preserve open lands and, where possible, reduce the costs of land acquisition using tools such as conservation easements.	LU:LOS	0	Program	CD, P&R, landowners	politics, staff, \$
<input type="checkbox"/>	229. Assist ranchers in identifying methods for protecting the economic value and integrity of ranchlands. Such methods may include designating certain portions of ranches for higher-density development.	LU:RR	0	Program	CD, landowners	staff
<input type="checkbox"/>	230. Collaborate with ASLD and landowners in developing conceptual land use plans that support the economic viability of ranches and promote lease activities that do not negatively affect wildlife habitat, watersheds, or other sensitive ecological areas.	LU:RR	0	Collab	CD, ASLD, landowners	staff, politics, interagency coop



<input checked="" type="checkbox"/>	Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/>	231. Pursue changes to state law to provide additional County review of 40-acre lot subdivisions.	LU:R	0	Collab	CD, BOS, State Legislature	staff, politics, inter-agency coop
<input type="checkbox"/>	232. Continue to work with the state legislature to amend subdivision law in a way that provides counties with more review authority over lot splits in order to provide better roads, drainages, and other infrastructure.	LU:R	0	Collab	CD, BOS, State Legislature	staff, politics, inter-agency coop
<input type="checkbox"/>	233. Develop incentives to encourage development of subdivisions (rather than lot splits)—for example, by streamlining the subdivision process or amending development standards.	LU:R	2	Project	CD	staff, politics, \$, inter-agency coop
<input type="checkbox"/>	234. Encourage a range of housing options by establishing medium- to high-density residential zoning in urbanizing areas and low- to medium-density residential zoning in developing rural and transitional areas.	LU:R	0	Program	CD, dvpt community, GFEC, NABA	
<input type="checkbox"/>	235. Identify opportunities for medium-density residential development near existing communities, providing special consideration to areas where infrastructure and road networks are accessible.	LU:R	2	Project	CD, ASLD, community groups, municipalities, landowners	politics
<input type="checkbox"/>	236. Encourage new construction methods and housing types to increase housing options for all socio-economic groups.	LU:R	1	Program	CD, Bldg Div, NABA, NACOG	politics
<input type="checkbox"/>	237. Consider amending the zoning ordinance to allow rental accessory apartments in single-family residential zones.	LU:R	2	Admin	CD, dvpt community, NABA, utility providers	politics
<input type="checkbox"/>	238. Develop design review guidelines for communities where appropriate and desired by local residents, using input from citizen committees.	LU:C	2	Program	CD	
<input type="checkbox"/>	239. Promote the use of design approaches that support appropriate commercial or industrial uses, respect the environment, fit the area, and encourage the right mix of uses.	LU:C	1	Project	CD	
<input type="checkbox"/>	240. Develop incentives and public outreach/education materials for property owners to bring nonconforming uses into compliance with Area Plans and the zoning ordinance.	LU:NU	2	Project	CD, community groups	staff, \$
<input type="checkbox"/>	241. Develop resource materials to educate the public and bring better awareness to LULUS and NIMBY issues.	LU:LULU	3	Project	CD	staff, \$

Growth

<input type="checkbox"/>	242. Collaborate with federal land managers to ensure that plans designate only lands for disposition that lie within growth areas, where infrastructure is available or can easily be extended.	G:GA	0	Collab	CD, ASLD, USFS, BLM	staff, politics, inter-agency coop
<input type="checkbox"/>	243. Coordinate with ASLD and private landowners to identify and protect the state sections that are most appropriate for grazing or conservation purposes and develop conceptual plans that consider the use and disposition of state lands in checkerboard areas in a regional context.	G:GA	0	Collab	CD, SDR, ASLD, landowners	staff, politics, inter-agency coop
<input type="checkbox"/>	244. Develop criteria for designating, reviewing, and amending rural growth boundaries for the preparation and/or update of Area Plans.	G:GA	2	Project	CD	staff, politics



<input checked="" type="checkbox"/>	Reference Number & Action Item	Element: Section	Start Priority	Type	Who	Limitations
<input type="checkbox"/>	245. Coordinate with communities, federal and state agencies, and others to identify state or private inholdings or federal lands adjacent to communities that should be acquired or exchanged for either conservation or development purposes.	G:GA	0	Collab	CD, ASLD, USFS, BLM	politics, interagency coop
<input type="checkbox"/>	246. Collaborate with appropriate agencies/organizations to prioritize lands identified for acquisition or exchange according to urgency (degree of threat or opportunity) and ease of transaction.	G:GA	0	Collab	CD, ASLD, USFS, BLM, P&R	staff, politics, interagency coop
<input type="checkbox"/>	247. Research case studies of sustainable communities, such as Civano (near Tucson) and similar “green communities” in the southwest to see if similar concepts could apply to future development projects in Coconino County.	G:GA	3	Project	CD, interns, NAU	staff
<input type="checkbox"/>	248. Coordinate with communities and agencies to identify federal lands that could be used for recreation and public purposes.	G:GA	0	Collab	CD, ASLD, USFS, BLM	politics, interagency coop
<input type="checkbox"/>	249. Develop methods to measure the fair share of off-site infrastructure costs and assess these costs equitably to affected owners.	G:CD	2	Project	CD, dvpt community	politics
<input type="checkbox"/>	250. Involve PW in the earliest stages of development review to ensure that proposals are consistent with CIPs.	G:CI	0	Program	CD, PW, Budget Dept.	inter-dept coop
<input type="checkbox"/>	251. Research the feasibility of impact fees and other revenue sources to fund capital improvements required for increased development.	G:CI	2	Project	CD, PW, BOS, Budget Dept	staff, politics
<input type="checkbox"/>	252. Coordinate planning efforts with other entities involved in CIPs to avoid duplication and ensure that adequate facilities are provided concurrently with development.	G:CI	0	Collab	PW, CD, Budget Dept.	interagency coop
<input type="checkbox"/>	253. Identify areas for future industrial/economic development; consider “prezoning” such areas.	G:ED	2	Project	CD, GFEC	politics
<input type="checkbox"/>	254. Collaborate with incorporated communities to site new commercial and industrial endeavors.	G:ED	0	Collab	CD, municipalities, GFEC	
<input type="checkbox"/>	255. Continue to work closely with GFEC and municipalities in providing accurate information to prospective employers and businesses.	G:ED	0	Collab	CD, municipalities, GFEC	
<input type="checkbox"/>	256. Develop incentives to attract environmentally friendly industries and other appropriate types of industry and employers as well as locally based or supported niche industries.	G:ED	2	Project	CD, GFEC, BOS	\$
<input type="checkbox"/>	257. Consider instituting a “BBB” tax (bed, board, and beverage) for unincorporated areas.	G:ED	2	Admin	CD, BOS	politics, \$
<input type="checkbox"/>	258. Pursue opportunities to expand the county’s enterprise zone.	G:ED	1	Project	CD, GFEC	

