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**III. Water Conservation Standards and Guidelines for Multi-Family Residential; Commercial, Office, Institutional and Industrial Land Uses; and Residential Subdivisions with Less than Five Units** **95**

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# I. Introduction

Water conservation is essential for the sustainability of the community. In 2008, the per capita drinking water use in Bernalillo County was 161 gallons a day. Of that amount, it is estimated that 40% was used for landscape purposes. Reducing the amount of water used for landscaping is one of the primary goals for both Bernalillo County and the Albuquerque Bernalillo County Water Utility Authority. The Water Conservation Plan for Bernalillo County (2006) and the Water Resources Management Strategy (2007), a long-range water supply plan for the metropolitan area, both emphasize reducing in the amount of drinking water used for landscape as a viable strategy for water conservation.

Taking a water-conserving approach to every development project can exert a great influence on the future sustainability of Bernalillo County. These Standards and Guidelines illustrate how to do this for each major type of development. They have been organized into separate chapters that reference the Bernalillo County Zoning Code for ease in use. The first chapter describes the physical environment of Bernalillo County, which can be divided into five biozones with similar conditions. The following three chapters detail water conservation standards and guidelines for Single Family Residential development (Chapter II); Commercial, Office, Institutional, Multi-Family Residential, Small Subdivision and Industrial development (Chapter III); and Master Planned Communities, Larger Subdivisions, and Land Planning (Chapter IV).

Photo 1. Rio Grande, Albuquerque, New Mexico

## A. Purpose and Goals

The purpose of this project is to develop standards and guidelines that define the requirements of the Bernalillo County Water Conservation Ordinance and provide direction to homeowners, builders and developers so that they can meet the ordinance requirements. The goal of the Standards and Guidelines is to improve water conservation through increased compliance with the ordinance by showing how to maximize water efficiency and conservation through design. This step-by-step guide provides: 1) definitions of the requirements, 2) directions on how to analyze the site and design for minimal disturbance and maximum use of precipitation, 3) descriptions and illustrations of methods with examples, 4) a matrix of methods and environmental conditions to facilitate decision making, 5) methods for conserving water through irrigation and 6) tools such as plant lists and water savings calculation sheets. The Standards and Guidelines pertain primarily to exterior water conservation measures such as the following::

- Site design that considers and integrates existing factors both on and off the site
- Best Management Practices for grading and stormwater management
- Application of water-harvesting methods
- Indirect ways to conserve water through site and landscape design
- Selection of appropriate plants from a user-friendly list that corresponds to terms used in the ordinance
- Specialized plant lists for golf courses and public recreation areas
- Water-saving irrigation techniques
- Use of graywater
- Water-conserving maintenance of landscape, water-harvesting systems, and irrigation

The Standards and Guidelines have been developed in accordance with existing regulations and by researching references developed by professional organizations and state and federal agencies involved in energy and water conservation. Standards and practices created and maintained by other municipalities and local governing bodies concerned with resource conservation have also been reviewed.

A protocol document/summary of ordinance requirements has been developed as a companion to this Standards and Guidelines to help the homeowner/builder/developer to prepare for processing plans through the County. This document is included in the Appendix. Together with the Standards and Guidelines, the protocol will enable both applicants and County staff to easily determine whether or not the requirements of the Water Conservation Ordinance have been met by using the checklists developed for applicants. The easy-to-understand checklists will increase compliance with the ordinance by clearly listing the requirements and the steps employed to meet them. County staff will be able to verify compliance by conducting a field inspection and subsequently approving the checklist.

## B. How to Use this Document

### Start with Your Bioregion and Site Conditions

Bioregion and site conditions are key considerations in determining the type, number and placement of water conservation devices to be used on a site. The Bioregion map (see Map 1 on page 9) shows that Bernalillo County is divided into five distinct bioregions based on environmental characteristics typically found within that area. Knowing the general conditions in a particular bioregion can help property owners and developers predict how various water conservation measures are likely to perform on a particular parcel or site. For example, harvesting water from downspouts or canales from a building in the West Mesa Bioregion where there are well-drained, sandy soils on a slope would be handled very differently from a harvesting water on a site in the Rio Grande Valley that has flat terrain and soils with high clay content. While general assumptions can be made based on the dominant characteristics of each bioregion, ultimately it is the evaluation of the specific site that will determine which water conservation methods and devices would be most appropriate.

