



Arapahoe County



COMPREHENSIVE PLAN

Adopted June 19, 2001
Amended January 15, 2002 (Public Facilities)
Amended May 22, 2012 (Tier Concept)
Amended January 7, 2014 (Chapter V, Plan Amendment Process)
Amended October 20, 2015 (Strategy GM 7.2(c))

Prepared by:

Arapahoe County Public Works and Development Department
Clarion Associates – 2001

Acknowledgements - 2001 Plan

The Arapahoe County Comprehensive Plan has been prepared in the Department of Development Services and Infrastructure Management Planning Division of Arapahoe County in conjunction with the Arapahoe County Planning Commission. Many other individuals have generously contributed to this effort.

BOARD OF COUNTY COMMISSIONERS

Susan Beckman, District 1

John Brackney, District 2

Marie Mackenzie, District 3

Lynn Myers, District 4

Debra Vickrey, District 5

COUNTY STAFF

Dave Schmit, Director of DSIM

Bryan Weimer, Program Manager, CIP and Comprehensive Plan Update Director

Bill Detweiler, Planning Division Manager

Sue Conaway, Planning Program Manager

Julio Iturreria, Senior Planner, Open Space

Ron Hovland, Senior Planner

Melissa Kendrick, Senior Planner

Wiley Smith, Senior Planner

June Farnham, Planner II

Sue Barton, Planner II

Sherman Feher, Planner I

Carol McAllister, Duty Planner

Jim Pankonin, Engineering Division Manager

Lanae Raymond, Engineer II

Chuck Haskins, Program Manager, Land Development

Mark Brown, Engineer III

Karl Packer, Engineer II

Jon Williams, Engineer I

Stacey Thompson, Engineer I

Spencer Luft, Mapping Technician
Kathryn Schroeder, County Attorney
Ron Carl, Assistant County Attorney

PLANNING COMMISSION

Brian Daigle
Frank Doyle
John F. Forhan
Brenda Gallagher
Donald Gregg
Arnold Hayutin
Susan Knapp
David Meyer
Matthew Plitnick
O'Neill Quinlan
Matthew Reay
Shannon Roth
Michael Rothberg

CONSULTANTS

Clarion Associates – Land Use Planning

Benjamin A. Herman, AICP
Chris Duerksen
Lesli Kunkle Ellis
Darcie White
Shelly Bruno, LSA Associates, Inc. (document design)

Catalyst Consulting – Public Process

Barbara Lewis

Coley/Forrest – Fiscal Impact Model

Jean Townsend

Leonard Rice Consulting Water Engineers – Water Resource Analysis

Jon R. Ford, P.E., C.P.G.

Carter & Burgess – Transportation Plan

Joseph Hart, P.E.
Steven Gomez, P.E.

CITIZEN ADVISORY COMMITTEE

Kathleen Burnet, East End Advisory Committee
Will Chase, I-70 Corridor Smart Growth
Janet Cranmer, County Resident
Tom Goodyear, County Resident
Joe Knopinski, The Farm at Arapahoe County
Pegi Lampton, County Resident
David Meyer, Arapahoe County Planning Commissioner
Peter Neukirch, Southeast Business Partnership
William Payne, William Payne & Associates
Bonnie & Richard Rader, County Residents
Jane Rieck, ACCORD
Michael Rothberg, Arapahoe County Planning Commissioner
Bobbie Scheffield, South Metro Land Conservancy
Andrea Suhaka, ACCORD

POLICY ADVISORY COMMITTEE

Dr. Jack Ballard, Littleton School District No. 6
Brian Daigle, Arapahoe County Planning Commissioner
Mayor Jim Egan, City of Sheridan
John F. Forhan, Arapahoe County Planning Commissioner
Bill Howard, Cherry Creek Parks
Jeffrey D. Kraus, Parker Jordan Metro District
Commissioner Marie Mackenzie, Arapahoe County
Steven Miller, Southeast Business Partnership
Pat Mulhern, Inverness Metropolitan District
Bob Stansbury, Littleton Fire Protection District
Pat Sullivan, Arapahoe County Sheriff's Office, represented by Capt. Mark Campbell
Mayor Paul Tauer, City of Aurora, represented by Bob Watkins
Allan Tenenbaum, E. Cherry Creek Valley Water District
Douglas Tidale, City of Cherry Hills Village
Stephen Titony, Cunningham Fire District Board
Marie Venner, Littleton Planning Commissioner
Commissioner Debra Vickrey, Arapahoe County
Ed Walsh, Arapahoe County Library Board President
Chris Wiant, Tri-County Health Department

TECHNICAL ADVISORY COMMITTEE

Bob Blodget, Parker Jordan Metropolitan District
Bill Broderick, Denver Regional Council of Governments
Warren Brown, Tri-County Health Department
Scott Brownlee, Centennial Airport Authority
Jim Calvery, Bennett Town Planner
Linda Capra, Southeast Business Partnership
Brett Collins, S. Suburban Parks & Recreation District
Lauri Dannemiller, City of Englewood
Kent Epperson, Regional Transportation District
John M. Fernandez, City of Aurora Planning
Brian Gray, Colorado Division of Wildlife
Donald Gregg, Arapahoe County Planning Commissioner
Gregory Hard, Cunningham Fire District
Rose Marie Herbert, Aurora Public Schools
Jeff Holwell, South Metro Denver Chamber of Commerce
Darryl Jones, Greenwood Village Planning
Dave Kaunisto, E. Cherry Creek Valley Water & Sanitation District
Glenda Lainis, Douglas County Planning
Arron Linstrom, Colorado Division of Wildlife
Carol MacLennan, Tri-County Health Department
Eloise May, Arapahoe Library District
Liza Moore, Colorado Division of Wildlife
Larry Mugler, DRCOG
Tony Ogboli, City and County of Denver
Gregory Rasmussen, South Metro Fire Rescue
Rob Ratkowski, Centennial Airport
Nicki Stoner, Adams County Planning
Mike Turner, City of Aurora Parks and Open Space
Bob Watkins, City of Aurora Planning
Dave Weber, Colorado Division of Wildlife
Newell Wright, Arapahoe County Water and Wastewater

Acknowledgements

January, 2014 Plan Update

BOARD OF COUNTY COMMISSIONERS

Nancy Doty, District 1
Nancy Sharpe, District 2
Rod Bockenfeld, District 3
Nancy Jackson, District 4
Bill Holen, District 5

COUNTY STAFF

David M. Schmit, Director of Public Works and Development
Bryan Weimer, Program Manager, Transportation Division Manager
Jan Yeckes, Planning Division Manager
Charles Haskins, Engineering Services Division Manager
Steve Byer, Building Division Manager
Dan Kennicutt, Support Services Division Manager
Allen Peterson, Road and Bridge Division Manager
Julio Iturreria, Long Range Planning Program Manager
Larry Mugler, Demographics Planner
Sherman Feher, Senior Planner
Bill Skinner, Senior Planner
Molly Orkild-Larson, Senior Planner
Shannon Carter, Director of Open Spaces and Intergovernmental Relations

PLANNING COMMISSION

Brian Weiss, Chair
Paul Rosenberg, Chair Pro-Tem
Arnold Hayutin

Mark Brummel

Leah Martin

Jane Rieck

Brett Larson

Table of Contents

I. INTRODUCTION

Purpose of the Comprehensive Plan	I-1
Authorization	I-1
Comprehensive Plan Context.....	I-1
Planning Process.....	I-2
Next Steps	I-4
Organization of the Plan	I-5

II. VISION AND GUIDING PRINCIPLES

Vision	II-1
Comprehensive Plan Principles	II-2

III. LAND USE PLAN

Introduction.....	III-1
Comprehensive Land Use Plan	III-1
Land Use Categories	III-5

IV. GOALS, POLICIES AND STRATEGIES

Introduction and Overview.....	IV-1
Growth Management	IV-3
Public Facilities and Services.....	IV-14
Neighborhoods and Housing	IV-21
Employment and Commercial Development.....	IV-25
Transportation.....	IV-30
Natural and Cultural Resources and the Environment	IV-35
Open Space, Parks and Trails.....	IV-43
Fiscal and Economic Impacts	IV-46

V. IMPLEMENTATION APPROACH

Introduction and Overview.....	V-1
Actions	V-1
Fiscal Impact Assessment	V-2
Plan Revisions and Amendments	V-3
Summary of Priority Actions	V-9

APPENDIX A: GLOSSARY OF TERMS	A-1
-------------------------------------	---------------------

APPENDIX B: PLANNING INFLUENCES	B-1
---------------------------------------	---------------------

APPENDIX C: ALTERNATIVE LAND USE SCENARIOS.....	C-1
---	---------------------

APPENDIX D: ACTION PLAN MATRIX	D-1
--------------------------------------	---------------------

APPENDIX E: MEETING MINUTES [E-1](#)
APPENDIX F: FISCAL IMPACT MODEL..... [F-1](#)
APPENDIX G: WATER RESOURCE STUDY..... [G-1](#)

LIST OF MAPS

CHAPTER III

Comprehensive Land Use Plan

Urban Service Area Land Use Plan

Recommended 2020 Roadway Plan

Projected Roadway Functionality—Eastern Arapahoe County

APPENDIX B

B-1: Regional Context

1. Vegetative Land Cover
2. Existing Zoning
3. Recent Development Activity and Parcelization
4. Water and Sanitation Districts
5. Fire Districts
6. School Districts
7. Park and Recreation Districts

Introduction



I. Introduction

PURPOSE OF THE COMPREHENSIVE PLAN

A Comprehensive Plan is an official public document that guides land use and growth and development decisions. The Arapahoe County Comprehensive Plan looks beyond pressing current issues to provide a perspective on opportunities for the future. It is about deciding what we want our County to be like in the future, and charting a course to get there. The Plan illustrates a generalized pattern of future land use, and it serves as a policy and strategy guide to update the County's land use regulations and establish the foundation for new programs. This 2001 Comprehensive Plan updates and replaces the 1985 Arapahoe County Comprehensive Plan.

This Plan is not to be confused with the County's zoning and subdivision regulations (the Land Development Code) or Capital Improvements Program (CIP). These are all more specific and detailed ordinances and programmatic documents that implement the goals and policies contained within this Plan.

AUTHORIZATION

In the State of Colorado, counties have the authority to create and adopt master (comprehensive) plans for the physical development of the unincorporated territory of the County, pursuant to 1973, C.R.S. 30-28-106(1). A comprehensive plan is an official public document adopted by a quasi-legislative body (in this case, the Planning Commission). C.R.S. 30-28-108 provides that the general purpose of the Comprehensive Plan is to guide and coordinate harmonious development of the County to promote health, safety, order, convenience, prosperity or general welfare of the residents, in accordance with present and future needs and resources.

COMPREHENSIVE PLAN CONTEXT

A BRIEF HISTORY OF ARAPAHOE COUNTY

Arapahoe County was Colorado's first county. Originally a part of the Louisiana Purchase, it was one of the original 17 Colorado counties established in 1861 when the Colorado Territory was formed. Arapahoe County is named after the larger Plains Indian tribes that



relied on the landscape for centuries before settlers began migrating west. In the 1820’s trappers began to permanently settle the area. In 1832 traders built the first trading post on Cherry Creek. In about 1859, irrigated farming began when an irrigation ditch was built along Bear Creek. During the same era, large homestead farming and ranching also occurred. In 1872, the first urban development began along present U.S. Highway 85 and Littleton, later the County seat, incorporated shortly thereafter in 1872.

By 1970 – a century later – the population of Arapahoe County had grown to 162,100 people, compelling the County to develop the first Comprehensive Land Use Plan. Arapahoe County first adopted a Comprehensive Plan in 1972 because it was experiencing growth pressures in the area generally west of Smoky Hill and Chambers Road. The County amended the 1972 Plan nineteen times before adopting a new Comprehensive Plan in 1985.

The 2001 Comprehensive Plan replaces and updates the 1985 Plan. Many of the conditions that existed in 1985 have changed and, while the 1985 Plan has a number of clearly stated goals and policies, the 1985 Plan is perceived as not being reflective of the changing conditions and amount of growth in the County. In addition, the 1985 Plan focuses on the western portion of the County, and does not address the needs of communities and rural areas in the eastern portion of the County. The County amended the 1985 Plan a number of times prior to this update.

PLANNING PROCESS

PLAN DEVELOPMENT

Public officials, staff, consultants, citizen volunteers, advisory committee members and the public have collaborated over a period of three years to develop the 2001 Comprehensive Plan. The project team, guided by the public officials and coordinated by staff and consultants, provided opportunities for the public and other stakeholders to participate during every stage of developing the County’s growth guide.

The first phase of Plan development involved issues identification, inventory of existing conditions, and mapping. The team reviewed the goals and policies of existing documents as well as the factors influencing change, such as population growth trends and projections, history of land use patterns and development trends, service district capacities, land capacity and location of sensitive resources. Appendix B provides detailed information on the planning influences, which contributed to developing this Plan.

The second phase of Plan development, which commenced in March of 2000, focused on the preparation of alternative land use scenarios depicting future development patterns. The project team prepared scenarios to facilitate public discussions about a desired future for the County, and to evaluate the alternative patterns of development (see Appendix C: Alternative Land Use Scenarios). Concurrently, the public officials and project team

GROWTH MANAGEMENT

What are the key growth management principles?

Countywide Growth Pattern

Arapahoe County will have a compact land use pattern within well-defined boundaries and will maintain a balance between development and the natural environment. The county will establish the Urban Service Area and Eastern Communities as growth areas with boundaries.

- Encourage Urban Development to Locate in Designated Growth Areas
- Ensure Adequate Public Facilities and Services in Growth Areas
- Avoid Scattered Development Outside of Growth Areas

WHAT TYPES OF TOOLS MIGHT BE USED?

- Establish growth area boundaries around Eastern Communities and a boundary for the Urban Service Area
- Work with existing districts to provide services for growth areas
- Develop and adopt standards for public services and infrastructure that new development must meet, such as street requirements, water supply constraints, and require new development in the Urban Service Area to annex into cities.



Rural Area Growth

Land use patterns in the Rural Area of Arapahoe County will maintain an open, rural character; maintain agricultural activities and protect sensitive natural areas.

- Limit Urban Development in Rural Area
- Provide Incentives for Clustered Residential Development in the Rural Area

WHAT TYPES OF TOOLS MIGHT BE USED?

- County will not provide infrastructure and services outside of growth areas
- Increase the minimum building lot size in rural areas (to 80 acres), but reward landowners with more development units if clustered
- Create incentives for clustered development in rural areas as an alternative to 35-acre development, such as density bonuses, streamlined review process, technical assistance
- Prohibit formation of new service districts outside of growth areas
- Develop a Transfer of Development Rights program to protect agricultural land and open space



Arapahoe County

formulated the Vision (see Section II), and the Goals, Policies and Strategies (see Section IV). Based on staff review and public input the preferred elements of the alternative land use scenarios and the goals, policies, and strategies evolved into the Arapahoe County Comprehensive Plan.



Byers public workshop

PUBLIC PARTICIPATION

Throughout the development of the Plan, the public had numerous opportunities to contribute to the work in progress. The County hosted numerous meetings and workshops designed to provide opportunities for review, comment, and input to the various components. In addition, the County maintained a web page, with all major work products available for review and comment. Periodic mailings were sent out to a mailing list of interested parties,

informing the public of the project’s status and schedule. The team also participated in numerous presentations to the Board of County Commissioners and the County Planning Commission, as well as other stakeholder groups and organizations throughout the County.

Participants

As the entity responsible for adopting the Plan, the Arapahoe County Planning Commission served as the project's Steering Committee, and was involved in all aspects of the Plan's preparation. The Board of County Commissioners, who set the basic policy direction for the County, were involved at key points in the planning process.

The Board of County Commissioners appointed three advisory committees intended to represent a broad spectrum of the community: a Technical Advisory Committee (TAC), Citizen Advisory Committee (CAC), and Policy Advisory Committee (PAC). The TAC provided staff-level technical advice and guidance during the planning process. It included representatives from County agencies as well as districts and municipalities within the County. The CAC, whose membership was largely comprised of County residents, brought diverse perspectives to the process. Members of this committee assisted with public participation by keeping community organizations informed and involved. The PAC provided policy guidance by focusing on multi-jurisdictional policy issues. Members of the PAC represented the interests of their constituencies, including municipalities, agencies and other organizations from the community. The project team met with each of the three advisory committees on five occasions during 2000 and 2001, to review elements of the draft Plan and provide guidance and input. The advisory committees also met on several occasions during the first phase of the plan's development.

Public Workshops and Meetings

Over the course of the planning effort, the County conducted a number of public meetings and workshops to provide opportunities for input to the process and direction of this Plan. A series of Community Forums were conducted during phase one of the planning process, to provide information and data related to the Plan update and to collect



Youth workshop in Byers

comments and feedback related to issues that are of concern to County residents. During phase two, public workshops and meetings took place in May 2000, October 2000, and January/February 2001. Each of these workshops was highly interactive, with citizens preparing their own land use scenarios for the County, reviewing and critiquing plans and policies, and discussing their findings and views with planning team members. Additionally, County high school students participated in workshops, providing a perspective on issues that are important to our youth.

The final round of comments and public input on the draft Plan were received at a public hearing conducted by the Planning Commission on April 24, 2001.

PARALLEL PLANNING EFFORTS

The County Department of Development Services and Infrastructure Management Planning Division coordinated several long-range planning efforts in concert with this Comprehensive Plan, including a countywide Transportation Plan and a Water Resources Study for the eastern portions of the County. Each of these planning efforts has been closely coordinated with the Comprehensive Plan, and is reflected in the policies. The Transportation Plan is to be used in conjunction with the Comprehensive Land Use Plan. In addition, the County adopted the Urban Growth Area boundary that is in conformance with the Denver Regional Council of Government's (DRCOG's) 36.26 square mile allocation. The growth pattern proposed in this Plan conforms closely with the growth area allocated by DRCOG.

NEXT STEPS

IMMEDIATE PLANNING CONCERNS

The goals, policies and strategies (Section IV) identify a number of planning concerns and strategies for accomplishing goals. During the review of the draft Plan, several issues were identified as requiring further study before they could be fully addressed in this Plan. These issues should be addressed by the Planning Commission and Board of County Commissioners within three to six months of adoption of this Plan. Once these issues have been resolved, the Planning Commission will amend the Comprehensive Plan to include updated policies. These issues are:

1. Minimum parcel size for residential development in the Rural Area—The Plan encourages cluster residential development in the Rural Area as an alternative to the pattern of dispersed development presently occurring (see Rural Area policies, pages IV-9 to IV-11). One suggested strategy is to increase the minimum building parcel size to 80 acres for a residential home site that is not part of a cluster development.
2. Groundwater policies for development—The Water Resources Study completed as part of this planning process identifies potential issues in the eastern portion of the County associated with the dependency on non-renewable groundwater supplies to serve development. The water supply policies in this Plan indicate the County's concern with reliance on non-tributary groundwater for long-term water supply (see Water Supply policies, page IV-14). Additional consideration needs to be given to implementation of these policies, particularly in the eastern area of the County where options for alternative supplies are limited.
3. Standards for roads in the rural area—The Board of County Commissioners has limited fiscal resources with which to meet the infrastructure needs of the County.

Accordingly, the Plan recognizes that rural areas of the County do not warrant the same level of road infrastructure that more urbanized areas require (see Rural Area Transportation policies, page IV-31). The County will need to develop level-of-service standards for the Rural Area, recognizing that roads will remain unpaved unless warranted by traffic volumes, health or safety standards.

SUBAREA PLANS

Arapahoe County worked with the Eastern Communities of Watkins, Strasburg and Byers and the special districts that serve these communities to develop community Subarea Plans that address growth boundaries, public facilities and services, land use patterns, transportation, resource conservation and fiscal impacts.



Subarea Plans will be adopted as elements of this Comprehensive Plan to further refine land use plans and policies for these communities. The County will also create Subarea Plans for places within the Urban Service Area that need detailed planning to solve local problems.

ORGANIZATION OF THE PLAN

The Comprehensive Plan is contained in four additional sections, which are briefly described below.

VISION AND GUIDING PRINCIPLES

The Vision and Guiding Principles section describes the County's vision and sets the basic direction for future growth and development in the County.

LAND USE PLAN

The Land Use Plan section depicts the desired future land use pattern of the County, and contains the Comprehensive Land Use Plan map showing three basic places: The Urban Service Area, the Eastern Communities/Tiers I and II, and the Rural Area/Tier III. This section also contains a more detailed land use map for the Urban Service Area, and description of each land use category and locational criteria.

GOALS, POLICIES AND STRATEGIES

The Goals, Policies and Strategies section identifies some fundamental choices to guide growth and development and balance competing demands. This section establishes the basic policy direction for the County under eight categories: Growth Management; Public Facilities and Services; Neighborhoods and Housing; Employment and Commercial Development; Transportation; Natural and Cultural Resources and the Environment; Open Space, Parks, and Trails; and Fiscal and Economic Impacts. Each category includes a set of goals. Each goal is supported by a set of policies and strategies with specific measures to carry the Plan forward.

IMPLEMENTATION APPROACH

The Implementation Approach section defines how each goal and policy identified in this Plan will be achieved. It lists the actions to be taken and assigns responsibility and phasing of procedures. It accompanies the Action Plan Matrix, included as Appendix D.

Appendixes

In addition to the elements described above, the Plan includes the following appendixes:

Appendix A—Glossary of Terms provides definitions for planning terms that are used throughout this Plan.

Appendix B—Planning Influences summarizes the factors affecting land use and development in the County, including regional influences, demographic trends, land use patterns, the physical environment, transportation and public facilities and services.

Appendix C—Alternative Land Use Scenarios describes the three scenarios developed to compare future land use patterns that evolved into the Comprehensive Land Use Plan.

Appendix D—Action Plan Matrix lists the specific actions to be taken in implementing the Plan.

Appendix E—Meeting Minutes provides a summary of each meeting held during the planning process.

Appendix F—Fiscal Impact Model provides a summary of the methodology and output of the model completed by Coley/Forrest.

Appendix G—Water Resource Study provides a summary of the Water Resources Study completed by Leonard Rice Consulting Water Engineers.



Vision and Guiding Principles

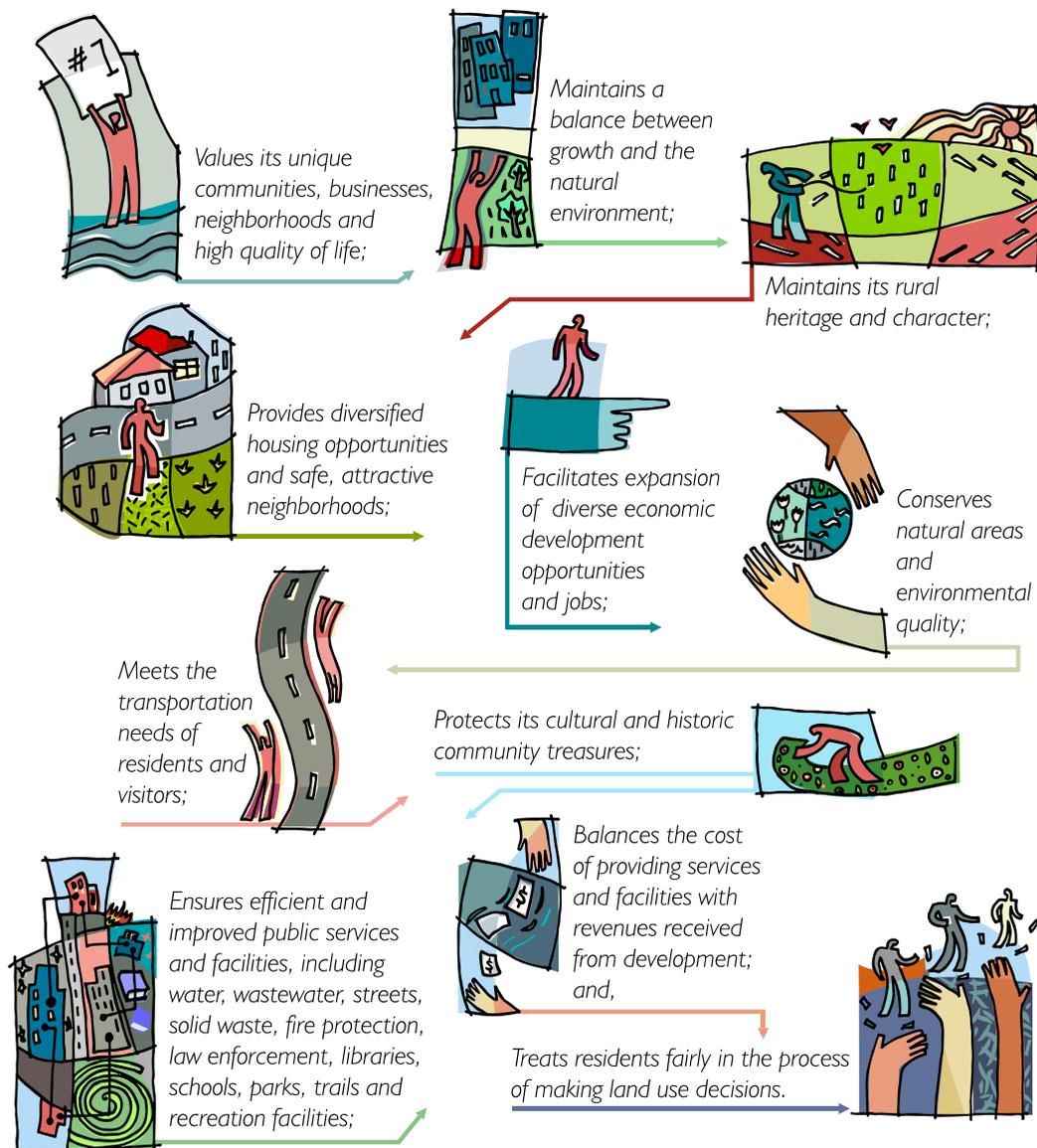


VISION AND
GUIDING PRINCIPLES

II. Vision and Guiding Principles

The Vision for Arapahoe County describes the County’s values and aspirations – what kind of place we would like our County to be over the next 20 years. It builds on the County’s best characteristics and identifies changes in land use patterns that would improve the County overall. This Vision has emerged from public surveys, workshops, advisory committee meetings and the direction given by elected and appointed officials. These participants identified what they like about the County and what they would like to see changed in the future, setting the foundation for this Plan.

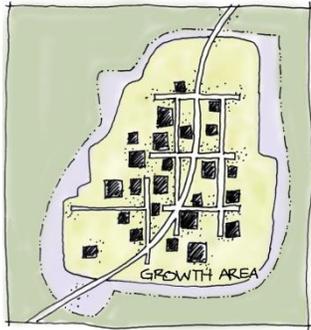
ARAPAHOE COUNTY WILL BE A PLACE THAT...



COMPREHENSIVE PLAN PRINCIPLES

The Comprehensive Plan principles, listed below, describe the community’s aspirations and set the direction for the Plan. They demonstrate the general ideals to be sought for the County over the next 20 years, building on the County’s strengths and proposing changes where necessary.

APPROPRIATE LAND USE PATTERNS



Arapahoe County will have a compact development pattern that encourages growth to locate within well-defined growth areas, and balances development and conservation of the natural environment. Development will occur in a manner that supports the urban pattern of the western portion of the County, seeks to ensure the viability of the eastern communities along the I-70 corridor, and maintains the eastern area’s open rural character, viable agricultural operations, and natural areas.

ADEQUATE PUBLIC FACILITIES AND SERVICES

The availability of water, wastewater, fire protection, police protection, parks and other utilities and services affects the safety and quality of life for residents and the economic stability of the County. The development pattern promoted by this Plan will allow the County to provide for long-term development needs, while achieving a more cost-effective and efficient provision of infrastructure and public facilities.

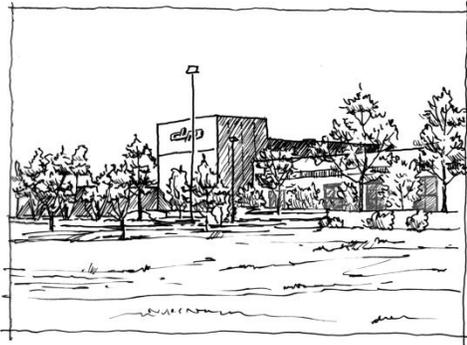


SAFE, FUNCTIONAL AND ATTRACTIVE NEIGHBORHOODS



The County will promote stable, safe and attractive new neighborhoods that contain a mix of land uses and diversified housing options, including housing that is affordable, and will seek to incorporate new development in existing neighborhoods so that it is appropriate in size, scale, design and use. New housing areas should be located in Growth Areas where residents will have access to the full range of infrastructure and facilities and services that are needed for healthy, livable neighborhoods.

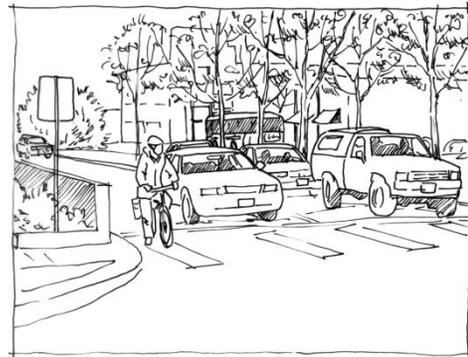
HIGH QUALITY EMPLOYMENT



The County recognizes that employment opportunities are important to its residents. The County will support and encourage well-designed employment centers and commercial development in the urban area and in the Eastern Communities along the I-70 corridor, taking into consideration the economic development goals adopted by the I-70 Chamber of Commerce. New employment should contribute to the community by providing high wages and minimal environmental impacts. Employment centers and commercial development should not occur in rural parts of the County or outside of Growth Areas unless they are agriculture-related.

TRANSPORTATION CHOICES AND MOBILITY

Mobility, efficiency and safety are important concerns for a transportation system. The County will address current and future mobility needs through appropriate land use decisions and an efficient transportation system with connected local and regional roads and viable transit alternatives. The County will ensure that adequate streets are designed to accommodate a range of modes of travel to coincide with new development.

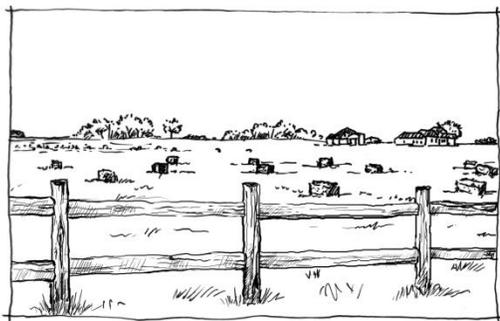


RESOURCE CONSERVATION AND ENVIRONMENTAL QUALITY



Residents of the County feel strongly about conserving resources and maintaining a healthy environment. The County will work to conserve its natural and cultural resources that provide wildlife habitat, maintain environmental quality and enrich the lives of residents through education, observation and outdoor recreation opportunities. The County will also promote human health and environmental quality by conserving water resources, protecting water quality, and maintaining compliance with air quality standards.

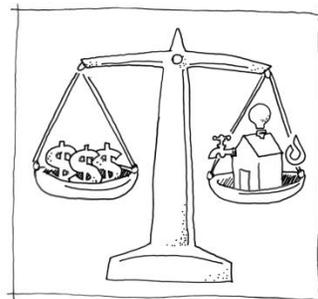
MAINTAIN RURAL CHARACTER



Residents of our rural areas in the County have expressed a strong desire to maintain the rural character and lifestyle they currently enjoy, including very low-density development, agricultural activities, and scenic views. The Plan must recognize the clear distinctions between the County's urban and rural areas and incorporate strategies to maintain and enhance the rural character.

BALANCED EXPENDITURES AND REVENUES

The County will strive to balance necessary expenditures related to the provision and maintenance of public services and facilities with revenues received from new development and property taxes. The Plan recognizes that short- and long-term fiscal effects of growth shall be considered to determine if development is paying its fair share, and that new tools and programs may be needed to ensure that a reasonable balance between expenditures and revenues is achieved.





Land Use Plan

LAND USE PLAN

III. Land Use Plan

INTRODUCTION

The Land Use Plan represents a fundamental element of the Comprehensive Plan. It establishes the land use and development patterns articulated in the goals and policies this Plan (see Section IV). In keeping with the traditional role of a Comprehensive Plan, it serves as the framework to undertake the County's desired land use pattern for the future.

Several maps are part of the Land Use Plan. The first of these, the Comprehensive Land Use Plan, provides a broad, countywide representation of the desired land use pattern. It illustrates the locations of the three basic building blocks of the Plan: the Urban Service Area, the Eastern Communities (defined as Growth/Planning Reserve Areas within Tiers I and II), and the Rural Area (Tier III). The second map is the Urban Service Area Land Use Plan. It illustrates more detailed land uses for the western, more urbanized part of the County. Following a description of the Comprehensive Land Use Plan, this section contains a description of applicable land use categories, for residential, and non-residential land uses, as well as criteria for appropriate locations for each type of land use.

As Subarea Plans are completed for the Eastern Communities of Byers, Strasburg and Watkins, the land use maps and policies for the Subareas will be added as elements of this Plan, to further refine the land uses indicated on the Comprehensive Land Use Plan map.

COMPREHENSIVE LAND USE PLAN

The Comprehensive Land Use Plan illustrates the desired concentration of future urban development in distinct places – Growth/Planning Reserve Areas. In the Growth/Planning Reserve Areas, the County and service providers may carefully plan for new development and efficiently provide service and facilities so that the County's investment in infrastructure will be reduced. The Growth/Planning Reserve Areas will contain a greater mix of uses and higher densities than what is typically being developed today, and will provide employment opportunities near the places where people live.

The Plan distinguishes the Growth/Planning Reserve Areas from the parts of the County that will not see urban development, at least within this 20-year time horizon. In places outside of the Growth/Planning Reserve Areas, it is intended that agricultural resources, open lands and Sensitive Development Areas will be conserved.

The Comprehensive Land Use Plan delineates the following places with distinct characteristics:

The Urban Service Area. The Urban Service Area is predominantly within or adjacent to areas of existing urban-level development in the western portion of the County. This is the place of the most intense urban activity and where annexations will likely occur. The Urban Service Area overall is closely aligned with the DRCOG Urban Growth Boundary.

Eastern Community Planning Areas. The unincorporated Eastern Communities, targeted as future growth nodes, are located along I-70 on the Eastern Plains within Tiers I and II. The County worked with the communities of Byers and Strasburg to prepare Subarea Plans.

The Rural Area/Tier III. The Rural Area covers the eastern two-thirds of the County and will continue to be a mix of predominantly agricultural uses and very low density rural residential development.

The Planning Reserve Area. This land will be jointly planned for consideration of future uses and land conservation beyond the 20-year time frame of this Plan.

URBAN SERVICE AREA

The Urban Service Area is generally located to the west of Hayesmount Mile Road, as defined by the boundary on the Comprehensive Land Use Plan. A vast majority of the land within the Urban Service Area is already zoned, developed and incorporated into Metro Area cities. However, some vacant land remains and some unincorporated, but developed, neighborhoods exist. The Urban Service Area is largely in conformance with the 36.26 square miles allocated by the Denver Regional Council of Governments (DRCOG) to Arapahoe County for urban growth.

In the Urban Service Area, new urban residential development, mixed with accompanying commercial and services, will be directed to areas contiguous to existing development. This new development should be annexed. The E-470 Corridor will be developed in a mixed-use pattern, incorporating residential and employment/commercial uses, occurring through annexation to the City of Aurora. In addition, an employment center will continue to develop around Centennial Airport/Dove Valley, because this area has a large concentration of vacant land zoned for employment uses along Arapahoe Road and County Line Road. The land uses are illustrated in the Urban Service Area Land Use Plan Map and described later under Land Use Categories.



EASTERN COMMUNITY PLANNING AREAS

The unincorporated Eastern Communities of Strasburg and Byers are depicted on the Comprehensive Land Use Plan as Planning Reserve Areas. The County will direct new development in the eastern part of the County to these rural communities, and will encourage these communities to develop at densities similar to the towns today, discouraging large lot development within or at their fringes.



The County prepared and adopted community Subarea Plans involving local residents, property owners and service districts, to delineate Growth Area boundaries and land uses for the unincorporated communities. The amount of development that can occur in these communities will need to be carefully coordinated with the ability of the County, districts, and other

responsible agencies to provide services (i.e., water, sewer, parks, roads, schools, fire and police protection).

The Plan policies address the need for employment and commercial uses in the Eastern Communities to generate jobs and revenue along with new housing, so the towns are not just “bedroom” commuter communities for the Denver Metro Area. New development should be consistent with the character and intensity of the towns and have accompanying employment opportunities, commercial and neighborhood services.

The County will coordinate with the incorporated towns of Bennett and Deer Trail to plan for future growth in these locations.

RURAL AREA/TIER III

The Rural Area/Tier III covers the eastern two-thirds of the County. In the Rural Area, some large lot residential development will continue to take place, but the primary activities will be agricultural.



The County will strive to strengthen and maintain agricultural activities through

the policies contained in this Plan. To promote conservation of agriculture and open lands, the County will encourage cluster residential development, rather than dispersed development. With cluster development, smaller lots are grouped together on a portion of a parcel, while a larger portion of the parcel is conserved for agriculture or open land. The County will discourage non-residential uses from occurring in the Rural Area, unless they are agriculture-related or are public facilities and services. Groundwater supply and availability will be a significant factor that limits development density in the rural area, since most of the water supply is non-tributary.

PLANNING RESERVE AREA

Planning Reserve Area designations have been applied to the Lowry Bombing Range property and areas within Tiers I and II.

State trust lands were given to the state by the federal government in 1876 for the specific purpose of generating revenue to support education in the state. In November 1996, the voters passed a Constitutional amendment that changed the structure and mission of the State Land Board. The amendment did a number of things, including mandating that the Board place a high priority on good stewardship of state trust lands, so that they can benefit future generations of Colorado schoolchildren, and created a 300,000-acre Stewardship Trust of lands that are to receive special stewardship attention. These lands are protected from sale or development unless four of the five Land Board members vote to take them out of the trust. The Lowry Bombing Range property is presently designated as part of the stewardship trust lands.

Creating a reserve ensures that the land is held vacant to accommodate possible future uses and allows for joint planning and coordination. Detailed planning must take place to determine how infrastructure and community facilities and services would be provided if development occurred. Some environmental hazards may exist on the property due to its prior use, which need to be addressed. In addition, it is important to consider how the natural resources should be conserved and managed while allowing for sustainable development. These natural resources include wildlife habitat and other areas that have conservation value, as well as natural resources with economic value, such as minerals, water, and energy resources. The single ownership of the property presents an exceptional opportunity for integrated planning to determine the future use of the property.

OTHER COMPREHENSIVE LAND USE PLAN ELEMENTS

Riparian Areas and Sensitive Development Areas

The Comprehensive Land Use Plan illustrates the riparian areas (i.e., 100-year floodplains and associated vegetation) along creeks such as Bijou Creek, Box Elder Creek, Kiowa Creek, Coal Creek, and Wolf Creek, that should be kept free of development to the maximum extent feasible. The Plan maps also shows Sensitive Development Areas, including prairie grasslands, riparian areas, wildlife habitats, and threatened species conservation areas, where development should be carefully evaluated and designed to minimize impacts on the land (see also Section IV: Goals, Policies and Strategies - Natural and Cultural Resources and the Environment). The County intends to be more proactive about conserving water resources and wildlife habitat. The policies and



strategies chart the course for refining inventories and using a combination of regulatory and voluntary techniques to conserve these resources.

Transportation Improvements

The compact development concept of this Plan is intended to encourage shorter trips and alternative modes of travel (i.e.,

pedestrian, bicycle and transit, in addition to automobiles) within Growth Areas. The Plan policies advocate increasing alternatives to the automobile and promoting land use patterns that support transit. Thus, transit services connecting nodes along the corridors should be part of the transportation system improvements.

Improvements to roadways connecting the Eastern Communities also will be necessary to accommodate current demands and the additional traffic generated as the communities grow. The Comprehensive Land Use Plan map designates the following roads for improvements:

- Hayesmount Mile Road;
- 6th Avenue;
- Watkins Road;

- Kiowa-Bennett;
- Quincy Avenue; and
- County Line Road.

Additional access points and roads may be required to serve future development within the Lowry Bombing Range, as determined through the joint planning process. It also may be necessary to upgrade roads that are parallel to I-70 and provide more I-70 crossings to separate local trips from interstate/regional trips (see Transportation Maps: Recommended 2020 Roadway Plan and Projected Roadway Functionality Eastern Arapahoe County).

LAND USE CATEGORIES

The Comprehensive Land Use Plan and the Urban Service Area Land Use Plan maps illustrate a combination of existing and new, more generalized, land use categories as defined below. In areas where land uses are already zoned for single use – predominantly in the Urban Service Area – these existing land use designations will remain in place.

The new land use categories are more consistent with the policies in this Plan (see Section IV: Goals, Policies and Strategies), which call for mixed-use development patterns in neighborhoods and employment areas. While the existing categories segregate land uses into single-use zones, the new categories allow each area to become a distinctive, diverse place with a mix of compatible activities. Criteria, to be used during the land use review process, will determine compatibility with the surrounding area. Detailed criteria will be developed after the Comprehensive Plan is adopted when the County’s development regulations are revised (see Section V: Implementation Approach).

As the Eastern Communities develop Subarea Plans, they may define more specific town-related land uses, so the following categories may be expanded accordingly.



RESIDENTIAL LAND USES

Residential land uses include Single Family Detached / Light Intensity, Urban Residential / Single Family Detached and Single Family Attached, and Multi-family, as described below:

Single Family Detached / Light Intensity

Uses

Primary: Single Family Low Density Residential

Secondary: N/A

Characteristics

Single Family Detached Light-Intensity (SFDLI) residential areas generally contain homes sited on individual lots, predominantly 2 ½ acres per residence or larger, with rural/suburban character. Life-styles are oriented to more rural activities, such as keeping horses. Residents also typically have accessory structures, such as barns and stables. Street and road configurations generally match natural topographic features, to maximize scenic views and conserve natural vegetation. Roads are usually gravel, or paved to a more rural standard. Open space is on individual private lands. The current average gross density in SFDLI areas is one (1) dwelling unit per three (3) acres.

Location

SFDLI areas are located at the fringe of urban development and emphasize privacy over convenience. This type of residential development is generally located where the terrain offers rolling and hillside sites, and should fit the terrain. The intent of this Plan is

not to promote SFDLI, except where it is shown on the Urban Service Area Land Use Plan Map.

Urban Residential / Single Family Detached and Attached

Uses

Primary: Single Family Detached, Single Family Attached (duplexes, triplexes, four-plexes, townhouses, and row houses, each with private entrance) and small Multi-Family units.

Secondary: Support services, such as Neighborhood Commercial centers with locally oriented shops and services, parks and recreation facilities, places of worship and schools.



Characteristics

Urban Residential development areas will contain mainly residential neighborhood development. Neighborhoods will contain a variety of housing types, combined with non-residential secondary land uses that are complementary and supportive. Urban Residential will be served by central water and sewer, paved streets, and other urban services.

The average gross density (i.e., dwelling units per acre) will vary in the Urban Residential category. For Single Family Detached, density will range from one to six (1-6) units per acre. For Single Family Attached and small Multi-Family, density will range from six to twelve (6-12) units per acre. Small multi-family units may be attached floor to ceiling (stacked units). They must comply with all height restrictions and be similar in scale and character to single-family dwellings, in order to be compatible with the neighborhoods in which they are to be located.

The secondary uses in Urban Residential areas are intended to serve the neighborhood and should be developed and operated in harmony with its residential characteristics. Neighborhoods should meet a wide variety of every-day living needs, invite walking to gathering places and services, and integrate into the larger community. Supporting commercial and service uses are encouraged to be included as part of a Neighborhood Commercial center, typically including a grocery store, retail shops, convenience stores, personal and business services, offices, community facilities, and other uses designed to serve the local area (see description for Neighborhood Commercial). Other supporting land uses, such as parks and recreation areas, religious institutions, and schools, may be included in Urban Residential areas.

Location

Urban Residential development will occur anywhere in the Urban Service Area, excluding restricted areas within the Airport Influence Area (Centennial Airport, Buckley Air Force Base, Denver International Airport and Front Range Airport) and in or adjacent to other hazard areas. It will occur in the Eastern Community Growth Areas, as defined by Subarea Plans. Urban Residential neighborhoods typically should be in close proximity to major arterials and transit systems and bounded by major streets with a direct connection to work, shopping and leisure activities. Neighborhoods should be internally served by a system of collector and local streets and should adapt to the terrain.

Multi-Family

Uses

Primary: Multi-family residential structures including apartments, cooperatives, condominiums and their related uses.



Secondary: Neighborhood Commercial

Characteristics

The Multi-Family residential areas contain residences with shared parking access and other facilities within buildings or complexes. If sold separately from its neighbors, the deed of a Multi-Family unit describes the purchase of air space rather than land. Multi-Family areas generally emphasize convenient connections to work, commercial centers and leisure-time areas. Often they provide a transition between non-residential areas and lower density residential uses. The primary recreational emphasis is on larger common areas shared with other residents of the same or nearby developments. The average gross density of Multi-Family areas will be thirteen (13) or more units per acre.

Location

Multi-Family residential development will locate within the Urban Service Area. It may occur in the Eastern Community Growth Areas, as defined by Subarea Plans. Multi-Family areas should be located near major arterials and transit systems and should be in proximity to neighborhood services and employment. Multi-Family development should occur on fairly level terrain.

Non-Residential Land Uses

Non-residential land uses include Employment Centers, four types of Commercial land use (Regional, Community, Neighborhood, and Convenience), Heavy Industry, Public Facilities, Mixed Use (E-470), Rural Area Uses and Open Space.

Other than indicating areas of existing zoned commercial and employment centers, the Comprehensive Land Use Plan map does not identify specific locations for commercial development. Rather, it assumes that the appropriate location for commercial uses will be determined by application of the goals, policies, and strategies contained in this Plan (see Section IV), as well as the locational criteria outlined below. Additionally, it assumes that appropriate locations for commercial uses and employment uses in the Eastern Communities will be determined during the preparation of Subarea Plans for these areas.

Employment Centers

Uses

Primary: Workplace uses such as research and development offices, major service and office center complexes, warehousing and light industrial uses, and major educational facilities.

Secondary: Supporting uses that complement the primary employment uses, such as restaurants, hotels, childcare, convenience shopping, and residential uses, if part of an overall planned development.



Characteristics

The Employment Centers designation applies to major concentrations of employment, including business parks and industrial areas. Centers should integrate buildings, outdoor spaces, transportation facilities and, if appropriate, higher density residential uses. Minimal dust, fumes, odors, refuse, smoke, vapor, noise, lights and vibrations extend from Employment Centers. Terrain requirements are for reasonably level land, preferably with a maximum slope of five (5) percent, capable of being graded without undue expense, avoiding irregularly sloped or poorly drained locations.

Location

Employment Centers will be located in Growth Areas – the Urban Service Area or the Eastern Communities, as determined by the community Subarea Plans. Employment Center sites should have direct access to existing or planned major transportation facilities (at least one major arterial, accessible to employment base with availability of public transit preferred). Generally, Employment Centers should be compatible with adjacent land uses.

Regional Commercial

Uses

Primary: Regional Commercial areas include general merchandise and comparison-shopping goods, including malls, “big-box” centers and auto dealerships.

Secondary: N/A

Characteristics

Regional Commercial areas include commercial activities with regional-level significance. They provide general merchandise and comparison-shopping goods, rather than emphasizing convenience and/or neighborhood-oriented shopping. They are generally defined as having a land area of 30 to 50 acres or more with space



adequate to accommodate peak parking, loading, open space, and other service needs. The gross leasable area typically ranges from 300,000 to more than 1,000,000 square feet. The trade area population is a minimum of 100,000 to 150,000 residents within a trade area of 10 to 15 miles.

Location

Regional Commercial areas should be located at the intersection of at least one major arterial and a highway, or at the intersection of two highways that service the trade area, and should have access to regional public transit service. Terrain requirements are for reasonably level land, preferably with a maximum slope of five (5) percent, avoiding irregularly shaped or poorly drained locations.

Community Commercial

Uses

Community Commercial areas typically include a large grocery store, other large retail stores such as a junior department store or large specialty retail stores, convenience stores, personal and business services and offices, community facilities, and other similar uses designed to primarily serve the region within which they are located.



Characteristics

Community Commercial areas include commercial activities that serve a portion of a region comprised of numerous neighborhoods and employment areas. They may include many of the uses that are found in Neighborhood Centers, such as a grocery store, but typically also include a small department store or specialty variety store as an additional anchor. They are generally defined as having a land area of 10 to 30 acres or more with area adequate to accommodate parking, loading, open space, and other service needs. The gross leasable area typically ranges from 100,000 to 300,000 square feet, typically averaging 150,000 square feet. The trade area population is a minimum of 40,000 to 100,000 residents within a trade area of 5 to 10 miles.

Location

Community Commercial areas should be located at the intersection of one or more major arterials. Terrain requirements are for reasonably level land, preferably with a maximum slope of five (5) percent, avoiding irregularly shaped or poorly drained locations.

Neighborhood Commercial

Uses

Neighborhood Commercial Centers typically include a grocery store, retail stores, convenience stores, personal and business services and offices, community facilities, and other similar uses designed to primarily serve the area within which they are located.

Characteristics

Neighborhood Commercial Centers are designed to primarily serve the area within which they are located. Neighborhood Commercial Centers typically range in size from 5 to 15 acres, and typically contain from 40,000 up to a maximum of 100,000 square feet of gross leasable area. Neighborhood Centers will often serve more than one neighborhood, but typically serve a trade area that is within a five-minute drive or a ten-minute walk or bicycle ride. Neighborhood Commercial centers should be designed to be compatible with surrounding neighborhoods as defined through building design, lighting levels, low canopies, pedestrian connections, height and size of building and signs.



Location

Neighborhood Centers should be located at the intersection of two collector streets or at an intersection of a collector street and an arterial. They should be designed in a manner that encourages direct pedestrian and bicycle access to and from adjacent and nearby neighborhoods, as well as convenient vehicular access.

Convenience Commercial

Uses

Convenience Commercial Centers typically include a mini-market that offers packaged groceries, gasoline sales, and sundries. They also often include a fast-food operation, for on-premises consumption or take-out.



Characteristics

Convenience Commercial areas are designed to meet the convenience shopping needs of nearby residents and passing motorists, offering packaged groceries and a limited selection of all types of sundries. Convenience Commercial Centers range in size from ½ to 2 acres, and typically contain from 3,000 to 5,000 square feet of gross leasable area. Convenience Centers serve a trade area that is within a ½ to one (1) mile radius, as well as pass-by traffic on adjacent roadways. They should be designed in a manner that integrates well with the adjacent neighborhood.

Location

Convenience Centers should be located at the intersection of a collector street and an arterial street, or at the intersection of a local street and a collector street if designed to integrate with the adjacent neighborhood. They should be designed in a manner that encourages direct pedestrian and bicycle access to and from adjacent and nearby neighborhoods, as well as convenient vehicular access. Convenience Centers may also be operated as adjuncts to Neighborhood Centers.

Heavy Industry

Uses

Heavy Industry land use includes manufacturing goods, wholesaling, warehousing, contracting, other miscellaneous categories and/or excavating natural resources

(including factories, gravel pits, concrete plants). Public and quasi-public facilities, such as sewage treatment plants, and substations, are also considered industrial uses.

Characteristics

Heavy Industry areas mainly involve manufacturing or resource excavation. Industrial areas should be accessible to their intended employment base. The intensity, scale and environmental impacts are high. Industry typically has outdoor storage. Terrain requirements are for reasonably level land, preferably with a maximum slope of five (5) percent. The site should be adequately sized to accommodate peak parking, loading, storage, open space, and other service needs. The average floor area ratio density is variable, depending on the number of building stories and parking, loading, storage and open space needs.

Location

Because of the high environmental impacts, Heavy Industry sites must be located away from population centers or must be adequately buffered. Traffic generated should not pass through residential areas. Sites should have access to one or more major arterials or highways capable of handling heavy truck traffic. Railroad or airport access may also be used. Industry should be located to serve at a regional level.