The steps to using this document are:

1) Identify your bioregion.
   a) Refer to the Bioregion Map (Map 1) and locate your parcel.
   b) Review the Bioregion Soils (Map 2), Precipitation (Map 3) and Vegetation (Map 4) Maps for general characteristics that are likely to prevail on your site. Note any characteristics particular to your site that may differ from characteristics dominant in the bioregion that impact microclimate, soil or drainage, such as prior uses of the land, patterns of erosion or solar exposure (south- versus north-facing).
2) Identify the property's development category.
   a) The Standards and Guidelines have been organized into separate chapters for different types of development: Single-Family Residential (A-1, A-2, R-1), Commercial/Office, and Industrial, Multi-family residential, and residential subdivision with fewer than five units (R-2, MH, O-1, C-N, C-2, C-L1, M-1, M-2) and Master Planned Communities, Campuses, Land Planning and Residential Subdivisions with five or more units (R-1, R-2, C-N, C-1). Refer to the Bernalillo County Zoning and Drainage Code for specific requirements applicable to each land use zone. Site design, approaches to grading and drainage, irrigation practices, graywater systems, water-harvesting strategies and plant selection are all influenced by the type and scale of the development.
3) Review the Water Conservation Standards and Guidelines for the development category in which you are working.
   a) Refer to the Water Conservation Device Matrix for a list of potential water-harvesting techniques and best management practices (page 40, page 116 and page 194). Based on site conditions, determine which devices could be used on your site.
   b) Read the additional details in the accompanying text for each of the techniques, following the matrix to confirm which methods are best suited for your needs.
4) Design
   a) Refer to "Appendix J. Bernalillo County Protocol Document/Summary of Ordinance Requirements" to determine which Water Conservation ordinance requirements apply to your site. The full ordinance is included in this document as "Appendix A. Bernalillo County: Applicable Plans, Regulations and Ordinance"
   b) Develop site, building and landscape plans that include the selected water conservation methods. An outline of appropriate design process steps is included in the guidelines section for each development type. Additional resources are included in the appendices such as the ABCWUA plant list, which provides information on vegetation appropriate to each bioregion, as well as the particular water and sun needs of individual plants.
   c) Refer to calculation worksheets in "Appendix B. Pre- and Post-Development Calculation Worksheets" recognizing when professional consultation may be advisable.

Please note that the design recommendations and information provided in these guidelines are for explanation and illustration of key water conservation concepts only. Not all design or construction details and information are shown, and adjustment to accommodate site-specific conditions will be needed. In addition, some of the techniques and best management practices may require permits or design by a registered professional, so be sure to verify current permit and other requirements with the relevant County or State agencies.

## C. Bioregions

Located in the northernmost reach of the Chihuahuan Desert, Bernalillo County lies in the Rio Grande Valley between the escarpment on the west and the Sandia Mountains on the east. Due to its relatively high elevation and location on the continental interior, the area experiences hot summers and cold winters, with nighttime temperatures dipping below freezing around 108 times per year on average. Annual precipitation averages slightly below 9 inches, an amount far exceeded by the average evapotranspiration rate. Prevailing winds for much of the county are out of the north from October through March, from the west in April and May, and from the east from June through September. The winds significantly contribute to erosion and increased evapotranspiration rates.

Given the county's scant precipitation and dwindling groundwater supplies, water is a critical resource. Water resource management and planning is best done on a regional level due to the many variables involved such as water supply and demand, climate, and legal and institutional constraints. The Office of the State Engineer has therefore defined New Mexico's water planning areas by basin designations. The majority of Bernalillo County lies within the Middle Rio Grande Basin, with the exception of the easternmost portion, which is within the Estancia Basin. Bernalillo County is the most populous in New Mexico and therefore can have a significant impact in terms of water conservation. The County Water Conservation Ordinance that became effective October, 2010, represents a significant step towards increased conservation for new development throughout the county. The ordinance requirements for water-conserving site design and development can be met by a range of best management practices and techniques. Variables such as soil types, elevations, climates, and vegetation must be evaluated when determining which water conservation devices to use on a particular site. As an example, the water needs for a plant on a west-facing slope in the sandy soils of the West Mesa would be much higher than those of the same plant on a flat area in the Rio Grande Valley or on a north-facing slope in the Sandia foothills.

Understanding the type of soil present on a site within the bioregion is key to appropriate design of the site and landscape. In a given bioregion within the county there may be no need to amend the soil, however some soils inhibit healthy plant growth and may need amendment. Determining the correct soil treatment and the soil amendment that might be needed begins with understanding the soil itself.

For the most part the relationship between plants, soil and water is based in the soil structure; this refers to the density of soil particles and the pore spaces between them (porosity or permeability) and the combination of soil types (texture). In general, a well-structured soil will readily accept, store, and transmit water, gases and nutrients to plants. The interrelated porosity or permeability and texture of soil if balanced can create the best conditions for low water use and plant growth. A dense structure, such as that of clayey soils, will greatly reduce the amount of air and water that can move freely through the soil. If the texture of the soil is too dense water can pond. A good soil repair for this problem can be adding gypsum to soil to open the pores. Water moves more readily through coarser-texture soils, such as those with a high percentage of sand. If water moves too freely through soils, as is the case with sands, it may be appropriate to add a percentage of clay or humus to the soil to increase water holding capacity and decrease permeability. Soil texture can effect plant growth and health; it is determined by the relative percentages of sand, silt, and clay. Loam, which has good texture, is considered a great gardening soil, it generally has percentages of 40% clay, 40% sand and 20% silt. Bioregions within Bernalillo County can be well drained or impermeable; they can have very simple textures as is the case in the sand of the west mesa or the clay in the valley. To understand how to amend or treat these various soil types for the best plant growth conditions consult with a green industry professional like a nursery person, landscape architect or designer, or the NMSU Cooperative Extension Service or other like agencies.

Based on topographic and biological features such as elevation, climate, average temperature range, soils, geology, and vegetation types, Bernalillo County can be divided into five distinct areas or bioregions: West Mesa, Rio Grande Valley, East Mesa, Foothills and Mountains, and East Mountains (see Figure 1 and Map 1).

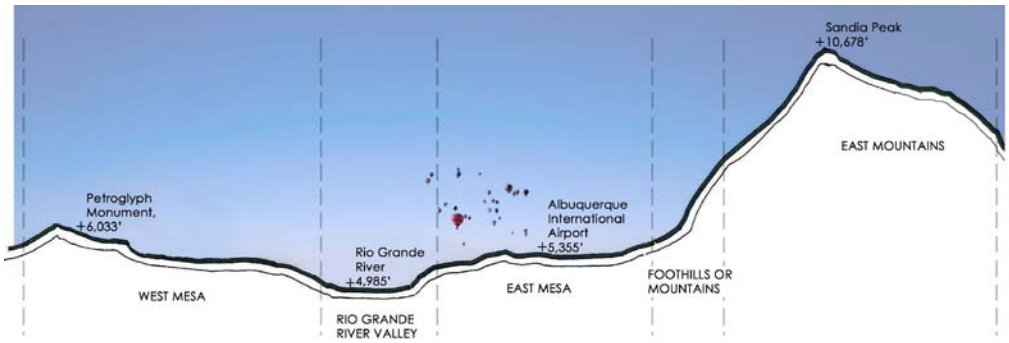



**Figure 1. Diagrammatic Cross Section - Bernalillo County Bioregions**

**West Mesa** - The West Mesa Bioregion reaches from the western edge of Bernalillo County to the western edge of the Rio Grande Valley. The zone is characterized by the hardy vegetation of desert grasslands, sand scrub and montane scrub/juniper savanna. Some of the plants found in this zone are prairie grasses, sand-sage, broom and feather dalea, punctuated with numerous wildflowers. These resilient plants are supported by average annual precipitation in the range of 7 to 9 inches. The soils in this bioregion are typically classified by the Natural Resources Conservation Services' (formally the Soil Conservation Service) system however for the purposes of this Guide we will use simpler and more user friendly descriptions (see "Map 2. Bernalillo County Soils" at the end of this section for the NRCS system). The West Mesa bioregion consists of well drained, deep soils composed of sandy or gravelly loams. Loam can be defined as sand (40%), Silt (40%) and clay (20%), these soils generally contain more nutrients and humus than sandy soils, have better infiltration and drainage than silty soils, and are easier to till than clay soils. Loams are more desirable for growing crops and landscaping and are considered ideal for gardening and agricultural uses because they retain nutrients well and retain water while still allowing the water to flow freely. West Mesa soils drain quickly with the exception of patches of finer clay that occur in some locations. In the far western part of the county the soils might be shallower than the immediate urbanized West Mesa, with layers of sand and gravel over sandstone, shale and basalt; these soils are excessively to well-draining but have widely varying depths to bedrock, which affects drainage and can cause low permeability.