Public Facilities

Uses

Primary: Schools (public and private), day care facilities, churches, libraries, jails, recreational centers, airports, hospitals, utility lines, power substations, power energy facilities, fire stations, police/law enforcement stations, active landfills, government offices and facilities and social service buildings, and other public uses.

Secondary: N/A



Characteristics

Public Facilities are provided by the County, municipalities, special districts or by private companies. They include the uses listed above: educational, religious, cultural and public services. The site should be adequately sized to accommodate parking and other service needs. Terrain, size and density vary depending upon the use.

Location

Depending on their compatibility with the surrounding area, quasi- and Public Facilities will be allowed in all Growth Areas and the Rural Area on a case-by-case basis except in the sensitive development and riparian corridor areas. Siting will be determined through the County's land use review procedures. Public Facilities should be accessible by the population served.

Mixed Use (Based on E-470 Plan)

Uses

Commercial (Retail), Employment (Professional), Public Facilities, Residential (Single Family and Multi-Family) and Open Space.

Characteristics

Mixed Use developments contain a mix of land uses that are master-planned, and include a variety of buildings, spaces and activities designed in harmony with an overall pedestrian-oriented site plan. Mixed Use in either a horizontal or a vertical pattern is desirable. Areas should include many aspects of high-end development focused on the corresponding development theme.

Location

Mixed Use will occur in the Urban Service Area and the Eastern Community Growth Areas, as defined by Subarea Plans. Mixed-use development should be located at the intersection of at least one major arterial and should have access to regional public transit service.

Rural Area Uses

Uses

Primary: Farming, ranching and other agriculturally related uses (irrigated and non-irrigated).

Secondary: Very low density residential, including cluster development that allows for homes to be clustered on a smaller portion of a property while preserving the remaining land for agriculture, wildlife, or open space.

Special Review: Mineral extraction, Agriculture-related-Business (including equestrian businesses, breeding and boarding, vet services, farm machinery an sales), and public facilities on a case-by-case basis.



Characteristics

In the eastern part of the County, the vast majority of land is dedicated to agriculture or farming, ranching and agriculturally related uses (i.e., tree farming, horse breeding). Agricultural operations typically require very large lots. Scattered areas of very low-density residences are also located in the Rural Area. These residences rely on site (well) water and septic systems, and open space usually is owned privately.

Location

Agriculture, secondary Rural Area uses, and Special Review uses are located in the eastern part of the County. Agriculture depends on soil capabilities and requires some basic utility services. Agricultural operations should have access to minor County roads. Agriculture is permitted in floodplains and geologic hazard areas, subject to State and County regulations.

Open Space

Uses

Public, quasi-public and private parks, country clubs, golf courses, trails, flood hazard areas, reclamation sites, reservoirs, wildlife corridors, conservation areas and landscape buffers.

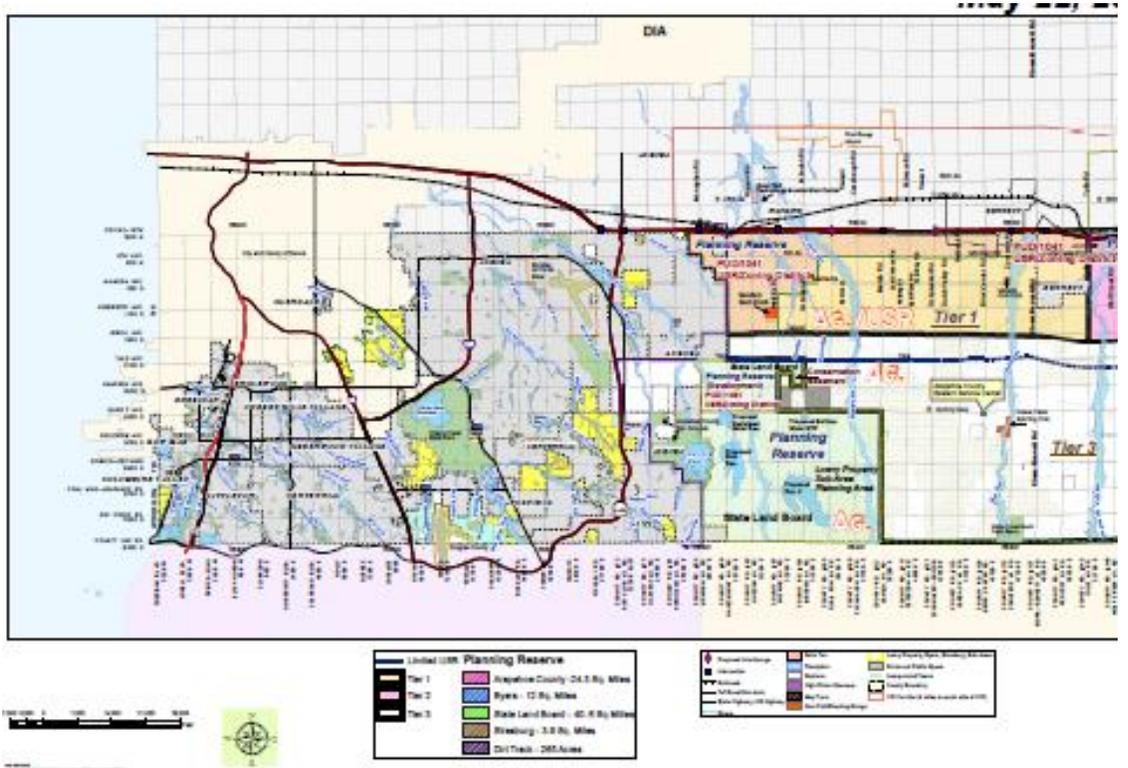
Characteristics

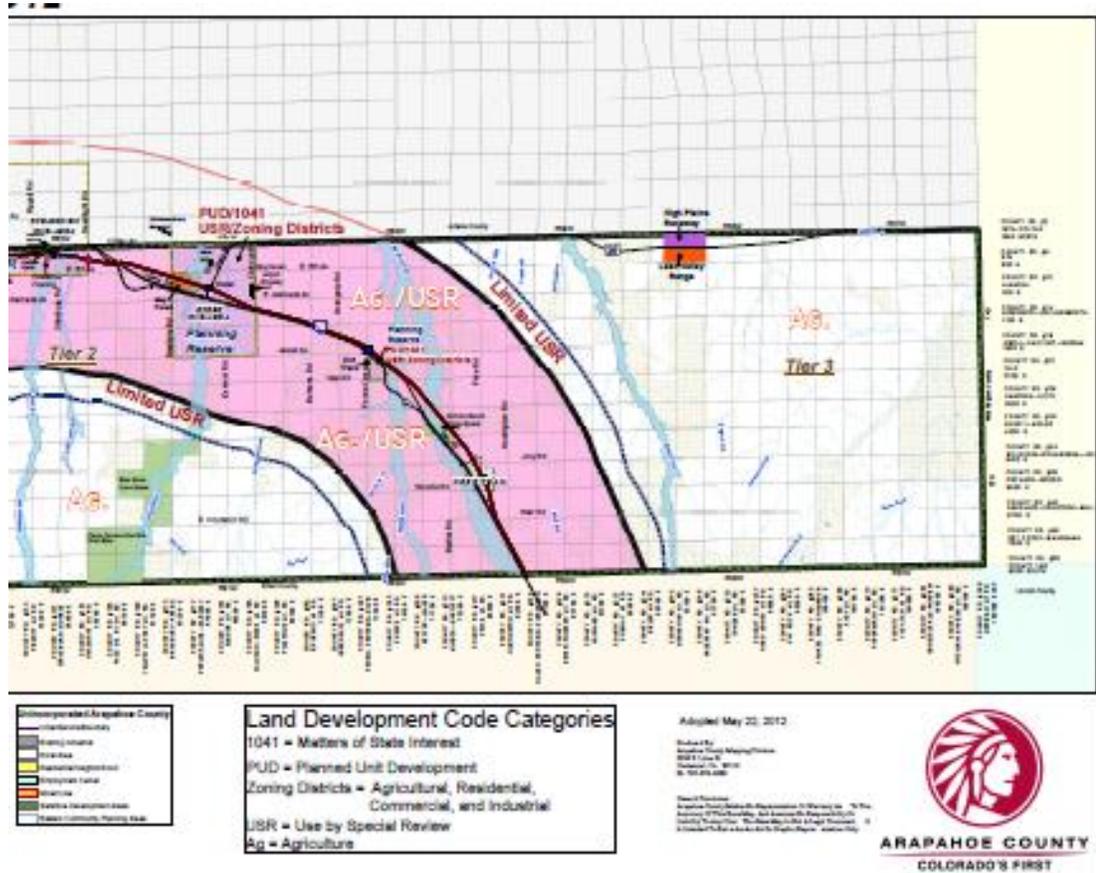
Open space includes sites and areas for active and passive recreation, conservation and mitigation of environmental hazards.

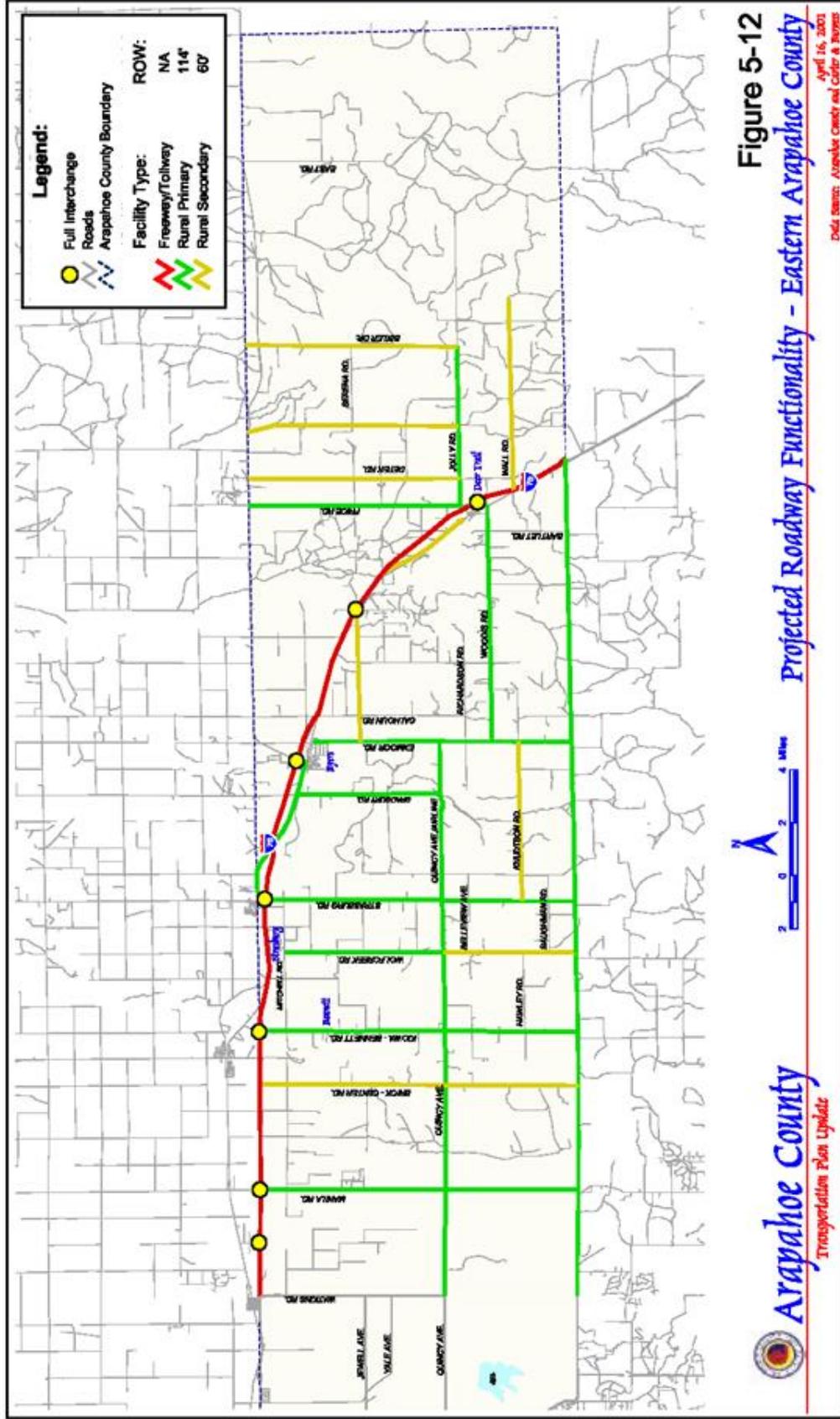
Location

The Comprehensive land Use Plan illustrates the location of existing open space. The location, access, terrain, size and design vary for future Open Space, depending on the specific use.









IV

Goals, Policies and Strategies



IV. Goals, Policies and Strategies

INTRODUCTION AND OVERVIEW

This section of the Arapahoe County Comprehensive Plan outlines the basic framework to guide land use decisions and other future actions that landowners, County staff, and elected and appointed officials will use. This framework is expressed as a set of *goals*, which represent an ideal or value to be sought; *policies*, which are a definite course of action to be pursued in attaining goals; and *strategies*, which outline specific measures to be taken in implementing the policy to which they relate.

These goals and policies are essential to setting a direction as the unincorporated portions of Arapahoe County develop and grow. They strive for balance among conflicting interests, serve to protect citizen and property owner rights, and reflect and affirm community values. The policies are intended to direct growth towards areas of the County that are appropriate for development; ensure that development is accompanied by adequate infrastructure; encourage citizen participation in community planning; and use the authority of local government to realize the County's goals by coordinating public and private sector efforts.

Because of the nature of policies, some may appear to conflict, particularly in the context of a specific development application, or as viewed from the different perspectives of persons whose interests or values may differ on a given issue. A classic example is the so-called "conflict" between policies that call for the "conservation of the natural environment" and policies that "support economic development". Because policies do not exist in isolation, and must be viewed in the context of all potentially relevant policies, it is largely in their implementation that they can be balanced and reconciled by County staff and decision-makers. Exercise of judgment is critical to a comprehensive plan that seeks to provide general direction regarding the range of policies affecting growth and development.

ORGANIZATION

The goals, policies and strategies are organized into categories to make it easier to translate them into more specific actions. However, many of the policies have implications that overlap more than just the single category in which they are listed. While they focus mostly on physical surroundings, they also contain implications that affect environmental, economic, and social concerns. The goals, policies and strategies are organized under the following categories:

1. Growth Management
2. Public Facilities and Services
3. Neighborhoods and Housing
4. Employment and Commercial Development
5. Transportation
6. Natural and Cultural Resources and the Environment
7. Open Space, Parks and Trails
8. Fiscal and Economic Impacts

Under each category, countywide policies describe the general direction that the County should take to achieve its goals. When more specific policies are necessary to accomplish goals for discrete places in the County, for example the Urban Service Area, then supplemental policies follow. Supplemental policies are provided when necessary for: (a) the Urban Service Area; (b) the Eastern Communities; (c) the Rural Area; and (d) the Planning Reserve Area.

GROWTH MANAGEMENT

INTENT

The primary objective of the Growth Management Policies is to determine where it is appropriate for new growth to occur in Arapahoe County, and how to achieve a balance between growth and environmental quality. The policies in this section encourage patterns of land use that result in efficient delivery of essential public facilities and services, help to maintain the rural character of eastern portions of the County, and promote the efficient use of land for development and other purposes.

Increasingly, development in the County has spread across the rural landscape because of the desirability of these rural environs. This development pattern is an inefficient use of land and natural resources. Dispersed development increases traffic congestion, and places a financial strain on the ability of the County to provide needed services and facilities, such as transportation, police, and fire and Emergency Medical Services (EMS). A more compact land use pattern, on the other hand, shapes growth in a manner that conserves the County's natural resources, livability, and sense of community.

The policies contained in this plan distinguish between areas of the County that are appropriate for urban development and those that are not. For purposes of this Plan, urban development is defined as those land uses with infrastructure and facilities typically associated with more densely populated areas, such as paved streets, sidewalks, municipal/district water and wastewater facilities, and other similar characteristics. The Plan establishes an Urban Service Area Boundary that identifies lands in the western portion of the County that are currently most appropriate for urban development. These lands will be planned for urban development, with a full range of urban services, and are encouraged to annex into incorporated towns and cities as development occurs.

In the eastern part of the County, the plan establishes Growth Areas around the unincorporated Eastern Communities of Watkins, Byers, and Strasburg. Development in these areas will need to be carefully coordinated through a Subarea Planning process, so that balanced growth can occur without changing the rural town character currently enjoyed by residents. It is the intent of this Plan that development that occurs in the Eastern Communities should occur at densities that are consistent with the currently developed patterns of these towns and should be served by an appropriate level of facilities and services, including public water and wastewater treatment, parks, adequate roads, and other necessary services.

By directing growth to Planning Reserve Areas, development can be more efficiently served; open lands and natural resources can be better conserved; public facilities and services can be delivered more effectively; and a diverse range of transportation choices can be made available.

COUNTYWIDE POLICIES

GOAL GM 1 – Promote a Compact Growth Pattern for the County

Arapahoe County will have a compact land use pattern within well-defined boundaries that seeks to maintain a balance between development and the natural environment.

Policy GM 1.1 – Establish a Planning Framework for the County That Defines Appropriate Locations for Urban Development

Arapahoe County will define appropriate locations for urban development by establishing an

Strategy GM 1.2(b) – Develop an Annexation Strategy for Development Within the Urban Service Area

So that adequate public facilities and services can be provided to urban areas, the County will require land within the Urban Service Area that is unincorporated to pursue annexation into a municipality at the time of development.

Strategy GM 1.2(c) – Consider Allowing Urban Development in Unincorporated Areas within the Urban Service Area Only When All Urban Services and Infrastructure Can Be Provided

The County recognizes that some unincorporated lands are already zoned for urban development. The County will allow urban development of these areas under County jurisdiction when provisions have been made through special districts and/or metropolitan districts for a complete range of facilities and services. Facilities and services include but are not limited to water and wastewater treatment, parks, libraries, fire protection and emergency medical service (EMS), and other essential public services.

GOAL GM 2 – Promote Coordinated Regional Planning

Arapahoe County will coordinate with towns and municipalities at a regional level to improve patterns of development, coordinate land use and transportation planning, and maintain the character of the Rural Area.

Policy GM 2.1 – Promote Intergovernmental Cooperation

Arapahoe County will pursue and promote opportunities for regional growth planning with neighboring towns, municipalities, counties, and the Denver Regional Council of Governments.

Strategy GM 2.1(a) – Review Growth Area Boundaries on a Periodic Basis

The County will work with affected jurisdictions and communities to review boundaries for the Urban Service Area and the Eastern Communities on a periodic basis to determine whether readjustments are necessary.

Strategy GM 2.1(b) – Collaborate with Cities to Establish an Annexation Strategy for Development

The County will work with the municipalities in the County to develop an annexation strategy that includes the following:

- Requires that properties proposing urban development be first considered for annexation into a municipality, rather than developing in the County.
- Requires that properties in the Urban Service Area be developed in accordance with urban standards for infrastructure and improvements.

Strategy GM 2.1(c)– Develop Intergovernmental Agreements with Special Districts in the Region

The County will work with special districts to establish agreements regarding provision of essential services in the Growth Areas to promote orderly and fiscally responsible development.

Policy GM 2.2 – Achieve Consistency Between the Comprehensive Plan and County Development Regulations

Arapahoe County will work to achieve consistency between the policies contained in this Plan and the County's land development regulations and approved development.

Strategy GM 2.2(a) – Amend the County's Development Regulations to Achieve Consistency with the Comprehensive Plan

The County will review and amend the County development regulations (Land Development Code) and engineering design standards (for roadways and drainage) to achieve consistency between the Plan policies and regulations.

Strategy GM 2.2(b) – Require Proposed Development To Be Consistent With The Comprehensive Plan

The County will require proposed development that is not consistent with the Plan to be preceded by a Comprehensive Plan amendment prior to consideration of development approvals.

Policy GM 2.3 – Promote Private Property Rights and Fairness

Arapahoe County will implement the policies of the Comprehensive Plan in a manner that respects the rights of private land owners to make a reasonable economic use of their property, while recognizing the impacts of land use decisions and development effects on the health, safety, and welfare of the larger community.

Strategy GM 2.3(a) – Strive to Implement the Comprehensive Plan in a Manner That Respects the Rights of Property Owners and the Community

The County will strive to implement the Plan in a manner that respects individual property rights, respects the values of the individuals in the community, considers the cumulative impacts and future generations, and applies due process in all deliberations.

Policy GM 2.4 – Allow Development of Public Facilities

Arapahoe County recognizes that certain Public Facilities and Services are required to provide for the quality of life, health, and safety of the general community.

Strategy GM 2.4(a) – Evaluate Public Facilities on a case-by-case basis

The County will allow Public Facilities to be sited throughout the County except in the sensitive development and riparian corridor areas subject to appropriate Location and Extent processes or Zoning and related land use procedures. It is specifically noted that this section of the County Comprehensive Plan is not to be construed as allowing an applicant, governmental or private, to avoid the required planning processes or development criteria contained in any County Land use Regulation. Further, while such uses of facilities are allowed in the County, not all locations are appropriate for these uses and each such application will be subject to the required approval processes, on a case-by-case basis. Facilities include but are not limited to: water and functional water lines, wastewater treatment, stormwater drainage, fire protection and EMS, police protection, parks, libraries, schools, and utilities.

GOAL GM 3 – Continue to Improve the County's Development Review Procedures

Arapahoe County will have an efficient development review process and may consider streamlined procedures as a means to promote desired land use patterns.

Policy GM 3.1 – Encourage Improvements to the County's Development Review Process

As an incentive to encourage the development patterns that are promoted by the goals and policies, Arapahoe County will explore opportunities to streamline the review process for development proposals that readily meet the policy intent of this Plan.

Strategy 3.1(a) – Identify Opportunities to Streamline the Development Review Process

The County will consider streamlining development review procedures for proposals that meet the policy intent of this Plan and that meet applicable standards and regulations. For example, the County may consider administrative review and approval of cluster development in the Rural Area.

SUPPLEMENTAL URBAN SERVICE AREA POLICIES

GOAL GM 4 – Promote Compact Growth in the Urban Service Area

The Urban Service Area will be designated as a Growth Area that has a primarily urban land use pattern to maximize the efficiency of existing public facilities. Within the Urban Service Area, existing developed areas will maintain their character and land use pattern, while undeveloped lands should be developed at urban densities in an efficient and attractive manner.

Policy GM 4.1 – Encourage a Compact Urban Development Pattern in the Urban Service Area

Arapahoe County will direct urban residential development and accompanying employment centers and commercial areas to the Urban Service Area where facilities and services may be provided efficiently. Urban development within the Urban Service Area will be built at densities of at least four (4) units per acre and will be served by municipal/district water and wastewater treatment systems.

Policy GM 4.2 – Require New Urban Development within the Urban Service Area Make a Reasonable Effort to Annex into Incorporated Towns and Cities

Arapahoe County will require all urban development in the Urban Service Area to make a reasonable effort to annex into towns and cities, so that adequate public facilities and services can be provided efficiently.

Strategy GM 4.2(a) – Annex Urban Development Land in the Urban Service Area

Within the Urban Service Area, the County will require unincorporated lands proposed for urban development to make a reasonable effort to annex prior to development (see Strategy GM 2.1 (b)).

Policy GM 4.3 – Promote Infill Development and Redevelopment in the Urban Service Area

Arapahoe County will promote infill development that is compatible with existing land uses in the Urban Service Area to take advantage of existing public infrastructure and services.

Strategy GM 4.3(a) – Create Incentives and Remove Barriers to Infill Development

The County will target provision of infrastructure, revise regulations to be context-oriented rather than rigid, and expedite processing of development reviews.

Strategy GM 4.3(b) – Prepare Subarea Plans in the Urban Service Area

Within the Urban Service Area, the County will determine areas that may need detailed land use planning and develop Subarea Plans when necessary. Such Subarea Plans will be adopted as elements of the Comprehensive Plan. Subareas of potential priority include:

- South Parker Road Corridor;
- Centennial Airport Employment Center; and
- Four Square Mile Area.

Policy GM 4.4 – Coordinate Planning Within the Urban Service Area with Municipalities

Arapahoe County will coordinate its planning efforts within the Urban Service Area with incorporated municipalities that are within or adjoining the Urban Service Area.

Strategy GM 4.4(a) – Recognize and Defer to Adopted Plans in the Urban Service Area

In the case where another jurisdiction has already planned for a Subarea within the Urban Service Area, the County will recognize and defer to an adopted plan. Urban development will conform to adopted plans, such as the E-470 Corridor Plan (City of Aurora).

SUPPLEMENTAL EASTERN COMMUNITY POLICIES***GOAL GM 5 – Plan for Compact Growth in the Eastern Communities***

A limited amount of land around the Eastern Communities of Arapahoe County will be designated as Growth/Planning Reserve Areas. It is intended that development in these areas will have a compact land use pattern to maintain the small town, rural character of the communities. Development will be carefully coordinated with the ability of the County and service districts to provide services and with the Transportation Plan.

Policy GM 5.1 – Encourage Compact Development Patterns in the Unincorporated Eastern Communities

Arapahoe County will encourage compact development in the unincorporated Eastern Communities where existing or planned infrastructure can adequately serve it. Development within the Eastern Community Growth Areas is intended to occur at densities similar to existing development in the towns, and must be served by a full range of facilities and services (i.e., roads, water, wastewater, parks and schools).

Strategy GM 5.1(a) – Establish Planning Areas for the Unincorporated Eastern Communities

The County has established Planning Areas for the unincorporated Eastern Communities on the Comprehensive Land Use Plan. Planning Areas are intended to generally define where to focus detailed Subarea planning efforts and to determine the location and extent of new development, which could be accommodated by existing and planned services and infrastructure (see Policy GM 5.2 and strategies).

Strategy GM 5.1(b) – Establish Growth Area Boundaries for the Unincorporated Eastern Communities

The County will define Growth Areas generally within Planning Areas for the unincorporated Eastern Communities of Strasburg and Byers. The Planning Area concept is intended to be flexible; however, Growth Areas will be based primarily on the availability of adequate public facilities and services to support growth in these areas. The Subarea Plans define the location of the Growth Area boundaries.

Strategy GM 5.1(c) – Revise Zoning and Subdivision Regulations for the Eastern Communities

The County will revise the zoning and subdivision regulations to allow compact development in the Eastern Communities. Current zoning does not allow urban density development.

Policy GM 5.2 – Prepare Community Subarea Plans for the Unincorporated Eastern Communities

Arapahoe County will address issues in the unincorporated Eastern Communities at a more local level through Subarea planning when necessary. Such community Subarea Plans will be adopted as elements of the Comprehensive Plan.

Strategy GM 5.2(a) – Develop Community Subarea Plans for the Unincorporated Eastern Communities

The County will achieve consistency with the Comprehensive Plan for the Eastern

Communities by developing and adopting Subarea Plan elements. It is anticipated that the County will prepare community Subarea Plans for the Town of Byers, and jointly with Adams County for the Towns of Watkins and Strasburg. These Plans will address growth management, land use, housing, economic development, transportation, public services and facilities, natural and cultural resources and the environment, open space, parks and trails, and other topics as appropriate.

Strategy GM 5.2(b) – Promote Local Public Participation in the Development of Subarea Plans and Planning Reserve Areas for the Eastern Communities

The County will continue a policy of public participation to encourage the involvement of community residents to plan for their future. Residents and property owners should be involved in the planning process.

Strategy GM 5.2(c) – Study Pros and Cons of Incorporation for the Unincorporated Eastern Communities

The County will consider incorporation as an option for providing services to the unincorporated Eastern Communities. Criteria for incorporation depend upon the needs and desires of the communities and the ability of the communities to provide facilities and services in a cost-effective manner.

Policy GM 5.3 – Coordinate with the Incorporated Eastern Communities

Arapahoe County will work with the incorporated Eastern Communities of Bennett and Deer Trail to achieve consistency between their land use plans, Capital Improvement Plans and the County's Comprehensive Plan.

Strategy GM 5.3(a) – Coordinate the County's Planning Efforts with the Incorporated Eastern Communities

The Towns of Bennett and Deer Trail have completed Comprehensive Plans with growth boundaries and reserve areas. The County will coordinate its planning efforts with the plans adopted by these communities for the Planning Reserve Areas defined on the Comprehensive Land Use Plan.

Strategy GM 5.3(b) – Develop Intergovernmental Agreements with the Incorporated Eastern Communities

The County will work with the incorporated Eastern Communities of Bennett and Deer Trail toward developing intergovernmental agreements that address topics such as annexation of proposed development adjacent to the communities, appropriate densities and land uses in unincorporated areas within their Planning Areas, and other topics related to land use and development in areas of mutual interest. The County will actively seek to involve affected members of the public in the process of developing IGA's with these communities.

SUPPLEMENTAL RURAL AREA POLICIES

GOAL GM 6 – Maintain the Existing Character of the Rural Area

Development activities in the Rural Area of Arapahoe County will be minimized to maintain the open, rural character, conserve agricultural activities and minimize the County's costs of providing services.

Policy GM 6.1 – Prohibit Urban Development in the Rural Area

The County will maintain the rural character by limiting development to very low densities in the Rural Area, in accordance with existing County zoning, and prohibiting higher densities other than for cluster residential development.

Strategy GM 6.1(a) – Prohibit Formation of New Special Districts Outside of Growth Areas

The County will not facilitate or extend services into the Rural Area and will prohibit formation of new special districts in the unincorporated Rural Area, unless the County determines a need for a new district.

Strategy GM 6.1(b) – Restrict Rezoning of Lands in the Rural Area for Urban Development

The County will restrict rezoning of lands in the Rural Area of the County for any form of urban development.

Policy GM 6.2 – Encourage Cluster Residential Development in the Rural Area as An Alternative to Dispersed Development on 35-Acre Parcels

Arapahoe County will encourage cluster residential development as an alternative to the current dispersed development pattern of homes on parcels of 35 acres or larger and not part of an approved subdivision.

Strategy GM 6.2(a) – Create Standards for Cluster Development in the Rural Area

The County will develop standards for cluster development that encourage the location of houses on smaller lots while conserving large areas for agriculture, private open space and natural resources.

Strategy GM 6.2(b) – Create Incentives for Cluster Development in the Rural Area

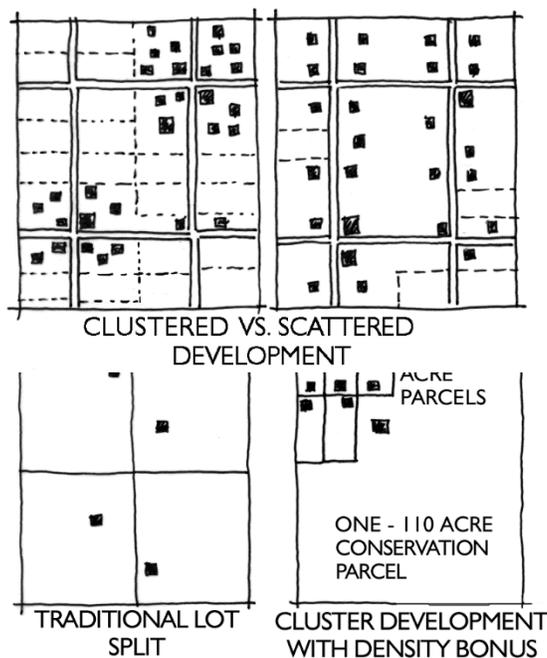
The County will create a cluster development incentive program. Incentives might include bonus development units, a streamlined development review process, and a reduction in road paving requirements. Incentives would be available for cluster development that avoids Sensitive Development Areas and that is built near paved roads.

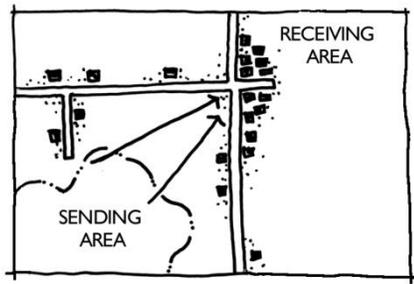
Strategy GM 6.2(c) – Provide Technical Assistance to Landowners

The County will provide technical planning assistance to landowners who are considering cluster development.

Strategy GM 6.2(d) – Consider Whether to Increase the Minimum Building Lot Size in the Rural Area to 80 acres

The County will consider whether to increase the minimum building lot size in the Rural Area to 80 acres. The County will also consider other innovative approaches to conserving rural land.



Policy GM 6.3 – Explore the Use of a Transferable Development Rights Program

TRANSFER OF
DEVELOPMENT RIGHTS

Arapahoe County will explore whether a Transferable Development Rights (TDR) Program would help conserve natural areas, maintain agricultural activities around communities and reduce the County's costs of providing services. TDR Programs allow development units to transfer from places where minimal development should occur to places where urban development is desired and where services may be provided, such as in the Eastern Community Growth Areas.

Strategy GM 6.3(a) – Study the Necessary Elements of a Successful Transferable Development Rights Program

The County will identify the purpose of a TDR Program

and determine how it would operate. A study should:

- Analyze whether the real estate market in the County would support a TDR Program.
- Identify appropriate and focused "Sending Areas" in the Rural Area. Sending Areas are those places that the County would like to keep free of development to the maximum extent feasible (i.e., Riparian Areas and/or prime agricultural lands).
- Identify appropriate "Receiving Areas" in the Eastern Community Growth Areas. Receiving Areas should be in locations where development at higher densities is appropriate and where such development can meet service level standards.
- Determine how the County would administer a TDR program, if developed. In particular the County should address how "units" or "rights" are transferred from one landowner or developer to another.
- Explore tools to provide incentives for TDR use, such as allowing well and septic development in receiving areas.
- Determine whether a TDR program would be mandatory or voluntary.

SUPPLEMENTAL PLANNING RESERVE AREA POLICIES

GOAL GM 7 – Designate Areas for Future Planning and Reserve

Arapahoe County will designate Planning Reserve Areas that are outside of the County's existing Urban Service Area that are projected for use within and beyond the 20-year planning time horizon of this Comprehensive Plan.

Policy GM 7.1 – Establish a Planning Reserve Area for the State Land Board Lowry Bombing Range

The Colorado State Land Board manages approximately 26,000 acres of land known as the Lowry Bombing Range property, which are designated as stewardship trust lands. The State has expressed interest in considering development or other uses for this property in the future; however, it is located away from existing urban services and roads and may have some environmental hazards associated with its prior use. On the other hand, the property, because of its sole ownership, also presents an opportunity for joint planning and careful consideration of future uses to conserve resources so that future development does not exceed the capacity of the land and availability of adequate services. Therefore, the County designates this land as Planning Reserve Area on the Comprehensive Land Use Plan. Creating a reserve ensures that the land is held vacant for future consideration, beyond the 20-year timeframe of this Plan. This allows for joint planning of the property. No development of these lands would occur until detailed planning has been undertaken and approved by affected jurisdictions. Any planning process would include determination of the availability of infrastructure and community facilities and services. It is also important to consider how the natural resources contained on the property would be conserved, while allowing for sustainable development. These natural resources include wildlife habitat and other areas that have conservation value, as well as natural resources with economic value, such as minerals, water, and energy resources.

Strategy GM 7.1(a) – Designate the Lowry Bombing Range as a Planning Reserve Area

The County designates the Lowry Bombing Range as a Planning Reserve Area on the Comprehensive Land Use Plan to recognize the unique physical characteristics of the property and its public ownership and administration by the State Land Board.

Strategy GM 7.1(b) – Maintain the Lowry Bombing Range Property as an Intact Land Unit

The County will discourage premature fragmentation of the property until an overall strategy for the area is developed.

Strategy GM 7.1(c) – Restrict Rezoning of the Planning Reserve Area for Urban Development

The Planning Reserve Area designation is for land that is projected for use beyond the 20-year planning time horizon of this Plan. Therefore, the County will not rezone the property for urban development until further planning for future uses is completed. Rezoning, if it is contemplated, would require an amendment to the Comprehensive Plan.

Policy GM 7.2 – Determine Development Capacity for the Planning Reserve Areas

Arapahoe County will need to determine what kinds of limitations, or capacity to serve, may exist in the Planning Reserve Areas.

Strategy GM 7.2(a) – Participate in Planning Efforts Undertaken by the Colorado State Land Board

The County will work with the Colorado State Land Board to plan for the future use of the Lowry Bombing Range property and to determine feasibility of development.

Strategy GM 7.2(b) – Consider Development Capacity for the Planning Reserve Areas

The County will consider development capacity of the Planning Reserve Areas. In particular, the lack of roads, water, wastewater, utilities, fire and police protection may be constraints to development. Assessing the impact that new infrastructure (such as roads,

utilities) and new development will have on natural areas, water quality, and adjacent communities, will be important considerations in determining development capacity of the area.

Strategy GM 7.2(c) – Recognize Existing Semi-urban Development within the Planning Reserve Areas

The County will recognize parcels of 55 acres or less but without urban services in 2015 within the planning reserve areas. It will approve continued development within these parcels at non-urban densities (parcels 1 acre or larger), while supporting landowners who wish to move to a more urban category. This strategy will not unduly affect the role of the Planning Reserve Areas as the areas for future urban development.

PUBLIC FACILITIES AND SERVICES

INTENT

The Public Facilities and Services Policies are intended to ensure that adequate community resources, public facilities and services are provided in the County at the time of new development. These facilities will be allowed throughout the County on a case-by-case basis and not all locations will be appropriate for these uses. Facilities and services include but are not limited to water and functional water lines, wastewater treatment, stormwater drainage, fire protection and EMS, police protection, parks, libraries, schools, and utilities.

COUNTYWIDE POLICIES

GOAL PFS1 – Plan for Adequate Public Facilities and Services

As development occurs, Arapahoe County will facilitate and ensure adequate public facilities and services (including functional water and wastewater lines, fire protection, police protection and other government services) for current and future residents in a fiscally responsible manner and under consistent standards.

Policy PFS 1.1 – Coordinate County and City Development Standards

Arapahoe County will coordinate with municipalities to adopt consistent development standards for infrastructure requirements within the County's Growth Areas that overlap with municipal Growth Areas. This will ensure that lands that may be subject to future annexation are developed in compliance with the standards of the community of which they will become a part.

Strategy PFS 1.1(a) – Develop Intergovernmental Agreements Regarding Development Standards

The County will develop Intergovernmental Agreements with municipalities, including the City of Aurora, the City of Centennial, and other applicable jurisdictions, to ensure that standards are consistent for development in the Urban Service Area.

Policy PFS 1.2 – Develop Adequate Level of Service and Land Dedication Standards

Arapahoe County will develop standards and/or work with special districts to develop level of service standards for roads, water and wastewater, fire protection, police protection, parks and schools.

Strategy PFS 1.2(a) – Work with Special Districts to Develop Level of Service Standards

When necessary, the County will work with special districts to establish level of service standards to ensure quality and dependability of service. Standards will apply equally to both public and private sector actions.

Strategy PFS 1.2(b) – Develop Level of Service Standards for Roads

The County will develop level of service standards for roads in the Transportation Plan (see also Transportation Policies). Standards will vary in different parts of the County.

Strategy PFS 1.2(c) – Develop Standards for Adequate and Functional Water and Wastewater

The County will work with water and sanitation districts to develop standards for adequate and functional lines, mains and stubs for water and wastewater.

Strategy PFS 1.2(d) – Work with Fire Districts to Develop Standards for Fire Protection and EMS

The County will develop intergovernmental agreements with fire districts to determine service standards for fire protection/EMS and necessary locations for future fire stations.

Strategy PFS 1.2(e) – Develop Standards for Law Enforcement and Police Protection

The County will establish standards to ensure that residents are provided adequate law enforcement and police protection. The County will deny development proposals that do not have adequate law enforcement service, including adequate access and response time.

Strategy PFS 1.2(f) – Develop Standards for Open Space, Parks and Recreation

The County will coordinate with parks and recreation districts to develop standards for open space, parks and recreation in the Open Space, Parks and Trails Plan (see Open Space, Parks and Trails Policies).

Strategy PFS 1.2(g) – Coordinate with School Districts to Reserve Land for Future School Sites

The County will coordinate with the school districts to ensure that the educational needs of all current and future students in the County are satisfied, and that adequate school sites are provided. The County will cooperate with the school districts on new school planning and school facility expansions to allow for cost effective services and to minimize negative impacts of school expansions on neighborhoods.

Policy PFS 1.3 – Require Adequate Facilities and Services at Time of Development

Once standards are established, Arapahoe County will require that new development conform to standards that require adequate facilities and services (including roads, water and sewer, fire protection, police protection, parks and schools), at the time of development.

Strategy PFS 1.3(a) – Require Adequate Public Facilities and Services To Be Provided Contemporaneously With New Development

The County will require public facilities and services to be in place or planned prior to development. The County will require conformance with specified level of service standards as a condition of approval for development. Moreover, the County will approve new development only when adequate public facilities and services are available at the time of development, or when the proportionate share of necessary improvements are made as part of the development project by the developer.

Policy PFS 1.4 – Support Expansion of Wastewater Treatment Facilities in Growth Areas

Arapahoe County will support the expansion of wastewater treatment and distribution facilities in the Urban Service Area and the Eastern Community Growth Areas as necessary to support development, and ensure that such facilities are in conformance with regional Clean Water Plans.

Strategy PFS 1.4(a) – Work With Existing Service Districts to Plan for Capacity/Expansion

The County will work with existing service districts in Growth Areas to ensure that they are planning for expansion of facilities to meet future growth demands. The County will consider providing technical assistance for expansion planning, so that service districts will be able to accommodate planned development in the Eastern Communities.

Policy PFS 1.5 – Consider Options to Obtain an Adequate Long-Term Water Supply for Communities in the County

Arapahoe County does not consider non-tributary groundwater to be an adequate long-term water supply for its communities. The County shall encourage service providers to consider options to obtain and secure adequate renewable, tributary sources of water for communities.

Strategy PFS 1.5(a) – Consider Requiring Service Plans Using Aquifer Life Assumption of 100-Year Supply with a 50 Percent Recovery Factor

To allow time to obtain and secure a renewable source of water, the County will consider requiring water districts that serve development in areas east of Gun Club Road to prepare service plans using a conservative aquifer life assumption of a 100-Year supply, non-tributary groundwater classification only, assuming a 50 percent recovery factor. Water districts in the eastern portion of the County that are able to prove a redundant water supply and have a renewable water source agreement in place may be excluded from this requirement. Compliance with this requirement would need to be demonstrated by the service district to the satisfaction of the County Engineering Department at the time of Service Plan review.

Policy PFS 1.6 – Consider Power Energy Needs to Support Growth and Development of the Region

Arapahoe County will consider the need for power energy facilities to be located throughout the County on a case-by-case basis except in sensitive development and riparian areas. Each use or facility will be considered based upon its location, associated impacts and all necessary approval criteria established for such use.

GOAL PFS 2 – Adequately Maintain Facilities in Growth Areas

Public facilities in Growth Areas of Arapahoe County will be well maintained and upgraded to preserve the livability and stability of these areas for current and future residents.

Policy PFS 2.1 – Adequately Maintain Facilities in Growth Areas

Arapahoe County will facilitate or adequately maintain public facilities in Growth Areas to serve the needs of current and future residents.

Strategy PFS 2.1(a) – Target Public Investments to Growth Areas

The County will target its capital investments in infrastructure maintenance (e.g., for roads, stormwater drainage and parks) into Growth Areas, to leverage its investments made through its Capital Improvement Program.

GOAL PFS 3 – Improve Access to County Information

Arapahoe County will improve residents' access to County information and government services.

Policy PFS 3.1 – Improve Residents' Access to County Information

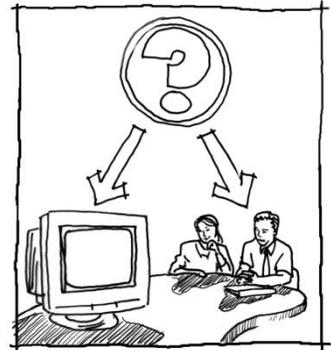
Arapahoe County will investigate efficient ways to disseminate County information and will ensure that County regulations, meeting schedules and other government informational items are available in a timely fashion for residents. The Internet provides efficient, cost-effective current information.

Strategy PFS 3.1(a) – Provide County Information on the Internet

The County will provide the Comprehensive Plan, County regulations and other County information in digital format and make it available on the Internet. The County will update Internet information on a regular basis.

Strategy PFS 3.1(b) – Consider Developing Satellite Services in the Eastern Communities

As the Eastern Communities grow, the County will consider developing satellite services within them to improve residents' access to County services and information.



GOAL PFS 4 – Project Local Character and a Positive County Image in the Public Realm

Arapahoe County will project its local character and convey an image of high-quality design of streets, public buildings, public open space and preservation of historic sites.



Policy PFS 4.1 – Promote Design in the Public Realm that Enhances the County's Image

Arapahoe County will promote design of new development and redevelopment projects that enhance its positive image and identity and reflect a high standard of architectural quality, visual interest, and local character. Particular emphasis will be placed on the public realm, including streetscape design and public buildings, as well as on new non-residential development (see Policy EC 2.1).

Strategy PFS 4.1(a) – Establish Design Standards for New Public Buildings

The County will develop standards to ensure that new public buildings are attractive, are located close to transit, have outdoor landscaping, and include public outdoor spaces.

Strategy PFS 4.1(b) – Establish Design Standards for New Streets

The County will establish design standards so new streets are functional, safe and visually appealing.

Policy PFS 4.2 – Achieve Land Use Compatibility when Siting Regional and Local Utilities

Arapahoe County will require regional utilities, such as wireless telecommunication towers, antennas and power substations, to build in locations and in a manner that is safe and compatible with surrounding land uses. Local utilities will be installed to minimize negative visual impacts.

Strategy PFS 4.2(a) – Develop Standards for Regional Utility Facilities

The County will develop standards that address the location of regional utilities. Such utilities must locate near similar uses, minimize their visibility and be compatible with the surrounding environment.

Strategy PFS 4.2(b) – Require Local Utility Wires to be Buried Within New Developments

The County will require local utility wires within new developments to be buried beneath the surface of the ground.

Strategy PFS 4.2(c) – Require Mitigation of Impacts from Regional Utilities

The County will require regional utilities (including but not limited to landfills and telecommunication towers) to mitigate impacts of their facilities on property owners and residents of the County.

SUPPLEMENTAL URBAN SERVICE AREA POLICIES

Policy PFS 4.3 – Require Public Wastewater Treatment Service

Within the Urban Service Area, the County will require public wastewater treatment service for all types and levels of new development. On-site alternatives for the provision of wastewater treatment will only be allowed where they do not potentially conflict with planned expansions of public systems.

Strategy PFS 4.3(a) – Develop and Adopt Public Wastewater Requirements

The County will develop and adopt criteria that establish requirements for public wastewater treatment for all new development in Growth Areas.

Policy PFS 4.4 – Manage Stormwater to Conserve Water Quality in the Urban Service Area

Increased runoff due to development impairs water quality in wetlands and streams because it contains high levels of particulates (e.g., sediment) and pollutants (e.g., fertilizers and oil). Arapahoe County will plan for stormwater drainage so it does not impair water quality. On the other hand, increased stormwater runoff may create opportunities to establish new wetlands, Riparian Areas and wildlife habitat.

Strategy PFS 4.4(a) – Implement a Stormwater Drainage Program in Growth Areas

The County will continue to implement a stormwater drainage planning and facility program in Growth Areas.

Strategy PFS 4.4(b) – Manage Stormwater Drainage Regionally

The County will collaborate with adjacent municipalities to develop and implement basin-wide stormwater management plans. The County will support integrated watershed management approaches to address water resource issues and non-point source control.

SUPPLEMENTAL EASTERN COMMUNITY POLICIES***Policy PFS 4.5 – Limit Approval of New Special Districts in the Eastern Communities***

Arapahoe County will work with the existing special districts to focus resources in the communities and will approve water and wastewater districts only when these services are unavailable from existing providers or municipal systems. The County may allow new districts to form only when property to be served is located within the County's designated Growth Areas and service is not available from existing districts.

Strategy PFS 4.5(a) – Establish Criteria for New Special Districts

The County will develop criteria for development approvals that require service to be obtained from existing special districts, and restrict approval of new special districts, unless it can be demonstrated that existing districts are unable or unwilling to provide service.

Policy PFS 4.6 – Ensure that the Eastern Communities are Adequately Served by Existing Special Districts

Arapahoe County will work with existing special districts on a proactive basis to facilitate provision of water and wastewater services, fire and emergency services protection, library facilities, schools, and other essential public services to adequately serve the Eastern Communities.

Strategy PFS 4.6(a) – Cooperate with Water and Sanitation Districts in the Eastern Communities

The County will work with existing water and sanitation districts to ensure that designation of Growth Areas and other planning activities in the Eastern Communities are coordinated with district service plans.

Strategy PFS 4.6(b) – Cooperate with Fire Districts that Serve the Eastern Communities

The County will continue to cooperate with the fire districts in identifying and providing for fire protection needs.

Strategy PFS 4.6(c) – Cooperate with School Districts that Serve the Eastern Communities

The County will continue to cooperate with the school districts in identifying and providing for school needs in and around the Eastern Communities.

SUPPLEMENTAL RURAL AREA POLICIES

Policy PFS 4.7 – Provide a Minimum Level of Public Facilities and Services in the Rural Area

While rural residential development will still occur in the Rural Area, Arapahoe County will assume limited responsibility for ensuring additional services.

Strategy PFS 4.7(a) – Establish Rural Standards for Fire Protection and EMS

The County will develop intergovernmental agreements with the fire districts to determine rural service standards for fire protection and necessary locations for future fire stations in the Rural Area. The County will not approve development proposals that do not prove availability of adequate fire protection. The County will consider regulations for new residential development to contain sprinklers if a minimum standard for fire protection is not attainable.

Strategy PFS 4.7(b) – Establish Rural Standards for Law Enforcement and Police Protection

The County will establish rural standards for law enforcement and police protection, and inform rural area residents that they should not expect rapid response from law enforcement personnel.

Strategy PFS 4.7(c) – Require “Buyer Beware” Disclosures at Time of Land Sale and Building Permit

The County will develop educational materials to notify landowners in the Rural Area that services and facilities will operate at minimum standards.

Policy 4.8 – Maintain the Viability of the Water Supply for Rural Area Residents

Arapahoe County will establish water service requirements that seek to ensure the long-term viability of the water supply in the Rural Area.

Strategy PFS 4.8(a) – Restrict Approval of New Water and Sanitation Districts in the Rural Area

The County will restrict approval of new water and sanitation districts in the Rural Area.

Strategy PFS 4.8(b) – Require Centralized Water Systems for Rural Developments (2 ½ acres or Smaller)

The County will require community water systems for all rural developments with lots sizes of two and one-half (2 ½) acres or smaller.

Policy PFS 4.9 – Adopt Impact Fees Tailored to the Rural Area

Arapahoe County will adopt impact fees that are tailored to the Rural Area, as permitted by State law, for development and maintenance of roads and other facilities.

Strategy PFS 4.9(a) – Adopt Area Impact Fees for the Rural Area

The County will adopt impact fees for development in the Rural Area that are determined based upon the cost of providing and maintaining roads and other facilities.

NEIGHBORHOODS AND HOUSING

INTENT

The Neighborhoods and Housing Policies are intended to bring about safe yet functional neighborhoods that offer a variety of housing options to satisfy the needs of residents in Arapahoe County's Growth Areas. In the future, both new and existing neighborhoods should contain a mix of land uses (e.g., parks, neighborhood retail services, civic centers, transit stops and places of worship) as well as a mix of houses (e.g., houses, apartments and townhomes). The arrangement of land uses within neighborhoods should allow residents to walk and bicycle to and from their daily activities and easily travel to nearby neighborhoods. Redevelopment projects should be sensitive to existing neighborhoods to maintain their character. While low-density residential development will continue to occur in the Rural Area, it is not the County's intent to encourage dispersed housing patterns. The County is unable to provide public services to dispersed development due to fiscal constraints.