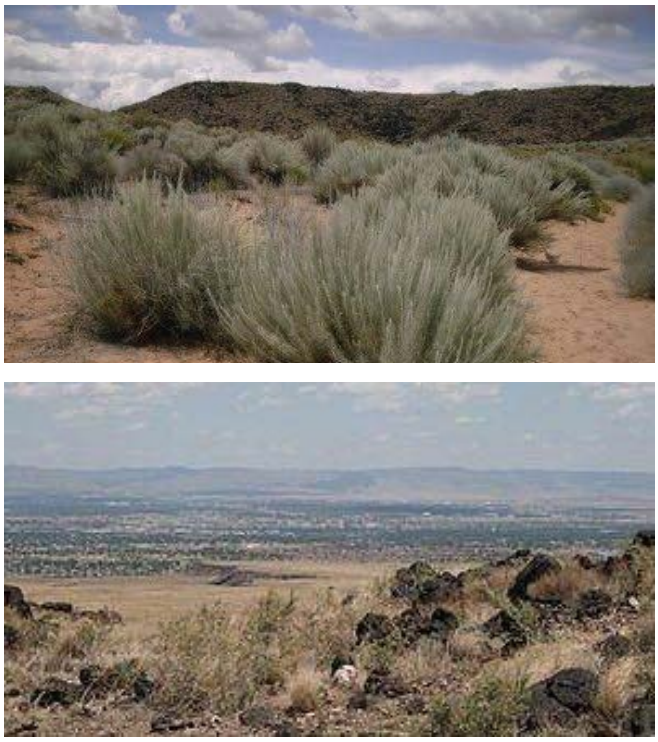


Photo 2. West Mesa

Winds frequently sweep across the West Mesa bioregion, at times with sustained gusts over 40 miles per hour. The wind has a desiccating effect and sculpts the surface topography. The West Mesa exists in an area known as a thermal belt, which is an area between higher elevations and a valley into which cold air drains. The main implication is that there are fewer occurrences of freezing temperatures in the West Mesa bioregion than in the valley or the foothills and mountains. Average temperatures range from lows of 24°F to highs in the low 90s..