These policies are also intended to have a positive impact on housing cost and availability for low- and moderate-income households and lead to greater provision of special-needs housing opportunities within the County's Growth Areas. The rising average price of homes is a problem, compelling people to live further away from employment centers and leading to more dispersed development.

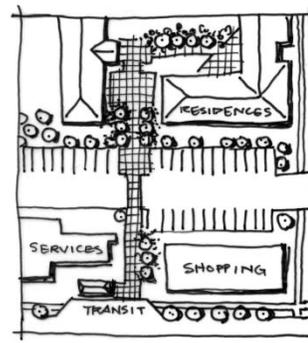
COUNTYWIDE POLICIES

GOAL NH 1 – Promote Development of New Mixed Use Neighborhoods in Growth Areas

Arapahoe County will promote stable, safe, attractive neighborhoods in Growth Areas of the County and will encourage a mix of land uses in new developments whenever appropriate.

Policy NH 1.1 – Promote New Mixed Use Neighborhoods in Growth Areas

The arrangement of land uses within new neighborhoods should ideally allow residents to conveniently walk and bicycle to and from parks, schools, work, shopping, places of worship and transit stops. Neighborhoods should be served by public transportation where it is available. Arapahoe County will amend zoning regulations, as applicable, to allow a greater mix of residential and compatible non-residential uses within Urban Service Area neighborhoods and in the Eastern Communities.



Strategy NH 1.1(a) – Revise Zoning Regulations to Allow Mixed Use Development in New Neighborhoods

The County will revise zoning regulations that currently only allow single-use buildings to support mixed use developments and structures in neighborhoods. The County will promote vertical mixed use (multi-story buildings that contain ground floor retail and services with apartments and/or offices located above). The height of mixed use developments must not alter the character of the neighborhood.

Policy NH 1.2 – Promote a Diversity of Housing Types in Growth Areas Countywide

As demographic trends change, Arapahoe County will promote diverse types of housing, lot sizes and densities that are appropriate to meet the changing needs and assure options for residents of all income levels. These housing opportunities will take place in the County's Growth Areas – the Urban Service Area and the Eastern Communities.

Strategy NH 1.2(a) – Amend Zoning Code to Allow a Mixture of Housing Densities in

Growth Areas

The County will amend the zoning code to allow different sizes of lots as well as single and multi-family housing, and manufactured housing in Growth Areas. Higher density housing should be located near open space, major thoroughfares, neighborhood services and transit services.

GOAL NH 2– Reconcile New Development With Existing Neighborhoods in Growth Areas

Arapahoe County will reconcile new development with existing stable, safe and attractive neighborhoods in the Growth Areas by ensuring that redevelopment and infill is compatible.

Policy NH 2.1 – Reconcile New Development with Existing Residential Neighborhoods in Growth Areas

Arapahoe County will reconcile new development with the character and physical elements (i.e., natural features, historic and cultural features, parks and schools) that contribute to the identity of existing residential neighborhoods. The County will ensure that adjacent new development and infill and redevelopment that occurs within Growth Areas is compatible in scale, use and character.

Strategy NH 2.1(a) – Develop Standards for Infill and Redevelopment

The County will apply development standards to infill and redevelopment projects so they achieve compatibility with existing neighborhood scale, promote a balance of land uses and preserve historic features to the maximum extent feasible.

Strategy NH 2.1(b) – Encourage Active Community and Neighborhood Participation

The County will encourage participation from neighborhood-based community organizations, residents and property owners in land development decisions as well as services and facilities planning. The County will notify organizations that may be affected by decisions in a timely manner so they have an opportunity to participate and/or sponsor meetings.

GOAL NH 3 – Increase Affordable Housing and Special-Needs Housing Opportunities in Growth Areas

Arapahoe County will increase housing options for people with low and moderate incomes and for people with special needs, including the elderly, homeless, victims of domestic violence, handicapped, mentally ill and disabled.

Policy NH 3.1 – Support New Affordable Housing Opportunities and Retain Existing Affordable Housing in Growth Areas

Arapahoe County will support the provision of an adequate supply of housing for low and moderate-income households in Growth Areas. In addition, the County will seek to retain existing affordable housing stock in older residential neighborhoods to the maximum extent feasible.

Strategy NH 3.1(a) – Reduce Local Government Barriers to Affordable Housing

The County will reduce local government barriers to construction of affordable units, including consideration of the following strategies:

- Provide tax incentives, i.e. a rebate of 100% of sales and use tax for materials used for the construction of affordable housing units;
- Waive or defer fees on affordable housing;
- “Fast track” permitting – to accelerate approval or waiver of process for affordable units;
- Rezone specific lands to allow higher density development;
- Provide flexible design standards (i.e. reduced parking requirements, reduced street widths, flexible sidewalk standards, such as only on one side of the street), combining utilities;
- Expansion of the qualifications of the first time homebuyers down payment assistance program;
- Sliding scale bonus with greater density for greater set aside of affordable units;

and

- Implementation of a program of deed restrictions for a term of 15 years, on a resale of an affordable housing unit to a qualified buyer, where appreciation is limited to the original owner, in efforts to keep the units affordable for future needs of primary workers.

Strategy NH 3.1(b) – Increase Funding for Affordable Housing

The County will identify and use funding available through grants and other funding programs to reduce the cost of housing for lower income households and provide financial incentives for building affordable housing.

Strategy NH 3.1(c) – Integrate Affordable Housing

The County will integrate affordable housing into neighborhoods in a complementary way, so it is not segregated in separate development areas.

Strategy NH 3.1(d) – Revise Regulations as Necessary to Allow Accessory Units

The County will allow accessory units as a viable form of affordable housing and will amend regulations as necessary to permit them in Growth Areas. Furthermore, the County will develop standards to address design, parking requirements, and other elements so accessory units are compatible with existing neighborhoods.

Strategy NH 3.1(e) – Work with Non-profit Organizations and Developers to Increase Affordable Housing Supply

The County will support and encourage non-profit organizations and developers to increase affordable housing supply. The County will determine viable incentives.

Policy NH 3.2 – Support Provision of Special-Needs Housing in Growth Areas

Arapahoe County will support the provision of facilities for group homes, shelters for homeless persons and victims of domestic violence, elderly housing and housing for handicapped, mentally ill and disabled in Growth Areas.

Strategy NH 3.2(a) – Investigate Funding Options for Special-Needs Housing

The County will identify and use funding available through grants and other funding programs to provide special-needs housing and to develop incentives for building it.

SUPPLEMENTAL URBAN SERVICE AREA POLICIES

Policy NH 3.3 – Encourage Higher Density Development in New Neighborhoods within the Urban Service Area

Arapahoe County will encourage new residential development projects within the Urban Service Area to develop at higher densities than what is currently typical to reduce the amount of land consumed and to ensure efficient infrastructure. The County will establish an overall minimum average density requirement for new residential areas and a mix of housing types.

Strategy NH 3.3(a) – Require Overall Minimum Average Density in the Urban Service Area

The County will require an overall minimum average density of four (4) units per acre in the Urban Service Area where service capacity exists, with a mix of housing types that are master planned over a land area of size adequate to meet this minimum density. Revise zoning regulations as appropriate. Existing maximum average density requirements will apply.

SUPPLEMENTAL EASTERN COMMUNITY POLICIES

Policy NH 3.4 – Encourage New Neighborhoods to Develop at Densities and Patterns that are Similar to the Existing Eastern Communities

Arapahoe County will encourage new residential developments within the Eastern Community Growth Areas to develop at densities and patterns that are similar to the existing neighborhoods and to be compatible with the small town character of these communities.

Strategy NH 3.4(a) – Develop Standards for Average Densities in the Eastern Communities

The County will require an overall average density of three (3) units per acre, with a mix of housing types within the Eastern Community Growth Areas, or establish an average density requirement based on Subarea Planning process. The County will revise zoning regulations as appropriate.

SUPPLEMENTAL RURAL AREA POLICIES

Policy NH 3.5 – Discourage Urban Residential Development in the Rural Area

Arapahoe County will discourage urban residential development from occurring in the Rural Area.

Strategy NH 3.5(a) – Restrict Rezoning of Land in the Rural Area for Urban Residential Development

The County will restrict rezoning of land in the Rural Area for urban development or for uses other than agricultural activities and very low density residential or cluster development.

EMPLOYMENT AND COMMERCIAL DEVELOPMENT

INTENT

Employment opportunities and commercial services are integral to Arapahoe County residents' quality of life. Commercial development provides greater tax revenues and jobs in the County, yet it sometimes creates traffic and adverse impacts in neighborhoods if not well planned. The County recognizes that establishing a mix of housing with employment and commercial land uses in Growth Areas is important so residents do not have to travel far between home, work, shopping, and other activities. Therefore, the County encourages employment and commercial development to occur in designated locations in the Urban Service Area and the Eastern Communities. In most instances, adjacent municipalities will annex commercial development, which is the County's intent. The County will not allow new employment and commercial development in the Rural Area, unless it is agriculture-related.

While the County intends to foster economic development and employment opportunities in Growth Areas, this development must be balanced with other community values. Commercial developments should be sensitive to the character of existing neighborhoods and should be designed to portray a positive image of the community and allow alternative transportation connections and safe pedestrian access.

COUNTYWIDE POLICIES

GOAL EC 1 – Promote Employment and Commercial Development in Growth Areas

Arapahoe County will have viable employment centers and commercial development in Growth Areas that provide employment and services to residents and that make a positive contribution to the community. The County will not support employment or commercial development in the Rural Area, other than that which is agriculture-related.

Policy EC 1.1 – Support Employment and Commercial Development in Growth Areas

Arapahoe County will support employment and commercial development land uses in Growth Areas, specifically within the Urban Service Area and the Eastern Communities in designated locations.

Strategy EC 1.1(a) – Coordinate with Incorporated Areas to Annex Employment and Commercial Development

The County will coordinate with incorporated areas to promote the annexation of lands that develop for employment and commercial uses.

Strategy EC 1.1(b) – Collaborate with the Business Community

The County will work with the business community and organizations to continue to encourage and support economic development in appropriate areas to increase private investment, provide jobs, attract new business and improve economic opportunities for residents.

Policy EC 1.2 – Designate Locations for Employment and Commercial Areas According to their Role and Function in the Region

Arapahoe County will encourage employment centers and commercial development to locate only in Growth Areas where convenient access and other necessary infrastructure and services are available. Their location should provide convenient vehicular access, efficient and safe pedestrian circulation, and efficient transit circulation and connections. The Comprehensive Land Use Plan designates general locations for employment centers and regional commercial development – particularly in the Urban Service Area. Further refinement of categories and locations in the Eastern Communities will occur as Subarea Plans are

developed for them. The County will discourage development of commercial areas in linear, “strip” configurations along roads with multiple access points.

Strategy EC 1.2(a) – Establish Appropriate Locations for Employment and Commercial Uses in Growth Areas

The County will target new commercial development to planned commercial areas. In addition, the County will adopt standards (and compatibility regulations) to support commercial redevelopment in selected locations, such as designated infill and redevelopment areas.

Strategy EC 1.2(b) – Target and Rezone New Locations for Employment Centers

The County will rezone locations for employment centers in areas with access to interstate highways and arterial roads, future transit, rail and airport facilities.

Strategy EC 1.2(c) – Restrict Rezoning of Land for Linear “Strip” Commercial Development

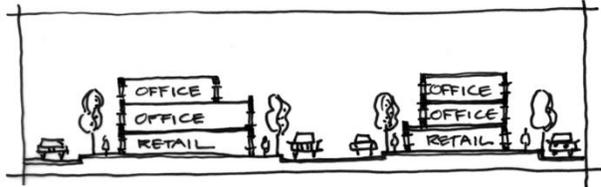
To prevent strip commercial development along highways and arterial roads, the County will restrict rezoning of land for such uses.

Strategy EC 1.2(d) – Provide Standards for the Location and Siting of Large, Freestanding Commercial Uses

The County will provide standards to allow large, freestanding commercial uses to be sited in locations that can be adequately served by transportation, water, sewer, and other public facilities and services. The County will not allow such uses to locate in remote areas where adequate public facilities cannot be provided.

Policy EC 1.3 – Promote a Mix of Uses in New Commercial Development and Redevelopment in Growth Areas

Arapahoe County will promote a mix of uses in new commercial development and redevelopment projects, avoiding large, single-use buildings and dominating parking areas.



Strategy EC 1.3(a) – Revise Zoning Regulations to Allow Mixed Use Development

The County will revise zoning regulations that currently only allow single-use buildings to support mixed use developments and structures. The County will promote vertical mixed use (multi-story buildings that contain ground floor retail and services with apartments and/or offices located above). The height of mixed use developments must not alter the character of a neighborhood.

GOAL EC 2 – Promote High-Quality Design of New Commercial and Industrial Development

Arapahoe County will project its local character and convey an image of high-quality design in new commercial development.

Policy EC 2.1 – Promote A High-Quality Urban Environment in all New and Redevelopment Employment Centers and Commercial and Industrial Development

Arapahoe County will promote design and site planning of the physical environment of employment centers and commercial development to allow for walking, bicycling, and transit opportunities and that conveys a positive image for the community.

Strategy EC 2.1(a) – Consider Developing Commercial Design Guidelines

The County will consider developing and adopting design guidelines to enhance the quality of the urban environment. Design guidelines would address landscaping and parking supply and design requirements, building architecture, building massing, and relationships to streets, sidewalks and neighbors.

Strategy EC 2.1(b) – Require Multi-modal Site Planning in Commercial Development

The County will develop and adopt standards for site planning to promote a walking, bicycling, and transit-supportive environment for all employment centers and commercial development.

GOAL EC 3 – Maintain Industrial Activities in Growth Areas

Arapahoe County will continue to provide opportunities for industrial development and employment in Growth Areas.

Policy EC 3.1 – Maintain Existing Industrial Lands in Growth Areas

Arapahoe County will identify and maintain existing industrial lands and undeveloped industrial parcels from the encroachment of other land uses. Rezoning these lands would limit future beneficial industrial development or relocation, including industrial distribution uses.

Strategy EC 3.1(a) – Restrict Rezoning of Existing Industrial Lands in Growth Areas

The County will restrict rezoning of existing industrial lands to ensure an adequate supply of land in appropriate locations for industrial development in Growth Areas.

Strategy EC 3.1(b) – Supply an Adequate Amount of Land for Industrial and Manufacturing Use

The County will revise zoning regulations as necessary to supply an ample amount of land for industrial and manufacturing uses in Growth Areas.

Strategy EC 3.1(c) – Establish Criteria for Industrial Distribution Uses in Growth Areas

The County will establish criteria for locations of employment uses that rely on movement of goods and materials to locate in areas convenient to railroads, airports, or arterial roads and highways and within or near employment centers. This will minimize the necessity for intra-County movement of goods.

SUPPLEMENTAL URBAN SERVICE AREA POLICIES***Policy EC 3.2 – Redevelop Strip Commercial Areas in the Urban Service Area***

Arapahoe County will support and encourage the gradual evolution of existing, auto-dominated strip commercial areas into compact, mixed use places designed to be pedestrian-oriented.

Strategy EC 3.2(a) – Provide Incentives for Redevelopment of Strip Commercial Areas

The County will provide incentives for redevelopment of strip commercial areas within the Urban Service Area, such as lower fees and/or a streamlined development review process.

SUPPLEMENTAL EASTERN COMMUNITY POLICIES***GOAL EC 4 – Support Economic Development in the Eastern Communities***

Arapahoe County will encourage economic development in the Eastern Communities that is compatible with the town centers and makes a positive contribution to the economy.

Policy EC 4.1 – Encourage Employment and Commercial Development within Town Centers of the Eastern Communities

To reinforce the role of the Eastern Communities as rural service centers, Arapahoe County will encourage employment and commercial uses to develop within town centers, or the core, of the Eastern Communities and will discourage strip commercial along I-70 and major arterials. Commercial uses will be at a scale and design compatible with the town center and must have adequate services at the time of development.

Strategy EC 4.1(a) – Revise Zoning Regulations to Allow Neighborhood Commercial in the Eastern Communities

The County will revise zoning regulations as appropriate to allow Neighborhood commercial development to occur within the unincorporated Eastern Community town centers.

Strategy EC 4.1(b) – Support Downtown Improvement Efforts to Attract Business to the Eastern Communities

The County will work with local business organizations and support local efforts to attract business. In addition, the County will seek funding to do physical downtown improvements that may attract private investment.

Strategy EC 4.1(c) – Provide Incentives for Commercial Development in the Town Centers of the Eastern Communities

The County will provide incentives for employment and commercial development to occur in town centers of the Eastern Communities (e.g., incentives may be lower impact fees in the communities than in the Rural Area).

Policy EC 4.2 – Encourage Start-up Businesses and Home Occupations in the Eastern Communities

Arapahoe County will encourage start-up business and home occupations to locate in the Eastern Communities to allow greater economic opportunities for community residents.

Strategy EC 4.2(a) – Revise Zoning Regulations as Appropriate for Home Occupations and Start-up Businesses

The County will revise zoning regulations to allow home occupations and start-up businesses in the Eastern Communities. The County may need to reform regulations to reduce barriers to home occupations.

SUPPLEMENTAL RURAL AREA POLICIES***Policy EC 4.3 – Discourage Commercial and Industrial Development in the Rural Area***

Arapahoe County will discourage the creation of new employment centers, commercial, industrial, or governmental facilities in rural locations that are far from existing residential neighborhoods, facilities and infrastructure.

Strategy EC 4.3(a) – Restrict Rezoning of Land in the Rural Area for Commercial Development

The County will restrict rezoning of land within the Rural Area for employment or commercial uses, other than for agriculture-related businesses or public facilities.

Strategy EC 4.3(b) – Limit Non-Residential Development to Agriculture-Related Uses, Public Facilities, and Natural Resource Extraction in the Rural Area

The County will allow only agriculture-related business, as determined by criteria, public facilities, and natural resource extraction industries that are dependent on the rural location (see also Natural and Cultural Resources and the Environment – Supplemental Rural Area Policies, Policy NCR 6.1).

Strategy EC 4.3(c) – Remove Incentives for Commercial Development in the Rural Area

The County will not subsidize scattered commercial development in the Rural Area. If commercial development does occur in the Rural Area, the County will require development to pay its own way by assessing impact fees that reflect the additional costs associated with it.

Policy EC 4.4 – Discourage Linear Development along I-70 and Major Arterials Outside of Growth Areas

Arapahoe County will discourage new employment centers and commercial development that are dispersed along the I-70 corridor and other major arterials, such as 6th Avenue, that competes with the Eastern Community town centers.

Strategy EC 4.4(a) – Revise Zoning Regulations as Appropriate to Prevent Isolated Employment Centers and Commercial Development

The County will revise zoning regulations as necessary to prevent strip commercial development along I-70 and major arterials outside of designated Growth Areas in the Eastern Communities. Employment centers and commercial development will be allowed only in the Growth Areas, where services are available.

TRANSPORTATION

INTENT

Transportation is a concern to residents of Arapahoe County who desire mobility to travel around the region efficiently and safely. As in other parts of the region and throughout the United States, the automobile is the dominant mode of transportation in the County. However, continued reliance on the automobile will degrade air quality, increase traffic congestion and driving times, require expensive road improvements and consume land for roads. If new growth continues to be dispersed, the challenges to improving existing road corridors and giving people multi-modal choices are even greater. The Transportation Policies encourage an efficient transportation system with local and regional connectivity, and promote alternatives to the automobile. These policies are not intended to supplant the Transportation Plan, but to reflect its specific more detailed strategies.

COUNTYWIDE POLICIES

GOAL T 1 – Promote an Efficient and Balanced Transportation System

Arapahoe County will have an efficient, safe transportation system that addresses current and future mobility needs and reduces dependency on the automobile.

Policy T 1.1 – Promote a Multi-Modal Transportation System in Growth Areas

Arapahoe County will promote a balanced transportation system that provides options to residents in public transit, walking, bicycling and automobile travel. The County will encourage alternatives to traditional commuting patterns, such as telecommuting.



Strategy T 1.1(a) – Develop a Countywide Transportation Plan

The County will develop and adopt a countywide Transportation Plan that addresses road capacity, a hierarchy of road cross-sections, traffic controls and operations, and regional road connectivity.

Strategy T 1.1(b) – Establish Multi-Modal Corridors

The County will define a system of multi-modal corridors that are designed to accommodate a complete range of modes of travel, including transit, bicycle, pedestrian, and vehicular traffic.

Strategy T 1.1(c) – Develop Standards for Transit-Oriented Development

The County will develop standards for transit-oriented development and plan for transit facilities along E-470 and I-70.

Policy T 1.2 – Establish Long-Term Road Maintenance and Improvement Priorities

Arapahoe County will establish level of service standards and set relative priorities for road maintenance and improvements on an annual basis according to categories developed in the Transportation Plan. The Plan will recommend priorities for State of Colorado investments in arterial roads through the continuing actions of the Denver Regional Council of Governments.

Strategy T 1.2(a) – Adopt and Implement Transportation Level of Service Standards

The County will establish road and intersection level of service standards in conjunction with the development review process.

Strategy T 1.2(b) – Set Priorities for Transportation Improvements

Based on level of service standards and needs, the County will set priorities for road improvements and other transportation improvements.

Strategy T 1.2(c) – Adopt a Transportation Improvement Plan that Is Updated Annually

The County will continue to update its Transportation Improvement Plan (TIP) on an annual basis.

Strategy T 1.2(d) – Establish a Funding Program for Major Investments and Partnering

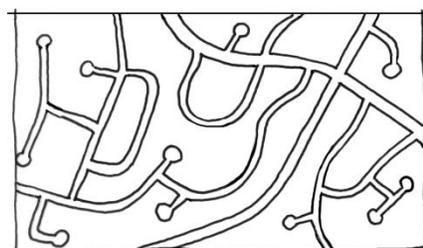
The County will develop a funding program to address critical large capital transportation improvement investments in coordination with cities within the County and adjacent jurisdictions.

Policy T 1.3 – Promote Connectivity and Continuity in Local and Regional Roads to Minimize Unnecessary Driving

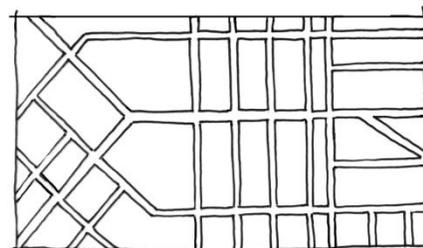
Arapahoe County will promote connectivity and continuity in local roads between adjacent neighborhoods, and regional roads between neighborhoods and nearby commercial and employment areas to minimize unnecessary driving, especially for short trips. Continuity and connectivity will also decrease vehicle miles traveled and achieve a better distribution of traffic across the road network, avoiding unnecessary congestion on collector and arterial streets.

Strategy T 1.3(a) – Develop Connectivity Guidelines

The County will develop and adopt connectivity guidelines that provide for vehicle, bicycle and pedestrian connections between neighborhoods, commercial areas and employment centers.



NOT THIS!



PREFERRED

Policy T 1.4 – Reduce Traffic in Residential Neighborhoods

Arapahoe County will ensure that streets in residential areas will be designed to discourage cross-town through-traffic but allow sufficient connections with adjacent neighborhoods and with the regional road system. The County will work to achieve a better distribution of traffic across the road network and avoid congestion on collector and arterial streets by ensuring connectivity and continuity in local roads.

Strategy T 1.4(a) – Implement a Traffic Mitigation Program

The County Traffic Engineer will implement neighborhood traffic calming strategies following the procedures as outlined on the Arapahoe County Neighborhood Traffic Management Program Manual.

Policy T 1.5 – Support Public Transit in Growth Areas

Arapahoe County will work with Colorado Department of Transportation (CDOT), E-470 Transportation Authority and the Regional Transportation District to support the enhancement of mass transit along I-25, I-225, and I-70 and other major employment and key transportation corridors in the County and to provide efficient connections with such a system.

Strategy T 1.5(a) – Coordinate with Public Transit Providers

The County will coordinate with public transit providers to ensure that urban development areas have access to public transportation.

Strategy T 1.5(b) – Create a Land Use Pattern to Support Transit in Growth Areas

The County will encourage and support development efforts that enhance major corridors by creating high-density, mixed use land use pattern necessary to support alternative modes of travel.

Policy T 1.6 – Consider Pedestrian Needs in Growth Areas

Arapahoe County will plan future development in Growth Areas to accommodate pedestrians with safe, convenient walking via a system of connected sidewalks, walkways, crosswalks and paths which meet minimum pedestrian facility design standards, including Americans with Disabilities Act requirements.

Strategy T 1.6(a) – Establish Standards for Streets and Sidewalks

The County will require streets and sidewalks and/or walkways in developing areas to form an interconnected network within neighborhoods and commercial areas and between neighborhoods and commercial areas and to other parts of the region.

Policy T 1.7 – Establish a Bicycling Network in Growth Areas

Arapahoe County will plan future development in Growth Areas to provide bicyclists with safe, convenient bicycling facilities including shared use paths, bike lanes, designated bike routes, bike parking, and signage for bike facilities. These facilities should meet AASHTO (American Association of State Highway and Transportation Officials) Guidelines and the recommendations in the County's Transportation Plan.

Strategy T 1.7(a) – Designate Bicycling Routes and Paths in Growth Areas

The County will adopt a bicycle route and path plan in conjunction with the Transportation Plan.

Strategy T 1.7(b) – Develop Bicycle Parking Guidelines in Growth Areas

The County will require new developments to provide bicycle parking at commercial, office, and transit locations, in accordance with DRCOG's *Sample Regional Bicycle Parking Ordinance* (2001).

Strategy T 1.7(c) – Promote the Bicycling Network

The County will develop a system to provide signs for bicycle facilities and to provide countywide bicycle maps for bicyclists.

Strategy T 1.7(d) – Coordinate Bicycle Improvements with Other Projects

The County will direct the development and implementation of facilities and services regarding all alternative modes of transportation including bicycling.

GOAL T2 – Coordinate Land Use and Transportation

Arapahoe County will have adequate streets and an efficient transportation system to coincide with new development in Growth Areas

Policy T 2.1 – Promote an Efficient Transportation System through Appropriate Land Use Patterns

Arapahoe County will plan a transportation system that supports the desired land use pattern of compact development and a mix of uses described in this Comprehensive Plan. The County will require that future development in Growth Areas is planned and designed so that land uses are readily accessible by all modes of travel – pedestrians, bicycles, public transit, and autos. In addition, the County will require new non-residential development to locate in employment and commercial centers to accommodate multi-modal forms of transportation, not solely automobiles.

Strategy T 2.1(a) – Promote an Efficient Transportation System through the Comprehensive Land Use Plan

The County establishes appropriate land uses in the Comprehensive Plan to promote an efficient transportation system (see Policies GM 1.1 through 1.2).

Policy T 2.2 – Ensure that New Development has Adequate Transportation Facilities to Serve it

Arapahoe County will ensure that new developments have adequate existing transportation facilities or facilities that are planned to coincide with the phasing of development. The County will allow new development to occur only where existing transportation facilities are adequate to serve it or where the developer will pay for necessary transportation improvements and on-going costs for the development and all other facilities and services.

Strategy T 2.2(a) – Require Adequate Roads to be Provided Contemporaneously with New Development

The County will require roads to be in place or planned prior to development. The County will require conformance to specified standards as a condition of approval.

SUPPLEMENTAL RURAL AREA POLICIES

Policy T 2.3 – Maintain Rural Roads at a Rural Level of Service Standard

Arapahoe County will not pave gravel roads in the Rural Area, unless health or safety necessitates paving. This will help maintain the rural character and balance the County's costs and revenues. The County will address the need to provide sufficient regional and local connections.

Strategy T 2.3(a) – Establish Transportation Level of Service Standards for the Rural Area

The County will develop and adopt level-of-service standards for the Rural Area, establishing that the County will only provide a minimal level of road facilities.

Strategy T 2.3(b) – Establish a Road Paving Standard

The County will develop and adopt a traffic volume threshold for paving of existing gravel roads and a policy for new development roads.



Strategy T 2.3(c) – Require Alternative Routes and Secondary Access

For new developments, the County will require supplemental access and secondary road connections to minimize singular access to regional roads.

Policy T 2.4 – Improve North–South and East–West Road Connectivity in the Rural Area

Arapahoe County will consider the need to improve north-south and east-west road connectivity in the Rural Area by exploring opportunities to extend major arterial roads. Strategy T 2.4(a) - Set Priorities for Rural Roads in the Transportation Plan

The County Transportation Plan will set priorities for future north-south and east-west road connections in the eastern part of the County.

Strategy T 2.4(b) – Reserve Right-of-Way in the Rural Area

The County will reserve right-of-way in the eastern part of the County as development occurs, to ensure that future road needs can be met.

SUPPLEMENTAL PLANNING RESERVE AREA POLICIES***Policy T 2.5 – Reserve Transportation Right-of-Way in Planning Reserve Area***

Arapahoe County will reserve right-of-way in the Planning Reserve Area as planning occurs to ensure availability of land for a connected transportation system.

Strategy T 2.5(a) – Reserve Right-of-Way in the Planning Reserve Area

The County will reserve right-of-way in the Planning Reserve Area, to ensure that future road needs can be met.

NATURAL AND CULTURAL RESOURCES AND THE ENVIRONMENT

INTENT

Arapahoe County residents in the cities and rural places appreciate the natural environment and the value it provides for people and wildlife. As the population in the County has grown, community interest in conserving natural and cultural resources has increased. The Natural and Cultural Resources and the Environment Policies are intended to promote conservation of important natural and man-made resources, such as streams, wetlands and archaeological sites, and minimize damage due to development. Policies addressing environmental hazards are intended to educate residents about avoiding hazards in the built environment. The policies also support maintaining and enhancing air and water quality as a means of promoting public health, and encourage energy conservation.

COUNTYWIDE POLICIES

GOAL NCR 1 – Conserve Natural Areas and Resources

Arapahoe County will conserve its natural areas and resources that provide habitat, maintain environmental quality and that enrich the lives of residents by providing opportunities for education, scientific research, nature interpretation, fishing, hunting, art, observation and outdoor recreation.



Policy NCR 1.1 – Conserve and Enhance Riparian Areas

Arapahoe County will conserve and enhance Riparian Areas (which include wetlands, streams, rivers and their associated vegetation and soils), through innovative planning, design, buffering, best management practices, open space planning and restoration where appropriate. Buffers control soil erosion, remove sediment, fertilizers, pesticides and other potential contaminants from runoff. 100-year floodplains, such as along Bijou Creek, Cherry Creek, Box Elder Creek, Kiowa Creek, Coal Creek and Wolf Creek, are important areas of focus.

Strategy NCR 1.1(a) – Create an Inventory of Riparian Areas

The County will identify floodplains, wetlands and other Riparian Areas and create better data and inventory maps that are updated as new information becomes available. An inventory will also help to establish priorities for Riparian Areas that are important to conserve or restore.

Strategy NCR 1.1(b) – Restrict Development in Riparian Areas

The County will continue to restrict development in the 100-year floodplains and within the inventoried Riparian Areas to the maximum extent feasible; revise zoning regulations as necessary.

Strategy NCR 1.1(c) – Establish Setbacks for Riparian Areas

The County will establish setbacks for floodplains and natural waterbodies to direct development away from Riparian Areas. Setback widths will depend on the quality, or priority, of Riparian Areas and the density of development.

Strategy NCR 1.1(d) – Consider Voluntary Approaches to Conserve Riparian Areas

If the County develops an Acquisition and Improvement Fund for Open Space, Parks and Trails (see also, Open Space, Parks and Trails Policies), it will consider whether acquisition of Riparian Areas is an appropriate use of funds. Conservation easements may be another voluntary option for conserving Riparian Areas, whereby land trusts hold the easements. Providing incentives for providing buffers to Riparian Areas may be a third voluntary approach. The United States Department of Agriculture (USDA) provides financial incentives for providing riparian buffers (such as filter strips and grassed waterways). The

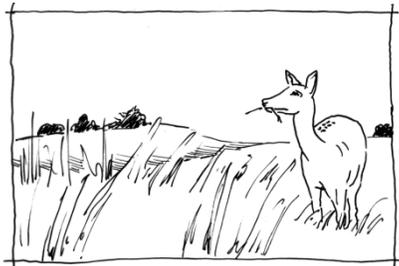
County will develop criteria for Riparian Areas for acquisition or the use of conservation easements.

Strategy NCR 1.1(e) – Identify Funding Sources for Riparian Area Conservation and Restoration

The County will identify grants and develop partnerships with non-profit organizations and land trusts to leverage County funding for conservation and restoration. It will consider establishing an open space fund for the urban and rural areas of the County to acquire wildlife habitat, migration corridors, and Sensitive Development Areas.

Policy NCR 1.2 – Conserve Wildlife Habitat and Corridors and Sensitive Development Areas

Arapahoe County will develop a wildlife program to identify and conserve lands and plants that provide food, forage and breeding grounds for wildlife. In many cases in the arid high plains, the Riparian Areas are the best wildlife habitat, so the strategies for Riparian Areas are applicable. Sensitive Development Areas, defined as intact ecosystems, such as short grass prairie lands, are also important habitat. The County will further inventory habitat and sensitive areas, consider acquisition and other voluntary conservation measures and develop standards so that public works projects avoid wildlife habitat and provide crossings and connections in new roads.



Strategy NCR 1.2(a) – Identify Wildlife Habitat and Corridors

The County will identify and inventory habitat and plants for wildlife of special concern (as determined by the Colorado Division of Wildlife and the Colorado Heritage Program). The County will work with the Colorado Division of Wildlife to inventory and record wildlife movement corridors habitat areas that are conservation priorities. The County will update this map as new information becomes available.

Strategy NCR 1.2(b) – Consider Acquiring Land and/or

Using Conservation Easements for Wildlife Habitat

If the County develops an Acquisition and Improvement Fund for Open Space, parks and Trails (see Open Space, Parks and Trails Policies), it will consider whether acquisition of wildlife habitat land is an appropriate use of funds. If so, the County will develop criteria for wildlife habitat land for acquisition or use of conservation easements.

Strategy NCR 1.2(c) – Work with Partners to Conserve and Manage Wildlife Habitat Lands

The County will work with other organizations and public and private landowners to conserve and develop wildlife management plans for public lands. In addition, the County will identify grants and other sources of funding for conservation and management.

Strategy NCR 1.2(d) – Control Noxious Weeds

The County will work with State agencies to develop and implement strategies that provide for the control of noxious weeds on public and private lands and educate owners of private lands about weed control, especially those adjacent to Riparian Areas and habitat areas.

Strategy NCR 1.2(e) – Consider Developing Road Design Standards for Wildlife Crossings

The County will consider developing standards that address location of roads to minimize impact on wildlife habitat and movement corridors. Such standards would require suitable crossings for wildlife when building new roads or upgrading existing roads. Other public works projects and utilities should adhere to site planning guidelines to minimize their impacts on Sensitive Development Areas.

Strategy NCR 1.2(f) – Create and Adopt Site Development Standards

The County will create and adopt site development standards to minimize negative impacts of development in Sensitive Development Areas and wildlife habitat. Standards will apply to buildings as well as fencing.

Strategy NCR 1.2(g) – Provide Wildlife Educational Materials

The County will develop and provide educational materials (i.e., a "Handbook") for landowners about wildlife and site planning to conserve Sensitive Development Areas and other wildlife issues including domestic pet and weed control.

Policy NCR 1.3 – Maintain Significant Views and Ridgelines

Arapahoe County will identify and maintain significant views, ridgelines, and high points to the maximum extent feasible to minimize degradation of scenic quality.

Strategy NCR 1.3(a) – Identify Significant Views and Ridgelines

The County will identify and record significant undeveloped views and ridgelines.

Strategy NCR 1.3(b) – Create Site Development Standards for Views and Ridgelines

The County will create site development standards for views and ridgelines, including setbacks, height limits, controls on quality and color of building roof and materials.

GOAL NCR 2 – Preserve Cultural Resources

Arapahoe County will preserve its cultural resources that provide a high quality of life for residents.

Policy NCR 2.1 – Preserve Historic, Archaeological and Cultural Resources

Arapahoe County will identify and support preservation of structures and districts with historic, archaeological and cultural significance.

Strategy NCR 2.1(a) – Identify and Designate Historic, Cultural and Archaeological Resources

The County will use field surveys and will work with community groups to identify and designate important historic, cultural and archaeological resources.

Strategy NCR 2.1(b) – Develop Procedures and Standards to Preserve Cultural Resources.

The County will amend sections of the zoning regulations to require documentation and preservation of cultural resources, such as adding renovation design standards and demolition controls.

Strategy NCR 2.1(c) – Provide Incentives to Preserve Cultural Resources

The County will provide incentives, such as bonus development units, to preserve cultural resources.

Strategy NCR 2.1(d) – Increase Funding for Preservation of Historic and Cultural Resources

The County will work with non-profit organizations and target grants and other sources of funding to preserve historic resources.

GOAL NCR 3 – Conserve Water Resources and Maintain High Water Quality

Arapahoe County will facilitate human health and environmental quality by conserving water resources and water quality.

Policy NCR 3.1 – Conserve Water Resources

Arapahoe County will maintain and improve water quantity and quality by implementing policies designed to increase public awareness of water conservation techniques, encourage

and reward water conservation efforts, identify and conserve aquifer recharge areas, and improve the quality of water discharged to streams and other water bodies in the region (see also, Goals and Policies for Public Facilities and Services).

Strategy NCR 3.1(a) – Support Denver Regional Council of Government’s (DRCOG’s) Clean Water Plan

The County will maintain and restore the integrity of the region’s aquatic environments, in part by supporting and achieving consistency with DRCOG’s *Clean Water Plan*.

Strategy NCR 3.1(b) – Adopt Water Conservation Regulations and Incentives for Water Conserving Landscapes

The County will amend zoning regulations to require water conserving landscape plans during the site plan review process for employment centers, commercial development, multi-family, public facilities and mixed use development projects. The County will require that new covenants do not preclude xeriscape landscaping (i.e., water conserving), or incorporation of native plants and grasses.

Strategy NCR 3.1(c) – Allow Recycling and Reuse of Water

The County will allow the use of recycled or reused water in new development projects and in rural residential uses as long as it meets State environmental standards.

Strategy NCR 3.1(d) – Require Septic Systems To Be Managed

The County will require new development and subdivisions that are served septic systems to be managed by a designated management agency, such as a special district, homeowner’s association or the Tri-County Health Department. The County will require the use of DRCOG’s Septic Management Planning Process where applicable.

Strategy NCR 3.1(e) – Provide Education About Best Management Practices

The County will develop a “handbook” or guide for developers and landowners that addresses erosion control, including a list of “best management practices,” during and after construction projects. The County will work with the Tri-County Health Department and the Natural Resources Conservation Service (NRCS).

Strategy NCR 3.1(f) – Require Soil Erosion Control

The County will require developers to replace or rehabilitate topsoil and vegetation disturbed or destroyed by construction, as applicable.

Strategy NCR 3.1(g) – Establish Well Protection Zones

The County will identify wells that may be threatened by contamination and establish protection zones where best management practices will be required.

GOAL NCR 4 – Meet Environmental Standards for Air Quality

Arapahoe County will promote human health and environmental quality by maintaining compliance with National Ambient Air Quality Standards that control stationary and mobile source emissions of pollutants.

Policy NCR 4.1 – Improve Air Quality

Arapahoe County, while it has limited authority in air quality control, will work to improve air quality in the region through reducing growth rate of total vehicle-miles of travel, encouraging non-polluting industries to locate in the County, and supporting air quality technological and educational programs.

Strategy NCR 4.1(a) – Continue Emphasis on Vehicle Mile Travel Reduction to Improve Air Quality

To contribute to improved air quality, the County recommends reducing dependence on automobile travel by promoting higher density and mixed use development in Growth Areas.

Strategy NCR 4.1(b) – Support Programs and Education About Air Quality

Because vehicle miles are expected to increase, the County will support air quality programs and increase education to help improve air quality (including but not limited to

fuel standards, auto inspections, dust reduction on unpaved roads and at construction sites, wood burning restrictions, alternative road construction methods, and emissions standards for commercial and industrial sources).

Policy NCR 4.2 – Encourage Reduction in Energy Consumption

Arapahoe County will encourage reduction in energy consumption to conserve resources and to maintain air quality, through education and by providing incentives for energy efficient building design and solar-oriented site planning.

Strategy NCR 4.2(a) – Support Energy Conservation Programs and Education

The County will support programs and education to reduce energy consumption, solar energy research and other clean energy programs, and energy efficient building design and solar-oriented site planning.

Strategy NCR 4.2(b) – Consider Incentives for Buildings and Site Planning that Conserve Energy

The County will consider incentives to support energy efficient building design and solar-oriented site planning.

Strategy NCR 4.2(c) – Develop Lighting Standards

The County will amend regulations to establish stricter controls for outdoor lighting to allow visibility of dark night skies and to conserve energy. The County will recognize and use state-of-the-art technology to reduce light trespass and glare and to conserve energy. For example, motion-detectors for recreation field lights may be one such application.

GOAL NCR 5 – Address Environmental Hazards

Arapahoe County will address natural hazards, such as floods and geologic hazards, and other land use hazards such as noise.

Policy NCR 5.1 – Inform Residents About Environmental Hazards

Arapahoe County will inform residents about potential hazards in Airport Influence Areas, highway noise zones and other hazardous areas and promote mitigation of such hazards.

Strategy NCR 5.1(a) – Identify Potential Hazardous Areas

Identify potentially hazardous areas, including but not limited to airport noise zones, highway noise zones, Superfund Sites, geologic hazard areas, flood hazard areas, steep slopes and wildfire potential areas.

Strategy NCR 5.1(b) – Increase Public Awareness about Potential Environmental Hazards

Develop a manual or public information regarding the hazards of developing and living in hazardous areas.

Strategy NCR 5.1(c) – Restrict Development in Floodplains

Floodplains pose a tremendous hazard to the safety of citizens and property in them. Land in floodplains will not be developed and will remain in a natural state to the maximum extent feasible. The County will consider the establishment of setbacks for floodplains and natural waterbodies (e.g., minimum of 100 feet from the edge of a wetland, lake, stream, or floodplain). In addition, the County will cooperate with FEMA and the Urban Drainage and Flood Control District, as well as other State and Federal agencies, to prevent flood damage and incompatible land uses in flood hazard areas.

Strategy NCR 5.1(d) – Adopt Standards to Limit or Mitigate Development in Other Hazard Areas

Adopt standards to limit or mitigate development in other hazard areas, such as steep slopes and geologic hazard areas.

Strategy NCR 5.1(e) – Require Noise Mitigation

Require a noise analysis during the development review process for lands potentially affected by 65db(A) or greater noise level caused by highways and major arterials, railroads, and industrial noise. A noise analysis will also be required for lands lying within Airport Influence Areas that are potentially affected by aircraft generated noise of 55db(A) or greater. Where noise cannot be abated at the source, the County will require developers to mitigate noise in new residential areas using setbacks, berms and building materials. High sound walls without landscaping and that block views are inconsistent with the policies herein.

Strategy NCR 5.1(f) – Designate Compatible Land Uses Within Airport Influence Areas

Designate land uses within and immediately adjacent to Airport Influence Areas that are compatible with the associated hazards and noise of airports. Residential development will occur only in designated areas within the Airport Influence Areas and is not allowed in areas affected by 60db(A) or greater noise level.

Strategy NCR 5.1(g) – Provide a Transition of Non-residential Uses Between Incompatible Uses and Near Hazardous Land Uses

Residential development must not occur immediately adjacent to hazardous land uses, such as Superfund Sites.

SUPPLEMENTAL RURAL AREA POLICIES

GOAL NCR 6 – Ensure that Mineral Resource Extraction in the Rural Area is Adequately Mitigated

When extraction of valuable mineral resources occurs, Arapahoe County will ensure that adequate mitigation measures are undertaken to reduce impacts on surrounding development and land uses.

Policy NCR 6.1 – Require Mitigation of Potential Adverse Impacts of Mineral Resource Extraction

The County will require mitigation of potential adverse impacts of mineral resource extraction by developing standards and requiring mitigation plans.

Strategy NCR 6.1(a) – Identify Mineral Resource Areas

The County will identify areas that are valuable for resource extraction and allow extraction of subsurface resources, in accordance with State and Federal laws.

Strategy NCR 6.1(b) – Develop and Adopt Standards to Supplement State Regulations for Mining

The County will adopt standards to supplement State regulations for mining so that

potential adverse impacts of mining are fully implemented. Standards will address the issues including but not limited to: hours of operation, noise restrictions, conservation of wildlife habitat, old growth Cottonwoods, Riparian Areas, dust control, mud on roads, and traffic.

GOAL NCR 7 – Maintain Agricultural Activities in the Rural Area

Arapahoe County will continue to have a viable agricultural industry in the Rural Area.

Policy NCR 7.1 – Support Agricultural Activities

Arapahoe County will work to maintain opportunities for farmers and ranchers who desire to continue farming and ranching.

Strategy NCR 7.1(a) – Restrict Incompatible Land Uses in the Rural Area

The County will amend zoning regulations as necessary to restrict new incompatible land uses from occurring in the Rural Area to the maximum extent feasible. Where it is not possible to restrict uses, developers must provide buffers and locate incompatible uses away from existing agricultural operations.

Strategy NCR 7.1(b) – Maintain Agricultural Zoning

The County will restrict rezoning of land in the Rural Area for urban development or other land uses not related to agriculture.

Strategy NCR 7.1(c) – Reduce Zoning Barriers to Agriculture

The County will assess whether zoning regulations unduly discourage desirable agricultural activities and services and will revise zoning regulations where necessary. The County will allow essential agriculture-related businesses in the Rural Area outside rural centers, as determined by a special review process.

Strategy NCR 7.1(d) – Work with the Community Agriculture Programs in Support of Agricultural Activities

The County will work with the agricultural community to identify ways to support agricultural activities. In some cases working with non-profit organizations may increase educational opportunities about financing, tax incentives for conservation easements and about other options for landowners to continue farming.

Strategy NCR 7.1(e) – Develop a “Right to Farm” Ordinance

The County will develop a “Right to Farm” Ordinance, in accordance with State policies. Such an ordinance would help shield farmers and ranchers who are using accepted agricultural and management practices from nuisance lawsuits. Such lawsuits are often filed by neighbors who move in after the agriculture operation is established.

Strategy NCR 7.1(f) – Increase Education About Rural Area Activities

The County will develop educational programs that address issues and potential risks associated with building and living in the Rural Area, including weed control, domestic pet control, and information about living near working ranches and farms.

Policy NCR 7.2 – Conserve Prime Agricultural Lands

Arapahoe County will identify prime agricultural lands that should be conserved and actively encourage agricultural land use and agricultural production to continue on these lands.

Strategy NCR 7.2(a) – Identify Prime Agricultural Lands

The County will develop a database and inventory of prime agricultural lands as determined by highly productive soils (defined by the Natural Resources Conservation Service) and access to water rights.

Strategy NCR 7.2(b) – Consider Acquiring Land and/or Using Conservation Easements and TDRs to Conserve Prime Agricultural Lands

If the County establishes an Acquisition and Improvement Fund for open space, the County will determine whether publicly-funded conservation easements or acquisition are appropriate tools for conserving prime agricultural lands. The County will also consider whether TDRs are other possible voluntary conservation approaches. The County should consider whether a leaseback program would be necessary for private management of

lands.

OPEN SPACE, PARKS AND TRAILS

INTENT

The Open Space, Parks and Trails Policies suggest using open space as a means to help direct growth, maintain rural character, conserve wildlife habitat, create edges to the urban environment and provide opportunities for education, scientific research, wildlife observation, hiking and passive and active recreation activities.

COUNTYWIDE POLICIES

GOAL OS 1 –Develop a Countywide Open Space, Parks and Trails System

Arapahoe County will have a countywide connected system of open space, and will contain parks, trails and recreation facilities in Growth Areas that provide active and passive recreation opportunities for County residents.

Policy OS 1.1 – System of Connected Countywide System of Open Space, and Public Parks and Trails

Arapahoe County will work to improve a connected system of open space and increase residents' access to public parks and trails in Growth Areas. The County will develop policies and procedures to identify priority open space lands, set level of service standards and address regional connections. The County will primarily focus on voluntary techniques for creating an open space system, but will establish dedication requirements.

Strategy OS 1.1(a) – Work With the Open Space Advisory Committee

The County will work with the existing Open Space Advisory Committee, which has a current purpose of identifying funding sources. This Advisory Committee might evolve to advise on countywide open space planning and identifying acquisition parcels (see Strategy OS 1.1(c), below).

Strategy OS 1.1(b) – Develop an Inventory of Existing Parks, Trails and Recreational Facilities

The County will create a thorough inventory of existing parks, trails and recreation facilities in the County.

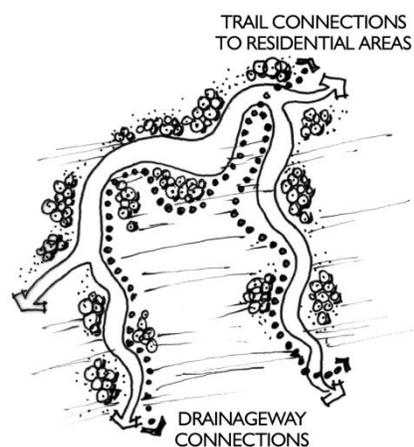
Strategy OS 1.1(c) – Develop a Countywide Open Space, Parks and Trails Plan

The County will develop an Open Space, Parks and Trails Plan that:

- contains the inventory of existing open space, parks, trails and recreational facilities;
- assesses improvement needs for existing facilities;
- identifies opportunities to expand on and improve the open space and trails system;
- develops level of service standard requirements for parks and trails in Growth Areas;
- identifies funding and implementation measures;
- develops criteria for land acquisitions;
- considers administrative needs for a program;
- considers impacts of recreation on wildlife;
- addresses management of open space parcels and maintenance of parks, trails and recreation facilities; and
- promotes connections with regional open space plans.

Strategy OS 1.1(d) – Establish Regional Open Space Connections

The County will work with adjacent counties (including Adams, Douglas and Jefferson), cities, DRCOG, Colorado State Parks, and parks and recreation districts to establish a regional interconnected open space system



Strategy OS 1.1(e) – Create an Open Space Acquisition and Improvement Fund

The County will create an Open Space Acquisition and Improvement Fund, which could be used to acquire lands, maintain open space areas and build and improve park facilities. The County should identify possible finance strategies, including but not limited to general obligation bonds, sales tax and/or fees, and seek grants and other funding sources. The County should also consider a variety of voluntary conservation measures, including land dedications and conservation easements and should work with non-profit organizations and land trusts to leverage local funding.

Strategy OS 1.1(f) – Establish Open Space Dedication Requirements for Private Development

The County will require open space dedications requirements for private development, or cash in lieu of dedication, to provide access to adjacent public lands and to provide adequate land for parks. The County will amend its zoning regulations as appropriate.

Policy OS 1.2 – Establish Level of Service Standards for Parks and Trails in Growth Areas

Arapahoe County will develop level of service standards for parks, trails and recreational facilities in Growth Areas and strive to meet these standards. Parks and trails should meet the needs of all residents, including senior citizens, children, teenagers and handicapped people.

Strategy OS 1.2(a) – Establish Level of Service Standards for Parks and Trails

The County will establish level of service standards as part of the Open Space, Parks and Trails Plan. Standards will address provision of parks and trails in Growth Areas and classifications for Regional, Community and Neighborhood Parks. The County will coordinate with existing parks and recreation districts (including the Arapahoe Park and Recreation District and the South Suburban Park and Recreation District) to establish agreed-upon standards to achieve consistency with the countywide Open Space, Parks and Trails Plan.

Strategy OS 1.2(b) – Promote Shared Use of School Recreation Facilities

The County will coordinate with school districts to determine if shared use of school facilities is appropriate to expanding active recreation opportunities.

Policy OS 1.3 – Plan for Non-Motorized Trails in Growth Areas and for Regional Connections

The County will promote trails planning to provide a non-motorized transportation alternative.

Strategy OS 1.3(a) – Address Opportunities to Improve a Trails System in the Open Space, Parks and Trails Plan

The County will address standards for trails and opportunities to improve a trails system in the Open Space, Parks and Trails Plan.

Strategy OS 1.3(b) – Adopt Connectivity Standards for Trails

The County will adopt connectivity standards for trails to require pedestrian, bicycle, and where appropriate, equestrian links between neighborhoods, commercial areas, civic uses, parks and open spaces (see Transportation Policies).

SUPPLEMENTAL RURAL AREA POLICIES*Policy OS 1.4 – Continue to Support Resource-Based Recreation in the Rural Area*

Arapahoe County will continue to support resource-based recreation in the Rural Area (e.g., hunting and fishing) on private lands if such activities can occur without adverse impacts on surrounding lands. The County will consider whether to allow such activities on public lands if the County acquires park land in the Rural Area.

Strategy OS 1.4(a) – Allow Resource-Based Recreation in the Rural Area

The County will examine whether current regulations allow resource-based recreation (including hunting and fishing) or whether the County could better accommodate such activities safely and with minimal adverse impacts in the Rural Area. The Open Space, Parks and Trails Plan will address management of public lands and resource-based recreation.

FISCAL AND ECONOMIC IMPACTS

INTENT

The Fiscal and Economic Impact Policies are intended to foster economic land use in a manner that ensures that Arapahoe County’s costs of providing infrastructure and services for development are met or exceeded by revenues generated by that development.

COUNTYWIDE POLICIES

GOAL FE1 – Balance Costs and Revenues

Arapahoe County will balance necessary expenditures related to the provision and maintenance of public services and facilities with revenues received from new development and property taxes.

Policy FE 1.1 – Balance Revenues with Recurring Infrastructure Costs

In places of Arapahoe County that are already developed and where facilities have maintenance requirements that strain the budget, the County may need to consider new revenue sources to pay for recurring infrastructure costs.

Strategy FE 1.1(a) – Consider Implementing New Revenue Sources

The County will consider implementing new revenue sources such as use taxes and sales taxes to balance costs of providing services with existing development.

Policy FE 1.2 – New Development Will Pay Capital and Operational Costs for Services and Infrastructure Attributable To It

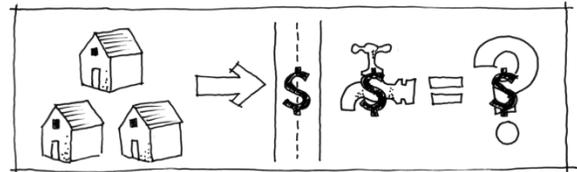
New development in Arapahoe County will pay the proportionate capital costs of required public services and facilities (i.e., streets, utilities, and parks) that are attributable to the development, as well as ensure that the long-term operation and maintenance of those services and facilities are provided for.

Strategy FE 1.2(a) – Restrict Approval of New Development That Does Not Pay Proportionate Costs

The County will approve only development that demonstrates that revenues are generated in the form of property taxes or other means that are sufficient to meet the proportionate costs of serving the proposed development.

Strategy FE 1.2(b) – Develop and Use a Fiscal Impact Model

The County will develop and use a Fiscal Impact Model to determine proportionate costs for new development to evaluate the impact of proposed developments on the County’s fiscal and operational ability to provide and maintain the services and infrastructure necessary to support the development.



Strategy FE 1.2(c) – Explore the Use of Impact Fees

The County will explore cost recovery systems that ensure that development occurs only if it pays its fair share. Development impact fees, in accordance with State authority, may cover costs of roads, police protection and parks. The system of fees, if adopted, must be fair and efficient and based on a standard formula that requires each new development to pay the calculated share of the cost of the new infrastructure and facilities.

V

Implementation Approach



V. Implementation Approach

INTRODUCTION AND OVERVIEW

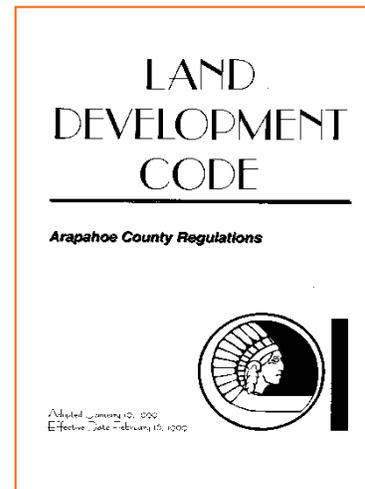
A key aspect of any plan is how it is carried out after it is adopted. The Implementation Approach section states how the County may best apply the strategies outlined in this Plan. First, this section recommends a variety of actions to instigate the Plan's strategies, outlined in Section IV. Next, it describes the Fiscal Impact Model to be used to evaluate proposed development. Finally, it explains the Plan Amendment Process.

ACTIONS

To apply the Plan's strategies, it is necessary to identify the types of actions that will be required, determine the responsible party or parties, and determine the priority and timing of the actions so the County is able to allocate necessary resources. The Action Plan Matrix supplements this section (see Appendix D). The Matrix categorizes each of the strategies according to the type of action that each will take to implement and lists the relative priority of actions. The necessary actions are: Regulatory Reform, Policy Decisions, Programs, Intergovernmental Agreements, Subarea Plans and Infrastructure Assessment. Each of these categories is briefly described below. A summary of the highest priority actions is located at the end of this section.

REGULATORY REFORM

The County's development regulations will need to be consistent with the goals and policies of the Comprehensive Plan for it to be realized. The County will need to revise the development regulations and standards, (including zoning, subdivision regulations, roadway standards, stormwater standards and development review procedures). For example, the Plan recommends the adoption of standards for cluster development in the Rural Area as a means to minimizing service demands from dispersed development and maintain rural character. The County will need to revise the Land Development Code with new standards for such development. Generally, revisions to the Land Development Code will need to take place soon after adoption of the Plan. Additionally, the County should consider adopting 1041 regulations (pursuant to C.R.S. Section 24-65.1-101 et seq.) as an additional tool to implement the goals, policies, and strategies of the Comprehensive Plan.



POLICY DECISIONS

The Plan identifies a number of strategies that will be carried out during day-to-day policy decisions made by the planning staff, Planning Commission, and Board of County Commissioners. The Board of County Commissioners will continually make decisions regarding development proposals and plan amendments. For example, resolving to restrict rezoning of lands in the Rural Area is a policy decision that is consistent with the intent of the Plan policies in Section IV. The Plan serves to guide such policy decisions that will occur throughout the life of the Plan.

PROGRAMS

The Comprehensive Plan establishes a foundation for new programs to carry out the goals of the Plan. For example, some strategies involve participating in planning efforts with other jurisdictions, such working with the State Land Board to develop long-range plans for the Lowry Bombing Range property. Special area studies may be necessary to accomplish other goals and policies, such as natural area conservation. Other policies may require the initiation of other planning efforts, such as the policy that supports developing an Open Space, Parks and Trails Plan. Programs have varying levels of priority, depending on the issues involved. Consequently, the County will initiate Programs at different timing intervals.

INTERGOVERNMENTAL AGREEMENTS

A number of the Comprehensive Plan recommendations will best be achieved through Intergovernmental Agreements between the County and other governmental entities, such as cities, towns, or special districts. For example, the Plan recommends that the County develop agreements with municipalities in the Urban Service Area to establish policies that encourage the annexation of land slated for development. Intergovernmental Agreements are generally a high priority for the County – to be initiated as soon as possible and completed within one to two years. Once established, they will continue to be operative for as long as the agreements intend.

SUBAREA PLANS

A key component of the Comprehensive Plan is to develop Subarea Plans for the Eastern Communities. These Subarea Plans will establish Growth Areas for the unincorporated communities of Watkins, Byers, and Strasburg, based on the ability of service districts and the County to provide needed community services and facilities. Subarea Plans for the Eastern Communities are an immediate priority – to be done soon after adoption of the Comprehensive Plan. In the Urban Service Area, Subarea Plans for certain key areas are a high priority – to be initiated as soon as possible and completed within one to two years.

INFRASTRUCTURE ASSESSMENT

In some cases, the Plan recommends that the County take a proactive role in working

with service districts to assess current and future needs and plan for expansion and improvement to services and facilities. For example, the Plan recommends that the County work with water and sanitation districts in the Eastern Communities so that they may provide the infrastructure needed to support development in proposed Growth Areas. The County will be involved with Infrastructure Assessment throughout the life of the Plan.

FISCAL IMPACT ASSESSMENT

A Fiscal Impact Model has been developed as a part of the Comprehensive planning process. The County will use the Model to evaluate fiscal impacts of proposed development. It will allow decision makers to gauge the additional costs and revenues that a proposed development will generate. While the model is a useful tool for evaluating financial considerations, the County may also need to consider other factors when making a decision about the viability of a development proposal. Some of these factors might include but are not limited to economic development objectives, proposed mitigation of fiscal impacts, or provision of needed affordable housing. Appendix F contains information about the Fiscal Impact Model.

PLAN REVISIONS AND AMENDMENTS (Amended January 7, 2014)

The Plan Revisions and Amendments process is considered an administrative change by the Arapahoe County Planning Commission. However, changes to the approved Comprehensive Plan and Subarea Plans will follow the procedures described below.

INTENT

Regular evaluation of the approved Comprehensive Plan (Complan) by the Planning Commission is necessary to provide an accurate statement of County development Goals and Policies based on current data and the needs of County citizens. Therefore, when changes in the social, physical or economic conditions of the County occur, it becomes necessary to reevaluate and change development goals and policies. In addition, consistency with the Comprehensive Plan is considered a fundamental criterion for a positive recommendation for zoning applications. The following procedures have been established to amend the Complan.

Generally, two types of amendments may be made to the Complan.

- A. Members of the community may initiate amendments only to the Comprehensive Plan Land Use Plan map or subarea plan maps. Such amendments shall be considered Major Amendments. Members of the community includes: individuals, landowners and/or their representatives, homeowners associations, and other parties affected by the plan.
- B. The Arapahoe County Planning Commission, either on its own or at the request of members of the community, the Board of County Commissioners, or the

Planning Division, may initiate either major or administrative amendments which affect the Land Use Plan map, the goals, objectives, and policies of the Complan or any subarea plans.

Major amendments have a significant effect on the intent of the goals, objectives, policies, and maps of the Complan. Examples of these are as follows:

- A. A comprehensive update of the Complan conducted approximately every ten years.
- B. The preparation of additional or more specific elements of the Complan or subarea plans.
- C. The revision of elements or portions thereof (including maps) as new information becomes available.

Administrative amendments include changes that do not affect the goals, objectives, policies, or maps in any substantive way. Examples of these are as follows:

- Updating the Land Use Plan map to show areas newly designated as preserved or conserved.
- Updating the Land Use Plan map to show newly annexed areas or incorporated municipalities.
- Updating population and employment forecasts.
- Formatting changes.

AMENDMENTS INITIATED BY THE PUBLIC

Plan amendments initiated by the public can be submitted and processed at any time during the year. The number of amendment requests that can be processed in any quarter may be limited by the Planning Division work program, which is set by the Planning Commission. Any amendment request deferred will be processed during the next quarter.

Approval Criteria

All of the following criteria shall be considered by the Planning Commission when approving or disapproving Complan amendment requests. The applicant has the burden of proof to demonstrate that an amendment fully complies with these standards and regulations and meets the criteria for approval. Each application must demonstrate:

- A. Consistency with the spirit, intent, goals, objectives, and policies of the Complan.
- B. Compatibility with surrounding land uses and zoning.

- C. Compatibility with existing, natural, and environmental conditions of the proposed amendment and preservation of important natural features, riparian corridors, wildlife habitat and movement corridors, and historic resources.
- D. Adequate water supply, water and sewer treatment facilities, transportation networks, access, fire protection, school facilities, and parks and trails for the development.
- E. How existing and planned capabilities of the affected special districts can adequately handle the service demand.
- F. How social, economic, or land-use conditions of the County have changed or are in the process of changing in such a manner to support the proposed amendment to the Complan.

Procedure for Amendments Initiated by the Public

Presubmittal Meeting. Prior to submittal of a Complan amendment application, the applicant shall meet with staff to review the proposal and discuss the procedures and submittal requirements. The applicant shall contact the Planning Division and schedule a presubmittal meeting which may include other referral agencies, as deemed necessary. The applicant shall provide the following:

- A. Project Narrative (per Section D of the Submittal Requirements), herein).
- B. Complan Amendment Map (per Section E of the Submittal Requirements, herein).
- C. Summary of initial meetings with stakeholders (homeowner associations, citizens, chambers of commerce, and groups such as the Four Square Mile planning committee).

Staff shall comment on the proposed amendment; its compliance with the intent of the amendment provisions; explain the amendment process; and identify any additional submittal requirements. A staff comment summary shall be provided to the applicant. The staff comment summary should not be considered an indication of the staff's recommendations regarding the proposal nor the Planning Commission's intention to approve or deny the amendment request.

Informal Planning Commission Discussion. At the discretion of the applicant, the applicant may request a discussion of the proposed amendment with the Planning Commission. This discussion will be scheduled as part of a study session at a regular meeting of the Planning Commission. The intent of this discussion is to provide the applicant with preliminary comments and issues that the Planning Commission has identified. The discussion should not be considered an indication of the Planning Commission's intention to approve or deny the amendment request.

Amendment Application. The Complan amendment application shall be submitted only after the presubmittal meeting has been completed and a copy of the comment summary has been provided to the applicant. Complan amendments shall then be processed as follows:

- A. The applicant shall submit the required information to the Planning Division. The submittal shall be reviewed for completeness within 10 working days. The applicant shall be notified of any inadequacies. An incomplete submittal shall not be processed until the deficiencies in the submittal have been remedied.
- B. The applicant shall submit an application fee deposit of \$7,500 payable to Arapahoe County Planning. At least 10 working days prior to final Planning Commission action, the Planning Division will calculate the actual cost of processing the plan amendment request. If the cost is less than the \$7,500 application fee deposit, the difference will be refunded to the applicant. If the cost is greater than \$7,500, the applicant shall submit an additional fee equal to the difference between the actual cost and \$7,500. The additional fee shall be submitted at least 5 working days prior to the Planning Commission publicly noticed hearing at which action on the amendment is scheduled. Failure to remit this fee prior to the meeting will result in withdrawal of the Comprehensive Plan Amendment application.
- C. For complete applications, staff shall notify the applicant of the referral agencies to receive referral packets. Referral packets shall be in unsealed envelopes large and durable enough to accommodate all packet materials, addressed to the appropriate referral agency, with all information identified in parts A, D, and E of the Submittal Requirements, properly folded and compiled. Referral packets shall also be provided to known homeowner associations within two miles of amendment areas (or the area of the subarea plan) and any other homeowner association potentially affected by the development.
- D. Staff shall mail the referral packets to the referral agencies. Staff shall mail notification letters to abutting landowners. The applicant shall submit any revised plans or documents for distribution to the referral agencies, as required by staff.
- E. The referral agencies shall comment within 20 working days from the date of mailing a complete submittal unless the applicant grants an extension of no more than 10 working days. The applicant is encouraged to meet with the referral agencies, staff, and public interest groups to address any concerns prior to the end of the referral period. The amendment shall be referred to the Division of Planning of the Department of Local Affairs in conformance with C.R.S. §30-28-122.

- F. The applicant shall hold a neighborhood meeting in the affected area to discuss the proposed plan amendment. The applicant will prepare a summary of the meeting that shall include an explanation of how any issues identified at the neighborhood meeting have been addressed and names and addresses of all participants/attendees.
- G. The staff planner will review the referral comments, discuss the concerns with the applicant, schedule a public hearing before the Planning Commission, notify the applicant of the hearing date and time, and prepare a staff report.
- H. The applicant shall be responsible for public notification in accordance with the Public Notice Requirements Section, herein.
- I. The Planning Commission shall evaluate the application, referral comments, staff report, and public testimony, and take one of the following actions:
 1. Approve the request.
 2. Approve the request with conditions.
 3. Table for further study.
 4. Continue the request to a time and date certain in order to obtain more information and to take additional public testimony.
 5. Deny the request.
- J. The Planning Commission's decision shall be based on the evidence presented, and compliance with the standards for approval, as listed in the Approval Criteria section and shall be in the form of a resolution.
- K. The Planning Commission resolution shall identify the approved amendment map and be signed by the Planning Commission Chair.
- L. If the amendment request is approved, all post-approval requirements shall be completed, as identified in the Approval Actions section.

Submittal Requirements. The Complan amendment application shall include:

- A. Completed Land Use Application Form (copy available from the Planning Division).
- B. Application Fee Deposit (submit check for \$7,500 payable to Arapahoe County Planning at time of submittal).
- C. Proof of Ownership, using information available from Arapahoe County's online GIS map, ArapaMAP.
- D. Project Narrative (8-1/2" x 11" document) supplemented with appropriate maps that describe the following:
 1. Intent of amendment.
 2. Conditions that have changed in the County to warrant the amendment.
 3. Consistency with the goals, objectives, policies, and intent of the Complan.

4. Consistency with maps contained in the Complan.
 5. Consistency with regional plans including Metro Vision, the Regional Transportation Plan, etc.
 6. Compatibility with surrounding land uses, density, and zoning.
 7. Environmental conditions and hazards shown on the current Complan.
 8. Important natural features, riparian corridors, wildlife habitat, and movement corridors shown on the current Complan
 9. Historic resources identified on the current Complan.
 10. Relationship to the existing road network and transportation element of the Complan.
 11. Capabilities of, and impacts on, existing or planned special districts affected by the amendment.
 12. Availability of water supply and provision of water and sanitary sewage treatment.
 13. Availability of public facilities such as schools, parks and trails, libraries, fire stations, etc.
- G. Complan Amendment Map (24" x 36") illustrating or containing the following:
- H. Vicinity map at a scale of 1" = 2,000' clearly showing location of the amendment in relation to major roads, section lines, existing subdivisions, and other pertinent features.
- I. Legal description and acreage of the property submitted for amendment.
- J. Drawing of the area proposed to be amended, at an appropriate scale determined by staff, that includes the following:
1. Topography in the area at 10-foot contour intervals.
 2. Major roads on, or adjacent to, the site and their functional classifications.
 3. Existing and proposed Complan Land Use Plan map (or subarea plan map) land-use designations.
 4. Complan Land Use Plan map (or subarea plan map) designation of adjacent areas.
 5. Any significant natural features or environmental conditions on or adjacent to the site.
- K. Stamped envelopes addressed to abutting landowners and landowners within one quarter mile of proposed amendment.
- L. A copy of the staff comments from the presubmittal meeting and any additional information, as requested by staff. A written response to all questions and comments raised through the presubmittal process is recommended.
- M. Evidence of ability to develop a sufficient water supply.

Public Notice Requirements. The applicant shall be responsible for public notification concerning public hearings. Such notice shall be made available to all residents and

property owners in the area affected by the proposed amendment. If the area is within an adopted subarea plan, the affected area will be considered the planning area included in the subarea plan. The following methods shall be used:

- A. **Communication with Homeowners Associations.** At least 20 working days prior to the Planning Commission hearing, the applicant will provide written notice to the president of each homeowners association within the affected area. The Planning Division can provide the applicant with a list of homeowners associations in the county.
- B. **Written Notice.** At least 10 working days prior to the Planning Commission hearing, the applicant shall mail a written notice of the hearing by first-class mail to the address of each abutting landowner and landowners within one quarter mile at such address shown in the records of the Arapahoe County Assessor's Office. The notice shall read substantially the same as the published notice also required by this section.
- C. At least 5 working days prior to the public hearing, the applicant shall submit the following to the Planning Division:
 1. An alphabetical list of the abutting landowners and landowners within one quarter mile.
 2. A map showing the site and the location of the landowners.
 3. A copy of the notice sent to the landowners.
 4. The certificate of mailing.

AMENDMENTS INITIATED BY THE PLANNING COMMISSION OR COUNTY STAFF

Submittal Requirements

Information submitted to the Planning Commission should be of sufficient detail to clearly explain the proposed amendment. A narrative describing reasons for the proposed amendment and maps or data supporting the amendment shall be included.

Major Amendment Procedure

Referrals. All major amendments shall be sent out to appropriate referral agencies for comment. The referral agencies shall comment within 20 working days after receiving a submittal. The amendment shall be referred to the Division of Planning of the Colorado Department of Local Affairs in conformance with C.R.S. §30-28-122.

Public Hearing. The Planning Division shall schedule a public hearing before the Planning Commission and prepare a staff report. At least 10 working days before the Planning Commission hearing, staff shall publish a notice in at least one publication of The Villager newspaper and, if the proposed amendment is in the area east of E470, in The I-70 Scout and on the County website.

Planning Commission Action. The Planning Commission shall evaluate the proposed amendment, referral comments, staff report, and public testimony, and take one of the following actions:

- Approve the request.
- Approve the request with conditions.
- Table the request for further study.
- Continue the request to a date and time certain in order to obtain more information and to take additional public testimony.
- Deny the request.

Administrative Amendment Procedure

As needed, the staff shall prepare a staff report describing narrative and map revisions to the Complan and provide that report to the Planning Commission. Following Planning Commission review and comment, the Planning Division Manager shall approve administrative amendments. No public hearing shall be required.

APPROVAL ACTIONS

Planning Commission Approval

The Planning Commission's decision on major amendments shall be in the form of a resolution. The Planning Commission resolution shall identify the proposed amendment map or narrative specifically and be signed by the Planning Commission Chair.

Plan Publication

All amendments approved shall be included in the next publication of the Complan.

Plan Certification

The Planning Commission shall certify a copy of the amended Complan to the Board of County Commissioners, as well as the planning commissions of all municipalities in the County.

SUMMARY OF PRIORITY ACTIONS

The Comprehensive Plan identifies a number of immediate priority items that should be implemented as soon as possible, in order to ensure that the County's land use actions and decisions are aligned with the policies contained in the Plan. These are summarized below, within the eight categories that are contained in the Goals and Policies section of the Plan.

GROWTH MANAGEMENT

- Amend the County's Development Regulations to achieve consistency with the Comprehensive Plan

- Identify opportunities to streamline the development review process
- Create incentives and remove barriers to infill development
- Revise Zoning and Subdivision Regulations for the eastern communities
- Create standards and incentives for cluster development in the rural area
- Establish Planning Areas for the eastern communities
- Establish Planning Areas and Growth Area boundaries for the Eastern Communities
- Consider whether to increase the minimum lot size in the rural area to 80 acres

PUBLIC FACILITIES AND SERVICES

- Require centralized water systems for rural developments (2 ½ acres or smaller)
- Develop Intergovernmental Agreements regarding development standards
- Develop level of service standards for roads
- Require adequate public facilities and services to be provided contemporaneously with new development

NEIGHBORHOODS AND HOUSING

- Revise Zoning Regulations to allow mixed use development in new neighborhoods
- Amend Zoning Code to allow a mixture of housing densities in growth areas
- Subarea planning for urban corridors and the Four Square Mile Area.

EMPLOYMENT AND COMMERCIAL DEVELOPMENT

N/A

TRANSPORTATION

- Promote an efficient transportation system through the Comprehensive Land Use Plan
- Develop a Countywide Transportation Plan
- Establish transportation level of service standards for the rural area
- Establish a road-paving standard
- Require adequate roads to be provided contemporaneously with new development

NATURAL AND CULTURAL RESOURCES AND THE ENVIRONMENT

N/A

OPEN SPACE, PARKS, AND TRAILS

- Continue to work with the Open Space Advisory Committee on developing

County-wide open space strategies

FISCAL AND ECONOMIC IMPACTS

- Develop and use a Fiscal Impact Model to evaluate the impacts from new development on the County

Appendices



A: Glossary of Terms

Affordable Housing: Housing which has a sales price or rent within the means of a low or moderate-income household as defined by local, state or federal legislation.

Annexation: The incorporation of land into a municipality, resulting in a change in the boundaries of that municipality.

Arterial (Major): Major arterials permit relatively unimpeded movement of heavy through traffic within the metropolitan area. Major arterials link communities and major land use concentrations (e.g., Parker Road, University Avenue and Arapahoe Road).

Arterial (Minor): Minor arterials are intended to permit relatively unimpeded movement of through traffic within the metropolitan area. However, traffic is generally less heavy, and the roadways are more local in nature than major arterials.

Aquifer: An underground bed or stratum of earth, gravel or porous stone that contains water.

Best Management Practices: Any activities, practices, procedures, programs, or other conservation measures designed to prevent or reduce the discharge of chemical, physical or biological pollutants directly or indirectly into surface water or groundwater to control soil loss and achieve water quality conservation goals.

Bonus Development Units: An increase to the otherwise maximum allowable number of units on a specific site in exchange for the developer's proposal to provide a public benefit or amenity.

Buffer: An area of land established to separate land uses, or a natural area designed to intercept pollutants and manage other environmental concerns or provide for open space.

Cluster Development: A development design technique which concentrates buildings on a portion or portions of the site to leave the remainder undeveloped and used for agriculture, open space and/or natural resource protection.

Collector Street: A Street that collects traffic from local streets and connects with major and minor arterials.

Community Water and Sewer: The provision and distribution of potable water, and collection and centralized treatment of sewage, for a residential subdivision or non-residential development that is owned, maintained, and operated by an entity for the sole purpose of providing such water and sanitary sewer service for the benefit of the development to which services are provided.

Compact Development: A focused layout of developed land that directs growth to well-defined contiguous areas. Compact development maintains the region's natural environment, livability and sense of community, conserves open lands and natural resources, and ensures that public facilities and services are delivered efficiently.

Conservation Easement: A property interest or right granted by the landowner to a land trust to maintain in a natural state or limit the use of that land.

Density: The average number of dwelling units per gross acre of land on a development site, including all land within the boundaries of the site for which the density is calculated.

Denver Regional Council of Governments (DRCOG): A voluntary association of 49 county and municipal governments in the greater Denver area which work together to address issues of regional concern, including growth management, transportation, and regional water quality.

Design Guidelines: Written statements, explanatory material, graphic renderings and/or photographs which are intended to provide property owners and the public with specific examples of techniques and materials that can be used to achieve the stated design objectives.

Design Standards: Regulations adopted in the Code that set forth criteria for the physical development of a site including requirements pertaining to heights, landscaping, parking, setbacks and other physical requirements.

Development: The process of converting land from one use to another, including the rezoning of land; subdivision of a parcel of land into two or more parcels; the construction, reconstruction, conversion, structural alteration, relocation, or enlargement of any structure; and any mining, excavation or landfill.

Eastern Community Planning Areas: Towns and their environs that create manageable planning units for addressing land use, transportation, facility, demographic and growth analysis. These places along I-70 are mapped on the Comprehensive Land Use Plan.

Employment Center: Major concentrations of employment, including existing business parks and industrial areas. Centers should integrate buildings, outdoor spaces, transportation facilities, and if appropriate, residential uses.

EMS: Emergency Medical Service, typically provided by mobile units.

Floodplains: Lands adjacent to lakes and streams subject to periodic flooding. Floodplains naturally store floodwater, conserve water quality and are valuable for recreation, and fish and wildlife habitat.

Groundwater: The supply of fresh water under the surface in an aquifer or soil that forms a natural reservoir.

Growth Area: An area that is appropriate for urban development because it contains or is planned for urban facilities and services typically associated with more densely populated areas, such as paved streets; neighborhood parks; public water and wastewater systems; and police and fire service.

Highway: A High speed, limited access road. Interstate-25 (I-25), Interstate-70 (I-70), Interstate-225 (I-225), and Extension-470 (E-470) are designated as highways. The primary function of a highway is to move traffic unimpeded within the region and to provide through movement to other cities and states.

Impact Fees: Charges that are assessed on new development to help pay for the capital facilities need by new development. Impact fees are based upon a standard formula and predetermined fee schedule.

Implementation: Carrying out or fulfilling plans and proposals.

Incorporated: The act or process of forming or creating a municipality.

Infill Development: The development of new housing or other uses on vacant parcels and scattered vacant sites within already built-up areas.

Infrastructure: Facilities such as roads, water and sewer lines, treatment plants, utility lines and other permanent physical facilities in the built environment needed to sustain industrial, residential or commercial activities.

Intergovernmental Agreement: A written agreement between two or more governmental jurisdictions.

Intersection: A location where two or more roads cross at grade.

Land Use Plan: A plan showing the existing and proposed location, extent and intensity of future land development for varying types of residential and non-residential uses of land.

Level of Service Standard: An expression of the minimum capacity required to satisfy needs for a particular service or facility.

Mitigate: To make less severe; alleviate; relieve.

Mixed Use: The development of a tract of land, building or structure with two or more different uses, including but not limited to residential, employment, public facilities or commercial.

Multi-Family Residential: A residential development containing three or more units, not including hotels, motels or group accommodations with an average gross density of thirteen (13) or more units per acre.

Municipal/District Water and Sewer: The provision and distribution of potable water and collection and centralized treatment of wastewater for all of the properties within a municipality, or for a geographic area which encompasses a number of separately developed areas for residential housing and/or non-residential land uses.

Municipality: A public corporation created by the legislature for governmental purposes that possesses local legislative and administrative powers.

Neighborhood: An area of a community with characteristics that distinguish it from other community areas, and which may include distinct ethnic or economic characteristics, schools or social clubs, or boundaries defined by physical barriers such as highways, or natural features such as rivers.

Non-Point Source Pollution: Multiple, diffuse areas of land surface or points of origin that contribute pollutants to a water source.

Non-residential: Any business, commercial or industrial development that does not contain residential dwelling units.

Open Space: Any parcel or area of land or water essentially unimproved and set aside, dedicated, designated, or reserved for public or private use or enjoyment, or for the use and enjoyment of owners and occupants of land adjoining or neighboring such open space.

Park: A tract of land designated and used by the public (or privately used if privately owned), for active and passive recreation.

Planning Reserve Area: An area in which joint planning will occur to consider future uses and conservation beyond the time horizon of this Plan.

Public Facilities: Land uses including schools, day care facilities, churches, libraries, jails, recreational centers, airports, hospitals, fairgrounds, utility lines, power substations, fire stations, police/law enforcement stations, government offices, and power energy facilities.

Public Improvement: Any improvement, facility or service, together with its associated public site or right-of-way, necessary to provide transportation, drainage, public or private utilities, energy or similar essential services.

Recreation, Active: Developed facilities used for recreation (e.g., including but not limited to soccer, baseball, softball, running tracks, paved bicycle trails, volleyball and tennis, off-road vehicle parks). Active recreation implies a high level of human use of an open space area or park.

Recreation, Passive: Relatively undeveloped lands used for recreation (e.g., unpaved trails for non-motorized use, picnic tables and interpretive sites). Passive recreation implies a lower level of human use of an open space area or park.

Redevelopment: The replacement or reconstruction of buildings that are not making efficient and effective use of the land on which they are located, or are in substandard physical condition.

Riparian Area: The upland area adjacent to a natural drainage way, lake, pond, reservoir or wetland characterized by a narrow band of lush vegetation within much drier surroundings.

Sensitive Development Area: Habitat and intact ecosystems, such as short grass prairie and conservation areas as designated by the Colorado Natural Heritage Program.

Single Family Attached / Urban Residential: A residence containing no more than one unit that is attached to one or more residences. Density ranges from 6 to 12 units per acre. This would include small multi-family dwellings that are compatible in character to single-family detached residences.

Single Family Detached / Urban Residential: A residence containing no more than one unit that is not attached to any other residence or building by any means, including

mobile homes and manufactured housing situated on a permanent foundation. Density ranges from 0 to 6 units per acre.

Special District: A district created by act, petition or vote of the residents for a specific purpose with the power to levy taxes.

Subarea Plan: A plan for a defined community or area within the County, typically developed with the involvement of residents of the area that is adopted as an element of this Comprehensive Plan.

Subdivision: The division of a lot, tract, or parcel of land into two or more plats, sites, or other divisions of land for the purposes, whether immediate or future, of sale of a building or development.

Transferable Development Rights: The transfer of development units from one location to another in the County.

Transit-Oriented Development: Urban development designed to accommodate pedestrians and non-vehicular forms of transportation on site and that has densities high enough to sustain transit use (i.e., typically at least seven dwelling units per acre).

Urban Development: An area with physical characteristics, levels of service, and land uses typically associated with more dense population, such as paved streets, neighborhood parks, curb, gutter, and sidewalk, public water and sewer, storm drainage systems and police and fire services. Urban development includes industrial, commercial/retail, or residential uses with an overall density of at least one unit per acre.

Urban Growth Boundary: As defined by the Denver Regional Council of Governments (DRCOG), the area that defines where urban development and expected growth should occur. Growth boundaries encourage contiguous and orderly growth, and prevent inefficient development and its burdens on infrastructure and service provision. Boundaries distinguish between land that is urban and that which is unimproved or rural.

Urban Service Area: The defined area (see Comprehensive Land Use Plan Map) of government-supplied public facilities and services and urban development.

Zoning: The dividing of the County into districts, and the establishment of regulations governing the use, placement, spacing and size of land and buildings.

B: Planning Influences

Appendix B provides a summary of the factors affecting land use in Arapahoe County. The factors include regional influences, physical elements, current land use and development patterns and opportunities, infrastructure and services capabilities, and transportation considerations. This information was compiled during the first phase of the comprehensive planning process, *Assessment of Issues and Existing Conditions*, and during the second phase



of the process, *Land Demand/Capability Analysis*.

Figure B-1: Arapahoe County Regional Context

REGIONAL INFLUENCES

CENTENNIAL AIRPORT

Centennial Airport is roughly bounded by Arapahoe Road to the north, County Line Road to the south, Jordan Road on the east, and I-25, which lies west of the boundary. The Airport continues into Douglas County where its property line terminates at E-470. Centennial Airport is the second busiest general aviation airport in the United States. The Arapahoe County Public Airport Authority has imposed restrictions on the weight of aircraft permitted to use the Airport. However, it is under pressure to allow scheduled passenger service. Neighboring residential groups oppose this effort, and the recent incorporation of the City of Centennial is likely to sustain this restriction. Currently, there are no plans to expand the boundaries of the Airport, but improvements to runways and taxiways are anticipated.

FRONT RANGE AIRPORT

Front Range Airport (located in Adams County) is roughly bounded by Imboden Mile Road on the west, Petterson Mile Road on the east, I-70 on the south and East 56th Street on the north. Due to the Airport's proximity to I-70, communities such as Watkins, Strasburg, Byers, and Deer Trail could benefit from employment opportunities generated by the Airport.

DENVER INTERNATIONAL AIRPORT

Denver International Airport (DIA) is located in the City and County of Denver, some distance north of Arapahoe County's boundary. DIA, at 54 square miles, is one of the largest airports in the world. Noise contours associated with DIA just barely extend into Arapahoe County; its noise influence area is generally north of the County line. However, demands for development activities in the region due to DIA will likely have an impact on portions of Arapahoe County, particularly the Eastern Communities.

BUCKLEY AIR FORCE BASE

Buckley Air Force Base (formerly known as the Buckley Air National Guard Base) is located in the City of Aurora, just west of E-470. This 3,250-acre military facility presently impacts residential areas in Aurora between I-70 and 8th Avenue and southeast of Jewel Avenue. Buckley's noise contour (60 LDN) prevents residential development within the airport influence area. Buckley Air Force Base has a protection zone at the end of the northwest/southeast runway to discourage development under the approach/departure paths.

E-470 TOLLWAY

E-470 is a privately financed highway that provides a connection around the eastern fringe of the urbanized Denver metropolitan area, connecting I-25 to the south in Douglas County to Denver International Airport. The final phase of the tollway will connect DIA to the northern metro region, at State Highway 7 and I-25. It runs in a north/south direction through the eastern edge of Arapahoe County's Urban Service Area. Most of the land along the E-470 corridor within Arapahoe County is located in the City of Aurora.

LOWRY LANDFILL

The Lowry Landfill is north of Aurora Reservoir and just to the east of E-470. The City of Aurora enacted an ordinance in 1987 restricting water and land development around the Lowry Landfill/Superfund Site. Currently the City prohibits development within one-quarter mile of the east, south and west exterior boundaries of Section Six, prior to EPA's remedy plan (expected in 2001). The City of Aurora will attach development stipulations and conditions with development proposals for the area.

PHYSICAL ELEMENTS

CURRENT LAND USE IN ARAPAHOE COUNTY

Arapahoe County covers approximately 806 square miles. Agriculture is the predominant land use in the County – mostly in the eastern two-thirds of the County. Institutional uses, including schools, public facilities and churches, consume roughly 6.4% of the County. Non-residential uses, including retail, commercial, industrial and utilities, cover roughly 2% of the County’s land area. Residential land uses occupy over 8% of the entire County and 4% of unincorporated lands. Vacant, unincorporated land that has been zoned for urban development and not yet developed represents 8,657 acres, or 2% of the entire County land area.

URBAN GROWTH BOUNDARIES WITHIN ARAPAHOE COUNTY

The Denver Regional Council of Governments (DRCOG) Urban Growth Boundary contains approximately 102,000 acres, including approximately 56,000 unincorporated acres (36.26 square miles), in Arapahoe County. Most of the unincorporated land within the Urban Growth Boundary has been developed, and the entire 36.26 square mile allotment has been allocated. With the recent incorporation of the City of Centennial, 27 square miles of that allocation is now located within the incorporated City limits, leaving approximately 9 square miles in unincorporated Arapahoe County, all of which has been allocated.

WILDLIFE AND VEGETATION

The rapid expansion of population on the Front Range and the movement of the Denver Metropolitan population into Arapahoe County is fragmenting wildlife habitat. In particular, the traditional pattern of land division into 35-acre parcels has a major negative impact.

The Eastern Plains of Arapahoe County contain unique plant and animal species. As development continues to spread east across the County, it will be important to know the location of these plant and animal species. Because of their rareness and/or their contributions to wildlife habitat it may be important to conserve them.

The Colorado Natural Heritage Program (CNHP) provided information on the location of plant species throughout eastern Arapahoe County. In addition to plant species, the CNHP also identifies potential conservation areas because of the presence of rare and imperiled species and plant communities. The conservation areas represent the CNHP’s estimate of the primary habitat supporting the long-term survival of targeted species and plant communities (see Vegetative Land Cover Map).

The areas of most significance identified include the prairie grasslands (including Tallgrass, Midgrass and Shortgrass Prairie), which make up a significant portion of eastern Arapahoe County, and the forest dominated riparian areas, which are located along several of the major drainageways.

POPULATION GROWTH

Arapahoe County, like the rest of Colorado, has seen a tremendous amount of

population growth and new development during the 1990's. In 1990, the population of Arapahoe County was 391,511. By 1998 the population had risen to 478,570, a 22% increase. Arapahoe County's growth is projected to continue. By the year 2020, population is projected to grow to 569,045, a 19% increase. The face of Arapahoe County's population will also continue to change. While the County is experiencing a decline in younger residents -- under the age of 15, a higher percentage of people are elderly (40% are over 50). At the peak of the baby boom generation it is expected that the County's senior population will increase; over one quarter of the population will be seniors.

CURRENT ZONING / BUILD-OUT CAPACITY

The build-out capacity of the County's existing zoning districts was calculated using the permitted densities of each zoning classification (see Existing Zoning Map). It is not realistic, however, to assume the total acreage of a particular zoning district will translate directly into a given density. This is because land is required for roads, utility easements and open space. Therefore, from the total acreage for each zone class, 20% was subtracted for open space requirements and 20% was subtracted for infrastructure requirements, such as roads and utility easements. The following findings were determined about the build-out capacity of the County:

- **Population Forecasts Exceed Zoned Land Supply** – The potential population estimated at build-out of the current zoning is significantly less than DRCOG's projected 2020 population and the potential population the groundwater supply is able to accommodate. With demand for developable land exceeding supply, Arapahoe County has the ability to properly manage and direct growth to those locations that are most suitable, including directing urban development to cities that are capable of providing infrastructure and services.
- **Existing Zoning is Consistent with Rural Character in the Eastern Portion of the County** – The existing zoning does not allow urban development to occur east of Gun Club Road. By maintaining the existing zoning, the County is in a strong position to maintain the character of rural areas.

RECENT DEVELOPMENT ACTIVITY

As a method of determining the "hot spots" for development within the County, the planning team conducted a development activity analysis. This analysis focused on two related factors. First, it examined the type and location of building permits issued within the last five years (1995–1999). This showed that demand is most strong for building permits for single family residences, especially in rural areas. Second, the analysis showed that land parcel sizes east of Gun Club Road are predominantly large (31% are over 80 acres); however more are being subdivided into 35-acre and smaller parcels (see Land Use Parcelization and Recent Development Activity Map).

The following charts show the number of building permits issued by region and the percentage of lot sizes east of Gun Club Road.

- **Significant Amount of Divided Land** – A significant amount of land division has

taken place within the County, particularly north of Quincy Avenue, between Watkins Road and Kiowa Creek. This activity may be attributable to its easy access to I-70 and the fact it is only a short distance to Denver International Airport, downtown Denver, and the Denver Technology Center. As traffic congestion and home prices continue to increase within the metro area, the demand for rural, large lot development may continue to increase.

The figure illustrates the number of building permits issued from 1995 to 1999 for various land parcel sizes (shown from small to large) in Eastern Arapahoe County (east of Gun Club Road).

Figure B-2: Parcel Sizes and Building Permits Issued in East Arapahoe County

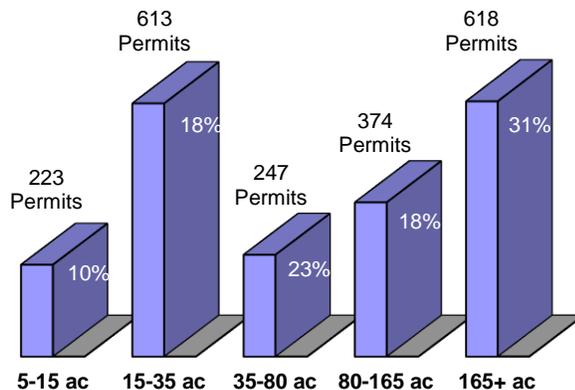
- **Building Activity Concentrated in Central Portion of County** – A large number of building permits have been issued between Watkins Road and Kiowa Creek as well; however, the number of permits issued is only a small percent of the available number of existing parcels.

Table B-1: County Development Activity / Number of Permits Issued 1995 to 1999

	Countywide No. of Permits	Gun Club Road to Kiowa Creek Road No. of Permits	Kiowa Creek Road to Deter Winter Road No. of Permits
Single Family	5,673	100	172
Multi-Family	832	12	13
Commercial	289	0	0
Total	6,794	112	186

URBAN DEVELOPMENT OPPORTUNITIES

The planning team analyzed areas within the County that are zoned for urban



development but not yet developed. This helps to assess whether the County needs additional urban zoning or if the current urban zoning is sufficient to meet the

projected development dement. All the zoning districts allow urban development except the agricultural zoning districts. The following were the key findings of this analysis:

- **Two Primary Areas of Development Opportunity** – Two general areas within the County show significant opportunities for development. The first is generally southwest of the Quincy Avenue and Gun Club / E-470 intersections. This area has large parcels of land zoned for mixed use that are still being used for agricultural purposes. All of this land is within Aurora’s E-470 Corridor Plan. The second is the area surrounding Centennial Airport, which has several large areas zoned either for mixed use or light industrial development.
- **Available Land Zoned for Development is Limited** – The remaining supply of available land zoned for development within unincorporated portions of the County is limited. As supply of developable land decreases, pressures to rezone agricultural lands will increase.
- **Land Zoned for Urban Development in Eastern Arapahoe County is Extremely Limited** – As previously noted in the zoning analysis, very little land in the eastern portion of the county is zoned to permit urban development.

INFRASTRUCTURE AND SERVICES CAPABILITIES

Most of the infrastructure and services within unincorporated Arapahoe County are provided by special districts, so the planning team considered the demand and potential capacity of districts as an additional step to determine development potential in the County. Particular emphasis was placed on determining the demand and capacity of water and sanitation districts, since they are critical in supporting development. The following information is categorized by district type.

Water Districts

Arapahoe County contains a large number of water districts, many of which are already fully developed (see Water and Sanitation Districts Map). Nine of the twelve largest volume water providers in the County are served through contracts with the Denver Water Board, which utilizes a renewable source for its water. Of the three remaining groundwater districts, the Willows Water District is transitioning to Denver Water.

The following water districts have the most potential to expand their services:

Arapahoe Water and Wastewater Authority:

The Arapahoe Water and Wastewater Authority (AWWA) uses 100% well water, 4 aquifers plus alluvial aquifers blended. Current demand is roughly 5,000 acre-feet per year. Estimated build out is 9,627 acre-feet (92.5% increase). The district has stated it needs additional storage facilities to meet demand. The AWWA also uses a non-potable water system. Currently, approximately 380 acre-feet per year of water are used in the non-potable water system. The district is planning to increase this use to 1,900 acre-feet per year by the year 2005, thereby reducing the demands on the potable water system.

East Cherry Creek Valley Water and Sanitation District:

The East Cherry Creek Valley Water and Sanitation District (ECCVWSD) uses 100% well water. The district’s current demand is approximately 11,800 single family equivalents

(sfe), or 7,080 acre-feet. Build out is estimated at 15,000 acre-feet (25,000 sfe) projected in 15 years. The district has stated it will be developing eleven wells in Rangeview to meet the projected demand.

Southgate Water District and Sanitation District:

The Southgate Water and Sanitation District uses Denver Water; however, it demonstrates significant potential to expand. Denver Water has agreed to serve the district until build out, but has stated it will not provide water to any entity outside of the service district boundaries. If Southgate wanted to expand its boundaries it would need to find another water source or provide Denver with surface water rights. Southgate stated it has no intention of expanding its current boundaries. Current demand is approximately 11,250 acre-feet (or 15,000 sfe). Future demand is estimated at 25,000 acre-feet (34,000 sfe). Much of Southgate's service area within Arapahoe County is built out. There is still some growth potential in the Panorama Office park.

Byers Water and Sanitation District:

The Byers Water and Sanitation District uses four wells in the Laramie-Fox Hills Aquifer. The system is currently at its capacity at roughly 360 acre-feet (90 acre-feet per well), and will not be able to handle additional development without additional water. However, a fifth well is planned, which will add an additional 90 acre-feet of water supply that will accommodate a planned development of approximately 50 single family homes.

The Byers Water District is looking to change their policy by requiring any new development to provide the district with a renewable water supply (surface water rights).

Strasburg Water and Sanitation District:

The Strasburg Water and Sanitation District uses three wells in the Laramie Fox Hill aquifer and one small surface well. The district is currently serving 260 homes with little expansion anticipated in Arapahoe County. The district was negotiating with a developer to add approximately 75 apartments within Arapahoe County; however, the negotiations ended. The developer is attempting to create a new district. Most growth is occurring to the north of Strasburg in Adams County.

Rangeview Metropolitan District:

The Rangeview Metropolitan District's service area incorporates virtually the entire State Land Board property east of the Aurora reservoir. The district has a total of 34,500 acre-feet of ground water rights. The district is permitted to export 11,000 acre-feet of water to users outside of the service area (23,500 acre-feet must be used within the service area).

The East Cherry Creek Valley Water and Sanitation District (ECCVWSD) is the only water service provider utilizing the water rights within Rangeview. The ECCVWSD has a 50-year contract (expiring in 2032) to develop eleven wells within Rangeview, which will provide 4,000 acre-feet of water. The ECCVWSD has developed four of the eleven wells and currently utilizes 1,000 acre-feet of water.

The Arapahoe Water and Sanitation District may utilize between 2,000 to 4,000 acre-feet of water from Rangeview to meet some of their demand.

Water Districts Using Ground Water

The following table shows all of the water districts within unincorporated Arapahoe County that utilize groundwater. The table includes the districts' current demand in both acre/feet (one acre foot equates to 325,580 gallons) and single family equivalents (sfe) (.5 acre/feet equals sfe), as well as each districts' demand upon build-out.

Table B-2: Water Districts Using Groundwater

District	Current Acre/feet Demand	Current S.F.E. Demand	Built-Out Acre/feet Demand	Built-Out S.F.E. Demand	Remaining Capacity (S.F.E.'s)
Arapahoe Water and Wastewater Authority	5,000	10,000	9,627	19,254	9,254
Byers Water and Sanitation District	360	720	450	900	180
Chapparral Water District	162	324	162	324	0
East Cherry Creek Valley Water and Sanitation	7,080	14,160	15,000	30,000	15,840
Greenwood Plaza Water District	336	672	336	672	0
Strasburg Water and Sanitation District	147	294	155	310	16
East Valley Water and Sanitation District	56	112	56	112	0
Inverness Water and Sanitation District	750	1,500	975	1,950	450
Total	13,891	27,782	26,761	53,522	25,740

Source: Clarion Associates from interviews with District officials, 2000.

Sanitation Districts

There are 39 sanitation districts within Arapahoe County. Thirty-two of the 39 districts treat their wastewater at either the Denver Metro Wastewater Reclamation District or at the Littleton/Englewood Wastewater Treatment Plant. Denver Metro and Littleton/Englewood will service the districts to build-out. Of the seven remaining

districts that are not being served by Denver Metro or Littleton/Englewood, only three districts show growth potential.

Arapahoe Water and Wastewater Authority

The AWWA operates the Lone Tree Creek Wastewater Treatment facility. Current design capacity is 3.2 mgd. Expansion plans are underway to increase plant capacity to roughly 5.4 mgd, with ultimate build-out capacity of 6.5 mgd within the next five to seven years. AWWA treats wastewater from the Cottonwood Sanitation District in Douglas County.

East Cherry Creek Valley Water And Wastewater District

The ECCVWSD treats its wastewater at the Denver Metro Wastewater Treatment plant via Aurora collection system. There is a maximum density the district is permitted to send through the Aurora system; however, capacity is not an issue for the district.

Byers Water and Sanitation District

Wastewater is treated in the Byers Wastewater Treatment Plant. Current average flow resulting from the approximately 500 households in Byers is 0.05 mgd. A new lagoon was recently constructed, which provides the district with an additional capacity to handle approximately 150 additional single family homes.

Strasburg Water and Sanitation District:

The Strasburg Water and Sanitation District operates the Strasburg Wastewater Treatment Plant, which uses a conventional lagoon system. Current average flows resulting from serving roughly 260 households in Strasburg is 0.03 mgd. The district is currently serving 330 homes with little growth anticipated in Arapahoe County.

Fire Districts

The following is a summary of the Fire Districts providing service within Arapahoe County (see Fire District Map).

Bennett Fire District

The Bennett Fire District is a volunteer department, except for three paid employees. One stated need is improved mapping for new development. Water supply is a concern the district constantly evaluates. In the past, the district has had to rely on water trucks that refill in the City of Bennett. However, the district is currently working on agreements with some developers in the southern portion of their district (Arapahoe County) that will allow the district to utilize the developments' wells to service those developments as well as surrounding properties.

Cunningham Fire District

The district is presently serving approximately 45,000 people and at build-out will serve approximately 65,000 people (75% built-out in land area). Additional needs to accommodate projected growth include additional equipment and personnel; station sizes and locations are satisfactory. The current service plan for the district covered through the year 2000. The district is currently working on a new service plan through the year 2005 and 2006. The new service plan evaluates the need for additional personnel, equipment and current station locations and size to serve projected growth.

Cunningham Fire District gets its water supply from the Cherry Creek Valley Water District in the Four Square Mile Area (Denver Water), and from ECCVWD.

South Metro Fire And Rescue (Castlewood)

The South Metro Fire District has not had difficulty accommodating the growth as far as capital needs; however, keeping up with personnel needs has been difficult. The district is looking at de-Brucing in order to remove the tax and spend limitations. Without de-Brucing, the personnel needs could be a limiting factor in the districts

growth.

Parker Fire District

The Parker Fire District covers approximately 10 square miles in Arapahoe County, which is 75% built out. The district services approximately 5,300 people and projects it will serve 16,300 people upon build out (recent developments are being built at much higher densities than in the past). The district currently has one station in Arapahoe County.

The district currently has a voluntary impact fee for developments that occur outside a stations response time to help cover the costs of a new station. The district has de-Bruced the mill levy increases.

School Districts

As more and more people move to the rural portions of the County, demands on the school districts rise. Tax and spend limitations instituted by the State make it difficult at times for schools to raise the necessary capital to meet the growing demands and, therefore, school districts need innovative techniques to fund improvements. The following list summarizes enrollment of the school districts that serve Arapahoe County (see School District Map).

Aurora School District 28J

Projected Enrollment (October 2000): 29,087

Bennett School District 29J

Projected Enrollment: not available

Byers School District 32J

Projected Enrollment (Fall 2000): 470

Cherry Creek School District #5

Projected Enrollment (October 2000): 41,385

Deer Trail School District 26J (K-12)

Projected Enrollment (Fall 2000): 180-200

Strasburg School District #2

Projected Enrollment (Fall 2000): 767

Parks and Recreation Districts and Facilities

Park and open space providers in Arapahoe County include the Arapahoe Park and Recreation District and the South Suburban Park and Recreation District.. The County has a limited role in providing open space and typically defers to special districts and municipalities.

South Suburban Park and Recreation District provides a large portion of park and recreation services in the southwestern portion of the County. South Suburban facilities include more than 2,881 acres of developed and open space park land at 119 locations, 41 playgrounds, and 107 miles of trails.

The need for a separate open space plan, along with the possible addition of a staff parks planner, has been suggested for Arapahoe County. The plan could include an assessment of opportunities for new facilities, accessibility of facilities to County residents, and strategies for providing additional facilities.

Public Libraries

Public library service is provided to Arapahoe County residents by four public library systems: Arapahoe Library District, Aurora Public Library, Englewood Public Library and Littleton (Bemis) Public Library. Together there are sixteen public library facilities available free of charge to all residents. The Aurora, Englewood and Littleton libraries are funded through their respective municipal budgets. The Arapahoe Library District is a political subdivision of the state and is funded through a mill levy on property tax decided by a vote of its residents. As growth continues, the Aurora Public Library and the Arapahoe Library District will need to shoulder most of the responsibility for providing additional libraries. Together all of these library systems provide information resources essential for the economic development of their communities as well as support for student achievement, literacy development, research, government information and recreation funding.

Transportation

Key transportation-related findings include the following:

- The County presently does not have plans for bike and pedestrian circulation.
- The County lacks a comprehensive functional street classification system for the urban and rural portions of the County.
- Road continuity in the eastern portion of the County suffers due to the lack of drainage and creek crossings.
- The County lacks a mechanism for early identification and preservation of potential high use transportation corridor right-of-way in the eastern portion of the County.
- The County lacks a mechanism for identifying and setting priorities for transportation investments (i.e., road resurfacing).
- The magnitude of cut-through traffic is increasing due to rapidly developing Adams, Douglas, Elbert and Jefferson Counties.
- The County lacks means to address jurisdictional inconsistencies in transportation network continuity and classifications and road design standards.
- Road discontinuities result from the lack of coordinated land use and transportation planning.
- A lack of continuity of pedestrian and bicycle facilities exists between local jurisdictions, and the County lacks a countywide plan for these facilities. These deficiencies create impediments for multi-modal transportation and encourage continued reliance on automobile travel.
- The County lacks coordinated transportation demand management incentives to provide alternative transportation opportunities.

C: Alternative Land Use Scenarios

OVERVIEW

A major part of developing the Arapahoe County Comprehensive Plan was to prepare and analyze alternative scenarios of future development patterns. The planning team prepared three scenarios, each based on a different set of values (see Figure C-1). Each one illustrated how the County would maintain or change from its present course if these values were put into practice. In essence, they were “snapshots” of possible patterns for development over the next 10–20 years. They facilitated discussion about the future shape, pattern, and direction of growth. The public, planning committee members, staff and elected officials evaluated the scenarios in a series of workshops and meetings.

After the public workshops, the team combined elements of all three scenarios and introduced some new elements, based on public input, to make the Draft Preferred Scenario. The Draft Preferred Scenario then became the Comprehensive Land Use Plan, described in Chapter III. The three scenarios: (1) Compact Development Pattern; (2) Dispersed Development Pattern; and, (3) Nodes and Corridors, are described below.

SCENARIO 1 – COMPACT DEVELOPMENT PATTERN

The Compact Development Pattern scenario would direct future development to well-defined, contiguous areas and away from environmentally sensitive areas. The area defined for future growth is predominately inside DRCOG’s Urban Growth Boundary (UGB), or adjacent to existing development for those unincorporated communities in which an UGB has not been established. By directing growth to areas contiguous with existing development and away from sensitive lands, growth would be more efficiently served by public facilities and services, and open lands and sensitive environmental areas better protected.

 C-1

SCENARIO 1 – KEY ELEMENTS

- *Natural Areas Protection:* This scenario has identified sensitive areas, such as riparian corridors, prairie grasslands, wildlife habitats, and important threatened species conservation areas where development should not occur. The scenario also identifies areas where providing east–west connections between environmentally sensitive areas and wildlife habitats would be appropriate to provide connections for wildlife and people.

Residential Clustering: Residential development in the rural areas of the

community would be encouraged to use a cluster development pattern. Cluster developments use smaller lots, grouped together on only a portion of a development parcel, while the remainder of a parcel is conserved as agricultural land or open space. Large lot, single-family residential development would be discouraged, although the development of homes on 35+-acre parcels would most likely continue since the County does not have authority over them.

- *Direct New Urban Development to Areas Contiguous with Existing Urban Development:* High-density residential development with accompanying commercial and personal services would be directed to areas contiguous to existing development. The areas identified for this type of development are generally located immediately west of Hayesmount Mile Road and around the intersection of E-470 and Quincy Avenue.
- *Growth Areas Around Rural Towns:* Growth Areas would be delineated around the eastern communities of Watkins, Bennett, Strasburg, Byers, and Deer Trail. Development within the Small Community Growth Areas would be required to be compatible in character and intensity to the existing development within the communities. Very large lot, rural-type developments would not be permitted within the boundaries.
- *Protect Lowry Bombing Range:* This scenario promotes the idea of protecting a large portion of the State Land Board Lowry Bombing Range property, currently owned by the Colorado State Land Trust, for public recreational purposes, such as a new State Park, with the remaining portion of the property designated as an “urban reserve” to allow for future development.
- *Primary Employment Center at Centennial/Dove Valley:* A primary “employment center” would occur around the Centennial Airport/Dove Valley area, as this area has a large concentration of vacant land zoned for employment uses.
- *Transportation Demands:* A compact development pattern may result in more frequent but shorter trips by area residents and business patrons. The roadway improvements required to serve this scenario are a continuation of the urban grid of streets east to Hayesmount Mile Road as defined in the Southeast and Northeast Aurora Transportation Studies. Other important connections east of Hayesmount Mile Road might include improving Quincy Avenue to Exmoor Road to provide an additional east-west connection, if needed, and Hayesmount Mile Road to provide additional north-south connection. Hayesmount Mile Road is of a higher priority due to the potential for significant development along this corridor. A compact development pattern can be more efficiently served by transit services and encourages more pedestrian and bicycle trip making.

SCENARIO 1 – IMPLICATIONS

Developments will likely be built at higher densities and will include a mix of housing types, rather than the existing development pattern of predominately one type and density of housing. The opportunity to protect open space corridors and sensitive environmental areas may require, as a tradeoff, a development pattern that is generally more urban, to use land more efficiently.

SCENARIO 2 – DISPERSED DEVELOPMENT PATTERN

The Dispersed Development Pattern scenario would place few restrictions on the location and intensity of development. Development would not be directed to any particular location, and would be permitted to disperse across the County as market forces dictate.

SCENARIO 2 – KEY ELEMENTS

- *Dispersed Low Density Residential Development:* Low-density residential development would disperse across the County, particularly adjacent to transportation corridors such as I-70, Quincy Avenue and County Line Road. Large lot subdivisions utilizing 35-acre and greater lots would occur throughout the County.
- *Urban Densities in Fringe Areas:* The rezoning of agricultural lands for urban development in the eastern portions of the County would occur, leading to urban levels of development beyond the perimeter of existing developed areas of the County. The most likely locations for such development are along Quincy Avenue, Hayesmount Mile Road, and around the E-470 and Quincy Avenue intersection.
- *Protect Floodplains:* The 100-year floodplains along creeks such as Box Elder Creek, Kiowa Creek, and Wolf Creek would be protected from development.
- *Develop Lowry Bombing Range:* Within this scenario, the State Land Board Lowry Bombing Range property would be fully developed at urban densities. The property would be encouraged to develop with a mix of employment, commercial and residential uses, along with supporting open space areas.
- *Rural Towns:* Development around the rural towns would continue to occur, with areas immediately surrounding the towns developing at rural residential densities.
- *Transportation Demands:* A dispersed development pattern places greater demands on the transportation system, as uses tend to be spread out over a large geographic area, resulting in greater trip lengths. Such a pattern would be difficult to efficiently serve with transit, and discourages pedestrian and bicycle trips, resulting in greater vehicular traffic volumes. This scenario would require improvements to a number of roadways in to accommodate the additional traffic. The north-south roadways that could potentially need improvement include: Hayesmount Mile Road from I-70 to County Line; Watkins Road from I-70 to Quincy Avenue; Kiowa-Bennett Road from I-70 to County Line Road; and Exmoor Road from I-70 to County Line Road. The east-west roadways that may need to be improved include: Mitchell Road from Watkins Road to Strasburg Road; Quincy

Avenue from Kiowa–Bennett to Exmoor Road; and County Line Road out to Exmoor Road.

SCENARIO 2 – IMPLICATIONS

A dispersed development pattern is the current land use pattern in Arapahoe County. Such a pattern requires large investments in public infrastructure and services, and requires greater reliance on the automobile as most uses are spread out. Development patterns tend to be of one type and density, and the opportunities to conserve open space and natural areas are more limited. This pattern may also tend to increase reliance on individual wells and septic systems for residential development, since the provision of centralized services is less feasible when development is dispersed.

SCENARIO 3 – NODES AND CORRIDORS

In the Nodes and Corridors scenario, development would be directed to specified nodes (or activity centers) along major corridors. The nodes would incorporate a mix of commercial and employment uses, community buildings, and residential neighborhoods. The primary focus of this scenario is to develop relatively intense, mixed–use nodes that serve as principal development concentrations for the area surrounding them.

SCENARIO 3 – KEY ELEMENTS

- *Rural Towns as Nodes:* In this scenario, the rural towns of Watkins, Bennett, Strasburg, Byers and Deer Trail would act as activity centers for the surrounding rural areas. New development in the eastern portions of the County would be directed to the rural towns and encouraged to develop at densities similar to the towns today, incorporating multiple uses. Emphasis would be placed on attracting employment and commercial uses in order to generate jobs and a strong economic base.
- *E-470 Corridor:* The area surrounding the E-470 and Quincy Avenue intersection would be developed as a mixed–use node, incorporating residential and employment/commercial uses. The area’s proximity to E-470 makes it an ideal location for employment uses. Residential neighborhoods would be located in the area surrounding the employment uses.
- *Hayesmount Mile Road / Quincy Avenue Node:* The area around the Hayesmount Mile Road / Quincy Avenue intersection would also develop as an activity node; however, the emphasis would be on residential neighborhoods with supporting commercial areas.
- *Protect Floodplains:* The 100–year floodplain along creeks such as Box Elder Creek Kiowa Creek, and Wolf Creek would be protected from development.
- *Lowry Bombing Range as Urban Reserve:* In this scenario, the majority of the State Land Board Lowry Bombing Range property would be held as an

“urban reserve.” Creating an urban reserve ensures there is available land to accommodate future urban levels of development, beyond the 20-year planning horizon. Portions of the Lowry Bombing Range would be allocated for recreational purposes, such as a new regional park. The public recreational areas would be located along the western boundary of the Lowry Bombing Range to provide a connection with the Aurora Reservoir.

- *Residential Clustering:* Residential development in the rural areas of the County would be encouraged to develop in a clustered pattern. Cluster developments use smaller lots, grouped together on a portion of the development parcel, while the remainder of the parcel is conserved as agricultural land or open space. Large lot, single-family residential development would be discouraged, although the development of homes on 35+-acre parcels would most likely continue since the County does not have authority over them.
- *Transportation Demands:* The nodes and corridors scenario would encourage shorter trips and pedestrian/bicycle travel within the activity centers. The roadways connecting the various nodes may need to be improved to accommodate the additional traffic generated by those nodes. These roadways could potentially include Hayesmount Mile Road, Watkins Road, Kiowa-Bennett, Quincy Avenue and County Line Road. Additional roadways/access points may be required to service the Lowry Bombing Range recreation area, as well as future development within the Lowry Bombing Range. A potential access point would be the extension of Watkins Road to the south into the Lowry Bombing Range property, and the second would probably be from Hayesmount Mile Road via Smoky Hill Road. There may be the need to provide frontage or parallel roads to I-70 to separate local trips from interstate/regional trips on I-70. This may also require additional roadway crossings of I-70. Transit services connecting nodes along the corridors could be part of the transportation system improvements.

SCENARIO 3 – IMPLICATIONS

A Corridors and Nodes scenario would result in development with a greater mix of uses and with higher densities than what is being developed today. Employment uses would be distributed to several areas around the County along primary corridors, rather than located in one primary area. Investment in infrastructure and services is minimized because uses are close together.

COMPARISON OF ALTERNATIVE SCENARIOS

Table C-1: Alternative Scenarios Comparison, below, demonstrates the difference between the three scenarios in terms of development pattern, amount of land developed, transportation, density, natural and cultural areas conservation, implementation requirements, water supply and fiscal impacts.

Table C-1: Alternative Scenarios Comparison

	Scenario 1: Compact Development Pattern	Scenario 2: Dispersed Development Pattern	Scenario 3: Corridors and Activity Centers
Development Patterns	Development is primarily located within designated Growth Areas and/or contiguous to existing communities, where infrastructure and services can be provided efficiently. Development outside of Growth Areas would occur at much lower densities.	Development is dispersed throughout the County, in many cases far from existing centers and infrastructure and urban services. Development location would be based solely on market demand.	Development primarily occurs in areas centered around Activity Centers along major transportation corridors, with the opportunity for residents to live and work in the same area.
Amount of Land Developed to Meet 2020 Forecasts	10,600 acres (16.5 square miles)	22,500 acres (35 square miles)	10,000 acres (15.5 square miles)
Transportation	Most traffic increases occur east of Hayesmout Mile Road. Scenario 1 Requires the least amount of paving of County roads. It results in more road improvements within the towns.	Scenario 2 increases traffic on most of the County road network due to longer trips. It requires the most paving of the 3 scenarios	Most traffic increases are focused along I-70 Corridor and key roads to the south. New parallel roads may be needed for I-70 to separate local and regional/interstate trips. Less paving is required than Scenario 2
Density	Densities would be higher within Growth Areas with sewer and water infrastructure to maximize land use efficiency and maintain rural character. Densities would be lower outside of Growth Areas.	Densities would remain about the same as today's development patterns.	Densities within the Activity Centers would be higher, to maximize land use and transportation efficiency within Centers. Development in Activity Centers would require water and sewer.
Natural/Cultural Resources, Open Space, Parks and Trails	Riparian corridors (100 year floodplain plus additional lands to protect wildlife corridors) and other natural areas are identified as areas where development should be restricted, thereby conserving more open space. Clustering of housing would conserve open lands in the rural areas.	Protection of 100-year floodplain would conserve open space in riparian corridors.	Protection of 100-year floodplain, and possibly additional buffer areas, would conserve open space along all riparian corridors. Directing development to activity centers will allow lands outside the perimeter of the developed area to be maintained as open space, agricultural lands, parks and trails.
Implementation	Regulatory actions required: <ul style="list-style-type: none"> ▪ Establish Growth Boundaries around compact areas; ▪ Increase minimum lot size in rural areas to 80 acres to restrict 35 acre development; ▪ Acquire development rights to maintain agricultural lands and sensitive areas; ▪ Cluster development required in rural areas. 	Limited actions required: <ul style="list-style-type: none"> ▪ Maintain existing standards and regulations; ▪ Rezone areas around towns as needed to accommodate market demand. 	Focus on incentive-based actions: <ul style="list-style-type: none"> ▪ County to ensure adequate supply of zoned land in Activity Centers; ▪ Work with Districts to meet infrastructure needs; ▪ Create density bonus incentives for cluster development in rural areas.
Water Supply	Existing Districts expanded to serve Growth Areas around existing towns.	Most development outside of existing town boundaries will rely on individual wells and septic tanks	Existing Districts expanded to serve Growth Areas around existing towns; new Districts formed to serve new Activity Centers or areas of clustered development.

Agricultural Lands	Protection of agricultural lands occurs.	Increased amount of agricultural lands out of production and developed.	Protection of agricultural lands occurs.
Fiscal Impacts	More compact development pattern will result in efficient delivery of public facilities and services.	Dispersed pattern of development may result in increased costs to County to provide for delivery of public facilities and services.	More compact development pattern will result in efficient delivery of public facilities and services; increased employment will enhance County's revenue base.

D: Action Plan Matrix

The Action Plan Matrix, below, lists the strategies from Section IV in this Plan. The matrix indicates the type of action that will be required to implement a strategy, the party or parties primarily responsible for implementing the strategy, and the priority of the strategy to be initiated. The County staff and planning officials will need to update this matrix on an annual basis, or as necessary, to keep the responsibilities and strategies current.

In the “**Type of Action**” column, the letters indicate whether the action required can be characterized as: **(RR)** – Regulatory Reform, **(D)** – Policy Decisions, **(P)** – Programs, **(SP)** – Subarea Planning, **(IGA)** – Intergovernmental Agreements, or **(IA)** – Infrastructure Assessment (see Section V: Implementation Approach, for descriptions).

The “**Priority**” column lists four possible time frames for implementing actions: **(1)** – **Immediate Priority**, to be implemented with adoption of the Plan or soon thereafter. **(2)** – **High Priority**, to be initiated as soon as possible and completed within one to two (1–2) years after Plan adoption. **(3)** – **Moderate Priority**, to be completed within three to five (3–5) years after Plan adoption. **(TLP)** – **Throughout the Life of the Plan**, are actions that occur continually. Once a strategy has been initiated and when the Action Plan Matrix is updated, the priority column for that particular strategy will be replaced with the term, “Completed.”

Growth Management			
<i>Strategy/Action</i>	<i>Type of Action</i>	<i>Responsible Party/Parties</i>	<i>Priority</i>
GM 1.2(c) – Consider Allowing Urban Development in Unincorporated Areas Within the Urban Service Area Only When all Urban Services and Infrastructure Can Be Provided	D	County	1
GM 7.1(a) – Designate the Lowry Bombing Range as a Planning Reserve Area	D	County	1
GM 6.2(d) – Consider Whether to Increase the Minimum Lot Size in the Rural Area to 80 acres	P	County	1
GM 2.2(a) – Amend the County’s Development Regulations to Achieve Consistency with the Comprehensive Plan	RR	County	1
GM 3.1(a) – Identify Opportunities to Streamline the Development Review Process	RR	County	1
GM 4.3(a) – Create Incentives and Remove Barriers to Infill Development	RR	County	1
GM 5.1(c) – Revise Zoning and Subdivision Regulations for the Eastern Communities	RR	County	1
GM 6.2(a) – Create Standards for Cluster Development in the Rural Area	RR	County	1
GM 6.2(b) – Create Incentives for Cluster Development in the Rural Area	RR	County	1
GM 5.1(a) – Establish Planning Areas for the Eastern Communities	SP	County	1
GM 5.1(b) – Establish Growth Area Boundaries for the Unincorporated Eastern Communities	SP	County	1
GM 1.1(b) – Establish Planning Areas and Growth Areas for the Eastern Communities	SP/RR	County	1
GM 7.2(a) – Participate in Planning Efforts Undertaken by the Colorado State Land Board	D	County & State Land Board	2
GM 2.1(b) – Collaborate with Cities to Establish an Annexation Strategy for Development	IGA	County & Cities	2

Growth Management			
GM 2.1(c) – Develop Intergovernmental Agreements with Service Districts in the Region	IGA	County & Special Districts	2
GM 5.3(b) – Develop Intergovernmental Agreements with the Incorporated Eastern Communities	IGA	County/Bennett & Deer Trail	2
GM 1.2(a) – Create Incentives for Development in Growth Areas	RR	County & Cities	2
GM 1.2(b) – Develop an Annexation Strategy for Development Within the Urban Service Area	RR/IGA	County & Cities	2
GM 4.3(b) – Prepare Subarea Plans in the Urban Service Area	SP	County	2
GM 5.2(a) – Develop Community Subarea Plans for the Unincorporated Eastern Communities	SP	County & Special Districts	2
GM 6.3(a) – Study the Necessary Elements of a Successful Transferable Development Rights Program	P	County	3
GM 7.2(b) – Consider Development Capacity for the Planning Reserve Area	P	County, State Land Board, other participating agencies	3
GM 2.1(a) – Review Growth Area Boundaries on a Periodic Basis	D	County	TLP
GM 2.3(a) – Strive to Implement the Comprehensive Plan in a Manner That Respects the Rights of Property Owners and the Community	D	County	TLP
GM 4.4(a) – Recognize and Defer to Adopted Plans in the Urban Service Area	D	County & Cities	TLP
GM 5.2(c) – Study Pros and Cons of Incorporation for the Unincorporated Eastern Communities	D	County	TLP
GM 5.3(a) – Coordinate the County’s Planning Efforts with the Incorporated Eastern Communities	D	County/Bennett & Deer Trail	TLP
GM 6.1(a) – Prohibit Formation of New Service Districts Outside of Growth Areas	D	County	TLP

Growth Management			
GM 6.1(b) – Restrict Rezoning of Lands in the Rural Area for Urban Development	D	County	TLP

GM 7.1(b) – Maintain the Lowry Bombing Range Property as an Intact Land Unit	D	County & State Land Board	TLP
GM 7.1(c) – Restrict Rezoning of the Planning Reserve Area for Urban Development	D	County	TLP
GM 4.2(a) – Annex Urban Development Land in the Urban Service Area	IGA	County & Cities	TLP
GM 6.2(c) – Provide Technical Assistance to Landowners	P	County	TLP
GM 2.2(b) – Require Proposed Development To Be Consistent With the Comprehensive Plan	RR	County	TLP
GM 5.2(b) – Promote Local Public Participation in the Development of Subarea Plans for the Eastern Communities	SP	County	TLP

Public Facilities and Services			
<i>Strategy/Action</i>	<i>Type of Action</i>	<i>Responsible Party/Parties</i>	<i>Priority</i>
PFS 4.8(b) – Require Centralized Water Systems for Rural Developments (2 ½ acres or Smaller)	D	County	1
PFS 1.1(a) – Develop Intergovernmental Agreements Regarding Development Standards	IGA	County & Cities	1
PFS 1.2(b) – Develop Level of Service Standards for Roads	RR	County	1
PFS 1.3(a) – Require Adequate Public Facilities and Services To Be Provided Contemporaneously With New Development	RR	County	1
PFS 4.2(a) – Develop Standards for Regional Utility Facilities	D	County	2
PFS 4.2(c) – Require Mitigation of Impacts from Regional Utilities	D	County	2
PFS 4.5(a) – Establish Criteria for New Special Districts	D	County/Special Districts	2
PFS 1.4(a) – Work With Existing Service Districts to Plan for Capacity/Expansion	IA	County/Special Districts	2
PFS 1.2(a) – Work with Special Districts to Develop Level of Service Standards	IGA	County/Special Districts	2
PFS 4.7(c) – Require “Buyer Beware” Disclosures at Time of Land Sale and Building Permit	P	County	2
PFS 4.1(b) – Establish Design Standards for New Streets	RR	County	2
PFS 4.2(b) – Require Local Utility Wires to be Buried Within New Developments	RR	County	2
PFS 4.3(a) – Develop and Adopt Public Wastewater Requirements	RR	County	2
PFS 4.7(b) – Establish Rural Standards for Law Enforcement and Police Protection	RR	County/Sheriff	2

Public Facilities and Services			
PFS 4.9(a) – Adopt Area Impact Fees for the Rural Area	RR	County	2
PFS 1.2(c) – Develop Standards for Adequate and Functional Water and Wastewater	RR/D	County/Water & Sanitation Districts	2
PFS 1.2(d) – Work with Fire Districts to Develop Standards for Fire Protection and EMS	RR/D	County/Fire Districts Districts Districts	2
PFS 1.2(e) – Develop Standards for Law Enforcement and Police Protection	RR/D	County/Sheriff	2
PFS 1.2(f) – Develop Standards for Open Space, Parks and Recreation	RR/D	County/Recreation Districts	2
PFS 4.7(a) – Establish Rural Standards for Fire Protection and EMS	RR/D	County/Fire Districts	2
PFS 4.1(a) – Establish Design Standards for New Public Buildings	RR	County	3
PFS 4.6(c) – Cooperate with School Districts that Serve the Eastern Communities	D	County/School Districts	TLP
PFS 4.8(a) – Restrict Approval of New Water and Sanitation Districts in the Rural Area	D	County	TLP
PFS 1.5(a) – Consider Requiring Service Plans Using Aquifer Life Assumption of 100–Year Supply with a 50 Percent Recovery Factor	D	County/Special Districts	TLP
PFS 2.1(a) – Target Public Investments to Growth Areas	D	County	TLP
PFS 3.1(a) – Provide County Information on the Internet	D	County	TLP
PFS 3.1(b) – Consider Developing Satellite Services in the Eastern Communities	D	County	TLP
PFS 4.4(a) – Implement a Stormwater Drainage Program in Growth Areas	D	County	TLP
PFS 4.4(b) – Manage Stormwater Drainage Regionally	D	County, Cities, & Urban Drainage	TLP
Public Facilities and Services			
PFS 4.6(a) – Cooperate with Water and Sanitation Districts in the Eastern Communities	D	County/Special Districts	TLP
PFS 4.6(b) – Cooperate with Fire Districts that Serve the Eastern Communities	D	County/Fire Districts Districts	TLP

PFS 1.2(g) – Coordinate with School Districts to Reserve Land for Future School Sites	RR/D	County/School Districts	TLP
---	------	-------------------------	-----

Neighborhoods and Housing			
<i>Strategy/Action</i>	<i>Type of Action</i>	<i>Responsible Party/Parties</i>	<i>Priority</i>
NH 1.1(a) – Revise Zoning Regulations to Allow Mixed Use Development in New Neighborhoods	RR	County	1
NH 1.2(a) – Amend Zoning Code to Allow a Mixture of Housing Densities in Growth Areas	RR	County	1
NH 3.1(b) – Increase Funding for Affordable Housing	P	County/Other agencies	2
NH 2.1(a) – Develop Standards for Infill and Redevelopment	RR	County	2
NH 3.1(a) – Reduce Local Government Barriers to Affordable Housing	RR	County	2
NH 3.1(d) – Revise Regulations as Necessary to Allow Accessory Units	RR	County	2
NH 3.3(a) – Require Overall Minimum Average Density in the Urban Service Area	RR	County	2
NH 3.4(a) – Develop Standards for Average Density in the Eastern Communities	SP	County	2
NH 2.1(b) – Encourage Active Community and Neighborhood Participation	D	County	TLP
NH 3.1(e) – Work with Non-profit Organizations and Developers to Increase Affordable Housing Supply	D	County/Other agencies	TLP
NH 3.2(a) – Investigate Funding Options for Special-Needs Housing	D	County/Other agencies	TLP
NH 3.5(a) – Restrict Rezoning of Land in the Rural Area for Urban Residential Development	D	County	TLP
NH 3.1(c) – Integrate Affordable Housing	RR/D	County	TLP

Employment and Commercial Development			
<i>Strategy/Action</i>	<i>Type of Action</i>	<i>Responsible Party/Parties</i>	<i>Priority</i>
EC 3.1(c) – Establish Criteria for Industrial Distribution Uses in Growth Areas	D	County	2
EC 3.2(a) – Provide Incentives for Redevelopment of Strip Commercial Areas	D	County	2
EC 1.2(a) – Establish Appropriate Locations for Employment and Commercial Uses in Growth Areas	D/RR	County	2
EC 1.2(b) – Target and Rezone New Locations for Employment Centers	D/RR	County	2
EC 4.3(c) – Remove Incentives for Commercial Development in the Rural Area	D/RR	County	2
EC 1.2(d) – Provide Standards for the Location and Siting of Large, Freestanding Commercial Uses	RR	County	2
EC 1.3(a) – Revise Zoning Regulations to Allow Mixed Use Development	RR	County	2
EC 4.2(a) – Revise Zoning Regulations as Appropriate for Home Occupations and Start-up Businesses	RR	County	2
EC 4.4(a) – Revise Zoning Regulations as Appropriate to Prevent Isolated Employment and Commercial Development	RR	County	2
EC 4.1(a) – Revise Zoning Regulations to Allow Neighborhood Commercial in the Eastern Communities	SP/RR	County	2
EC 2.1(a) – Consider Developing Commercial Design Guidelines	P	County	3
EC 1.1(b) – Collaborate with the Business Community	D	County & Business Organizations	TLP
EC 1.2(c) – Restrict Rezoning of Land for Linear “Strip” Commercial Development	D	County	TLP
EC 2.1(b) – Require Multi-modal Site Planning in Commercial Development	D	County	TLP
Employment and Commercial Development			
EC 3.1(a) – Restrict Rezoning of Existing Industrial Lands in Growth Areas	D	County	TLP
EC 3.1(b) – Supply an Adequate Amount of Land for Industrial and Manufacturing Use	D	County	TLP

EC 4.1(b) – Support Downtown Improvement Efforts to Attract Business to the Eastern Communities	D	County/Business Organizations	TLP
EC 4.3(a) – Restrict Rezoning of Land in the Rural Area for Commercial Development	D	County	TLP
EC 4.3(b) – Limit Non-Residential Development to Agriculture-Related Uses and Natural Resource Extraction in the Rural Area	D	County	TLP
EC 1.1(a) – Coordinate with Incorporated Areas to Annex Employment and Commercial Development	D/IGA	County & Cities	TLP
EC 4.1(c) – Provide Incentives for Commercial Development in the Town Centers of the Eastern Communities	P	County/Business Organizations	TLP

Transportation			
<i>Strategy/Action</i>	<i>Type of Action</i>	<i>Responsible Party/Parties</i>	<i>Priority</i>
T 2.1(a) – Promote an Efficient Transportation System through the Comprehensive Land Use Plan	D	County	1
T 1.1(a) – Develop a Countywide Transportation Plan	P	County	1
T 2.3(a) – Establish Transportation Level of Service Standards for the Rural Area	RR	County	1
T 2.3(b) – Establish a Road Paving Standard	RR	County	1
T 2.3(c) – Require Alternative Routes and Secondary Access	RR	County	1
T 2.2(a) – Require Adequate Roads to be Provided Contemporaneously with New Development	RR/D	County	1
T 2.4(b) – Reserve Right-of-Way in the Rural Area	D	County	2
T 1.1(b) – Establish Multi-Modal Corridors	P	County	2
T 1.2(d) – Establish a Funding Program for Major Investments and Partnering	P	County	2
T 1.4(a) – Implement a Traffic Mitigation Program	P	County	2
T 1.7(c) – Promote the Bicycling Network	P	County	2
T 1.7(d) – Coordinate Bicycle Improvements with Other Projects	P	County	2
T 1.1(c) – Develop Standards for Transit-Oriented Development	RR	County	2
T 1.2(a) – Adopt and Implement Transportation Level of Service Standards	RR	County	2
T 1.6(a) – Establish Standards for Streets and Sidewalks	RR	County	2
T 1.7(b) – Develop Bicycle Parking Guidelines in Growth Areas	RR	County	2
T 1.3(a) – Develop Connectivity Guidelines	RR/D	County	2
Transportation			
T 1.7(a) – Designate Bicycling Routes and Paths in Growth Areas	P	County	3
T 2.5(a) – Reserve Right-of-Way in the Planning Reserve Area	P	County	3
T 1.2(b) – Set Priorities for Transportation Improvements	D	County	TLP
T 1.5(b) – Create a Land Use Pattern to Support	D	County & Cities	TLP

Transit in Growth Areas			
T 1.2(c) – Adopt a Transportation Improvement Plan that is Updated Annually	P	County	TLP
T 1.5(a) – Coordinate with Public Transit Providers	P	County/RTD	TLP
T 2.4(a) – Set Priorities for Rural Roads in the Transportation Plan	P	County	TLP

Natural and Cultural Resources and the Environment			
<i>Strategy/Action</i>	<i>Type of Action</i>	<i>Responsible Party/Parties</i>	<i>Priority</i>
NCR 3.1(c) – Allow Recycling and Reuse of Water	D	County	2
NCR 3.1(d) – Require Septic Systems to be Managed	D	County/Tri-County Health	2
NCR 1.3(b) – Develop Site Development Standards for Views and Ridgelines	D/RR	County	2
NCR 1.1(d) – Consider Voluntary Approaches to Conserve Riparian Areas	P	County	2
NCR 1.1(e) – Identify Funding Sources for Riparian Area Conservation and Restoration	P	County	2
NCR 1.2(a) – Identify Wildlife Habitat and Corridors	P	County/CDOW	2
NCR 1.2(b) – Consider Acquiring Land and/or Using Conservation Easements for Wildlife Habitat	P	County	2
NCR 1.3(a) – Identify Significant Views and Ridgelines	P	County	2
NCR 3.1(g) – Establish Well Protection Zones	P	County	2
NCR 5.1(a) – Identify Potential Hazardous Areas	P	County	2
NCR 7.1(e) – Develop a “Right to Farm” Ordinance	P	County	2
NCR 7.1(f) – Increase Education About Rural Area Activities	P	County	2
NCR 1.1(b) – Restrict Development in Riparian Areas	RR	County	2
NCR 1.1(c) – Establish Setbacks for Riparian Areas	RR	County	2
NCR 3.1(f) – Require Soil Erosion Control	RR	County	2
NCR 4.2(c) – Develop Lighting Standards	RR	County	2
NCR 5.1(d) – Adopt Standards to Limit or Mitigate Development in Other Hazard Areas	RR	County	2
Natural and Cultural Resources and the Environment			
NCR 6.1(b) – Develop and Adopt Standards to Supplement State Regulations for Mining	RR	County	2
NCR 7.1(a) – Restrict Incompatible Land Uses in the Rural Area	RR	County	2
NCR 4.1(b) – Support Programs and Education About Air Quality	D	County	3
NCR 4.2(a) – Support Energy Conservation Programs	D	County	3

and Education			
NCR 3.1(b) – Adopt Water Conservation Regulations and Incentives for Water Conserving Landscapes	D/RR	County/Tri-County Health	3
NCR 1.1(a) – Create an Inventory of Riparian Areas	P	County/CDOW	3
NCR 1.2(e) – Consider Developing Road Design Standards for Wildlife Crossings	P	County/CDOW	3
NCR 1.2(f) – Create and Adopt Site Planning and Development Standards	P	County	3
NCR 1.2(g) – Provide Wildlife Educational Materials	P	County/CDOW	3
NCR 2.1(a) – Identify and Designate Historic, Cultural and Archaeological Resources	P	County/State Hist. Preservation Officer	3
NCR 2.1(c) – Provide Incentives to Preserve Cultural Resources	P	County	3
NCR 2.1(d) – Increase Funding for Preservation of Historic and Cultural Resources	P	County	3
NCR 3.1(e) – Provide Education About Best Management Practices	P	County/Tri-County Health/NCRS	3
NCR 4.2(b) – Consider Incentives for Buildings and Site Planning that Conserve Energy	P	County	3
NCR 5.1(b) – Increase Public Awareness about Potential Environmental Hazards	P	County	3
NCR 2.1(b) – Develop Procedures and Standards to Preserve Cultural Resources	P/RR	County	3
NCR 5.1(e) – Require Noise Mitigation	RR	County	3
Natural and Cultural Resources and the Environment			
NCR 4.1(a) – Continue Emphasis on Vehicle Mile Travel Reduction to Improve Air Quality	D	County	TLP
NCR 7.1(b) – Maintain Agricultural Zoning	D	County	TLP
NCR 5.1(g) – Provide a Transition of Non-Residential Uses Between Incompatible Uses and Near Hazardous Land Uses	D/RR	County	TLP
NCR 7.1(c) – Reduce Zoning Barriers to Agriculture	D/RR	County	TLP
NCR 1.2(c) – Work with Partners to Conserve and Manage Wildlife Habitat Lands	P	County	TLP
NCR 1.2(d) – Control Noxious Weeds	P	County/State Agencies	TLP
NCR 3.1(a) – Support Denver Regional Council of Government’s (DRCOG’s) <i>Clean Water Plan</i>	P	County	TLP
NCR 6.1(a) – Identify Mineral Resource Areas	P	County	TLP

NCR 7.1(d) – Work with the Community Agriculture Programs in Support of Agricultural Activities	P	County	TLP
NCR 5.1(c) – Restrict Development in Floodplains	RR	County	TLP
NCR 5.1(f) – Designate Compatible Land Uses Within Airport Influence Areas	RR	County	TLP

Open Space, Parks and Trails			
<i>Strategy/Action</i>	<i>Type of Action</i>	<i>Responsible Party/Parties</i>	<i>Priority</i>
OS 1.1(a) – Work With the Open Space Advisory Committee	P	County/Open Space Advisory Committee	1
OS 1.1(b) – Develop an Inventory of Existing Parks, Trails and Recreational Facilities	IA	County	2
OS 1.1(c) – Develop a Countywide Open Space, Parks and Trails Plan	P	County	2
OS 1.1(e) – Create an Open Space Acquisition and Improvement Fund	P	County/Voters	2
OS 1.3(a) – Address Opportunities to Improve a Trails System in the Open Space, Parks and Trails Plan	P	County	2
OS 1.1(f) – Establish Open Space Dedication Requirements for Private Development	RR	County	2
OS 1.2(a) – Establish Level of Service Standards for Parks and Trails	RR	County/Parks & Recreation Districts	2
OS 1.3(b) – Adopt Connectivity Standards for Trails	RR	County	2
OS 1.4(a) – Allow Resource-Based Recreation in the Rural Area	D	County/Property Owners	TLP
OS 1.1(d) – Establish Regional Open Space Connections	P	County, adjacent Counties, Cities, Colorado State Parks and districts	TLP
OS 1.2(b) – Promote Shared Use of School Recreation Facilities	P	County/School Districts	TLP

Fiscal and Economic Impacts			
<i>Strategy/Action</i>	<i>Type of Action</i>	<i>Responsible Party/Parties</i>	<i>Priority</i>
FE 1.2(b) – Develop and Use a Fiscal Impact Model	D	County	1
FE 1.2(c) – Explore the Use of Impact Fees	D/RR	County	2
FE 1.1(a) – Consider Implementing New Revenue Sources	P	County	2
FE 1.2(a) – Restrict Approval of New Development that Does Not Pay Proportionate Costs	D	County	TLP

E: Meeting Minutes

This Appendix contains minutes from meetings held throughout 2000 and 2001 to develop the Comprehensive Plan. First, it contains minutes from the Technical Advisory Committee, Citizen Advisory Committee and Policy Advisory Committee meetings (held April, July and August, 2000 and February, 2001). Next, it contains minutes from the Planning Commission and Board of County Commissioner meetings (held August and November, 2000 and February 2001). Finally, it contains public meeting summaries from meetings held in Strasburg and Byers and the youth workshop (held June and October, 2000 and January, 2001).

ARAPAHOE COUNTY COMP PLAN MEETING NOTES					
Date	4/26/00	Time	10:00-11:00 am	Meeting Location	Arapahoe County
Type of Meeting	<input type="checkbox"/> Project Mgmt	<input type="checkbox"/> Planning Commission	<input type="checkbox"/> Project Team Meeting	<input checked="" type="checkbox"/> Technical Advisory Committee	
Topic	Meeting #1 – Technical Advisory Committee				
Present					
Handouts	Meeting agenda; Committee Roles and Responsibilities and Guidelines; Planning Process Diagram; Defining Issues Summary	Next Meeting	tbd		
Action Items					

Sue Conaway, Arapahoe County Project Manager, opened the meeting with introductions of project team members and Policy Advisory Committee members. She described the completion of Phase I of the planning process last spring, and the decision to move forward with Phase II with a different project team of staff and consultants. This first meeting represents the kick-off meeting for the Committee.

Sue Conaway reviewed the purpose and role of the Policy Advisory Committee as providing policy advice to staff and consultants, Planning Commission, and Board of County Commissioners. The Committee Guidelines were reviewed and agreed-to.

Ben Herman, Clarion Associates Project Manager, reviewed the technical planning process for the Comprehensive Plan, as well as the link to the Water Resources Study and Transportation Master Plan that are underway concurrent with the Comprehensive Plan.

Tom Leeson, Clarion Associates Project Planner, reviewed current activities related to the Summary of Defining Issues; Land Capabilities/Demand Analysis; and Policy Framework.

Ben Herman reviewed the preliminary concepts for the Land Use Alternative Scenarios.

DISCUSSION:

Consider a natural resource-based scenario, based upon the concept of preservation of riparian corridors and other areas of natural habitat.

Consider concept of “water corridors” – areas along supply routes that may be able to support higher densities.

Need to get more information about State Land Board property, and its likelihood for development.

ARAPAHOE COUNTY COMP PLAN MEETING NOTES					
Date	4/26/00	Time	7-9 pm	Meeting Location	Arapahoe County
Type of Meeting	<input type="checkbox"/> Project Mgmt	<input type="checkbox"/> Planning Commission	<input type="checkbox"/> Project Team Meeting	<input checked="" type="checkbox"/> Citizens Advisory Committee	
Topic	Meeting #1 – Citizens Advisory Committee				
Present					
Handouts	Meeting agenda; Committee Roles and Responsibilities and Guidelines; Planning Process Diagram; Defining Issues Summary		Next Meeting		
Action Items	Committee members to be provided with copies of the scenarios for further comments – add annexation areas to them. Follow-up with copies of water resources information, when available for distribution. CAC members to review Issues Summary and provide comments to Sue Conaway by 5/12/00. Staff to follow-up on Planning Commission communication recommendations. CAC members to consider business community involvement and follow-up with comments to staff.				

Barbara Lewis, Catalyst Consulting, opened the meeting with introductions of project team members and Citizens Advisory Committee members.

Sue Conaway, Arapahoe County Project Manager, described the completion of Phase I of the planning process last spring, and the decision to move forward with Phase II with a different project team of staff and consultants. This first meeting represents the kick-off meeting for the Committee.

Barbara reviewed the purpose and role of the Citizens Advisory Committee as providing advice and input to staff and consultants, Planning Commission, and Board of County Commissioners. The Committee Guidelines were reviewed and agreed-to, with the addition of emphasis on communication to the Planning Commission.

Ben Herman, Clarion Associates Project Manager, reviewed the technical planning process for the Comprehensive Plan, as well as the link to the Water Resources Study and Transportation Master Plan that are underway concurrent with the Comprehensive Plan. Barbara reviewed the public participation process.

DISCUSSION:

Need to determine if business community interests are adequately addressed in the process.

Should have Planning Commissioner attend the CAC meetings. Need to have a clear means for getting input directly to the PC. Consider possible joint meetings.

Explore possibility of adding representation from one or more HOA's for areas east of Parker Road.

Ensure that school districts are adequately represented in the TAC; especially in the eastern part of the county, school needs are acute.

Ben reviewed current activities related to the Summary of Defining Issues; Land Capabilities/Demand Analysis; and Policy Framework.

Ben Herman reviewed the preliminary concepts for the Land Use Alternative Scenarios. It was emphasized that these are early, first-cut concepts only; the scenarios will be developed over the next month. Four scenarios were presented: Dispersed Development, Compact Development, Rural Centers, and Transportation Corridors and Nodes.

DISCUSSION:

Need to define what urban development is.

Consider whether 1041 process could be used as growth management tool.

Need to clearly delineate annexed areas on scenarios, since County cannot control them.

Consider role of dispersed development scenario – should it be considered a viable alternative, or a benchmark?

Should ensure that open space/wildlife corridors/ag land preservation are reflected in a scenario. Could be incorporated into the Compact Development scenario, or be its own Conservation-oriented scenario.

The meeting adjourned at 9 pm.

ARAPAHOE COUNTY COMP PLAN MEETING NOTES					
Date	4/26/00	Time	7:30-9:00 am	Meeting Location	Arapahoe County
Type of Meeting	<input type="checkbox"/> Project Mgmt	<input type="checkbox"/> Planning Commission	<input type="checkbox"/> Project Team Meeting	<input checked="" type="checkbox"/> Policy Advisory Committee	
Topic	Meeting #1 – Policy Advisory Committee				
Present					
Handouts	Meeting agenda; Committee Roles and Responsibilities and Guidelines; Planning Process Diagram; Defining Issues Summary		Next Meeting	tbd	
Action Items					

Sue Conaway, Arapahoe County Project Manager, opened the meeting with introductions of project team members and Policy Advisory Committee members. She described the completion of Phase I of the planning process last spring, and the decision to move forward with Phase II with a different project team of staff and consultants. This first meeting represents the kick-off meeting for the Committee.

Sue Conaway reviewed the purpose and role of the Policy Advisory Committee as providing policy advice to staff and consultants, Planning Commission, and Board of County Commissioners. The Committee Guidelines were reviewed and agreed-to.

Ben Herman, Clarion Associates Project Manager, reviewed the technical planning process for the Comprehensive Plan, as well as the link to the Water Resources Study and Transportation Master Plan that are underway concurrent with the Comprehensive Plan.

Tom Leeson, Clarion Associates Project Planner, reviewed current activities related to the Summary of Defining Issues; Land Capabilities/Demand Analysis; and Policy Framework.

Ben Herman reviewed the preliminary concepts for the Land Use Alternative Scenarios.

Discussion:

Consider possibility of determining levels of development in designated development areas needed to support needed infrastructure.

Consider concept of “water corridors” – areas along supply routes that may be able to support higher densities.

Need to get more information about State Land Board property, and its likelihood for development.

ARAPAHOE COUNTY COMP PLAN MEETING NOTES					
Date	7/17/00	Time	10:00 am – 12:00 pm	Meeting Location	Castlewood Public Library
Type of Meeting	<input type="checkbox"/> Project Mgmt	<input type="checkbox"/> Planning Commission	<input type="checkbox"/> Project Team Meeting	<input checked="" type="checkbox"/> Technical Advisory Committee	
Topic	Meeting #2 – Technical Advisory Committee				
Present	Committee Members: Bill Broderick, Rob Ratkowski, Mike Turner, John Fernandez, Don Gregg, Glenda Lanis, Dave Kaunisto, Brian Gray, Carol MacLennan, Rosemary Marie, Eloise May, Joe Herbert Project Team: Sue Conaway, Bryan Weimer, Ben Herman, Tom Leeson, Barbara Lewis, Joe Hart				
Handouts	Summaries of 5/16/00 Public Workshop and 5/16/00 and 6/1/00 Student Visioning Workshop; Land Development Capability Analysis	Next Meeting	August 8 10:00 am – 12:00 pm	Arapahoe County Administration EOC Room	
Action Items	Distribute information on the next TAC meeting on August 8 th . Add library services to the Land Development Capability Analysis and Policy Framework; contact Eloise for help in drafting.				

Sue Conaway, Arapahoe County Project Manager, opened the meeting with introductions of project team members and Technical Advisory Committee members.

Barbara Lewis, Catalyst Consulting, reviewed the meeting agenda and handouts and provided a brief update on public involvement activities since the last TAC meeting.

Tom Leeson, Clarion Associates, summarized results from the Land Demand Capability Analysis. The presentation focused on maps depicting Current Zoning/Build out Capacity, Recent Development Activity, Infrastructure and Services Capability, Potential Development Density, Urban Development Opportunity, Existing Land Use, Vegetation Land Use/Land Cover, and Wildlife Habitats.

TAC DISCUSSION:

With respect to DRCOG’s Urban Growth Boundary (UGB), the County feels that the UGB is significantly deficient.

Look at the boundary for defining the developing area and reconsider whether it is the appropriate boundary for future planning.

Ben Herman, Clarion Associates Project Manager, reviewed the draft Policy Framework.

The Framework is organized by planning areas that include Urbanized Area, Developing Area, Rural Town Centers, Rural Area, and Countywide. Within each area, the Draft Policy Framework presents draft goals and policies related to Land Use, Growth Management, Housing and Neighborhoods, Commercial Development, Industry and Employment, and Agricultural Lands. Strategies to implement the policies will be added later after the goals and policies are refined.

Ben presented key issues for discussion, as follows:

Urban development – whether urban development should be concentrated in towns and cities or continue to occur in the County.

Annexation – how the County should deal with annexations

Special districts – what position; should the County take on the formation of new districts

Central water & sewer requirements – what are the appropriate requirements

Urban Development and Annexation

Two views were expressed on urban development within the County. One view is that the County should not provide urban density zoning, thus encouraging incorporated areas to take over urban levels of development. The dangers when the County approves urban development are that the cities end up annexing the commercial development and leaving residential to the County and the urban area becomes surrounded by large lot development.

Another view is that it would be impractical for the County not to provide urban levels of development.

Study the distinction between urban and rural development.

Better coordination is needed between adjacent jurisdictions. Look at having development in the County that is adjacent to incorporated areas adopt the urban standards in the incorporated area by reference. Look also at existing IGA between Aurora and Arapahoe County.

Change interpretation of the Urban Growth Boundary to a sub-area concept.

Special Districts

Special districts are good in that they are responsive to the people they serve but they create another layer of government.

Districts are necessary to extend local government services because they finance infrastructure. Suggest policy to discourage the formation of new districts in rural areas and to strive for consistency with other providers in urban areas.

In rural town centers, look at the cost of service and include a clause for dissolution of the district.

Suggest policies to allow new districts in growth areas only and to promote district consolidation. It is important to recognize that districts need development to survive.

Districts that are not adjacent to urban areas may be cost-prohibitive.

Need better planning to respond to and anticipate demand. Schools and libraries have trouble managing services to meet demands in developing areas. New districts that create demands on County services, particularly roads, need to fit into the County system.

Central Water and Sanitation

Small wastewater treatment systems are not cost-effective. Septic systems can work on lots of 2.5 acres or less as long as they are sited well.

Changing to a policy of a 300-year supply would be a problem for water districts. Feels that it detracts from the County's goals.

Developments should provide continuous water for large lot developments because wells are going dry.

Other Issues

Need to support the clean up at the Lowry Landfill where there is strong intergovernmental involvement.

Add library services policies.

Add clause that the County will prohibit or discourage residential development within the 65 DNL contour. (Contact Rob or Scott for information.)

Joe Hart, Carter & Burgess, provided an update on the County Transportation Plan. Mr. Hart discussed some of the findings for the eastern portion of the county, such as: roadway discontinuities, deficient roadway sections, safety issues, and an expectation for higher levels of service. The findings for the western portion of the county included: limited opportunities for new through travel lanes, continued development in surrounding counties and greater congestion.

Mr. Hart also discussed the different implications in regards to the alternative land use scenarios. These include: trip generation/trip length, needs for roadway paving/maintenance, the potential need for parallel facilities, and the opportunities for transit facilities.

DISCUSSION:

It is important that willingness-to-pay be studied as part of the Transportation Plan.

Barbara Lewis reported that the next TAC meeting would be held on August 8th at the County Administration Building and would focus on discussing the Alternative Land Use Scenarios. She also encouraged members to visit the Comprehensive Plan Website at www.co.arapahoe.co.us and to offer ideas for additional public outreach to inform and involve interested citizens.

The meeting adjourned at 12:00 noon.

ARAPAHOE COUNTY COMP PLAN MEETING NOTES					
Date	7/17/00	Time	7:00 – 9:00 pm	Meeting Location	Castlewood Public Library
Type of Meeting	<input type="checkbox"/> Project Mgmt	<input type="checkbox"/> Planning Commission	<input type="checkbox"/> Project Team Meeting	<input checked="" type="checkbox"/> Citizens Advisory Committee	
Topic	Meeting #2 – Citizens Advisory Committee				
Present	Committee Members: Janet Cranmer, Joe Knopinski, Pegi Lampton, Dave Meyer, Peter Neukirch, Bill Payne, Bonnie and Richard Rader, Jane Rieck, Mike Rothberg, and Bobbie Scheffield. Project Team: Sue Conaway, Bryan Weimer, Ben Herman, Barbara Lewis, Chris Primus				
Handouts	Summaries of 5/16/00 Public Workshop and 5/16/00 and 6/1/00 Student Visioning Workshop; Land Development Capability Analysis	Next Meeting	August 10 7:00 – 9:00 pm	American Legion Hall in Strasburg	
Action Items	Distribute information on the next CAC meeting on August 10 th .				

Sue Conaway, Arapahoe County Project Manager, opened the meeting with introductions of project team members and Citizens Advisory Committee members.

Barbara Lewis, Catalyst Consulting, reviewed the meeting agenda and handouts and provided a brief update on public involvement activities since the last TAC meeting.

Ben Herman, Clarion Associates Project Manager, summarized results from the Land Demand Capability Analysis. The presentation focused on maps depicting Current Zoning/Buildout Capacity, Recent Development Activity, Infrastructure and Services Capability, Potential Development Density, Urban Development Opportunity, Existing Land Use, Vegetation Land Use/Land Cover, and Wildlife Habitats.

CAC Discussion:

The influence of the water resources policy on potential growth is a substantial concern. Some members favor a conservative approach to managing water resources, resulting in growth limitations, whereas others do not.

Ben Herman reviewed the draft Policy Framework. The Framework is organized by planning areas that include Urbanized Area, Developing Area, Rural Town Centers, Rural Area, and Countywide. Within each area, the Draft Policy Framework presents draft goals and policies related to Land Use, Growth Management, Housing and Neighborhoods, Commercial Development, Industry and Employment, and Agricultural Lands. Strategies to implement the policies will be added later after the goals and policies are refined.

Ben presented key issues for discussion, as follows:

1. Urban development – whether urban development should be concentrated in towns and cities or continue to occur in the County.
2. Annexation – how the County should deal with annexations
3. Special districts – what position ;should the County take on the

formation of new districts

4. Central water & sewer requirements – what are the appropriate requirements

CAC Discussion:

Each CAC member was asked to briefly share comments related to the highlighted issues or other aspects of the draft Policy Framework that concerned them. CAC comments are summarized below:

The tie between transportation corridors and land use planning/zoning needs to include higher density, mixed use

Favors stronger housing policy, emphasizing middle and lower income housing

Pleased to see transportation impacts on neighborhoods addressed

Not clear on why annexation is included in the Policy Framework

Water is a big hook to limit growth

Likes the services provided by the Arapahoe County Sheriff but not the capacity; if services are not enforceable, don't provide them.

Does the County have the power to act on the agricultural lands policies? Suggest the County help landowners gain information on conservation trusts.

Favors economic development in Bennett, Strasburg, and Byers as long as alternative transportation is available.

Under Parks and Recreation, need to define what would be parks and what would be athletic fields. Favors more parks.

Don't encourage new development because Arapahoe County doesn't have the capacity to provide services (police, fire) to the increased population. Development ends up becoming a burden on existing residents

Annexation is a property taking; seems like the County has no power.

Discouraged by the Comprehensive Plan process because the pattern is for areas to urbanize and then for the cities to annex the commercial properties to get the tax base. The County needs the political will to have teeth in controlling growth through zoning.

The County tax base is shrinking and as a result, the infrastructure costs will rise.

Has a huge problem with annexation. If the Comprehensive Plan is not enforceable, what is the point?

Concerned about fiscal and economic impacts. Need to start with what we can afford and know where the money will come from to have adequate services for people who want to live here.

Need to preserve wildlife – don't interrupt wildlife corridors; establish core habitat areas and appropriate buffers associated with developments.

Public Comments:

Refrain from policies that tell people where to live

Development should proceed based on growth with long-term sustainability based on having a sustainable water supply

Chris Primus, Carter & Burgess, provided an update on the County Transportation Plan.

Mr. Primus discussed some of the findings for the eastern portion of the county, such as: roadway discontinuities, deficient roadway sections, safety issues, and an expectation for higher levels of service. The findings for the western portion of the county included: limited opportunities for new through travel lanes, continued development in surrounding counties and greater congestion.

Mr. Primus also discussed the different implications in regards to the alternative land use scenarios. These include: trip generation/trip length, needs for roadway paving/maintenance, the potential need for parallel facilities, and the opportunities for transit facilities.

Barbara Lewis reported that the next CAC meeting would be held on August 10th, possibly at a location in the eastern portion of the County, and would focus on discussing the Alternative Land Use Scenarios. She also encouraged members to visit the Comprehensive Plan Website at www.co.arapahoe.co.us and to offer ideas for additional public outreach to inform and involve interested citizens.

The meeting adjourned at 9:05 p.m.

ARAPAHOE COUNTY COMP PLAN MEETING NOTES					
Date	7/17/00	Time	7:30 am – 9:30 am	Meeting Location	Castlewood Public Library
Type of Meeting	<input type="checkbox"/> Project Mgmt	<input type="checkbox"/> Planning Commission	<input type="checkbox"/> Project Team Meeting	<input checked="" type="checkbox"/> Policy Advisory Committee	
Topic	Meeting #2 – Policy Advisory Committee				
Present	Committee Members: Jack Ballard, Bill Howard, Steven Miller, Bob Watkins, Stephen Titony, Marie Venner, Ed Walsh, Chris Wiant, Gary Guinn, Mark ? Project Team: Sue Conaway, Bryan Weimer, Ben Herman, Tom Leeson, Barbara Lewis, Joe Hart				
Handouts	Summaries of 5/16/00 Public Workshop and 5/16/00 and 6/1/00 Student Visioning Workshop; Land Development Capability Analysis	Next Meeting	August 8 7:30 am – 9:30 am	Arapahoe County Administration EOC Room	
Action Items	Distribute information on the next PAC meeting. Determine what work Leonard Rice Water Engineers will do on water quality as part of the Water Resources Plan.				

Sue Conaway, Arapahoe County Project Manager, opened the meeting with introductions of project team members and Policy Advisory Committee members.

Barbara Lewis, Catalyst Consulting, reviewed the meeting agenda and handouts and provided a brief update on public involvement activities since the last PAC meeting.

Tom Leeson, Clarion Associates, summarized results from the Land Demand Capability Analysis. The presentation focused on maps depicting Current Zoning/Buildout Capacity, Recent Development Activity, Infrastructure and Services Capability, Potential Development Density, Urban Development Opportunity, Existing Land Use, Vegetation Land Use/Land Cover, and Wildlife Habitats.

PAC Discussion:

- Acknowledge the importance of watershed protection for riparian corridors
- Check DOW's information on Pronghorn coverage.

Ben Herman, Clarion Associates Project Manager, reviewed the draft Policy Framework. The Framework is organized by planning areas that include the Urbanized Area, Developing Area, Rural Town Centers, Rural Area, and Countywide. Within each area, the Draft Policy Framework presents draft goals and policies related to Land Use, Growth Management, Housing and Neighborhoods, Commercial Development, Industry and Employment, and Agricultural Lands. Strategies to implement the policies will be added later after the goals and policies are refined.

Ben presented key issues for discussion, as follows:

1. Urban development – whether urban development should be concentrated in towns and cities or continue to occur in the County.
2. Annexation – how the County should deal with annexations
3. Special districts – what position; should the County take on the formation of new districts

Discussion: Urban Development and Annexation

Need clarity in the Policy Framework (page 5) on whether large lot development is encouraged or discouraged. Need to look at large lots in the context of potential development around it.

County can set larger acreage (greater than 35 acres) for development to make it relevant to today's economics.

County must continue to support urban development because the County can't force annexations. Since cities pick prime development, County needs to support residents not included in City annexations.

Better intergovernmental coordination is needed to provide continuity and compatibility in development between adjacent jurisdictions. Some favor more consistent standards across jurisdictions while others feel that different standards provide variety in development. Need more implementation tools fostering coordination, such as IGAs and Regional Planning.

Can the Comprehensive Plan handle properties that are either not likely to or not ready to be annexed?

Special Districts

Need to address the impact of annexations on special districts.

Need to address the impact of development on school districts, particularly in providing transportation.

The Comprehensive Plan should address the real cost of services.

Joe Hart, Carter & Burgess, provided an update on the County Transportation Plan. Mr. Hart discussed some of the findings for the eastern portion of the county, such as: roadway discontinuities, deficient roadway sections, safety issues, and an expectation for higher levels of service. The findings for the western portion of the county included: limited opportunities for new through travel lanes, continued development in surrounding counties and greater congestion.

Mr. Hart also discussed the different implications in regards to the alternative land use scenarios. These include: trip generation/trip length, needs for roadway paving/maintenance, the potential need for parallel facilities, and the opportunities for transit facilities.

Barbara Lewis reported that the next PAC meeting would be held on August 8th at the Arapahoe County Administration Building and would focus on discussing the Alternative Land Use Scenarios. She also encouraged members to visit the Comprehensive Plan Website at www.co.arapahoe.co.us and to offer ideas for additional public outreach to inform and involve interested citizens.

The meeting adjourned at 9:30 am.

ARAPAHOE COUNTY COMP PLAN MEETING NOTES					
Date	8/8/00	Time	10:00 am - noon	Meeting Location	Arapahoe County Offices
Type of Meeting	<input type="checkbox"/> Project Mgmt	<input type="checkbox"/> Planning Commission	<input type="checkbox"/> Project Team Meeting	Technical Advisory Committee	
Topic	Meeting #3 – Technical Advisory Committee				
Present	Committee Members: Liza Moore (alternate), Aaron Linstrom, Jeff Holwell (alternate), Mike Turner, Linda Capra, Scott Brownlee, Glenda Lainis, Carol Maclennan, Gregory Hard, Bob Blodget and John Fernandez Project Team Members: Bryan Weimer, Sue Conaway, Julio Iturreria, Ben Herman, Darcie White, Barbara Lewis, and Steve Gomez County Staff: June Farnham, Sue Barton, Beverly Straub				
Handouts	Meeting minutes from meeting #2, Land Use Scenario Descriptions	Next Meeting	TBD		
Action Items	See below.				

Sue Conaway, Arapahoe County Project Manager, opened the meeting with introductions of those in attendance.

Barbara Lewis, Catalyst Consulting, reviewed the agenda and provided an overview of the meeting process to obtain committee comments on the 3 draft land use scenarios.

Ben Herman, Clarion Associates, provided an overview of the 3 draft land use scenarios. He noted that these would be refined and revised based on comments received from the Technical, Policy, and Citizen’s Advisory Committees, the Planning Commission and Board of County Commissioners, and County staff.

The objective of the review meeting was to obtain comments from the committee that would help us “sharpen” the alternatives. Our goal is to have 3 well-defined, clearly distinct alternatives, in order to test the outcomes and possible consequences of different patterns of growth for the county. The following is a detailed listing of comments received for each of the 3 scenarios.

Scenario 1 – Compact Development Pattern:

Infill ag lands west of Hayesmount with urban residential

Define a more clear e/w boundary to development.

Need to articulate clustering – consider clustering at a larger scale, rather than on a parcel-by-parcel basis, to prevent natural/ag lands fragmentation.

Provide more detailed description for Rangeview.

Should have a minimum baseline level of resources protection for all scenarios.

This scenario should be more closely tied to regional growth forecasts.

What is the implication of the WorldPark development?

Has many similarities to the Nodes and Corridors plan. Need more distinction.

Can scenarios 1 and 3 be combined?

Need more designation for employment centers.

Scenario 2– Dispersed Development Pattern – no comments

Scenario 3 – Nodes and Corridors

Makes the most sense relative to transportation corridors.

Need to discuss densities to distinguish this from #1.

It seems like there should be more development along I-70 and other major roads.

Make #1 more compact.

Consider introducing transit into the “mix”.

General Comments

The following is a summary of general comments for all scenarios:

Any possibility of having a regional trail system with east/west links?

Consider preparing a map that shows baseline conditions.

May want to consider a baseline level of rural residential development.

The following is a summary of general changes to be incorporated into the scenarios:

Prepare a “baseline” map with attributes that are common to all scenarios

Look at effect of initiative 256 on scenarios – possibly as part of analysis.

Strengthen Activity Centers to better differentiate between #1 and #3.

Tie open space alternatives to land use patterns.

Enhance distinguishing characteristics.

Barbara Lewis reported that the next meeting would be scheduled once the plans are refined and the modeling/analysis has been completed.

The meeting adjourned at 9:30 am.

ARAPAHOE COUNTY COMP PLAN MEETING NOTES					
• ate	8/10/00	• ime	7-9 pm	• ing Location	Meet Strasburg American Legion
• ype of Meeting	T <input type="checkbox"/> Project Mgmt	<input type="checkbox"/> Planning Commission	<input type="checkbox"/> Project Team Meeting	<input checked="" type="checkbox"/> Citizens Advisory Committee	
• opic	Review Land Use Scenario Alternatives				
• resent	Committee Members: Kathleen Burnet, Mike Rothberg, Dave Meyer, Wil Chase, Richard and Bonnie Rader, Interested Citizens: Dick Palmer, Constance and Norm Ely Project Team Members: Bryan Weimer, Sue Conaway, Julio Iturreria, Barbara Lewis, Ben Herman, Darcie White				
• andouts	Description of Land Use Scenarios Minutes of CAC Meeting #2	• ext Meeting	N Tbd		
Action Items					

Sue Conaway, Arapahoe County Project Manager, opened the meeting with introductions of those in attendance.

Barbara Lewis, Catalyst Consulting, reviewed the agenda and provided an overview of the meeting process to obtain committee comments on the 3 draft land use scenarios.

Ben Herman, Clarion Associates, provided an overview of the 3 draft land use scenarios. He noted that these would be refined and revised based on comments received from the Technical, Policy, and Citizen’s Advisory Committees, the Planning Commission and Board of County Commissioners, and County staff.

The objective of the review meeting was to obtain comments from the committee that would help us “sharpen” the alternatives. Our goal is to have 3 well-defined, clearly distinct alternatives, in order to test the outcomes and possible consequences of different patterns of growth for the county. The following is a detailed listing of comments received for each of the 3 scenarios.

Compact Scenario

Continue to build a case for compact land use pattern by demonstrating that this approach absorbs the smallest amount of land for development, and is most fiscally responsible.

Do not force zoning changes on existing residents – in particular, do not change A-1 zoned areas to mixed-use designation, such as for WorldPort project.

Encourage more development like downtown Denver. Combine living quarters and businesses.

Dispersed Scenario

Is this what we have now? If not, need to explain how it is different.

This looks like “open season”. If this is what we get, how do we make it act more like a plan?

Don’t lump 2 ½ and 35 acre patterns together as “rural” – they are quite different.

Need to focus on what county is not going to provide in rural areas.

Don’t tax rural owners out of their land.

Nodes and Corridors

Why not designate the nodes as circles of some diameter and allow the town (if incorporated) to define the actual limits from time-to-time, through joint planning activities.

Outline City of Aurora areas adjacent to the county, and specify what the city's plans are for these areas. Mesh the county's plans with Aurora's.

More natural areas – preserve wildlife habitats and corridors.

Do not force zoning changes on existing county residents, and do not show A-1 changed to Mixed Use.

Emphasize clustering in rural areas.

This alternative will give us the best chance to preserve rural flavor while allowing economic development.

Do not rely so heavily on highways and roads. Need to include alternative modes.

What is role of development along corridors? Is it just in nodes, or should it be continuous?

All Scenarios

Need to define the character of residential development outside of rural (small) communities? Open space – who will pay?

- a. Farmland Trust assistance
- b. County buy up land for greenbelts
- c. Open space tax
- d. How much open space is enough?
- e. Look into conservation easements

Need to clearly define what open space is, and what purpose it is for.

Need to clearly define service levels that county will provide. 2 ½ acre lots are areas with water, sewer, and improved roads. Areas of 20–40 acres are areas with no services provided by the county or districts.

Should identify zoning/land use patterns for Elbert and Douglas Counties, to see what is happening next to our borders.

ARAPAHOE COUNTY COMP PLAN MEETING NOTES					
• ate	8/9/00	• ime	7:30-9:30 am	• ing Location	Meet Arapahoe County Offices
• ype of Meeting	T	<input type="checkbox"/> Project Mgmt	<input type="checkbox"/> Planning Commission	<input type="checkbox"/> Project Team Meeting	<input checked="" type="checkbox"/> Policy Advisory Committee
• opic	Meeting #3 – Policy Advisory Committee				
• resent	Committee Members: Ed Walsh, Pat Mulhern, Brian Daigle, Allen Tenenbaum, Marie Venner, Bob Watkins and Stephen Miller Project Team Members: Bryan Weimer, Sue Conaway, Julio Iturreria, Ben Herman, Darcie White and Barbara Lewis				
• andouts	Meeting minutes from meeting #2, Land Use Scenario Descriptions		• ext Meeting	N	TBD
Action Items	See below.				

Sue Conaway, Arapahoe County Project Manager, opened the meeting with introductions of those in attendance.

Barbara Lewis, Catalyst Consulting, reviewed the agenda and provided an overview of the meeting process to obtain committee comments on the 3 draft land use scenarios.

Ben Herman, Clarion Associates, provided an overview of the 3 draft land use scenarios. He noted that these would be refined and revised based on comments received from the Technical, Policy, and Citizen’s Advisory Committees, the Planning Commission and Board of County Commissioners, and County staff.

The objective of the review meeting was to obtain comments from the committee that would help us “sharpen” the alternatives. Our goal is to have 3 well-defined, clearly distinct alternatives, in order to test the outcomes and possible consequences of different patterns of growth for the county. The following is a detailed listing of comments received for each of the 3 scenarios.

Scenario 1 – Compact Development Pattern:

Must have multiple transportation solutions and corridors to relieve congestion
In order to implement, county will need to create policies to limit development densities within the rural area.

County would have to become active in open space program.

Looks like all proposed development is urban residential.

Not enough employment centers. All residential.

Add more emphasis on retail/commercial in small communities

Coordinate new urban areas with Aurora’s plans and urban growth areas.

Scenario 2– Dispersed Development Pattern

Commercial areas needed within rural areas.

Need to more clearly define the “Rangeview Potentials and Options” shown now as urban residential – should be more mixed-use, with more open space.

Extent of rural development may be understated as now portrayed. May be

underestimated given current trends.

Scenario 3 – Nodes and Corridors

Hayesmount/Quincy node is a big question for Aurora; it's beyond their planning area.

Need more emphasis on what the nodes represent in small communities.

Consider revising Rangeview to incorporate a node.

Consider including 3 levels of natural resource protection.

Plan should more clearly demonstrate desire for mixed uses and minimum densities in nodes.

Emphasize I-70 employment base.

Need strong policies from county to recognize the small community centers with strong emphasis on development within these communities.

General Comments – All Scenarios

The following is a summary of general changes to be incorporated into the scenarios:

- a. Show Aurora's planned land uses along the E-470 corridor.
- b. Strengthen distinction between the scenario themes, especially 1 and 3.
- c. Define how rural areas are delineated – existing vs. potential?
- d. Determine if dispersed scenario includes enough rural residential.
- e. Need to add transportation before taking these to the public.

Barbara Lewis reported that the next meeting would be scheduled once the plans are refined and the modeling/analysis has been completed.

The meeting adjourned at 9:30 am.

ARAPAHOE COUNTY COMP PLAN MEETING NOTES					
• ate	2/5/01	• ime	10:00 am - noon	• ing Location	Meet Castlewood Library
• ype of Meeting	T	<input type="checkbox"/> Project Mgmt	<input type="checkbox"/> Planning Commission	<input type="checkbox"/> Project Team Meeting	Technical Advisory Committee
• opic	Review Draft Preferred Scenario, Key Principles and Strategies				
• resent	Committee Members: Aaron Linstrom, Mike Turner, Linda Capra, Scott Brownlee, Glenda Lainis, Carol Maclennan, Gregory Hard, Bob Blodget and John Fernandez Project Team Members: Bryan Weimer, Sue Conaway, Ben Herman, Lesli Ellis and Barbara Lewis				
• andouts	Revised Project Schedule, Draft Preferred Scenario and Key Principles and Strategies		• ext Meeting	N	TBD
Action Items					

Barbara Lewis, Catalyst Consulting, opened the meeting, reviewed the agenda and asked those in attendance to introduce themselves.

Ben Herman, Clarion Associates, provided an overview of the Draft Preferred Scenario and Lesli Ellis helped summarize comments from the public meeting in Byers.

The objectives of the meeting were to: 1) explain the draft preferred scenario to committee members and gain their acceptance of the draft and suggestions for revisions, and 2) to learn committee member comments on key principles and strategies for implementation.

Committee members were encouraged to provide additional comments in writing within the next 2 weeks. Written comments provided at the meeting are attached to this record.

Barbara Lewis closed the meeting and reported that there would be one additional set of advisory committee meetings on the draft plan, probably in March. The Draft Plan will provide everyone on the mailing list a copy of the draft plan for comments prior to the Planning Commission Hearing to adopt the plan.

The meeting adjourned at noon.

Comments and Suggestions – Summary of Discussion

The plan would probably be consistent with any new state legislation that would make comprehensive plans mandatory. The County may want more general language in its plan if the State makes plans mandatory and enforceable.

Exact locations for Eastern Community Growth Area boundaries will be determined by the local communities in Subarea plans. Subarea plans will take about 4 – 6 months. The incorporated areas will do their own planning.

The Urban Service Area Boundary is mostly consistent with DRCOG, just more squared off.

Concerned about the term “Rangeview” for the planning reserve because it implies urban development.

Water should be a key element of the plan: (1) conservation and (2) quality.

Potential water contamination is a problem. Add attention to stormwater runoff adjacent to the floodplain and riparian areas. Take a closer look at development adjacent to the 100-year floodplain.

Planning Reserve Area means that the County may make a statement about the type of development and requirements for resources and infrastructure on the site.

Concerned about using term “high density residential.” Consider using “urban density” instead.

Large lot development: 5 acres and below requires some services, 5–10 won’t come into play unless it is a cluster. The #1 strategy is to not rezone.

Clustering is preferable. Clustering may be in the form of 6 – 10 acre lots and 1 – 100 acre conservation lot on a 160 acre parcel (this is with 2 bonus units).

County shouldn’t set standards for districts, but county does refer applicants to districts. County may “endorse” projects.

If the county adopts a fire service standard, nothing would meet it. Sprinklers could be a requirement if project doesn’t meet standards. (i.e. require in homes over 4,000 sf unless water supply is there). In Adams County, if the Fire District doesn’t support a project, the county won’t approve it.

The fire districts don’t really have staff to review development proposals.

Clustering Procedure: Make it as minimal as possible.

Criteria for setbacks in natural areas would be new tools for protecting wildlife areas. Agree with the concept of paying special attention to area next to the floodplain.

Don’t rezone agriculture lands.

The county will probably not develop a concurrency ordinance, but will look at level of service standards for transportation corridors.

Transportation can’t all be developer funded in urban areas, and opportunities for expansion are constrained. Are there regional benefits to channeling money outside of county? TIP process is successful for funding high priority projects (emphasis on east west arterials).

In rural areas current funding is 1/10 of what it costs to serve these areas. Roads and law enforcement are big costs. Impact fees may be used for roads, but can’t be used for sheriff.

Will the county do Subarea plans for S. Parker Road? (Same approach for Subarea planning, but it may need to be multi-jurisdictional).

Changes Recommended

Use the term “Lowry Bombing Range” instead of “Rangeview.”

Don’t show complete transportation corridor for Hayesmount Road; show arrows for proposed connection.

Adopt definition of urban services (including full spectrum – water, sewer, fire, libraries, roads, etc.).

Show Lowry Landfill as public / institutional land use.

Develop language for pollution prevention (golf courses) and Best Management Practices.

Consider a requirement for sprinklers if new development doesn’t meet a fire level of service standard.

Develop a multi jurisdictional Subarea plan for S. Parker Road.

Reexamine policies for development adjacent to the floodplain.

ARAPAHOE COUNTY COMP PLAN MEETING NOTES						
• ate	2/7/01	• ime	7-9 pm	• ing Location	Meet	Arapahoe County Admin.
• ype of Meeting	T	<input type="checkbox"/> Project Mgmt	<input type="checkbox"/> Planning Commission	<input type="checkbox"/> Project Team Meeting		<input checked="" type="checkbox"/> Citizens Advisory Committee Meeting
• opic	Review Draft Preferred Scenario, Key Principles and Strategies					
• resent	Committee Members: Bill Payne, Bonnie and Richard Rader, Bobbie Scheffield, Andrea Suhaka, Fred Mould Project Team Members: Sue Conaway, Julio Iturreria, Barbara Lewis, Ben Herman, Lesli Ellis					
• andouts	Revised Process Schedule Draft Preferred Scenario Key Principles and Strategies			• ext Meeting	N	Tbd
Action Items						

Barbara Lewis, Catalyst Consulting, reviewed the agenda and provided an overview of the meeting process to obtain committee comments on the Draft Preferred Scenario. Committee members have 10 days to provide additional comments.

Ben Herman, Clarion Associates, provided an overview of the draft preferred scenario and the key elements and Lesli Ellis, Clarion Associates, provided a brief overview of public comments from 1/29/01 Byers Public Meeting.

The objectives of the review meeting were to: 1) explain the draft preferred scenario to committee members and gain their acceptance of the draft and suggestions for revisions, and 2) to learn committee member comments on key principles and strategies for implementation.

The committee discussed the draft preferred scenario and strategies for implementation.

Barbara closed the meeting, stating that the next meeting time is still to be determined. Barbara encouraged members to provide additional written comments on the draft preferred scenario within 10 days. There will be one more set of Advisory Committee meetings, probably in March. The county will provide all committee members with a copy of the draft plan for comments.

The committee adjourned at 9 p.m.

Comments and Suggestions

Overall, the committee said that the Draft Preferred Scenario is on the right track.

The committee is concerned that the county might not really implement the plan if it doesn't have teeth. Be sure that it is enforceable.

The policies should address problems associated with prior use of the Lowry Range.

The committee generally supported the 80-acre minimum lot size concept and the cluster development approach.

The committee suggested the need for a "Buyer Beware Rule" -- a warning to new

rural residents that the county will not provide an urban level of services in remote areas. For example, Conifer has a disclosure requirement to warn new home buyers about minimal fire protection. This could take place during building permit or real estate transaction.

Water is a very important piece of the plan. The committee discussed the Leonard Rice report, stating that the study results conflict with the reality of declining aquifers and wells dropping. The BOCC policy doubles the State Engineer's requirements (100 year supply @ 50% recovery rate), which is acceptable to the committee, but not necessarily conservative enough. Water limitations will affect minimum lot sizes for clustering (i.e., 5-acres may be the smallest lot sizes, joint wells may be preferable).

Show Hayesmount Road in the Planning Reserve as "Alignment to be Determined."

Educate Rural Landowners. (i.e., Douglas County has a "Landowner's Handbook that educates rural residents about weeds, wildlife, and other rural issues). The county could hold seminars in the rural portion of the county.

Be sure that Eastern Communities are planned to include mixed uses and employment so they do not continue to be bedroom communities. Employment centers outside of the Urban Service Area are necessary for a balance. (These would appear in subarea plans for communities – a finer grain of detail).

Change the language of "encourage urban level of services and encourage annexation," to read, "new urban development should be annexed; existing urban development should be addressed on a case-by-case basis." The committee is concerned about existing enclaves of urban development in the county and being sure that they don't fall through the cracks.

ARAPAHOE COUNTY COMP PLAN MEETING NOTES					
• ate	2/05/01	• ime	7:30-9:30 am	• ing Location	Meet Arapahoe County Offices
• ype of Meeting	T	<input type="checkbox"/> Project Mgmt	<input type="checkbox"/> Planning Commission	<input type="checkbox"/> Project Team Meeting	<input checked="" type="checkbox"/> Policy Advisory Committee
• opic	Review Draft Preferred Scenario, Key Principles and Strategies				
• resent	Committee Members: Project Team Members: Bryan Weimer, Sue Conaway, Ben Herman, Lesli Ellis and Barbara Lewis				
• andouts	Revised Schedule, Draft Preferred Scenario description, key principles		• ext Meeting	N	TBD
Action Items					

Sue Conaway, Arapahoe County Project Manager, opened the meeting with introductions of those in attendance.

Barbara Lewis, Catalyst Consulting, reviewed the agenda and provided an overview of the meeting process to obtain committee comments on the 3 draft land use scenarios.

Ben Herman, Clarion Associates, provided an overview of the Draft Preferred Scenario.

The objectives of the review meeting were to: 1) explain the draft preferred scenario to committee members and gain their acceptance of the draft and suggestions for revisions, and 2) to learn committee member comments on key principles and strategies for implementation.

The committee discussed the draft preferred scenario and strategies for implementation.

Barbara closed the meeting, stating that the next meeting time is still to be determined. Barbara encouraged members to provide additional written comments on the draft preferred scenario within 10 days. There will be one more set of Advisory Committee meetings, probably in March. The county will provide all committee members with a copy of the draft plan for comments.

The committee adjourned at 9:30 a.m.

Comments and Suggestions – Summary of Discussion

If setting number of units as a fixed unit, what difference does it make what size the lots are? Benefit to more flexibility with lot sizes. Smallest lot size would be 5 ac., based on water constraints. Could go smaller

Need incentive to cluster. Most successful programs are incentive-based. Most have some kind of paired-down process – more than now done which is just lawyer transaction.

New development annexed through IGA. County gives the City the Right of First Refusal.

Over time, a service area boundary is not intended to be fixed... Will likely move. Watkins folks are talking about incorporation.

Infrastructure and Fiscal Economic Policy.

Look at library services too. Overwhelming demand on Smokey Hill area.

Plan says libraries in communities. Minimum level of services outside of towns.

Open Space, Natural Areas, Parks, Trails

Maintain agriculture zoning in agricultural areas

Is floodplain protection sufficient or setback or acquisition of buffer?

Develop open space plan – tax method or user fees?

Green areas or riparian corridors – 100 year floodplain doesn't sound sufficient.
100 year with designated wetlands areas.

Would support wider area – to 250 or 500 feet. – wildlife movement corridor, open lands/natural area. Value of short-grass prairie. Mountain Plover – federally listed – occurs throughout plains. Critical wildlife habitat – look at these lands carefully when developing. Colorado Natural Heritage Program – does not extend into planning reserve. Show in map.

MV – TDR – approach in those areas – 2-tiered program. Greater incentives for clustered in sensitive areas. Lots and lots of sending area – need better receiving. Adams – allowing up zoning in rural areas with other parcels acquired. How would it work?

Width of corridor adjacent to floodplains? DOW – 600 foot buffer to protect – migratory pathways. Most floodplain in that area. Hard to justify 600–800 as essential.

Water supply: 100 year water supply – 50% recovery. L. Rice study to determine if water-carrying capacity limit – 1. enough for zoning. 2. State Engineer's approach not accurate. Need to assume percent available for use given economics of recovery. Basin for how future districts or expansions would calculate availability. Recharge not a big factor in this basin. 1–2% actually occurs.

Doesn't seem responsible. Question is what should we plan on using up. Need to find a sustainable amount and plan for that. Property rights – if one uses water it affects another's' property.

Non-renewing resource. Should stretch out water supply over much larger area in rural, when run out of it, never will be able to pay to bring it in.

Most districts looking at ways to bring in non-ground supply

Considerable discussion about 100 not being conservative enough.

BCC will use other mechanisms to preserve water. 100 year gives opportunity to update plan.

Still need better precedent. Don't perpetuate a bad policy.

Subarea planning in towns requires water importing.

Selling water. Do something about this.

State still issues water permits but county can require developers to prove they

can meet county standard. At state engineer – just needs to demonstrate 100-year supply.

Selling water off land – sell water in lower aquifer – must address.

Plan policy revisited every 5 years – could advocate a regional water authority.

Gives flexibility to update every 5 years.

Transportation

Need to coordinate City and county development standards.

Need to give group indication of service standards.

ARAPAHOE COUNTY COMP PLAN MEETING NOTES					
Date	8/8/00	Time	7 pm	Meeting Location	Arapahoe County Offices
Type of Meeting	<input checked="" type="checkbox"/> T	<input type="checkbox"/> Project Mgmt	<input type="checkbox"/> Planning Commission	<input type="checkbox"/> Project Team Meeting	<input checked="" type="checkbox"/> Planning Commission
Topic	Review of draft scenarios				
Present	Planning Commission Members: Neil Quinlan, Brian Daigle, Dave Meyer, Frank Doyle, Project Team Members: Bryan Weimer, Sue Conaway, Julio Iturreria, Ben Herman, Darcie White, Joe Hart, Ron Hovland, Interested Citizen: Paul Rosenberg				
Agenda Items	Land Use Scenario Descriptions		Next Meeting	N TBD	
Action Items	N/A				

Ben Herman, Clarion Associates, provided an overview of the 3 draft land use scenarios. He noted that these would be refined and revised based on comments received from the Technical, Policy, and Citizen’s Advisory Committees, the Planning Commission and Board of County Commissioners, and County staff.

The objective of the review meeting was to obtain comments from the Commission that would help us “sharpen” the alternatives. Our goal is to have 3 well-defined, clearly distinct alternatives, in order to test the outcomes and possible consequences of different patterns of growth for the county. The following is a listing of comments received.

Need to clarify how the Water Resources study influences the scenarios.

Should consider how to tie in the mission statement and goals of the many community organizations located in the eastern part of the county.

Need to clarify what the nodes will be like in scenario #3.

In general, PC seemed to feel that we are on the right track – not a lot of specific comments.

The meeting adjourned at 8:15 pm.

ARAPAHOE COUNTY COMP PLAN MEETING NOTES					
• ate	11/14/00	• ime	5:30 pm	• ing Location	Meet Arapahoe County Offices
Type of Meeting	<input type="checkbox"/> Project Mgmt	<input type="checkbox"/> Planning Commission	<input type="checkbox"/> Project Team Meeting	<input checked="" type="checkbox"/> Planning Commission	
• opic	Discussion about preferred scenarios				
• resent	Planning Commission Members: Jack Forhan, Don Gregg, O'Neill Quinlan, Brian Daigle, Dave Meyer, Frank Doyle, Shannon Roth, Susan Knapp Project Team Members: Bryan Weimer, Sue Conaway, Ben Herman, Darcie White, Lesli Ellis County Commissioner: Marie MacKenzie				
• andouts	N/a		• ext Meeting	N	TBD
Action Items	N/A				

Ben Herman, Clarion Associates, provided an overview of the public workshop. He noted the public tended to prefer Scenario 3 of the land use alternatives and a more generalized map and specific text policies. With a more specific map, it tends to be like a zoning map. It gives the appearance of certainty, but it may have to be amended frequently.

Basic Staff Direction

- Show an Urban Edge near Watkins and Jewel (encompassing World Park)
- Show Rangeview land as Urban Reserve or Planning Area or Agricultural Area
- Eastern towns should have designated Growth Areas: Urban Density (Mostly), Infrastructure (Mainly Water/Sewer), Areas inside will develop Town Plans
- County should take a more proactive role with towns: Assist service districts with facility planning and funding, Support sub-area planning
- Areas outside of urban areas or towns should remain rural: Existing zoning, Clustering incentives
- Make the final map more general than the current map (plan should be more policy-driven)

Questions

- Increase minimum lot size?
- Growth areas commensurate with municipal growth areas (boundaries)?

Summary of Planning Commission Discussion

- The Planning Commission generally supported the direction of staff and recommended in favor of a generalized map and more specific policies.
- They generally approved the urban growth boundaries near Jewel and Watkins as well as town boundaries and suggested developing incentives for infill.
- They suggested that Rangeview should be indicated as a Planning Reserve.
- They were in favor of the county taking a more proactive role in town and district

planning.

- They suggested that the discussion about increasing minimum lot size be addressed by residents in the eastern portion of the county. They expressed some support for the idea of increasing minimum lot size with added incentives for clustering (i.e., increase minimum lot size to 80 acres but allow landowners to develop 2 units on 35 acres if they cluster development).

ARAPAHOE COUNTY COMP PLAN MEETING NOTES					
• ate	2/6/01	• ime	5:30 pm	• ing Location	Meet Arapahoe County Offices
• ype of Meeting	T	<input type="checkbox"/> Project Mgmt	<input checked="" type="checkbox"/> Planning Commission	<input type="checkbox"/> Project Team Meeting	<input checked="" type="checkbox"/> Board of County Commissioners
• opic	Draft Preferred Scenario				
• resent	Planning Commission Members: Jack Forhan, Don Gregg, O'Neill Quinlan, Brian Daigle, Dave Meyer, Frank Doyle, Shannon Roth, Susan Knapp Project Team Members: Bryan Weimer, Sue Conaway, Ben Herman, Lesli Ellis, Steve Gomez County Commissioner: Marie MacKenzie				
• andouts	Draft Preferred Scenario Key Principles and Strategies		• ext Meeting	N	TBD
Action Items	N/A				

Ben Herman, Clarion Associates, noted that most Commissioners were at the Byers Public Meeting and already saw the presentation about the Draft Preferred Scenario. This discussion focused on strategies.

Comments and Suggestions – Discussion Summary

- Do not say that the “desired” level of service for Arapahoe Road is a “D classification”.
- Determine the financial impact on special districts of a policy that states that all new urban development will be annexed. Have the special districts made commitments... talk to their attorneys or financial advisors.
- Make a distinction between being in a district or not. Don’t form new districts vs. existing... zoned property (within urban growth).
- County worked with DRCOG to adjust boundary – pull out open space, airport runways, drainage and parks to allow for more growth so that the county will comply with DRCOG’s 23 square mile growth limit.
- The planning reserve area doesn’t fit into the growth boundary.
- The boundaries for Eastern Communities are fuzzy right now.
- Strasburg doesn’t have any water districts south of I-70, only in Adams Co.
- Make sure communities have a mix of housing and jobs – revenue. They need more mixed development so they are more self-sufficient.
- The Commission was generally in support of raising the minimum lot size to 80 acres.
- The Commission was generally in support of using cluster development incentives, but advocates a flexible process.

MEETING #1 – 6/26/00

THE WATER RESOURCE PLAN

STRASBURG, COLORADO

On Monday evening Arapahoe County Planning staff, Clarion Associates and Leonard Rice Consulting Water Engineers held a meeting at the Strasburg American Legion Hall to present the water resource information to County residents. Jon Ford with LRCWE, presented his research on the amount of ground water available in the eastern part of the County.

There were 40 people in attendance. The following is a summary of the public comments received.

- One man was aware of an Urban Drainage study that supports greater densities than the densities shown in this study. Why is there a difference?
- Several people are concerned about the number of dwelling units that could be supported by the ground water. They want the County to keep in mind that these are estimates and not absolute single-family numbers that could be developed.
- They want the water plan to address the usage of the aquifers by giving priority to using ground water for drinking and using “gray water” or recycled water for irrigation and recreation usage.
- One gentleman wanted to know if there was a back-up plan if the numbers in the study are not accurate.
- Others wanted the study to look at the appropriated water in the water districts to see what kind of impact they have on the aquifers in the eastern portion of the County.
- To conserve on water it was suggested that people xeriscape and have dual water systems in the house to be able to use recycled water.
- One man wants the County to allow for clustered development to provide for more efficient use of water and have the ability to dry land farm on the remaining portion of the property.
- Someone suggested that if the County has questions about the area to call the I-70 Chamber. Others felt that it was important to have more input than just an I-70 Chamber point of view.
- Paved roads and who pays for the improvements is an issue that was raised.

COMMUNITY WORKSHOP #2

OCTOBER 23, 2000, BYERS HIGH SCHOOL

The following is a summary of the comments on the three plan alternative scenarios from teams of citizens on October 23, 2000 at Byers High School. Each group reviewed the three scenarios and produced a set of comments on their likes, dislikes, and other issues, as well as a set of criteria or preferences for a preferred scenario.

Scenario 1 – Compact Development Pattern

Likes

- Keeps pollution in the western portion of the county
- Lower costs
- Retains agriculture
- Slows urban sprawl
- Open space
- Density is confined
- Urban growth boundary line
- Byers Community Plan
- Bennett Plan is compatible
- Best scenario – compact services
- Larger tracts outside of town
- Compact towns
- Concentrating in town centers

Dislikes

- Transportation timing and cost of improvements
- Wildlife transverse migration corridors need to be more frequent/extensive
- Bennett Comp Plan boundaries – stay closer to the town
- Hard boundary
- May lessen development along I-70 corridor (especially Commercial and Industrial)
- Consistency with World Park plan
- Balanced development at World Park needs MU w/ R1 and R2 – no RV parks
- Protect Indian Peak Native American Burial grounds
- Clarify Mixed-Use areas
- More formal parks
- World Park
- Lack of additional MU areas
- Controlling town boundary growth
- Not enough business on Highway 36 & I-70 outside of Byers
- Agriculture won't be viable
- Incompatible uses with rural areas
- 35's not maintained – rather see clusters
- Don't like additional buffers on open space
- Don't like growth boundaries

Other Comments

- Need PUD Mixed-Use areas in compact areas to accommodate multi-family residential, commercial, and retail districts
- Check SW area – Eastern Hills Development (PUD residential?)
- Coordinate with Adams County!
- Control Aurora annexation
- Like 20 acre development better than 40

Scenario 2 – Dispersed Development Pattern***Likes***

- Landowner rights enhanced
- Density of development is unchanged
- Property rights maintained
- More rural designation
- Fits SB 215
- Larger plots of land
- Opportunity for various types of development
- Less restrictive
- The way it is...

Dislikes

- Expensive for schools – busing
- Creates zoning problems
- Not business-friendly
- Higher infrastructure costs
- Impacts major access roadways
- Overtaxing issues
- Sprawl
- Inefficient for services
- Ruins view sheds
- No plan
- Developer-driven
- Cost – extensive infrastructure required
- Not a responsible approach

Water

- Community facilities and infrastructure do not get created
- Do not expand Urban Reserve areas
- Not enough opportunity for small business along the I-70 corridor
- World Park MU zoning
- Rangeview development
- Should be allowed to parcel off 5 acres
- Incorporate employment from Scenario 3 into this alternative

Other Comments

- Not enough time to work on plans
- Representation for eastern residents is lacking
- Need to continue water studies

Scenario 3 – Corridors and Nodes***Likes***

- Mixed-use zoning dispersed
- Open space
- Lower infrastructure costs
- Less paving of roads
- Developing jobs in the community
- Employment opportunities
- Centralized infrastructure
- Flexibility
- Service issues, public safety
- School service
- Encourages industry and economic development
- Clustered development
- Smaller rural residential areas

Watkins sphere of influence
 Community infrastructure
 Cluster development
 3-5 acre clusters good

Dislikes

World Park MU zoning
 Property rights issues
 WorldPark extends too fast south of node – needs to be more compact
 No balance for Watkins development
 Too limiting
 Urban development
 Need more multi-family
 Other Comments
 Like to see more mixed-use development in the east
 Put existing development on the map
 Pave Quincy to Byers/Exmore Road
 Allow mix of housing types
 Provide incentives for water and sanitary districts to grow

Group #1

Preferred Concept Criteria:

Preferred Scenario #3 – like the flexibility, opportunity for expansion, and local control
 We desire a clear, strict plan, yet with flexibility
 Ability to provide infrastructure and services is critical
 Important to coordinate with Adams County, particularly in Strasburg, Bennett, and Byers

Group #2

Preferred Concept Criteria:

Prefer Scenario #2, with incorporation of the following additional elements:

Expanded areas for mixed–use development

No World Park!

Larger acreage properties outside of towns

Expanded open space

Group #3

Preferred Concept Criteria:

Scenarios 1 and 3 preferred
 Scenario #2 not cost-effective
 Like the 80 acre minimum lot size requirement in rural areas
 Emphasis on employment possibilities positive

Other Comments:

1. Check with state engineer on well requirements – believe it to be 7

acres rather than 2 ½

Group #4***Preferred Concept Criteria:***

- Provide for infrastructure in and around the towns
- Prefer Scenario #3 road concept
- Place strongest emphasis on the towns
- Open space not big enough!
- Preserve Indian Peak burial grounds

Group #5***Preferred Concept Criteria:***

- More mixed-use to provide for employment opportunities
- Water resources should be overriding criteria – must demonstrate ability to meet demand before development!
- Emphasize clustering concept (3-5 acre lots) to preserve open space and make services and infrastructure more efficient
- Look to future development of industrial uses along the Quincy Corridor
- Identify opportunities for n/s corridors up to Front Range Airport and Quincy/County Line Rds.

Group #6***Preferred Concept Criteria:***

- Encourage mixed-use around town centers
- Business development in towns
- Encourage mix of 35 acre+ sites and more compact development
- Must prove water availability before development

Group #7***Preferred Concept Criteria:***

- Mix of housing types in towns
- 100 year flood plain provides an ample amount of open space
- cluster housing promotes "open lands" vs. "open space" in agricultural areas
- Tax incentives to encourage employment in towns
- Multi-family housing in towns
- Incentives for service districts
- Incorporate elements of Scenarios 1 and 3 into 2

Group #8***Preferred Concept Criteria:***

- Prefer scenario #3 due to:

Lower infrastructure service costs

Higher tax base

Less road improvement requirements

- Spread more mixed-use development along the I-70 corridor

COMMUNITY WORKSHOP #3

BYERS HIGH SCHOOL, JANUARY 29, 2001

On January 29, 2001, county staff and consultants presented the Draft Preferred Scenario to about 70 members of the public at Byers High School. Citizens had the opportunity to comment on the draft scenario. The public then visited four stations: (1) Growth Management and Land Use; (2) Open Space and Resource Protection; (3) Fiscal Impacts and Public Services; and, (4) Transportation. The stations contained information on key principles, policies and tools that might be used to implement the County Comprehensive Plan. The following is a summary of the questions and answers and written comments from citizens at the four stations.

Draft Preferred Scenario – General Questions and Comments

What are some options for clustering? It is driven by water. Some options for a 160- acre parcel – could have 8 lots if they are clustered instead of 4, or have 1 conservation lot plus 7 home sites. This is conceptual.

Pipelines, they take up several acres – Need regulations that have setbacks for buildings. This needs to be addressed. The County did not address this in last comp plan and it is not included this time. Safety for citizens – Citizens need to be protected through adopted criteria. Xcel energy and IREA want their issues addressed and we will be meeting with them. General policies would be in the Comprehensive Plan and then more specific regulations in the zoning regulations.

Why doesn't the map show government agency land or their plans? State land board land north or Quincy? Land application of sewage sludge that Denver owns?

Transportation improvement for Quincy Rd., do they end at Kiowa – Bennett? Why not further? High cost to extent improvements. Current capital improvement budget is \$4.5 m.

Why Hayesmount improvements and not Watkins Rd? It isn't Hayesmount, it is Watkins improvements that are proposed.

Would like connection to County Line Rd.

The eastern plains should stay the way they are now. The County shouldn't pay so that developers can build. It shouldn't come out of taxes.

Concerned that Aurora may annex the whole area. What can the County do? (The area around Bonnie Lane near Watkins)

Growth boundary was determined with Aurora.

How do you convince Aurora to stick to it? Marie Mackenzie – They aren't moving further because of no water. We need to get a handle on the Comp Plan and then talk to Aurora.

Bennett will make a determination in their growth area but this leaves landowners in the County out of the decision. (Those within the planning study area) The County and Bennett will develop an IGA.

But the landowner doesn't have input. A public hearing is required for an IGA.

If County or City wants to buy land for sludge treatment, what will the County do? Landowner selling the land will have a say. This should be addressed in policies. Marie – Land near Deer Trail doesn't have plutonium.

Legislation regarding comprehensive plans, how does the timing of this plan relate? There are 3 major groups with proposals. We are looking at April for adoption of this plan and legislation being proposed at about the same time. This plan is mostly consistent with proposed legislation.

Growth Management and Land Use

Yes, county should encourage affordable housing.

Concerning pipelines... I think there should be at least a 1/8 mile buffer on both sides of line where no buildings can be built. As far as parking, there should be no parking lots within the potential explosion damage area (Carl Jones).

Open space is community-owned. Open area is not community-owned.

Byers Influence Area needs to go an extra mile. Strasburg area of influence may be too big. Clustering is better than 80 acres and leave the 35 acres alone.

If I'm not now, I would like to be on the advisory committee (Elizabeth Richardson, Colorado Open Lands).

The county seems to be pushing out agriculture and has too many restrictions on types of agriculture that can take place.

I am interested in expanding the Byers city limits (Kharl Peterson).

How can Arapahoe County encourage business in our area and increase the tax base?

Define cluster, especially with respect to split cluster – ag reserve in rural area to allow more density closer to urban (discuss with Nicky Stoner or Jan Hays).

"Letting us put a 'mother-in-law' on our 40 acres" (Sandee Pummel)

Arapahoe County should not encourage more growth in the rural area. Not enough water for unlimited growth. Aquifer is dropping now in Watkins area. Don't providing housing; it means more people, which depletes water available.

Open Space and Resource Protection

Yes, the county should raise money for open space purchases.

Conservation easements – incentives, transaction costs...

Coordinate trails with Adams Co. (Kiowa–Bennett River, Comanche/Wolf Creek areas, Byers Rivers, Prairie Parks)

East and west corridors to connect south and north riparian corridor?

Off limits to area parallel to flood plains – enforce!

Public Services and Fiscal Impacts

Developers need to pay both cash-in-lieu of land and funds to mitigate capital expenditures to the schools.

Take high ground in to effect with Byers planning areas.

Additional buffer on floodplain to accommodate additional development.

Developers should pay for infrastructure.

Not enough water for what’s being proposed in Byers.

Roadway funding: sell 35 ac; donate portion of profit for roads and receive capital gains tax deduction.

Speed limit signs – enforced – would help funding!

Local Impact District is a tough sell – need incentive.

Transportation

Don’t plan road through the Lowry Bombing Range when the county opposes development on the range.

Maintain dirt roads to ensure school buses can run safely and buses not beaten to death because of poorly maintained dirt roads. Roads – maintain existing and make development pay for new roads.

Less calcium chloride for dust abatement – too corrosive.

Road development and/or improvements need to be divided up across the county, not concentrated to the west end. Need to use less calcium chloride on dirt roads; it is extremely corrosive.

Is Douglas Co. & Elbert Co. planning to contribute to construction of Watkins Road?

Paved Roads will encourage development. Developers should pay for improvements.

Do not want Mississippi to connect to Watkins Road. Are there plans?

A lot of traffic on Exmoor Road south of Quincy. Traffic from Chenango.

6th, Imboden, and Almstead were paved without improving base and now worse than before paved. Need more/better maintenance.

Need to straighten Kiowa–Bennett alignment at Elbert Co. Line.

Consider improvement needs on Exmoor Road south of Quincy to Knudtson Road (need traffic volume forecast).

Possibly more traffic than on Strasburg Road.

Consider another I-70 exit at Bradbury Road (spread the traffic load from the current single exit).

Bradbury Road – Consider paving short segment I-70 south to US-40.

Some of us like dirt roads and don't want to see more paved roads.

Spread the recommendations to include some roads further to the east.

ARAPAHOE COUNTY COMP PLAN MEETING NOTES					
• ate	6/1/00	• ime	10:30-12 pm	• ing Location	Meet Eaglecrest High School
• ype of Meeting	<input type="checkbox"/> T	<input type="checkbox"/> Project Mgmt	<input type="checkbox"/> Planning Commission	<input type="checkbox"/> Project Team Meeting	<input checked="" type="checkbox"/> Youth Design Workshop
• opic	Design workshop for Eaglecrest High Students				
• resent	Comp Plan Staff; Approx. 16 students				
• andouts				• ext Meeting	N
Action Items					

The following is a brief summary of each group's report-back comments (see the boards for more detailed information):

Group #1

Don't Like:

1. Badly designed bus stops – no structures, no shade, doesn't make transit desirable
2. Cheaply built commercial development
3. Bad (ugly) fences
4. Stop signs

Like:

1. Nicely designed bus stops
2. Open spaces
3. Nicely designed shopping centers (better quality materials)
4. Fences w/ landscaping near them
5. Parks
6. Greenbelts

Group #2

Don't Like:

1. Bad fences
2. Power lines
3. Discontinuous access (no thru roads)
4. Poor drainage
5. traffic hazards

6. unusable open space

Like:

1. Wide open spaces
2. Subdivisions that are not so packed in
3. Convenient shopping centers (close to neighborhoods – lots of services)
4. Higher quality fencing (plastic/metal)

Group #3**Don't Like:**

1. Construction mess
2. Close-together houses with no trees
3. Roads, traffic
4. Traffic on Parker Road (horrendous)
5. Poorly maintained roads

Like:

1. Trees along the road – will make a canopy when mature
2. Open fields on Quincy
3. Landscape buffers
4. Parks by elementary schools

Good and Bad:

1. The dump – good technology, but still a dump
2. Developments with parks – but houses still crammed together
3. E-470 at Quincy – well designed, not intrusive, but breaks up open space

Group #4**Don't Like:**

1. Roads poorly maintained
2. Too many big gas stations
3. Overhead power lines
4. Multifamily housing in open fields – no trees, not well integrated into neighborhoods
5. Big masses of apartments (1/4 mile solid)

Like:

1. Parks with water features
2. More open space
3. Open space – “most people moved out here because they like open space feel”
4. Apartment project by Quincy Reservoir – fits in well with neighborhood

F: Fiscal Impact Model

A fiscal impact program is being calibrated uniquely for Arapahoe County. The program is a series of linear equations that translate current (Year 2000) tax rates, user fees and fines, and service delivery costs into formulas that measure costs and revenues associated with servicing existing or new development.

The program is designed to measure annual revenues generated by and annual costs incurred by various types of existing and expected or proposed development. The program is applicable to any development within unincorporated Arapahoe County.

The program is unique to Arapahoe County; it is calibrated using actual historic financial conditions, reported in the County's annual audits and budgets. While the program applies current tax rates, user fees, and charges, each can be adjusted as revenue schedules change. The program also uses budgeted expenditures for different types of services. However, the fiscal effect of higher or lower expenditure levels for various services may also be tested.

The fiscal impact program only measures the annual fiscal effect of various types of development on general government funds; it is not intended to replace complex types of decisions such as approving or disapproving major new land developments and changing service delivery standards. A particular type of development may produce a short-run negative fiscal effect, but this may be counter balanced with important quality of life issues, expected longer term positive fiscal effects or indirect spin-off benefits.

Major Features of the Current Conditions Program. The current conditions governmental fiscal impact program is designed to measure the annual fiscal effects on all non-enterprise funds of the County, including the following:

FUNDS REPRESENTED IN THE FISCAL IMPACT MODEL	
FUND	MAJOR COMPONENTS / PURPOSES
General Fund	The General Fund is the major operational expenditure fund of the County. It includes the budgets of all elected officials and support departments. The General Fund Year 2000 budget is \$109.5 million.
SPECIAL REVENUE FUNDS	
Road & Bridge Fund	The Road and Bridge Fund is responsible for maintaining and developing roads and bridges in Arapahoe County. It includes services such as snow and ice removal, traffic safety, grading, graveling and dust control; patching, chip and seal, overlay and street cleaning; curb, gutter and sidewalk maintenance; roadway construction and bridge maintenance. The Year 2000 budget totals \$17.5 million.
Human (Social) Services Fund	The Human (or Social) Services Fund provides social service programs, such as child protective services and adoption services, and assistance payment programs, such as Temporary Assistance to Needy Families (TANF), and Medicaid for Families. The Year 2000 budget totals \$26.5 million. The fiscal impact model accounts for only the amount of services that are funded with local taxes, which

FUNDS REPRESENTED IN THE FISCAL IMPACT MODEL	
FUND	MAJOR COMPONENTS / PURPOSES
	is about 30 percent of the total.
Conservation Trust Fund	This Fund accounts for revenues from the Colorado lottery proceeds, which are received by Arapahoe County on a formula-driven basis. All funds must be used for park and recreation projects. Recently, revenues have averaged \$700,000 to \$750,000 per year.
Arapahoe Law Enforcement Authority	This Authority is a special district that provides for law enforcement in the unincorporated area of the County. The Patrol Division of the Sheriff's Office as well as three grant-funded School Resource Officers are paid from the Authority Budget. The remainder of the Sheriff's budget is in the County General Fund or the Sheriff's Commissary Fund. The fiscal model accounts for only the amount of services that are funded with local taxes and fees, which is about 97 percent of the total.
Cash-in-Lieu Fund	This fund receives revenues from developers of subdivisions of residentially zoned land. All residential subdivisions must provide public land dedication to the County for parks and other public purposes based on population generated. There is an option to dedicate cash or land. This Fund tracks the cash dedications. The model provides the user a choice as to whether the subdivider will provide land or cash.
DEBT SERVICE FUNDS	
Debt Service Funds	There are several debt service funds. These funds are used to repay revenue bond debt, certificates-of-participation (COPS) lease obligations, and lease purchase agreements are included in the fiscal impact model. All debt service obligations are included in the fiscal impact mode.
CAPITAL PROJECTS FUNDS	
Capital Expenditure Fund	This Fund is used to account for County capital projects, not including fixed assets, which are accounted for in the Central Service Fund. The fiscal impact model includes the portion of improvements that are financed with local taxes, not with intergovernmental and grant revenues and sales of assets because these can be intermittent and not from fund transfers because these are captured in the originating Fund.
Infrastructure Fund	The portion of the Infrastructure Fund that is financed with transportation improvement fees is included in the fiscal impact model. The portion that is funded with State and Federal grants is excluded, since these grants are not correlated directly with land use decisions and real estate development.
Arapahoe County Recreation District Fund	This Fund is used to finance parks, trails and open space within the Recreation District, including the Arapahoe County Community Park and the Cheyenne Arapaho Park. It is funded with a levy of 0.704 mills and user fees and intergovernmental revenues. The fiscal impact model accounts for revenues collected locally and expenditures associated with locally generated taxes, fees and related interest earnings.

F-2

The fiscal model excludes both revenues and expenditures associated with a number of funds that are either internal accounting funds, receive only state and federal grants that are unrelated to new growth, or are enterprise funds. A list of funds excluded from the model and the reason for each exclusion is summarized below.

FUNDS EXCLUDED FROM THE FISCAL IMPACT MODEL	
FUND	MAJOR COMPONENTS & REASONS FOR EXCLUSION

FUNDS EXCLUDED FROM THE FISCAL IMPACT MODEL	
FUND	MAJOR COMPONENTS & REASONS FOR EXCLUSION
SPECIAL REVENUE FUNDS	
Contingent & Emergency Reserve Fund	This fund was established in 1983 as a financial protection to the County. Revenues were generated by a 0.187 mill levy and used for emergency situations, such as road repairs subsequent to a rainstorm. This fund is excluded from the fiscal impact model because for the last three years, this fund has received no revenues from any source.
Community Development Fund	All fund revenues are from the federal government and driven by formulas. There are no transfers into or out of the fund. Revenues are outside of the control of Arapahoe County.
Work! Fund	The Arapahoe/Douglas Work! Division of the Community Services Department conducts job-training programs for the County. Programs are federally funded through the State of Colorado, which acts as a pass-through. The purpose of all programs is to prepared unemployed individuals for entry or re-entry into the labor market. This fund is excluded from the fiscal impact model because it receives no local revenues and is not directly impacted by land use decisions in the County.
Sheriff's Commissary Fund	Although not formally an enterprise fund, this fund functions like a commissary within the County Jail. The commissary operates to allow inmates to purchase miscellaneous items, such as telephone and barber services that are not provided by the County. The net cash flow from services are used to provide recreational, educational and indigent services and products for inmates. Land use decisions do not directly influence the revenues or expenditures within this fund.
Employee Flexible Benefit Fund	This fund covers flexible medical expenses. Revenue is collected through payroll deduction from employees in this program. The fund is self-sustaining and not impacted by land use decisions.
Self-Insurance Funds	The County maintains three self-insurance funds: The Self Insurance Liability Fund (0012), the Self-Insurance Dental Fund (0013) and the Self Insurance Worker's Compensation Fund (0019). Revenues for the Self-Insurance Liability Fund come from each department that has vehicles through a transfer from the General Fund. Revenues for the Self-Insurance Dental Fund and the Self-Insurance Worker's Compensation Fund come from each department through premiums each department pays per employee. Costs associated with each self-insurance fund are included in the General Fund department budget.
Comm. Network System Replacement Fund	This fund provides funding for a future replacement of the County Radio Communication System. Arapahoe County and other local governments have agreed to contribute annual based on the number of radios each operate. The County's contribution is transferred from each operational department that use radios. The fiscal impact model captures the costs in the operational departments.
Forfeited Property Fund	This fund accounts for money received from drug related seizures. It is excluded from the fiscal impact model because revenues are unpredictable and not directly related to land use decisions or real estate development.
Law Enforcement Assistance Admin. Fund	This fund is used to finance the training law enforcement officers in Arapahoe and Douglas County. Since 1998, financial responsibilities have been transferred to the Highlands Ranch Law Enforcement Training Foundation. Funds have been fully transferred and there is no activity in the Year 2000 budget.
CAPITAL PROGRAM FUNDS	
Central Service Fund	Fixed asset purchases are budgeted and made through the Central Service Fund and leased to individual departments. The fiscal impact model accounts for these expenditures within the departments in which

FUNDS EXCLUDED FROM THE FISCAL IMPACT MODEL	
FUND	MAJOR COMPONENTS & REASONS FOR EXCLUSION
	the assets are used.
Law Enforcement Cap. Imp. Trust Fund	This fund accounts for debt service payments and construction costs associated with the Law Enforcement Authority. The fiscal impact model accounts for these costs in the Debt Service Fund.
Union Park Water Fund	This Fund accounted for financing a future trans-mountain water diversion project. In 1998, the County transferred the funding responsibility to a consortium of water and sanitations districts. There is no County budget for the year 2000.
IMPROVEMENT DISTRICT FUNDS	
All improvement district funds are excluded from the fiscal impact model because they are self-sustaining. Assessment revenues finance annual debt service obligations of each fund.	

The current conditions program contains the following features:

1. The program is calibrated using actual historic financial conditions reported in the County's annual audits. Parameters are calibrated using the latest revenue and expenditure information.
2. The program applies existing [2000] tax rates and user fee rates and service delivery standards.
3. In preparing the cost standards, several years of historic data was examined. In most cases, 2000 costs were used as a standard. Exceptions occurred when 2000 was an unusual year from a budget perspective. In these instances, the average of the last three years is used.
4. Each revenue and expenditure parameter is under review by the Budget Director and the Development Services Director. The parameters are as specific as available data allows.
5. The user is provided the opportunity to vary the rate of inflation for real estate market values, operation and maintenance expenditures, and user fee schedules. Inflation rates may differ in these three areas.
6. Data requirements to run the program are detailed on a set of user worksheets presented in the next chapter. There are many opportunities for the user to customize equations to suit case specific purposes.

Potential Applications. The fiscal impact program can be used in many ways. For example, the program can be used to:

- Test the annual fiscal effect of a proposed development, given current financial practices and service delivery standards; to request modifications to the proposal, based on fiscal implications;
- Test the fiscal implications of changing an individual tax rate, user fee, fine or charge;
- Derive a user fee schedule to insure that new development produces at least a

neutral fiscal effect;

- Test the fiscal consequences of changing levels (expenditures) of service delivery.

The program can also be used to test the fiscal effect of simple developments, hypothetically built in "year one" and occupied in "year two."

G: Water Resource Study

**WATER RESOURCE STUDY
FOR EASTERN ARAPAHOE COUNTY**

PREPARED FOR
ARAPAHOE COUNTY

MARCH 2001

PROJECT No.: 1059ARP01



LEONARD RICE CONSULTING WATER ENGINEERS, INC.

2000 CLAY STREET, SUITE 300 DENVER, COLORADO 80211-5119
(303) 455-9589 FAX (303) 455-0115

WATER RESOURCE STUDY FOR EASTERN ARAPAHOE COUNTY

PREPARED FOR

ARAPAHOE COUNTY

MARCH 2001

PROJECT No.: 1059ARP01

The technical material in this report was prepared by or under the supervision and direction of the undersigned, whose seals as a Professional Engineer and Certified Professional Geologist are affixed below:

Jon R. Ford, P. E., C. P. G.

The following members of the Leonard Rice Consulting Water Engineers, Inc. staff contributed to the preparation of this report:

Principal in Charge	:	Jon R. Ford, P. E., C. P. G.
Staff Geologist	:	Heather Justus
Data Processor	:	Glenda Emmans
Data Processor	:	Jeanine Martinez



LEONARD RICE CONSULTING WATER ENGINEERS, INC.

2000 CLAY STREET, SUITE 300 DENVER, COLORADO 80211-5119
(303) 455--9589 FAX (303) 455-0115

WATER RESOURCE STUDY FOR EASTERN ARAPAHOE COUNTY

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	Study Area	1
1.2	Methods Used	2
1.3	Conclusions.....	2
1.4	Policy Recommendations.....	3
2.0	EXISTING WATER SUPPLIES IN THE COUNTY	5
2.1	Water Supplies in Urban Portions of Arapahoe County	5
2.2	Water Suppliers in Eastern Arapahoe County	6
3.0	CURRENT AND PROJECTED WATER DEMAND IN EASTERN ARAPAHOE COUNTY.....	7
3.1	Existing Land Use.....	7
3.2	Expected Future Growth.....	7
3.3	Water Demand by Use.....	7
3.4	Present and Future Water Demand	7
3.4.1	Water Demand Factors	10
4.0	SOURCES OF FUTURE WATER SUPPLY FOR ARAPAHOE COUNTY.....	11
4.1	Traditional Sources	11
4.1.1	Importing Water From Other Basins	11
4.1.2	Converting Agricultural Water Rights to Municipal Use.....	12
4.1.3	Storing Excess Water in Reservoirs.....	12
4.1.4	Denver Basin Ground Water.....	13
4.1.5	Alluvial Ground Water	13
4.2	Non-traditional Sources	13
4.2.1	Conservation	13
4.2.2	Reuse of Waste Water.....	13
4.2.3	Artificial Recharge.....	14
4.2.4	Conjunctive Use.....	15
4.3	Traditional Sources as a Component of Future Supply in Arapahoe County.....	15
4.4	Non-traditional Supply as a Component of Future Supply in Urbanized Arapahoe County.....	16
4.5	Traditional and Non-traditional Sources as a Future Supply in Eastern Arapahoe County.....	16

WATER RESOURCE STUDY FOR EASTERN ARAPAHOE COUNTY

TABLE OF CONTENTS, continued

5.0	GROUND WATER RESOURCES OF EASTERN ARAPAHOE COUNTY.....	17
5.1	Hydrogeology of the Denver Basin Aquifers	17
5.1.1	Denver Basin Aquifer Depth, Thickness and Extent in Eastern Arapahoe County	17
5.1.2	Denver Basin Well Yields in Eastern Arapahoe County	18
5.1.3	Denver Basin Aquifer Annual Recharge	19
5.1.4	Denver Basin Aquifer Water Level Trends	19
5.2	Hydrogeology of the Alluvial Aquifers	21
5.2.1	Alluvial Aquifer Thickness, Extent, Well Yield and Recharge in Rural Arapahoe County	21
5.2.2	Alluvial Aquifer Water Level Trends	21
5.3	Denver Basin Aquifer Resource Assessment in Eastern Arapahoe County	21
5.3.1	Denver Basin Aquifer Resource Distribution in Rural Arapahoe County.....	24
5.4	Alluvial Aquifer Resource Assessment in Eastern Arapahoe County.....	25
6.0	WATER QUALITY	27
7.0	SUMMARY OF INSTITUTIONAL CONSTRAINTS AFFECTING GROUND WATER DEVELOPMENT	33
7.1	State regulations.....	33
7.1.1	Limitations Related to Use.....	34
7.1.2	Limitations by Aquifer.....	34
7.1.3	Denver Basin Aquifer Regulations	35
7.2	County Regulations Affecting Ground Water Development.....	37
7.3	Other Ground Water Regulations	37
8.0	BIBLIOGRAPHY	38

**WATER RESOURCE STUDY
FOR EASTERN ARAPAHOE COUNTY
County**

TABLE OF CONTENTS, continued

LIST OF TABLES

	<u>Page</u>
Table 3-1 Reported Water Demand by Use	8
Table 3-2 Water Demand Forecast 2000 - 2020	9
Table 4-1 Mix of Traditional Supplies in the Future.....	15
Table 5-1 Denver Basin Aquifer Thickness	18
Table 5-2 General Denver Basin Aquifer Yields	19
Table 5-3 Estimated Ground Water Reserves in Rural Arapahoe County.....	23
Table 5-4 Relative Percent of Total Resource.....	24
Table 5-5 Estimate of Alluvial Aquifer Water Resources in Rural Arapahoe County	26
Table 6-1 Dawson Aquifer Water Quality	28
Table 6-2 Denver Aquifer Water Quality.....	29
Table 6-3 Arapahoe Aquifer Water Quality.....	30
Table 6-4 Laramie-Foxhills Aquifer Water Quality.....	31
Table 6-5 Alluvial Aquifers Water Quality.....	32
Table 7-1 Denver Basin Ground Water Classes.....	36

LIST OF FIGURES

(located at the end of the report)

Figure 1-1 Extent of Study Area
Figure 2-1 Source of Water Supply to Districts, Cities and Towns in Arapahoe County
Figure 3-1 Generalized Current Land Use
Figure 5-1 Extent of Denver Ground Water Basin and Study Area
Figure 5-2 Geologic Map and Geologic Cross Section
Figure 5-3 Depth to the Bottom of the Arapahoe and Laramie-Foxhills Aquifers
Figure 5-4 Depth to the Bottom of the Dawson and Denver Aquifers
Figure 5-5 Decline in Static Water Level in the Arapahoe Aquifer Since 1950
Figure 5-6 Lateral Extent of Alluvial Aquifers
Figure 5-7 Total Available Nontributary Ground Water than can be Withdrawn Annually per Acre

1.0 INTRODUCTION

This study of water resources of eastern Arapahoe County was done in conjunction with the 2000 update of the County Comprehensive Plan. The County staff identified that the magnitude and type of water resources available in the County were not well documented. They also recognized that water resources might be a critical issue in the eastern rural portion of the County. Consequently, we were retained to conduct a planning level study and to summarize:

- the existing water supplies utilized within the entire county;
- the current and projected water demand for the eastern portion of the County;
- future water sources that could be developed for use in the County;
- the hydrogeology and ground water resources of the eastern portion of the County;
- the water quality of the ground water available beneath the eastern portion of the County; and
- in a general way the institutional constraints affecting ground water development within the County.

Because the Comprehensive Plan update covers the period 2000 to 2020, this study also uses that planning period.

Although the primary focus of the project was on the eastern rural portion of the County, the County staff directed us to document the current demand and water supplies used in the entire County including the urban portion. An assessment of the adequacy of the supply, both current and future, for the urban portion of the County was not done because most of the supply is provided by four large water providing entities that have the responsibility to provide adequate water service, as well as, the planning, engineering and financial resources to meet the future water demand.

While surface water from the Platte River drainage system and surface water imported into the basin are a major source of supply for the urban part of the County, they are not likely to be a source of supply for the eastern part of the County because the cost to transport the water to the eastern part of the County is too great. Furthermore, the surface water supply available from the drainage basins within the eastern portion of the County is too small and unreliable to be a significant source of future supply. Consequently, ground water which is currently the primary source of supply, will also be the future source of supply for the eastern portion of Arapahoe County.

1.1 STUDY AREA

For this study, the eastern or rural portion of Arapahoe County was defined as that portion of the County east of Gun Club Road as shown on Figure 1-1. This includes all of T. 4 and 5 S., and R. 57-64 W.

1.2 METHODS USED

We were directed to utilize publically available data and to conform to the current methods of the Office of the State Engineer (SEO) regarding assessment of the ground water resource of the study area. The principal source of data was developed in 1985 by the SEO. Since that time, additional wells have been drilled in the study area for which there is accurate data on water levels, well yields, aquifer properties, and aquifer saturated thickness. Because the SEO has not updated its database, this data was not gathered or interpreted in this study. Had this been done, the resource assessment included in this report would not have been consistent with the SEO. Our judgement is the assessment would have changed less than 10 percent; consequently, the assessment provided in this report is sufficient for its general planning purpose.

To facilitate interpretation and mapping, we obtained the SEO database in digital form. It was then converted to a format useable by our mapping software. We gathered, reviewed and summarized all of the water quality data available for the study area from the U.S. Geological Survey and the Colorado Department of Health and Environment. We also gathered and reviewed publications of the U.S. Geological Survey and the State Engineers Office regarding the hydrogeology of the study area.

Along with members of the County's Planning and Engineering staff we met with the water providers (both urban and rural) of Arapahoe County that rely on ground water as a significant source of their total supply to discuss their current supplies and future plans. In addition, we obtained and reviewed annual reports of water providers that supply surface water within the County.

1.3 CONCLUSIONS

Based upon our evaluation, we conclude the following:

- 1) Current water demand in the urban portion of Arapahoe County is approximately 88,000 acre feet per year. Approximately 15 percent of this demand is met by ground water, the rest is provided by surface water from the South Platte River or surface water imported from outside the South Platte River drainage basin.
- 2) Future water demand in urban Arapahoe County will mostly be met by a combination of importing surface water, converting agricultural surface water irrigation rights in the South Platte River Basin to municipal use, storing excess surface water in reservoirs, and by ground water. To a much lesser extent, the demand will be met by conservation, reuse of waste water, artificial recharge of excess surface water to the ground water system and conjunctive use of surface and ground water.
- 3) The current water demand in eastern Arapahoe County is approximately 1,200 acre feet per year. Essentially all of the demand is met by ground water.
- 4) The future demand, in the year 2020, is estimated to be approximately 4,300 acre feet per year. All of this demand will likely be met by ground water.

- 5) Eastern Arapahoe County is underlain by the Denver Basin Aquifers and alluvial aquifers associated with the major intermittent streams that flow across the County.
- 6) The Denver Basin Aquifers contain approximately 22 million acre feet of water beneath the eastern portion of Arapahoe County. About 50 percent of this is recoverable. The annual recharge is about 8,000 acre feet per year.
- 7) In eastern Arapahoe County, the alluvial aquifers contain about 200,000 acre feet of water. Approximately 10,000 acre feet per year of alluvial aquifer ground water could be developed without exceeding the annual inflow and recharge. Currently, approximately 4,000 acre feet per year are pumped from the alluvial aquifers.
- 8) The water quality of all of the aquifers ranges from good on the west side of the County to fair to poor on the east side. Total dissolved solids, sulfate and hardness tend to increase from west to east across the County.
- 9) The development of ground water is regulated and limited by State and County statutes, rules, regulations and policies. Ground water use requires a permit from the State Engineers Office of the Colorado Division of Water Resources. The Colorado Department of Health and Environment regulates well locations relative to septic fields and also regulates water quality for municipal supplies. The County regulates land use which indirectly regulates ground water use. The County, as a consequence of this evaluation, has developed a policy to limit ground water development.

1.4 POLICY RECOMMENDATIONS

During the course of the evaluation several study sessions were conducted with the Board of County Commissioners (BOCC), meetings were held with the managers of water providing entities in the eastern portion of Arapahoe County and a town meeting was held in Strasburg. The purpose of all of these meetings was to identify water supply issues. Once the issues were identified, the County staff, with our input, recommended preliminary policies that were adopted by the BOCC.

The important issues that were identified were:

- Should the County adopt a policy to limit water development to less than that allowed by State law?
- Should the County encourage water conservation?
- Should the County establish priorities for water use?
- What would be the policy toward formation of new water districts?

We provided the County staff with our recommendations for each of these issues. Our recommendations considered the finite nature of the water resource available, as well as, the

infrastructure requirements and the general feasibility of constructing various water supply facilities.

We recommended that the County limit Denver Basin ground water development to the nontributary class of ground water (see Section 7) and that it be limited to 50 percent of that allowed by Colorado statutes. Our belief is that approximately 50 percent of the theoretically recoverable ground water stored in the Denver Basin Aquifers is economically recoverable. We feel that it is prudent for the County to adopt a conservative ground water development policy that is based upon the practical limitation that not all ground water is economically recoverable. To maximize the probability that the resource will last longer than the 100 year statutory life, we recommended that ground water development also be limited to only the nontributary class of ground water. This effectively limits ground water development to 60 percent of the recoverable ground water.

We recommended that the County adopt a policy to encourage water conservation and the reuse of waste “gray” water. Although we did not recommend one specific strategy, clearly the most effective conservation practice is to limit lawn irrigation.

We did not recommend a water priority policy. We feel that the water development limitation policy described above sufficiently protects domestic water supplies.

We recommended that the new formation of water districts be allowed. Our experience is that, by and large, water districts capably provide water to their customers. Only rarely are districts so mismanaged that they do not reliably supply water to their customers. To the extent possible, we recommended that existing districts expand to serve new customers. We feel that this would help promote the development of larger more financially capable districts rather than a proliferation of districts too small in size.

2.0 EXISTING WATER SUPPLIES IN THE COUNTY

2.1 WATER SUPPLIES IN URBAN PORTIONS OF ARAPAHOE COUNTY

The major water suppliers within Arapahoe County include the Denver Water Board, City of Aurora, City of Englewood, Arapahoe County Water and Waste Water Authority (ACWWA) and East Cherry Creek Valley Water and Sanitation District (ECCV). The Denver Water Board provides water to approximately forty special districts, towns and cities within the County. Its water supply consists of a complex surface water collection system that includes the South Platte River, the Blue River, the Fraser River, the Williams Fork River, Boulder Creek and Ralston Creek. Denver Water stores raw water in Dillon, Antero, Eleven Mile Canyon, Cheeseman, Strontia Springs, Gross, Chatfield, Platte Canyon and Ralston Reservoirs, and Marston, Soda and Long Lakes. It maintains its own treatment and distribution facilities that serve its customers in Arapahoe County. The Arapahoe County area served by Denver Water is nearly fully developed and Denver Water is not actively increasing its customer base in Arapahoe County.

The City of Aurora serves essentially only customers within its City Limits. Its water supply consists of a complex surface water collection system that includes the South Platte River, the Arkansas River and the Colorado River. Aurora stores raw water in Antero, Spinney Mountain, Strontia Springs, Aurora and Rampart Reservoirs, as well as, Jefferson Lake. Aurora also utilizes some ground water from the Cherry Creek Alluvial Aquifer. Aurora is actively expanding its service area, customer base, treatment, storage, transmission and distribution facilities. To meet future demand, Aurora is actively developing and adding to its portfolio of water rights.

Both the ACWWA and ECCV rely on Denver Basin ground water as their source of supply. ACWWA also utilizes ground water from the Cherry Creek Alluvial Aquifer. They each maintain and develop their own treatment and distribution systems. Neither has significant raw water storage reservoirs because they utilize the aquifers as reservoirs. Both districts contain significant undeveloped land, so their customer base and water demand are both increasing.

Figure 2-1 is a map that shows water supplier boundaries. It also shows the source of supply for each entity. Denver Water supplies approximately 38,000 acre-feet per year of surface water to Arapahoe County residents. Aurora and Englewood, together supply approximately another 33,000 acre-feet of surface water annually to Arapahoe County residents. Various water or water and sanitation districts supply approximately 13,000 acre-feet per year of ground water, mostly from the Denver Basin Aquifers. Other small districts supply about 4,000 acre-feet per year of water from unidentified sources, most probably from Denver Water.

2.2 WATER SUPPLIERS IN EASTERN ARAPAHOE COUNTY

The communities of Bennett, Strasburg, Byers and Deer Trail in the eastern, rural portion of the County, all rely on the Denver Basin Aquifers for their water supply.

The Rangeview District in the western portion of the study area has a lease from the Colorado State Land Board for the development of the Denver Basin Aquifers beneath approximately 37.5 square miles. The District's lease allows it to re-lease up to 11,000 acre feet per year of water to other entities for use outside the district boundary. A portion of the water available for lease has been leased to the ECCV. Information indicates that no additional leases have been made. The agreement between the District and State Land Board provides that the remaining water, estimated to be approximately 20,000 acre feet per year may be developed and used within the District's boundary.

3.0 CURRENT AND PROJECTED WATER DEMAND IN EASTERN ARAPAHOE COUNTY

Current and projected water demand through the year 2020 within the study area was estimated by first determining the likely water demand factors for various uses then applying them to estimates of the current and projected number of households in the study area. The County supplied the estimates of the number of current and projected households used on this analysis. The water demand factors for various uses were generated from research conducted for this project. No actual comprehensive water use data from the study area are available.

3.1 EXISTING LAND USE

Figure 3-1 is a generalized current land use map of the study area. It is a simplification of a map provided by the County. This figure groups land use into the following six categories: Agricultural, Developed, Open Space, Public Land, Right-of-Ways and Housing. The map shows that the current land use of the vast majority of the study area is agricultural and that the areas used for housing are for the most part within or adjacent to the existing towns. The lot size for the housing categories ranges from typically 0.1 acres within the towns up to 35 acres in the rural residential areas.

3.2 EXPECTED FUTURE GROWTH

The County expects that as future growth occurs, it will be dominated by growth in the towns and in rural residential subdivisions containing lots of 35 acres in size or smaller. We assume that the future lot size distribution will be generally similar to the current distribution.

Table 3-1 shows the current and year 2020 household forecast. This forecast is broken down into town and rural categories. The town category includes the towns of Strasburg (part), Bennett (part), Byers and Deer Trail. The rural category includes all other categories.

3.3 WATER DEMAND BY USE

Table 3-2 shows the compilation of water demand by type of use as well as the source of the information. This table also provides data on the percentage of the water demand for several use categories that are consumed and not returned to the hydrologic system. This consumptive use has important water rights implications because in Colorado the consumptive use must be replaced to the hydrologic system to prevent injury to senior water rights. This concept is discussed in more detail in Section 7 of this report.

3.4 PRESENT AND FUTURE WATER DEMAND

Estimates of current and future household data were converted to current and future water demand by multiplying the number of households times the water use demand factors as follows:

**Table 3-2
Water Demand Forecast 2000-2020
Arapahoe County - East of Gun Club Road**

Year: 2000

Land Use	Number of Households	Water Demand (ac-ft/yr) rounded	Water Supply wells
Towns	975	600	municipal system
Rural	1579	600	individual wells
Total	2291	1200	

Year: 2020

Land Use	Number of Households	Water Demand (ac-ft/yr) rounded	Water Supply wells
Towns	3431	2100	municipal system
Rural	6373	2200	individual wells
Total	9804	4300	

Increase: 2000-2020

Land Use	Number of Households	Water Demand (ac-ft/yr) rounded	Water Supply wells
Towns	2456	1400	municipal system
Rural	4794	1700	individual wells
Total	7513	3100	

- Notes:
- 1) Estimate of households taken from Jean Townsend Memo dated November 21, 2000.
 - 2) Number of rural households increased by 20% to account for area between Gun Club Road and Kiowa Creek.
 - 3) Number of town households in 2020 increased by 400 and 100 acre-feet/yr added for golf course irrigation of Bennett development.
 - 4) Demand for rural households assumed to be .35 acre-foot/year
 - 5) Demand for town households assumed to be .5 acre-foot/year plus 15% for commercial, industrial and municipal irrigation use.
 - 6) Excludes any development at Rangeview or within Aurora or East Cherry Creek Valley Water and Sanitation District service area east of Gun Club Road.

JRF D:\1059ARP01\ruralwaterdemand.wb3

3.4.1 Water Demand Factors

- 1) Town households were assumed to have a domestic demand of 0.5 acre feet per year. Current lot size and irrigation patterns were assumed to continue in the future. The town demand per household was the rounded average of the single family demand from the various studies shown on Table 3-2.
- 2) Commercial, industrial and public facility demand were assumed to be equivalent to 15 percent of the total domestic demand.
- 3) Rural households were assumed to have a water demand of 0.35 acre feet per year including an average lawn irrigation demand of approximately 0.10 acre feet per year. We believe that the rural demand is less than the town demand because it is met by individual wells. Our experience is that the homeowners that rely on individual wells limit irrigation to preserve their water supply and to minimize cost. From our field inspection of the area, we conclude that outside lawn or other water use of the rural homeowners is limited. We believe that a rural demand of 0.35 acre feet per year per household may overstate the water demand and is thus conservative.

Table 3-1 shows that the current annual estimated water demand in the study area is about 1,200 acre feet. It shows that in 2020, the estimated annual water demand will be about 4,300 acre feet. This is an increase of about 3,100 acre feet per year.

The water demand factors and the consumptive use percentages presented in Table 3-2 are general estimates intended for planning purposes only. Actual water demand and consumptive use are functions of many variables specific to each use. If a more precise estimate is necessary for some purpose, they should be independently evaluated.

4.0 SOURCES OF FUTURE WATER SUPPLY FOR ARAPAHOE COUNTY

The possible conventional sources of future water supplies for Arapahoe County consist of the following:

- 1) Importing surface water or ground water from outside the South Platte River basin;
- 2) Converting surface water agricultural irrigation water rights within the South Platte River drainage basin to municipal use;
- 3) Storing excess surface water in reservoirs for periods when demand exceeds supply;
- 4) Denver Basin ground water; and
- 5) Alluvial aquifer ground water.

All of these sources are currently being used in Arapahoe County.

Possible non-traditional sources of future supply are:

- 1) Conservation to reduce demand;
- 2) Reusing waste water;
- 3) Artificially recharging surface water into aquifers to provide storage during periods of excess supply and withdrawing it later during periods of high demand; and
- 4) Conjunctive use of surface water and ground water.

To a varying extent, water suppliers in Arapahoe County are utilizing all of these non-traditional approaches.

Historically, the choice of supply was dependent solely on the cost of the supply. Today, cost is still important, but environmental and water rights considerations have become major factors in deciding what additional supplies can be developed.

4.1 TRADITIONAL SOURCES

4.1.1 Importing Water From Other Basins

Initially, water supplies for the Denver area were developed from the South Platte River Basin. Traditionally, more water was acquired than was necessary to meet average demand, so that during times of drought, the water supply would be adequate. Eventually, demand increased beyond the available supply during droughts, so water outside the basin was developed and imported into the basin.

Water planners still prefer developing water outside the South Platte Basin because in this way the greatest increment of reliable additional supply can be developed at the least cost. Examples of this approach are the Two Forks project proposed by the Denver Water Board and the Union Park Project proposed by a group including Arapahoe County. An example of an attempt to import ground water was the ADWI plan and the current Stockman's plan to import ground water from the San Luis Valley.

4.1.2 Converting Agricultural Water Rights to Municipal Use

Conversion of senior agricultural surface water irrigation rights within the basin to municipal use is less preferred for areas like Arapahoe County, because there is little or no senior surface water irrigation either upstream or in the vicinity of Arapahoe County. Surface water rights downstream could be converted to municipal use but either a pipeline with pump stations would be necessary to deliver the water, or a court approved exchange plan would be necessary to allow senior down stream water rights to be diverted upstream from their historic diversion points. A pipeline would be extremely expensive and require extensive maintenance. An exchange plan would be difficult to accomplish because it would have to prevent injury to all of the water rights between the original down stream diversion point and the new upstream diversion point. In the past, injury was expressed only in turns of flow rate, now the courts also consider injury to include changes in water quality. This greatly complicates approval of an exchange plan.

Because irrigation water was historically diverted only in the summer, converting it to municipal use typically results in the water only being available in summer. Consequently, a storage reservoir is required. Storage reservoirs have various environmental and public perception problems associated with them that has made them difficult to permit, finance and construct in the recent past. This is discussed in more detail in the next section of this report.

4.1.3 Storing Excess Water in Reservoirs

Early on in the development of water in the Denver area, planners realized that during the spring runoff of melting snow in the mountains there was excess water in streams that could be diverted for use during the late summer and winter when there was a shortage of runoff. The solution to this problem was the construction of storage reservoirs. Planners realized that if the reservoirs were large enough, they could store water for use during droughts. Thus, storage reservoirs became a way to provide a drought supply and to reduce cost by acquiring and developing less water.

Unfortunately, state and federal legislation that has accumulated over the years complicates or prohibits development of import/reservoir projects. Compounded on this legislation is the general public perception that reservoirs create severe environmental problems and the perceptions of western slope residents that 1) they own the water on the west side of the continental divide and 2) the diversion to the eastern slope would cause economic ruin of western slope communities.

4.1.4 Denver Basin Ground Water

Denver Basin ground water has several significant advantages. First, it can usually be developed near the point of use, so transmission pipelines or canals are normally not necessary. Second, storage reservoirs are not needed because the aquifer acts like a reservoir. Third, Colorado law allows this water to be reused. Fourth, only limited treatment is necessary. The disadvantages are: 1) the resource is finite and will eventually be consumed to its economic limit; and 2) operating and maintenance costs increase over time as water levels decline in the aquifers.

4.1.5 Alluvial Ground Water

Alluvial ground water has the first two advantages of Denver Basin ground water (i.e., can be developed near point of use and the aquifer acts like a storage reservoir). The most significant disadvantage is that it is administered like surface water. Wells into alluvial aquifers are considered so junior that they are not allowed to pump without an augmentation plan that protects all senior water rights. The cost in legal and engineering fees and the limitations on allowable pumping that often result from augmentation plans, make the new use of alluvial ground water for a municipal supply either uneconomic or impractical.

4.2 NON-TRADITIONAL SOURCES

4.2.1 Conservation

Historically, conservation has been used to minimize the peak day demand. This is usually done to prevent the cost of adding additional treatment capacity that serves only to meet the peak summer lawn irrigation demand. In addition, there have been some efforts to reduce indoor use. Things like low volume toilets and restricted shower nozzles are required by some water providers. These conservation attempts are thought to reduce annual water demand by about 10 percent.

Meaningful conservation, would have to include eliminating or severely restricting outside irrigation. This would be effective because lawn irrigation is typically about 40 percent of the total water demand in the Denver area. This would result in xeriscape landscaping somewhat similar to Phoenix or Tucson, Arizona.

4.2.2 Reuse of Waste Water

A few water providers are considering, and a few are implementing, programs to use untreated raw water or reuse treated waste water for outside irrigation. At first, their intent was to reduce treatment costs, in the same way water conservation has been practiced. Some water providers are now reducing demand by using treated waste water for park, open space, or golf course irrigation. Other water suppliers are currently evaluating the potential of using reuse water to reduce the demand for future supplies.

The problems associated with reusing waste water are:

- 1) A second and entirely new distribution system is required to transport the waste water to the point of use in an already developed area;
- 2) The public's perception of possible spread of infectious disease through the use of waste water; and
- 3) Current Colorado law only allows nontributary Denver Basin Aquifer water and water imported from other basins to be reused.

4.2.3 Artificial Recharge

Two districts, Willows Water District in Arapahoe County and Centennial Water and Sanitation District in Douglas County have experimented with injecting (recharging) treated water into the Denver Basin Aquifers during times of excess supply and excess treatment capacity and then withdrawing the water during periods of higher demand. Detailed information of the economics and technical issues are generally unavailable.

We discussed the Centennial Water and Sanitation District's artificial recharge program with Mr. Rick McLoud, Water Resources Manager for the District. He indicated that they currently have nine wells that they use as injection/recovery wells – six in the Arapahoe Aquifer and three in the Denver Aquifer. They inject treated water during periods of excess supply, typically in the fall, winter, and spring then pump out the water during the peak summer months. During the last year, they injected a total of approximately 765 acre feet of water into the Denver and Arapahoe Aquifers. Over the seven year life of the project, the District has been increasing the injected amount as they convert wells or add wells to their system. The District will be equipping three additional wells for injection in 2001, including a well in the Laramie-Foxhills Aquifer. To date, a total of about 5,200 acre-feet have been injected. Currently the annual amount recharged is approximately 7 percent of the Districts's total annual usage, and about 50 percent of the District's annual ground water usage. Only about 10 percent of the District's current demand is met by ground water. In the future with current supplies, about one-third of the demand will be met by ground water (including artificial recharge).

During the last several years, the Willows Water District abandoned its artificial recharge project when it became a Denver Water Board customer. Apparently, there were some technical difficulties that the District was not able to overcome. We presume that these difficulties and the cost associated with them were factors considered in the District's decision to abandon the program.

Based upon the limited history of artificial recharge of the Denver Basin Aquifers, it is difficult to conclude that artificial recharge can be done on a significant scale. We expect that water suppliers will continue to evaluate the technology and cost involved. We expect that artificial recharge will be done on a limited scale by water providers who have high quality surface water available at various times during the year.

4.2.4 Conjunctive Use

Conjunctive use of surface water and ground water is simply having a supply system that can utilize either or both surface water and ground water. Typically surface water is utilized when it is available and ground water is used when insufficient surface water is available. Several operational styles could be used. First, ground water is only used during periods of drought. This style reduces the need to acquire and develop surface water that would be senior enough that it would remain in priority during a drought, as well as reducing the need for a storage reservoir sized to meet demand for an extended drought period.

The second style is to utilize ground water during short periods when demand exceeds surface water supply. This is typically during the summer irrigation season. This operational style reduces the need for peak storage reservoirs and also reduces the need to acquire additional senior surface water rights that are not needed during most years. This style would also rely on ground water during an extended drought to meet demand. A disadvantage of conjunctive use is the need to develop two treatment systems since the raw water quality is often significantly different. An additional disadvantage is that the supply system is more complex and requires water system operators to be knowledgeable about both surface water and ground water collection systems.

A few water suppliers are creating conjunctive use systems. Those that are, usually relied initially on ground water as the source of supply. To meet growing demand, to lessen their reliance on a depleting resource, and to lengthen the life of the ground water resource, they have begun to develop surface water supplies. To utilize the existing infrastructure and to minimize cost, conjunctive use makes sense for these water suppliers.

4.3 TRADITIONAL SOURCES AS A COMPONENT OF FUTURE SUPPLY IN ARAPAHOE COUNTY

We believe that traditional supply sources will probably provide about 65 percent of the future supply necessary in the front range region. The percentage attributable to each source will likely be as shown on the following table.

Table 4-1, Mix of Traditional Supplies in the Future

	<u>Urbanized Area</u>	<u>Entire Arapahoe County</u>
Import	40 %	40 %
Agricultural Conversion	19 %	8 %
Denver Basin Ground Water	5 %	15 %
Alluvial Ground Water	<u>1 %</u>	<u>2 %</u>
	65%	65%

The relative amounts are dependent upon a favorable change in legal, environmental and public perception from the status quo. If these changes do not occur, Denver Basin ground water will probably provide a greater percentage of the future supply.

4.4 NON-TRADITIONAL SUPPLY AS A COMPONENT OF FUTURE SUPPLY IN URBANIZED ARAPAHOE COUNTY

We believe that all of the non-traditional sources of supply will be more widely used in the future, particularly if the environmental regulations and public perception do not change. We expect combined together, they will account for about 35 percent of the future supply in urban areas. Unless outside irrigation is severely limited, we doubt that conservation will provide a reduction in demand of more than 10 percent of future water supply development.

Artificial recharge may or may not be a significant factor in the future. Its development will entirely be dependent upon overcoming the current technical difficulties. We believe that it will not account for more than 5 percent of the future additional supply.

Reuse of waste water will probably be widely practiced, particularly in newly developing portions of the Denver Metropolitan area. We estimate that reuse will provide approximately 20 percent of the future supply.

Conjunctive use will likely be essential in the future as the available surface water supply is consumed. Therefore, it will not provide a portion of the supply, rather it will become an operating style.

4.5 TRADITIONAL AND NON-TRADITIONAL SOURCES AS A FUTURE SUPPLY IN EASTERN ARAPAHOE COUNTY

The source of current domestic and municipal water supply in the study area, eastern Arapahoe County, excluding the portion of the study area within the Aurora City limits, is about 95 percent from the Denver Basin Aquifers and about five percent from alluvial aquifers. In the future, it is likely that the part of the County that remains rural will continue to rely on Denver Basin and alluvial ground water in about the same relative percentages as the current supply. We doubt that non-traditional sources, for example waste water reuse, will be practical or cost effective in rural Arapahoe County.

If a portion of the rural area becomes urbanized, it will probably not be able to rely solely on Denver Basin ground water. We expect that Denver Basin ground water could be used initially and then imported water and water resulting from the conversion of agricultural surface water to municipal use could be used. We believe that the ultimate mix of traditional supplies would be similar to that shown in Table 3-1. We also expect that non-traditional supplies would be developed in percentages similar to that presented in the preceding section.

5.0 GROUND WATER RESOURCES OF EASTERN ARAPAHOE COUNTY

Arapahoe County is underlain by two groups of aquifers. The most important group because of their large areal extent and significant thickness are the Denver Basin Aquifers. Of lesser importance are the Alluvial Aquifers associated with major intermittent streams drainage.

5.1 HYDROGEOLOGY OF THE DENVER BASIN AQUIFERS

The Denver Basin Aquifers from youngest and most shallow, to oldest and deepest are as follows:

- Upper Dawson Aquifer
- Lower Dawson Aquifer
- Denver Aquifer
- Upper Arapahoe Aquifer
- Lower Arapahoe Aquifer
- Laramie-Foxhills Aquifer

The aquifers were deposited over a 20 million year period that began about 70 million years ago. They consist of an interlayered mixture of poorly cemented sand, small gravel, silt and clay that resulted from the erosion of the uplifting Rocky Mountains. Streams carried sediment off the mountains and deposited it on the low lying plains east of the mountain front. As the streams left the mountains, their gradient became much more gentle and the velocity of the water decreased as the streams flowed to the east. Because of the lower velocity, the larger grains of sand and gravel could not be carried by the streams, so they were deposited near the mountain front. The finer sand, silt and clay were carried further east and then deposited. Consequently, the size of the grains of sand and gravel tend to decrease from west to east across the County.

As the aquifers were being deposited, the depositional plain slowly subsided (sank) so that the Denver Basin was formed. This basin extends from El Paso County to the south to Weld County to the north and from the mountain front to eastern Arapahoe County as shown on Figure 5-1. The basin is an asymmetrical bowl that is deepest just west of the study area in the vicinity of Cherry Creek State Park. It is the most shallow around the edges of the basin.

5.1.1 Denver Basin Aquifer Depth, Thickness and Extent in Eastern Arapahoe County

Over the last 50 million years, erosion has removed the sediment deposited on top of the aquifers and created the current topography. Figure 5-2 shows a geologic cross section of the Denver Basin Aquifers west to east across the study area. It shows how the elevation of each aquifer increases from west to east and similarly how the depth to the aquifers decreases from west to east. For example, the elevation of the bottom of the Laramie-Foxhills Aquifer is at an elevation of about 3,800

feet on the west side of the study area and at an elevation of about 5,000 feet on the east side of the study area. Similarly the depth to the bottom of the Laramie-Foxhills Aquifer is about 2,300 feet below the ground surface on the west side, while the bottom of the aquifer is exposed at the ground surface near the eastern border of the County. The cross section also shows that from west to east, the shallowest aquifer has successively been removed by erosion, so that in the farthest eastern part of the County none of the Denver Basin Aquifers remain.

The cross section shows how the thickness of each of the aquifers varies across the study area. The following table lists the thickness of each aquifer (where not partially or completely eroded):

TABLE 5-1 - Denver Basin Aquifer Thickness

<u>Aquifer</u>	<u>Thickness (ft)</u>	<u>Comment</u>
Upper Dawson	0 - 300	Full aquifer not present
Lower Dawson	150 - 350	
Denver	900 - 1100	
Arapahoe	500 - 600	Upper and Lower Aquifers
Laramie-Foxhills	200 - 400	combined

Figure 5-2 also includes a geologic map that shows the approximate lateral limit of each aquifer. The geologic map shows that the Upper Dawson Aquifer is limited to a small area in the southwest portion of the study area while the Laramie-Foxhills Aquifer underlies the entire study area except for the eastern-most portion of the County.

Figures 5-3 and 5-4 show the depth below the ground surface to the bottom of each of the Denver Basin Aquifers for all but the Upper and Lower Dawson Aquifers. Depth maps for the Upper and Lower Dawson Aquifers were not prepared because 1) these aquifers are limited to a small area in the southwest portion of the study area and 2) essentially all of the ground water stored in these aquifers is classed as either tributary or not non-tributary (see Section 7 for a discussion of ground water classes).

5.1.2 Denver Basin Well Yields in Eastern Arapahoe County

Typically, the Upper and Lower Dawson Aquifers have the highest percentage of sand and gravel and contain the most space between the sand and gravel grains where water can be stored. This means that these aquifers have the greatest permeability, the ability for water to flow through the aquifers. The Arapahoe Aquifer has the second highest percentage of sand and gravel and permeability. Or conversely, the Denver Aquifer has a comparatively high percentage of silt and clay and a relatively low permeability and water storing capacity. The Laramie-Foxhills Aquifer contains the smallest

average sand size, but also has the lowest percentage of silt and clay. Therefore, it has an intermediate permeability, somewhere between the Arapahoe and Denver Aquifers.

Well yields are a function of permeability, saturated thickness and aquifer depth, so well yields vary between aquifers and across the study area. This variability means that it is difficult to generalize well yields. The following table provides a range of typical well yields.

Table 5-2 - General Denver Basin Aquifer
Yields

<u>Aquifer</u>	<u>Yield (gpm)</u>
Upper Dawson	0-50
Lower Dawson	0-50
Denver	0-100
Arapahoe	0-400
Laramie-Foxhills	0-200

In all cases, the yield for each aquifer is greatest in the west part of the study area and lowest in the east part.

5.1.3 Denver Basin Aquifer Annual Recharge

The annual recharge to the Denver Basin Aquifers is unknown; however it is generally thought to be small. We estimate that recharge is about two percent of precipitation, or about 8,000 acre feet per year within the study area. This is about equal to three percent of the ground water that could theoretically be withdrawn annually under current Colorado Statutes.

5.1.4 Denver Basin Aquifer Water Level Trends

When the water level rises above the top of the aquifer in a well, the aquifer is considered to be an artesian aquifer. While artesian aquifers some times flow naturally at the surface, this is not necessary for an aquifer to be considered artesian. When the water level in a well is below the top of the aquifer, the aquifer is considered to be unconfined or under water table conditions (the two terms are interchangeable). The Denver Basin Aquifers prior to development were artesian in the center of the basin and unconfined on the edges where they were exposed at the land surface. An artesian aquifer can become unconfined when pumping causes the water level to decline below the top of the aquifer.

In artesian aquifers, the level that the water level rises above the top of the aquifer in wells is called the potentiometric head. As the potentiometric head declines during well pumping, water expands very slightly as the pressure is reduced and flows into a well. As long as the potentiometric head remains above the top of the aquifer, the aquifer in the vicinity of the well remains fully saturated and the entire well yield results from the expansion of the water. Since water is nearly incompressible,

the amount of water produced by a well as a consequence of the removal of all the potentiometric head is only a very small fraction of the total amount of water stored within the aquifer. This is on the order of one or two percent.

As ground water is withdrawn by wells from the aquifers, the water level or potentiometric surface drops in the well compared to the level in the rest of the aquifer. This creates a cone of depression around the well. The water level difference between the well and the aquifer is the source of energy that allows water to flow into the well where it is pumped to the surface. The cone of depression becomes deeper and covers a larger area the longer a well is pumped. Ultimately, the cones of nearby wells coalesce to form a regional cone of depression.

The short term consequence of the formation of a regional cone of depression is that pumping costs are increased because the water must be lifted farther. The long term consequence is that eventually well yields decline as the elevation difference between the water level in the aquifer and well becomes less. The loss of yield can be made up by adding additional wells. Eventually, it becomes cost prohibitive to add wells and to pay the pumping costs. At that point, the aquifers reach their economic limit. Analysis of the point that the economic limit is reached is complex, uncertain and beyond the scope of this project. It could be as little as fifty years or as much as several hundred years into the future. Undoubtedly, the economic limit in each aquifer will be reached at different points in time at different points in the Denver Basin because the pumping rate, aquifer saturated thickness and aquifer potentiometric head all vary from place to place.

Significant ground water pumping, mostly from the Arapahoe Aquifer, has occurred in southwestern Arapahoe County and Northern Douglas County for the last thirty years. A regional cone of depression centered around the Town of Parker has formed in this area. The decline in the center of the regional cone of depression exceeds 800 feet. The cone extends over a large part of the Denver Basin. Figure 5-5 shows how much the potentiometric head has dropped from predevelopment conditions to the present within the study area. The decline varies from about 700 feet in the western part of the study area to zero in the eastern part. The decline in all of the other aquifers is significantly less than it is in the Arapahoe Aquifer because the pumping in these other aquifers is much less; however, the shape of the cone of depression is similar.

Since the Arapahoe Aquifer remains under artesian conditions over most of its extent, most of the water produced has been a result of decompression of the water in the aquifer. Therefore, the aquifer remains fully saturated in most areas and about 98 percent of the original resource is still present in the aquifer, even though over the last 30 years the potentiometric surface has declined by over 800 feet in some places in the Denver Basin. The consequence of the decline in potentiometric head beneath eastern Arapahoe County, is the potential of increased pumping costs compared to pre-development conditions. This is most particularly true in the western part of the study area.

5.2 HYDROGEOLOGY OF THE ALLUVIAL AQUIFERS

The alluvial aquifers present in the eastern portion of Arapahoe County are associated with the major intermittent streams that flow south to north across the County as shown on Figure 5-6. The aquifers were deposited during the last three million years during and following the ice ages. As glaciers melted, water and sediment were carried out of the mountains and deposited in the stream channels. The alluvial aquifers consist of sand and gravel with zones of clay.

5.2.1 Alluvial Aquifer Thickness, Extent, Well Yield and Recharge in Rural Arapahoe County

The aquifers range up to 2 miles wide and are from 0 to 40 feet thick. Well yields range from a few gallons per minute (gpm) up to 700 to 1,000 gpm. The aquifers supply some irrigation and domestic water in the study area. The annual recharge to the alluvial aquifers in eastern Arapahoe County is approximately 7,000 acre feet per year.

5.2.2 Alluvial Aquifer Water Level Trends

Water levels are not measured in the alluvial aquifers within the study area, so we do not know for certain what changes have occurred in water levels. We know that water levels in southern Adams County have generally risen two to five feet since 1960 as irrigated agriculture has declined in the area. Since very little irrigation pumping has occurred from these aquifers in Arapahoe County, we believe that water levels are only slightly lower (a few feet) than they were prior to irrigation well development that began in the 1930's. Water levels probably declined until about 1960, then rose two to five feet over the years in the same way they have in Adams County. Since water levels are stable or even rising, we conclude that the alluvial aquifers are not being depleted by the current level of pumping.

5.3 DENVER BASIN AQUIFER RESOURCE ASSESSMENT IN EASTERN ARAPAHOE COUNTY

Available water that can be developed and well yield are not only a function of mean grain size, but are also functions of aquifer thickness and lateral extent. All of these factors were considered in preparing our estimate of the in-place and recoverable ground water resource in the Denver Basin Aquifers within eastern portions of Arapahoe County.

The methodology that we used to prepare our estimate is the same as that used by the State Engineers Office of the Colorado Division of Water Resources. The equation for in-place resource is:

$$\text{Resource} = \text{Area} * \text{Saturated thickness} * \text{Specific Yield}$$

where:

- Resource – in-place volume of ground water that can be drained by gravity in units of acre-feet
- Area – land area underlain by the aquifer in units of acres
- Saturated Thickness – total thickness of water saturated sand, silt and gravel within the aquifer (excluded clay) in units of feet.
- Specific Yield – the ratio of drainable water to rock volume expressed as a dimensionless decimal

<u>Aquifer</u>	<u>Specific Yield</u>
Upper and Lower Dawson	0.20
Denver, Upper and Lower Arapahoe	0.17
Laramie-Foxhills	0.15

Because the saturated thickness varies from one locality to another, the calculation was done on a section by section basis (one square mile) for each aquifer and then the totals were summed. The saturated thickness was taken from a database prepared by the State Engineers Office.

It is not physically or economically possible to produce all of the drainable ground water within these aquifers. Therefore, the recoverable resource is less than the in-place resource. No one knows what proportion of the in-place resource will ultimately be recovered. The generally accepted range is between 30 and 70 percent. For this study, we have used 50 percent, the midpoint of the range. Table 5-3 shows our estimate of the in-place and recoverable Denver Basin ground water resource within rural Arapahoe County. In addition, the table shows the amount of ground water that could be produced annually if 50 percent of the resource is recoverable and the aquifers are depleted 100 years from now.

Colorado administers ground water in the Denver Basin by class. Three classes exist, nontributary, not non-tributary and tributary. The differences are discussed in Section 7 of this report. For the purposes of preparing Table 5-3, the not non-tributary and tributary classes have been combined.

Table 5-3
Estimated Ground Water Reserves In Rural Arapahoe County
T.4-5 S., R.57-65W.

In-Place Reserves (Acre-Feet)			
Rounded to nearest 10000 af			
Ground Water Class ==>	Nontributary	Not Non-Tributary	Total
Upper Dawson	0	30,000	30,000
Lower Dawson	10,000	320,000	330,000
Denver	480,000	6,430,000	6,910,000
Upper Arapahoe	3,790,000	2,520,000	6,310,000
Lower Arapahoe	1,060,000	0	1,060,000
Laramie-Fox Hills	8,360,000	50,000	8,410,000
Totals	13,700,000	9,350,000	23,050,000

Annual In-Place Reserves (Acre-Feet/Year)			
Rounded to nearest 100 af/yr			
Ground Water Class ==>	Nontributary	Not Non-Tributary	Total
Upper Dawson	0	300	300
Lower Dawson	100	3,200	3,300
Denver	4,800	64,300	69,100
Upper Arapahoe	37,900	25,200	63,100
Lower Arapahoe	10,600	0	10,600
Laramie-Fox Hills	83,600	500	84,100
Totals	137,000	93,500	230,500

Annual Recoverable Reserves (Acre-Feet/Year)				
Rounded to nearest 100 af/yr				
Ground Water Class ==>	Recovery Factor	Nontributary	Not Non-Tributary	Total
Upper Dawson	0.5	0	200	200
Lower Dawson	0.5	100	1,600	1,700
Denver	0.3	1,400	19,300	20,700
Upper Arapahoe	0.5	19,000	12,600	31,600
Lower Arapahoe	0.5	5,300	0	5,300
Laramie-Fox Hills	0.5	41,800	300	42,100
Totals		67,600	34,000	101,600

JRF: C:\1059ARP01\seodata\seodata.wb3

LEONARD RICE CONSULTING WATER ENGINEERS, INC.

The relative percentage of the total in-place resource in each aquifer is as follows:

©Leonard Rice Consulting Water Engineers, Inc.

March 7, 2001 – 1059ARP01

TABLE 5-4 - Relative Percent of Total Resource

<u>Aquifer</u>	<u>Percent</u>	<u>Comments</u>
Dawson	1	Combined Upper and Lower; underlies small area
Denver	30	
Arapahoe	32	Combined Upper and Lower
Laramie-Foxhills	37	Underlies most of County

5.3.1 Denver Basin Aquifer Resource Distribution in Rural Arapahoe County

Figure 5-7 shows how the in-place Denver Basin Aquifer resource varies across the rural part of the County. The map was prepared by summing the nontributary ground water class for all aquifers beneath each section (square mile) of land then dividing the total by 640 acres per section. This quantity was in turn divided by 100 years, the legislated life of the aquifer (see Section 7 of this report), to estimate the in-place acre feet per year per acre. Thus, the map shows the ground water in-place in acre feet per year per acre of land area. Using the water demand factors (0.35 to 0.5 acre feet per year per household) determined in Section 3 of this report and the recommended limitation on ground water development outlined in Section 1 (limit development to 50 percent of the nontributary ground water class). The resource could supply 60,000 to 100,000 households.

Figure 5-7 shows that the in-place resource decreases from a maximum of about 1.2 acre-feet per year per acre in the western part of the study area to zero in the eastern part. This trend occurs because:

1. The aquifers have been successively removed by erosion from west to east (See Figure 5-2, Geologic Cross Section), so the combined thickness of the aquifers decreases from west to east.
2. There is a greater proportion of sand and gravel in the western portion of the study area than there is in the eastern part.

The average in-place resource in the study area is about 0.5 acre feet per year per acre, while the median is about 0.2 acre feet per year per acre. The median is significantly less than the average because so much of the resource is concentrated in the western portion of the study area.

We estimate that the total Denver Basin in-place ground water resource beneath the entire County is approximately 32 million acre-feet. This means that the study area (rural Arapahoe County) contains about 70 percent of the total resource and about 80 percent of the land area. The urban (western) portion of the County contains about 30 percent of the in-place resource and about 20

percent of the area. Thus the urban portion of the County has an average in-place resource of about 0.62 acre-feet per year per acre compared to the rural part of the County that has an average in-place resource of about 0.5 acre-feet per year per acre.

5.4 ALLUVIAL AQUIFER RESOURCE ASSESSMENT IN EASTERN ARAPAHOE COUNTY

Table 5-5 shows our estimate of the amount of ground water inflow, outflow, natural evapotranspiration, pumping and annual recharge to the Alluvial Aquifers within the study area.

The saturated maximum amount of ground water that could be developed from these aquifers without exceeding the annual recharge and inflow, or reducing the outflow into Adams County is:

$$\begin{aligned} & \text{Inflow} + \text{Recharge} - \text{Outflow} = \text{Ground Water Available} \\ \text{From Table 5-5} - 22,000 + 7,000 - 19,000 & = 10,000 \text{ acre-feet/year} \end{aligned}$$

Currently, this 10,000 acre-feet is divided between pumping (4,000 af/yr) and natural evapotranspiration (6,000 af/yr). Prior to pumping, essentially the entire 10,000 af/yr was consumed by natural evapotranspiration in riparian zones and wetlands zones associated with the streams. Thus, the areal extent of these zones has been reduced from historic levels by pumping. Additional pumping would further reduce the extent of these zones.

The amount of water stored in the Alluvial Aquifers is on the order of 200,000 acre feet. This is only a tiny fraction (about one percent) of the volume of water stored in the Denver Basin Aquifers beneath the study area.

Table 5-5
Estimate of Alluvial Aquifer Water Resources in
Rural Arapahoe County
(units are acre-feet/year)

<i>Ground Water Inflow to County</i>	
Box Elder Creek Alluvial Aquifer	3,500
Kiowa Creek Alluvial Aquifer	5,800
Wolf Creek Alluvial Aquifer	1,500
Comanche Creek Alluvial Aquifer	1,900
West Bijou Creek Alluvial Aquifer	2,900
East Bijou Creek Alluvial Aquifer	6,200
Muddy Creek Alluvial Aquifer	200
Total (rounded)	22,000

<i>Ground Water Recharge within County</i>	
Box Elder Creek Alluvial Aquifer	1,100
Kiowa Creek Alluvial Aquifer	1,800
Wolf Creek Alluvial Aquifer	300
Comanche Creek Alluvial Aquifer	400
West Bijou Creek Alluvial Aquifer	1,200
East Bijou Creek Alluvial Aquifer	2,400
Muddy Creek Alluvial Aquifer	500
Total (rounded)	7,000

<i>Natural Evapotranspiration</i>	
Box Elder Creek Alluvial Aquifer	1,100
Kiowa Creek Alluvial Aquifer	900
Wolf Creek Alluvial Aquifer	900
Comanche Creek Alluvial Aquifer	900
West Bijou Creek Alluvial Aquifer	900
East Bijou Creek Alluvial Aquifer	800
Muddy Creek Alluvial Aquifer	300
Total (rounded)	6,000

<i>Ground Water Pumping within County</i>	
Box Elder Creek Alluvial Aquifer	500
Kiowa Creek Alluvial Aquifer	100
Wolf Creek Alluvial Aquifer	200
Comanche Creek Alluvial Aquifer	200
West Bijou Creek Alluvial Aquifer	1,800
East Bijou Creek Alluvial Aquifer	800
Muddy Creek Alluvial Aquifer	0
Total (rounded)	4,000

<i>Ground Water Discharge from County</i>	
Box Elder Creek Alluvial Aquifer	2,900
Kiowa Creek Alluvial Aquifer	6,400
Wolf Creek Alluvial Aquifer	700
Comanche Creek Alluvial Aquifer	1,000
West Bijou Creek Alluvial Aquifer	1,200
East Bijou Creek Alluvial Aquifer	6,800
Muddy Creek Alluvial Aquifer	400
Total (rounded)	19,000

JRF C:\1059ARP01\alluvium.wb3

6.0 WATER QUALITY

There is only limited water quality data available for eastern Arapahoe County. We have compiled the publically available data from the U.S. Geological Survey (USGS) and the Colorado Department of Health and Environment for the study area plus a six mile wide buffer around the study area. The data are presented in tabular form for each aquifer as Tables 6-1 through 6-5. Tables are included for the Dawson, Denver, Arapahoe and Laramie-Foxhills Aquifers, as well as, a composited table for the Alluvial Aquifers.

Typically, there are less than twenty sample points for each aquifer (except for the alluvial aquifers) and none of the samples included a full analysis of all currently regulated parameters. Consequently, detailed mapping is not possible. Most of the data for the Alluvial Aquifers was for the Alluvial Aquifers of Cherry Creek and Sand Creek, both of which are outside the study area.

In 1981, the USGS published a series of Water Quality Maps of the Denver Basin Aquifers. Generally, these maps show that the key indicators of overall water quality: total dissolved solids, hardness and sulfate, increase from west to east across the study area in each aquifer. The exception is the Dawson Aquifer where the indicators increase from south to north. The water quality can be characterized as good on the west side, to fair to poor on the east side of the study area. The data compiled for this study are consistent with the general observations.

The tabulated data, Tables 6-1 through 6-5, suggest that the Arapahoe Aquifer has the lowest total dissolved solids and sulfate while the Alluvial Aquifers and the Laramie-Foxhills Aquifer have the highest level of total dissolved solids, sulfate and hardness. Nitrate levels that exceed the Drinking Water Standards were detected in about 40 percent of the Alluvial Aquifer samples. This is commonly the result of fertilizer application on irrigated cropland. For the other aquifers, the parameters for which one or more samples exceed the standards are typically total dissolved solids, sulfate, manganese, iron, sodium, and chlorine. The localities where the samples exceed the standards are commonly along the eastern limit of each aquifer.

Table 6-1 Dawson Aquifer Water Quality

Analyte	# of Samples	Maximum	Minimum	Average	Standard	Units	# Exceeding Standard
PRIMARY DRINKING WATER STANDARDS:							
Antimony, Dissolved	ND	ND	ND	ND	6	ug/L	0
Arsenic, Dissolved	1	0.0	0.0	0.0	50	ug/L	0
Barium, Dissolved	ND	ND	ND	ND	2000	ug/L	0
Beryllium, Dissolved	ND	ND	ND	ND	4	ug/L	0
Cadmium, Dissolved	11	1.8	0.0	0.3	5	ug/L	0
Chromium, Dissolved	10	24.0	0.0	5.9	100	ug/L	0
Copper, Dissolved	13	64.1	0.0	8.8	1000	ug/L	0
Cyanide Dissolved	1	5.0	5.0	5.0	0.2	ug/L	1
Fluoride, Total	4	1.6	0.1	0.6	4	mg/L as F	0
Fluoride, Total	1	0.4	0.4	0.4	4	mg/L as F	0
Lead, Dissolved	12	50.0	0.0	8.2	50	ug/L	1
Mercury, Dissolved	1	0.1	0.1	0.1	2	ug/L	0
Nickel, Dissolved	11	20.0	0.0	8.4	100	ug/L	0
Nitrogen Nitrate, Dissolved	13	0.1	0.0	0.0	10	mg/L as N	0
Nitrogen Nitrate, Total	ND	ND	ND	ND	10	mg/L as N	0
Nitrogen, Nitrite, Dissolved	13	0.1	0.0	0.0	1	mg/L as N	0
Nitrogen, Nitrite, Total	ND	ND	ND	ND	1	mg/L as N	0
NO2 + NO3 Dissolved	14	0.2	0.0	0.1	10	mg/L as N	0
NO2 + NO3 Total	ND	ND	ND	ND	10	mg/L as N	0
Selenium, Dissolved	1	0.0	0.0	0.0	50	ug/L	0
Selenium, Total	ND	ND	ND	ND	50	ug/L	0
Silver, Dissolved	1	0.0	0.0	0.0	50	ug/L	0
SECONDARY DRINKING WATER STANDARDS:							
Chloride, Total	18	182.0	3.2	42.3	250	mg/L	0
Iron, Dissolved	15	68.2	0.1	19.1	300	ug/L	0
Manganese, Dissolved	14	1,915.0	0.0	170.8	50	ug/L	4
PH, Field	18	11.8	6.8	8.6	6.5-8.5	standard	6
Sulfate, Total	16	1,091.7	6.8	247.7	250	mg/L as SO4	5
Total Dissolved Solids	10	1,815.0	26.0	631.7	500	mg/L	4
Zinc, Dissolved	13	32.6	0.0	6.9	5000	ug/L	0
QUALITY INDICATORS:							
Alkalinity, Total	14	382.0	30.0	131.2		mg/L as CaCO3	
Bicarbonate Ion	18	230.0	0.0	101.8		mg/L as HCO3	
Boron, Dissolved	1	0.0	0.0	0.0	300	ug/L	0
Calcium, Dissolved	14	587.5	6.0	146.5		mg/L as Ca	
Calcium, Total	5	326.0	3.0	117.3		mg/L as Ca	
Carbon Dioxide	13	15.1	0.0	4.3		mg/L as CO2	
Carbonate Ion	11	1,895.0	0.0	194.5		mg/L as CO3	
COD High Level	13	53.3	5.0	15.8		mg/L	
COD Low Level	12	39.0	5.0	14.9		mg/L	
Hardness, Total	18	1,566.7	1.0	341.5		mg/L as CaCO3	
Hydroxide	7	2,147.5	75.0	606.0		mg/L	
Magnesium, Dissolved	10	170.8	0.1	24.6		mg/L as Mg	
Noncarbonate Hardness	13	633.3	0.0	193.1		mg/L as CaCO3	
Phosphate, Ortho	13	0.8	0.0	0.1		mg/L as PO4	
Phosphate, Total	4	0.3	0.0	0.1		mg/L as PO4	
Phosphorus, Total	ND	ND	ND	ND		mg/L as P	
Potassium, Dissolved	14	44.5	2.2	14.2		mg/L as K	
Potassium, Total	5	14.6	3.5	7.0		mg/L as K	
Radon, 222 Total	ND	ND	ND	ND		pc/L	
Radon, 222 PE	ND	ND	ND	ND		pc/L	
Silica, Dissolved	7	18.0	1.0	10.0		mg/L as SiO2	
Sodium, Dissolved	14	245.7	52.8	121.2	200	mg/L as Na	3
Sodium, Total	5	111.0	12.0	57.7	200	mg/L as Na	0
Specific Conductance	28	8,000.0	4.0	1,209.7		umhos/cm	
Strontium, Dissolved	ND	ND	ND	ND		ug/L as Sr	
Uranium, Natural	ND	ND	ND	ND		ug/L	

ND=No data

LEONARD RICE CONSULTING WATER ENGINEERS, INC.

Table 6-2 Denver Aquifer Water Quality

Analyte	# of Samples	Maximum	Minimum	Average	Standard	Units	# Exceeding Standard
PRIMARY DRINKING WATER STANDARDS:							
Antimony, Dissolved	ND	ND	ND	ND	6	ug/L	0
Arsenic, Dissolved	ND	ND	ND	ND	50	ug/L	0
Barium, Dissolved	ND	ND	ND	ND	2000	ug/L	0
Beryllium, Dissolved	ND	ND	ND	ND	4	ug/L	0
Cadmium, Dissolved	6	0.0	0.0	0.0	5	ug/L	0
Chromium, Dissolved	1	0.0	0.0	0.0	100	ug/L	0
Copper, Dissolved	6	1.5	0.0	0.3	1000	ug/L	0
Cyanide Dissolved	ND	ND	ND	ND	0.2	ug/L	0
Fluoride, Total	8	2.6	0.9	1.5	4	mg/L as F	0
Fluoride, Total	ND	ND	ND	ND	4	mg/L as F	0
Lead, Dissolved	9	1.0	0.0	0.4	50	ug/L	0
Mercury, Dissolved	ND	ND	ND	ND	2	ug/L	0
Nickel, Dissolved	6	32.0	0.0	17.7	100	ug/L	0
Nitrogen Nitrate, Dissolved	3	0.2	0.0	0.1	10	mg/L as N	0
Nitrogen Nitrate, Total	ND	ND	ND	ND	10	mg/L as N	0
Nitrogen, Nitrite, Dissolved	3	0.5	0.0	0.2	1	mg/L as N	0
Nitrogen, Nitrite, Total	5	0.2	0.1	0.1	1	mg/L as N	0
NO2 + NO3 Dissolved	11	0.7	0.0	0.2	10	mg/L as N	0
NO2 + NO3 Total	5	7.7	0.3	1.8	10	mg/L as N	0
Selenium, Dissolved	3	1.0	1.0	1.0	50	ug/L	0
Selenium, Total	ND	ND	ND	ND	50	ug/L	0
Silver, Dissolved	ND	ND	ND	ND	50	ug/L	0
SECONDARY DRINKING WATER STANDARDS:							
Chloride, Total	23	398.8	1.2	45.7	250	mg/L	1
Iron, Dissolved	19	1,000.0	0.0	123.8	300	ug/L	2
Manganese, Dissolved	19	462.0	0.0	111.0	50	ug/L	7
PH, Field	21	10.9	6.8	8.1	6.5-8.5	standard	3
Sulfate, Total	23	1,061.3	4.2	194.0	250	mg/L as SO4	6
Total Dissolved Solids	20	816.0	6.0	320.0	500	mg/L	1
Zinc, Dissolved	9	220.0	0.0	30.3	5000	ug/L	0
QUALITY INDICATORS:							
Alkalinity, Total	10	672.5	110.0	222.9		mg/L as CaCO3	
Bicarbonate Ion	18	329.2	2.0	113.6		mg/L as HCO3	
Boron, Dissolved	3	60.0	50.0	56.7	300	ug/L	0
Calcium, Dissolved	9	225.0	9.3	59.1		mg/L as Ca	
Calcium, Total	12	215.8	5.1	44.9		mg/L as Ca	
Carbon Dioxide	9	9.8	0.1	5.1		mg/L as CO2	
Carbonate Ion	11	318.0	0.0	34.3		mg/L as CO3	
COD High Level	2	64.0	41.7	52.8		mg/L	
COD Low Level	4	33.0	23.0	28.6		mg/L	
Hardness, Total	19	645.0	3.0	94.3		mg/L as CaCO3	
Hydroxide	ND	ND	ND	ND		mg/L	
Magnesium, Dissolved	15	34.0	0.4	8.5		mg/L as Mg	
Noncarbonate Hardness	9	220.0	0.0	31.1		mg/L as CaCO3	
Phosphate, Ortho	5	0.0	0.0	0.0		mg/L as PO4	
Phosphate, Total	6	0.3	0.0	0.1		mg/L as PO4	
Phosphorus, Total	5	0.2	0.0	0.1		mg/L as P	
Potassium, Dissolved	9	20.0	1.0	5.3		mg/L as K	
Potassium, Total	12	20.9	1.0	6.0		mg/L as K	
Radon, 222 Total	ND	ND	ND	ND		pc/L	
Radon, 222 PE	ND	ND	ND	ND		pc/L	
Silica, Dissolved	14	23.0	2.0	12.4		mg/L as SiO2	
Sodium, Dissolved	11	323.0	43.0	122.4	200	mg/L as Na	2
Sodium, Total	12	83.0	7.0	49.0	200	mg/L as Na	0
Specific Conductance	37	2,739.0	19.2	632.6		umhos/cm	
Strontium, Dissolved	ND	ND	ND	ND		ug/L as Sr	
Uranium, Natural	ND	ND	ND	ND		ug/L	

ND=No data

LEONARD RICE CONSULTING WATER ENGINEERS, INC.

Table 6-3 Arapahoe Aquifer Water Quality

Analyte	# of Samples	Maximum	Minimum	Average	Standard	Units	# Exceeding Standard
PRIMARY DRINKING WATER STANDARDS:							
Antimony, Dissolved	ND	ND	ND	ND	6	ug/L	0
Arsenic, Dissolved	8	9.0	0.0	1.7	50	ug/L	0
Barium, Dissolved	3	10.0	0.0	5.0	2000	ug/L	0
Beryllium, Dissolved	3	0.0	0.0	0.0	4	ug/L	0
Cadmium, Dissolved	3	0.0	0.0	0.0	5	ug/L	0
Chromium, Dissolved	3	0.1	0.0	0.0	100	ug/L	0
Copper, Dissolved	3	10.0	1.0	5.3	1000	ug/L	0
Cyanide Dissolved	ND	ND	ND	ND	0.2	ug/L	0
Fluoride, Total	22	2.1	0.7	1.4	4	mg/L as F	0
Fluoride, Total	3	1.6	0.8	1.3	4	mg/L as F	0
Lead, Dissolved	3	10.0	0.0	3.3	50	ug/L	0
Mercury, Dissolved	ND	ND	ND	ND	2	ug/L	0
Nickel, Dissolved	ND	ND	ND	ND	100	ug/L	0
Nitrogen Nitrate, Dissolved	ND	ND	ND	ND	10	mg/L as N	0
Nitrogen Nitrate, Total	ND	ND	ND	ND	10	mg/L as N	0
Nitrogen, Nitrite, Dissolved	ND	ND	ND	ND	1	mg/L as N	0
Nitrogen, Nitrite, Total	ND	ND	ND	ND	1	mg/L as N	0
NO2 + NO3 Dissolved	11	5.2	0.0	0.5	10	mg/L as N	0
NO2 + NO3 Total	ND	ND	ND	ND	10	mg/L as N	0
Selenium, Dissolved	6	1.0	1.0	1.0	50	ug/L	0
Selenium, Total	ND	ND	ND	ND	50	ug/L	0
Silver, Dissolved	3	0.0	0.0	0.0	50	ug/L	0
SECONDARY DRINKING WATER STANDARDS:							
Chloride, Total	29	57.0	1.5	14.4	250	mg/L	0
Iron, Dissolved	25	1,100.0	7.0	153.3	300	ug/L	3
Manganese, Dissolved	19	320.0	0.0	45.8	50	ug/L	2
PH, Field	28	8.6	7.0	7.8	6.5-8.5	standard	1
Sulfate, Total	29	310.0	13.0	49.6	250	mg/L as SO4	1
Total Dissolved Solids	31	967.0	16.0	305.0	500	mg/L	5
Zinc, Dissolved	3	0.0	0.0	0.0	5000	ug/L	0
QUALITY INDICATORS:							
Alkalinity, Total	25	352.0	9.0	142.8		mg/L as CaCO3	
Bicarbonate Ion	28	380.0	11.0	128.9		mg/L as HCO3	
Boron, Dissolved	9	500.0	40.0	208.9	300	ug/L	2
Calcium, Dissolved	22	130.0	6.8	29.5		mg/L as Ca	
Calcium, Total	9	31.0	1.0	10.4		mg/L as Ca	
Carbon Dioxide	21	44.0	0.7	7.5		mg/L as CO2	
Carbonate Ion	17	25.0	0.0	7.0		mg/L as CO3	
COD High Level	ND	ND	ND	ND		mg/L	
COD Low Level	ND	ND	ND	ND		mg/L	
Hardness, Total	29	370.0	1.0	78.4		mg/L as CaCO3	
Hydroxide	ND	ND	ND	ND		mg/L	
Magnesium, Dissolved	25	54.0	0.4	9.0		mg/L as Mg	
Noncarbonate Hardness	22	190.0	0.0	17.0		mg/L as CaCO3	
Phosphate, Ortho	10	0.4	0.0	0.1		mg/L as PO4	
Phosphate, Total	12	0.4	0.0	0.2		mg/L as PO4	
Phosphorus, Total	ND	ND	ND	ND		mg/L as P	
Potassium, Dissolved	14	6.9	0.1	3.1		mg/L as K	
Potassium, Total	7	6.9	1.2	3.0		mg/L as K	
Radon, 222 Total	ND	ND	ND	ND		pc/L	
Radon, 222 PE	ND	ND	ND	ND		pc/L	
Silica, Dissoved	31	27.0	6.8	13.5		mg/L as SiO2	
Sodium, Dissolved	22	203.0	34.0	71.1	200	mg/L as Na	1
Sodium, Total	9	93.0	1.0	25.7	200	mg/L as Na	0
Specific Conductance	39	1,393.0	4.0	399.4		umhos/cm	
Strontium, Dissolved	3	100.0	100.0	100.0		ug/L as Sr	
Uranium, Natural	ND	ND	ND	ND		ug/L	

ND=No data

LEONARD RICE CONSULTING WATER ENGINEERS, INC.

Table 6-4 Laramie Fox Hills Aquifer Water Quality

Analyte	# of Samples	Maximum	Minimum	Average	Standard	Units	# Exceeding Standard
PRIMARY DRINKING WATER STANDARDS:							
Antimony, Dissolved	ND	ND	ND	ND	6	ug/L	0
Arsenic, Dissolved	ND	ND	ND	ND	50	ug/L	0
Barium, Dissolved	ND	ND	ND	ND	2000	ug/L	0
Beryllium, Dissolved	ND	ND	ND	ND	4	ug/L	0
Cadmium, Dissolved	ND	ND	ND	ND	5	ug/L	0
Chromium, Dissolved	ND	ND	ND	ND	100	ug/L	0
Copper, Dissolved	ND	ND	ND	ND	1000	ug/L	0
Cyanide Dissolved	ND	ND	ND	ND	0.2	ug/L	0
Fluoride, Total	2	0.8	0.5	0.7	4	mg/L as F	0
Fluoride, Total	ND	ND	ND	ND	4	mg/L as F	0
Lead, Dissolved	ND	ND	ND	ND	50	ug/L	0
Mercury, Dissolved	ND	ND	ND	ND	2	ug/L	0
Nickel, Dissolved	ND	ND	ND	ND	100	ug/L	0
Nitrogen Nitrate, Dissolved	ND	ND	ND	ND	10	mg/L as N	0
Nitrogen Nitrate, Total	ND	ND	ND	ND	10	mg/L as N	0
Nitrogen, Nitrite, Dissolved	ND	ND	ND	ND	1	mg/L as N	0
Nitrogen, Nitrite, Total	ND	ND	ND	ND	1	mg/L as N	0
NO ₂ + NO ₃ Dissolved	2	0.5	0.1	0.3	10	mg/L as N	0
NO ₂ + NO ₃ Total	ND	ND	ND	ND	10	mg/L as N	0
Selenium, Dissolved	ND	ND	ND	ND	50	ug/L	0
Selenium, Total	ND	ND	ND	ND	50	ug/L	0
Silver, Dissolved	ND	ND	ND	ND	50	ug/L	0
SECONDARY DRINKING WATER STANDARDS:							
Chloride, Total	5	56.0	8.3	22.4	250	mg/L	0
Iron, Dissolved	2	60.0	50.0	55.0	300	ug/L	0
Manganese, Dissolved	2	90.0	10.0	50.0	50	ug/L	1
PH, Field	5	8.6	6.9	7.8	6.5-8.5	standard	1
Sulfate, Total	5	341.0	4.0	84.2	250	mg/L as SO ₄	1
Total Dissolved Solids	7	1,210.0	17.0	571.0	500	mg/L	3
Zinc, Dissolved	ND	ND	ND	ND	5000	ug/L	0
QUALITY INDICATORS:							
Alkalinity, Total	2	250.0	250.0	250.0		mg/L as CaCO ₃	
Bicarbonate Ion	5	170.5	3.0	84.6		mg/L as HCO ₃	
Boron, Dissolved	ND	ND	ND	ND	300	ug/L	0
Calcium, Dissolved	2	85.0	1.2	43.1		mg/L as Ca	
Calcium, Total	5	85.0	1.2	36.5		mg/L as Ca	
Carbon Dioxide	2	62.0	3.8	32.9		mg/L as CO ₂	
Carbonate Ion	2	0.0	0.0	0.0		mg/L as CO ₃	
COD High Level	ND	ND	ND	ND		mg/L	
COD Low Level	ND	ND	ND	ND		mg/L	
Hardness, Total	5	154.0	5.0	49.4		mg/L as CaCO ₃	
Hydroxide	ND	ND	ND	ND		mg/L	
Magnesium, Dissolved	2	16.0	0.4	8.2		mg/L as Mg	
Noncarbonate Hardness	2	24.0	0.0	12.0		mg/L as CaCO ₃	
Phosphate, Ortho	2	0.5	0.0	0.3		mg/L as PO ₄	
Phosphate, Total	5	0.6	0.1	0.4		mg/L as PO ₄	
Phosphorus, Total	ND	ND	ND	ND		mg/L as P	
Potassium, Dissolved	2	6.7	0.9	3.8		mg/L as K	
Potassium, Total	5	6.7	0.9	3.7		mg/L as K	
Radon, 222 Total	ND	ND	ND	ND		pc/L	
Radon, 222 PE	ND	ND	ND	ND		pc/L	
Silica, Dissolved	7	26.0	12.0	15.0		mg/L as SiO ₂	
Sodium, Dissolved	2	290.0	120.0	205.0	200	mg/L as Na	1
Sodium, Total	5	29.0	3.0	19.2	200	mg/L as Na	0
Specific Conductance	14	1,720.7	128.0	977.2		umhos/cm	
Strontium, Dissolved	ND	ND	ND	ND		ug/L as Sr	
Uranium, Natural	ND	ND	ND	ND		ug/L	

ND=No data

LEONARD RICE CONSULTING WATER ENGINEERS, INC.

Table 6-5 Alluvial Aquifers Water Quality							
Analyte	# of Samples	Maximum	Minimum	Average	Standard	Units	# Exceeding Standard
PRIMARY DRINKING WATER STANDARDS:							
Antimony, Dissolved	5	1.0	1.0	1.0	6	ug/L	0
Arsenic, Dissolved	35	4.0	0.0	1.5	50	ug/L	0
Barium, Dissolved	6	234.0	18.0	127.8	2000	ug/L	0
Beryllium, Dissolved	6	1.0	0.5	0.9	4	ug/L	0
Cadmium, Dissolved	79	2.9	0.0	0.5	5	ug/L	0
Chromium, Dissolved	54	33.3	0.0	15.6	100	ug/L	0
Copper, Dissolved	77	70.9	0.0	14.0	1000	ug/L	0
Cyanide Dissolved	ND	ND	ND	ND	0.2	ug/L	0
Fluoride, Total	44	0.9	0.2	0.6	4	mg/L as F	0
Fluoride, Total	27	1.4	0.1	0.6	4	mg/L as F	0
Lead, Dissolved	78	30.0	0.0	6.0	50	ug/L	0
Mercury, Dissolved	15	23.4	0.0	1.6	2	ug/L	1
Nickel, Dissolved	78	125.0	0.0	30.4	100	ug/L	5
Nitrogen Nitrate, Dissolved	61	540.3	0.0	30.5	10	mg/L as N	23
Nitrogen Nitrate, Total	17	6.1	0.0	1.6	10	mg/L as N	0
Nitrogen, Nitrite, Dissolved	65	6.6	0.0	0.2	1	mg/L as N	1
Nitrogen, Nitrite, Total	31	7.3	0.0	0.4	1	mg/L as N	1
NO2 + NO3 Dissolved	82	579.1	0.0	22.9	10	mg/L as N	24
NO2 + NO3 Total	52	215.0	0.1	14.5	10	mg/L as N	13
Selenium, Dissolved	35	28.0	0.0	7.6	50	ug/L	0
Selenium, Total	7	10.0	0.0	1.4	50	ug/L	0
Silver, Dissolved	6	1.0	1.0	1.0	50	ug/L	0
SECONDARY DRINKING WATER STANDARDS:							
Chloride, Total	159	1,854.7	2.0	68.9	250	mg/L	4
Iron, Dissolved	138	9,930.0	0.0	215.3	300	ug/L	11
Manganese, Dissolved	134	5,254.5	0.0	189.7	50	ug/L	47
PH, Field	158	9.0	6.3	7.3	6.5-8.5	standard	2
Sulfate, Total	152	1,530.0	5.0	237.7	250	mg/L as SO4	45
Total Dissolved Solids	170	5,780.0	17.0	746.6	500	mg/L	70
Zinc, Dissolved	79	4,091.8	0.0	75.4	5000	ug/L	0
QUALITY INDICATORS:							
Alkalinity, Total	91	1,463.0	2.0	190.3		mg/L as CaCO3	
Bicarbonate Ion	131	552.8	3.0	187.1		mg/L as HCO3	
Boron, Dissolved	34	70.0	3.0	23.9	300	ug/L	0
Calcium, Dissolved	77	1,190.0	19.7	224.6		mg/L as Ca	
Calcium, Total	103	215.8	2.0	73.9		mg/L as Ca	
Carbon Dioxide	78	276.0	0.4	34.2		mg/L as CO2	
Carbonate Ion	126	84.6	0.0	1.1		mg/L as CO3	
COD High Level	30	1,900.0	6.5	158.2		mg/L	
COD Low Level	28	40.0	6.0	18.1		mg/L	
Hardness, Total	147	3,592.3	2.0	429.0		mg/L as CaCO3	
Hydroxide	30	74.5	0.0	5.4		mg/L	
Magnesium, Dissolved	123	151.6	1.1	34.4		mg/L as Mg	
Noncarbonate Hardness	50	1,250.0	0.0	300.5		mg/L as CaCO3	
Phosphate, Ortho	79	43.8	0.0	1.7		mg/L as PO4	
Phosphate, Total	7	0.6	0.2	0.4		mg/L as PO4	
Phosphorus, Total	38	0.7	0.1	0.2		mg/L as P	
Potassium, Dissolved	77	32.0	1.8	7.6		mg/L as K	
Potassium, Total	103	46.0	1.0	8.4		mg/L as K	
Radon, 222 Total	5	907.0	717.0	819.6		pc/L	
Radon, 222 PE	5	30.0	27.0	28.2		pc/L	
Silica, Dissolved	71	37.0	1.0	23.0		mg/L as SiO2	
Sodium, Dissolved	77	738.3	21.0	100.9	200	mg/L as Na	7
Sodium, Total	103	271.5	3.0	52.8	200	mg/L as Na	3
Specific Conductance	158	6,727.7	6.0	878.0		umhos/cm	
Strontium, Dissolved	1	2,600.0	2,600.0	2,600.0		ug/L as Sr	
Uranium, Natural	5	37.0	6.0	18.8		ug/L	

ND=No data

LEONARD RICE CONSULTING WATER ENGINEERS, INC.

7.0 SUMMARY OF INSTITUTIONAL CONSTRAINTS AFFECTING GROUND WATER DEVELOPMENT

7.1 STATE REGULATIONS

The development of ground water is regulated and limited by both state and county statutes, rules, regulations and policies. Because the Colorado State Constitution established the appropriation doctrine with regard to developing water supplies, water (both surface and ground water) may be developed only if all older senior water rights are not injured. Injury usually is considered as a reduction in the ability to divert for beneficial use, the full quantity of the right at the time the right is in priority. Over the last decade, injury has also come to include a reduction in water quality.

The Colorado State Engineer administers water rights on a priority basis. This means that if sufficient water is not available to meet the demand, junior water rights may not divert and are considered at that time to be out-of-priority. Because most of the surface water was appropriated early in Colorado's history, before the technology to develop ground water existed, ground water is almost universally so junior that it is out-of-priority most of the time.

To permit economic development, the State legislature has over the years, provided means so that ground water can be developed. They created in the Denver Basin a nontributary class of ground water that is not subject to the prior appropriation doctrine. They also created a process where both junior surface water and ground water supplies can be developed provided there is a court approved augmentation plan that prevents injury to senior water rights. This is done by replacing in the stream the depletion caused by junior diversions so that there is sufficient water in the stream for the senior rights.

A depletion to a stream is that amount of water that is consumptively used and never returned to the stream. The consumptive use is less than the amount diverted because some portion of the diversion returns to the river system. In the case of ground water, the concept of a stream depletion is somewhat more complex because a well may either intercept ground water that was flowing to a stream and cause a future depletion; or it may induce water to flow out of the stream and into the aquifer and thereby also cause a stream depletion. Because ground water flows through an aquifer very slowly, a stream depletion resulting from well pumping is delayed by days, months or years. This time delay must be considered in the augmentation plan.

A common practice in Colorado is to retire irrigated crop land from production and to change the use of the portion of the water right that was consumed (evapotranspired) by the plants to municipal use. The portion that was not consumed is no longer diverted and remains in the river for use by other senior water rights. Diversion could either be by an irrigation canal or by an irrigation well.

The portion that historically was consumptively used, can then be used for municipal purposes without causing injury, providing that the timing of the use is not changed or if the timing of the unconsumed portion, the return flow, is not changed. If the timing is changed, additional protection of senior water rights is required. This can be in the form of storing the return flow component in a reservoir and releasing it at the proper times to the river to protect the senior water rights.

To develop a ground water supply in Colorado requires a well permit issued by the State Engineers Office (SEO) of the Colorado Division of Water Resources or the Colorado Ground Water Commission if the well is located in a designated ground water basin. The applicable well permit regulations depend upon the intended use, the aquifer that is the source of supply and, for the Denver Basin Aquifers, the class of the aquifer.

7.1.1 Limitations Related to Use

From a use perspective, the well permitting procedures generally fall into the following three categories:

- 1) Domestic well serving a single household on a lot of at least 35 acres in size.
- 2) Domestic wells on lots less than 35 acres in size.
- 3) All other uses.

The SEO will issue a well permit for homes on lots at least 35 acres in size. The well may only be used for in-house purposes. Domestic wells on lots less than 35 acres in size will only be issued if either of the following conditions are met:

- 1) There is an adjudicated plan for augmentation that protects senior water rights.
- 2) The wells will produce water from the nontributary Denver Basin Aquifers. The use may not be limited to in-house use only; however, it is commonly limited.

All other uses require either an adjudicated augmentation plan or the wells must produce water from the nontributary portion of the Denver Basin Aquifers.

7.1.2 Limitations by Aquifer

The permit regulations differ by aquifer in the following ways:

- 1) All wells, regardless of use (except domestic wells on 35 acres or larger lots) that are completed into alluvial aquifers or the tributary and not non-tributary portion of the Denver Basin Aquifers require an adjudicated augmentation plan before a permit will be granted.
- 2) No augmentation plan is required for wells completed in the nontributary portion of the Denver Basin Aquifers.

7.1.3 Denver Basin Aquifer Regulations

Denver Basin Aquifer ground water can be appropriated by permit upon application to the Colorado Division of Water Resources provided that the ground water has not been previously appropriated.

The total appropriation for each aquifer is determined by multiplying the total land area claimed to be owned or controlled by the applicant by the water saturated thickness of sand, silt and gravel contained in the aquifer as portrayed on maps included in the State Engineer's Denver Basin Rules. This is then multiplied by the specific yield contained in those same rules for the appropriate aquifer. Specific yield is the ratio of water drainable by gravity to the rock volume including the water (both drainable and undrainable). The amount that may be withdrawn annually is one percent of the total appropriation. In this way, the aquifer life is theoretically a minimum of 100 years. The parcels of land included in the application need to be contiguous, or nearly so, to be considered as a single appropriation.

Ownership of the land is not required; however, a lease of the right to appropriate the ground water is required. While all of the ground water in the various aquifers beneath a parcel may be appropriated, a well may only withdraw water from one aquifer. Therefore, to develop multiple aquifers requires multiple wells. As many wells as are required to withdraw the water can be permitted.

Colorado allows the appropriation to be adjudicated in Water Court. This process quantifies the appropriation. The primary purpose of adjudicating a ground water appropriation fixes the amount so that it can not be reduced by future changes in the law. The Water Court routinely retains jurisdiction to adjust the adjudicated appropriation based upon the actual saturated thickness determined when wells are drilled.

Within the Denver Basin, there are three classes of ground water: tributary, not non-tributary and nontributary. These classes have varying requirements related to the relative connection between the ground water and surface water systems as shown in the following table.

Table 7-1 – Denver Basin Ground Water Classes

Class	Requirement	Comment
nontributary	2% of the annual appropriation as assumed to return to the river system.	Not administered in the priority system. May be used and reused an unlimited number of times.
not non-tributary	4% of the appropriation must be augmented to protect senior water rights. After pumping stops the continuing depletions must be augmented.	Requires a Water Court Adjudication of the augmentation plan before the water may be used.
tributary	Actual depletions must be augmented.	Administered in the surface water priority system. Water Court adjudication of Augmentation Plan required.

Each Denver Basin aquifer contains all three classes of ground water.

Generally, tributary Denver Basin ground water is located within one mile of a flowing stream that crosses the exposure of the particular aquifer. Not non-tributary ground water extends from one mile from a live stream to a line, determined by the State Engineer for each aquifer, beyond which is nontributary ground water.

The foregoing discussion applies to the portions of the Denver Basin Aquifers that are outside of designated ground water management districts. Within the management districts, the districts adopt their own rules for appropriation of Denver Basin ground water. Generally, these districts have adopted the same procedures and rules used by the State Engineer outside of the districts. The study area contains portions of the Lost Creek and Kiowa-Bijou ground water management districts as shown on Figure 5-6.

Current legislation and rules allow ground water to be appropriated and exported beyond the land area used to create the appropriation. This allows a portion of a piece of property to be developed at a higher density than would be otherwise possible; however, the balance of the area would remain underdeveloped if all of the ground water was exported.

7.2 COUNTY REGULATIONS AFFECTING GROUND WATER DEVELOPMENT

Adams, El Paso, Elbert and Douglas Counties have all adopted land use regulations that limit the amount of ground water that can be developed. The typical approach is to require the applicant to demonstrate that there is a 300 year water supply available. For the Denver Basin Aquifers, this requirement is usually met by reducing the land development density so that the water demand is one-third of what could be appropriated by a well permit. Other methods of supplying water such as reusing water, or using a combination of both surface water and ground water are usually permissible.

We recommended that Arapahoe County also adopt a policy that limits the development of ground water. Our recommendation differs from that typically adopted because it is based upon the amount of water that is likely to be economically recoverable rather than some particular aquifer life criteria. It also differs because it limits development to only the nontributary class of ground water. Limiting the development to 50 percent of the in-place nontributary ground water conserves the resource and maximizes the probability that it will last longer than the 100 year statutory life.

7.3 OTHER GROUND WATER REGULATIONS

The State and local health departments regulate both domestic and municipal wells. Their primary focus is on water quality issues. Domestic well regulation is limited to requiring a well to be a specific distance from septic leach fields. Municipal wells, whether owned by a community, special district or private water company, are required to meet water quality standards mandated in the Federal Safe Drinking Water Act. Generally, water treatment is limited to disinfection. Occasionally, treatment to remove iron and manganese is also done. Consequently, the health department regulations do not tend to limit the use of ground water.

8.0 BIBLIOGRAPHY

- Duke, H. R. and Longenbaugh, R. A., May, 1966. Evaluation of Water Resources in Kiowa and Bijou Creek Basins, Colorado. Civil Engineering Department, Colorado State University, Fort Collins, Colorado. Prepared under contract with the Colorado Water Conservation Board.
- Larsen, Lynn S. and Brown, Joseph B., March 1971. Soil Survey, Arapahoe County, Colorado. Prepared by the U.S. Department of Agriculture, Soil Conservation Service, in cooperation with the Colorado Agricultural Experiment Station.
- Lytle, Bruce A., June 1998. Development of Douglas County Water Supply Criteria. Prepared by John C. Halepaska & Associates, Inc., Water Resources Consultants.
- Robson, Stanley G., 1987. Bedrock Aquifers in the Denver Basin, Colorado - A Quantitative Water-Resources Appraisal. U.S. Geological Survey Professional Paper 1257. Prepared in cooperation with the Colorado Department of Natural Resources, Office of the State Engineer; Denver Board of Water Commissioners; and Adams, Arapahoe, Douglas, Elbert, and El Paso Counties.
- Robson, S.G. and Romero, John C., 1981. Geologic Structure, Hydrology, and Water Quality of the Dawson Aquifer in the Denver Basin, Colorado. U.S. Geological Survey Atlas HA-643. Prepared in cooperation with the Colorado Department of Natural Resources, Division of Water Resources, Office of the State Engineer; the Denver Board of Water Commissioners; and Adams, Arapahoe, Douglas, Elbert, and El Paso Counties.
- Robson, S.G. and Romero, John C. and Zawistowski, Stanley, 1981. Geologic Structure, Hydrology, and Water Quality of the Arapahoe Aquifer in the Denver Basin, Colorado. U.S. Geological Survey Atlas HA-647. Prepared in cooperation with the Colorado Department of Natural Resources, Division of Water Resources, Office of the State Engineer; the Denver Board of Water Commissioners; and Adams, Arapahoe, Douglas, Elbert, and El Paso Counties.
- Robson, S.G. and Romero, John C., 1981. Geologic Structure, Hydrology, and Water Quality of the Denver Aquifer in the Denver Basin, Colorado. U.S. Geological Survey Atlas HA-646. Prepared in cooperation with the Colorado Department of Natural Resources, Division of Water Resources, Office of the State Engineer; the Denver Board of Water Commissioners; and Adams, Arapahoe, Douglas, Elbert, and El Paso Counties.
- Robson, S.G. and Wacinski, Andrew and Zawistowski, Stanley and Romero, John C., 1981. Geologic Structure, Hydrology, and Water Quality of the Laramie-Fox Hills Aquifer in the Denver Basin, Colorado. U.S. Geological Survey Map HA-650. Prepared in cooperation with the Colorado Department of Natural Resources, Division of Water Resources, Office of the State Engineer; the Denver Board of Water Commissioners; and Adams, Arapahoe, Douglas, Elbert, and El Paso Counties.

Simpson, Hal D. and Lile, Chuck, April 1998. Denver Basin and South Platte River Basin Technical Study, Senate Bill 96-074. Prepared by the Colorado State Engineer's Office and the Colorado Water Conservation Board.

Denver Basin and South Platte River Basin Technical Study, Senate Bill 96-074, Technical Addendum 1. Prepared by Hydrosphere Resource Consultants, Inc.

Denver Basin and South Platte River Basin Technical Study, Senate Bill 96-074, Technical Addendum 2. Prepared by Colorado Division of Water Resources.

1965. Bedrock Contour Map, Kiowa - Bijou Creek Basins, Colorado. Civil Engineering Section, Colorado State University, Fort Collins, Colorado, October 15, 1965

1965. Map of Water Table Contours & Saturated Thickness - Summer 1965, Kiowa-Bijou Creek Basins, Colorado. Civil Engineering Department, Colorado State University, Fort Collins, Colorado, October 15, 1965.

1965. Location Map & Reported Capacities for Irrigation and Municipal Wells, Kiowa-Bijou Creek Basins, Colorado. Civil Engineering Department, Colorado State University, Fort Collins, Colorado, October 15, 1965.

1969. Map Showing Model-Calculated 2050 Potentiometric Surfaces of Bedrock Aquifers in the Denver Basin, Colorado, Model Simulation Study-Base. U.S. Geological Survey Professional Paper 1257, Plate 3. Prepared in cooperation with the Colorado Department of Natural Resources, Division of Water Resources, Office of the State Engineer; the Denver Board of Water Commissioners; and Adams, Arapahoe, Douglas, Elbert, and El Paso Counties.

1991. EPA Manual of Small Public Water Supply Systems. EPA 570/9-91-003. Prepared by U.S. Environmental Protection Agency, office of Water (WH-550).

1996. Denver Water Comprehensive Annual Financial Report for the Year Ended December 31, 1996, Denver, Colorado.

1997. Denver Water Comprehensive Annual Financial Report for the Year Ended December 21, 1997, Denver, Colorado. Prepared by the Accounting Section of the Finance Division.

1999. Resolution of the Adams County Board of County Commissioners Adopting Ground Water Sufficiency Policy. By resolution of the Adams County Board of Commissioners.

1999. Zoning Hearing Decision - Case 95-99-RA Ground Water Sufficiency Policy. By resolution of the Adams County Board of Commissioners.

1999. Arapahoe County Union Park Reservoir Project. Presentation by WRC Engineering, Inc.

1999. Ground Water Levels in the North Kiowa-Bijou Ground Water Management District, Kiowa-Bijou Designated Basin. Prepared by the State of Colorado, Department of Natural Resources, Division of Water Resources, Office of the State Engineer.