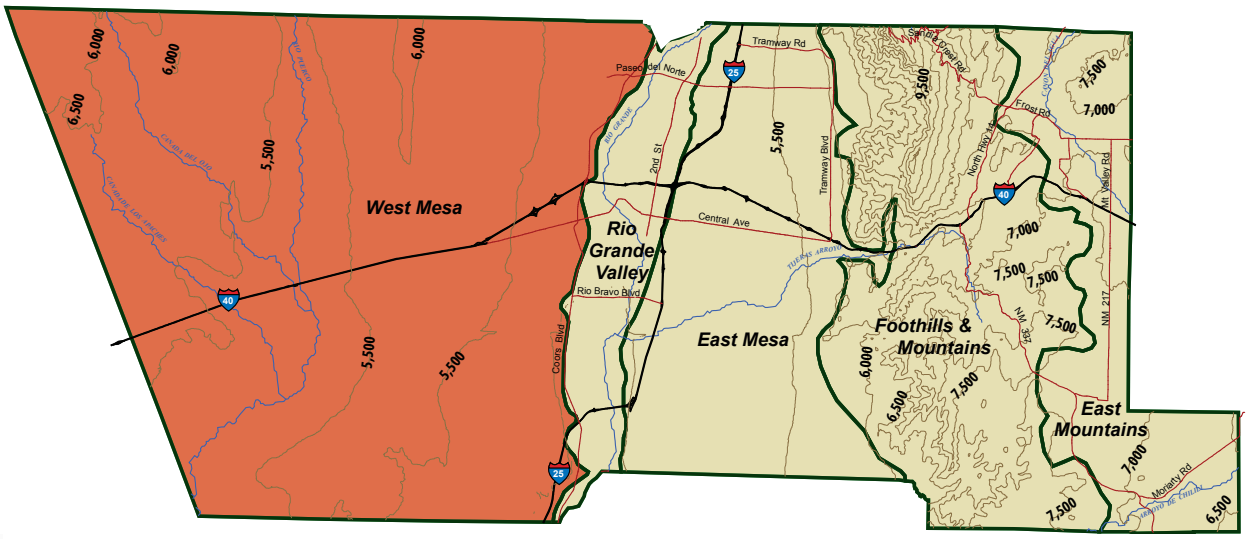



Figure 2. West Mesa Bioregion

**Rio Grande Valley** - The Rio Grande Bioregion runs north-south roughly through the middle of the county. For thousands of years people have settled and farmed along the river, and consequently, the vegetation in the Rio Grande Valley bioregion is a mix of urban and agricultural plants with a bosque of woodland meadow, cottonwoods, New Mexico olive, sumac, forbs and meadow grasses between the river levees. Soils in this bioregion were deposited by the river and are deep soils on alluvial fans, foothills and mesas. They are well-drained loamy soils for the most part; however, there are areas with a significant percentage of clay in the and sand as well as sandy soils with scatterings of clay deposits. In areas where the clay content is higher, the capacity to hold water is increased and may result in ponding and poor percolation. The areas that are predominated with sand or loam are well drained. Average annual precipitation is approximately 6 to 8 inches. Temperatures in the Rio Grande Valley Bioregion tend to be lower in evenings and mornings and drop below freezing more frequently than in the thermal belt zones due to cold air drainage from the mountains. Average lows in the valley hover around 20°F. Paradoxically, temperatures during the summer can be higher in the valley bioregion than in either of the mesa bioregions, averaging about 92°F. Ambient humidity also tends to be higher in the valley than in the other bioregions due to the presence of the river, irrigation canals, flooded fields and denser tree canopy.

Photo 3. Rio Grande Valley

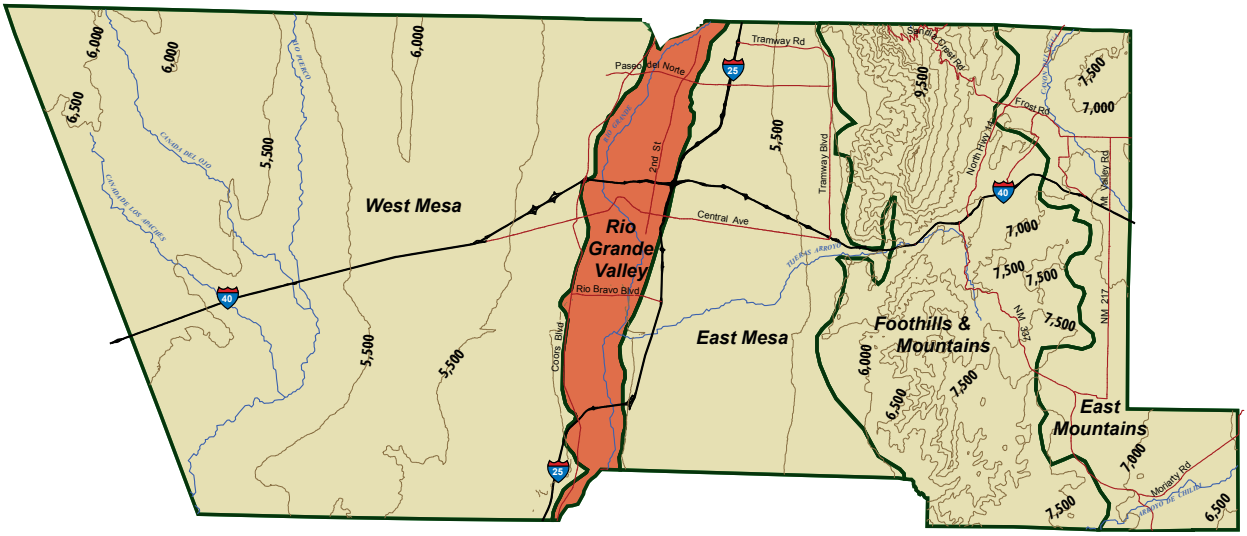



Figure 3. Rio Grande Valley Bioregion

**East Mesa** - The East Mesa Bioregion is the area commonly referred to as the Heights; it lies between the valley and the foothills of the Sandia Mountains. This zone has been highly urbanized so urban exotic landscape plants are most commonly seen. The native vegetation varies greatly from sand scrub to desert grassland to coniferous and mixed woodland of chamisa, sages, prairie grasses, piñon, juniper, oak and other deciduous trees. Annual precipitation averages around 7 to 9 inches, with the higher amounts falling at the higher elevations. Soils found in the East Mesa bioregion are deep and found on alluvial fans and mesas. They are made up of decomposed granite, sand, gravels and silty loam. These coarse-textured soils tend to drain well for the most part. The soils in the foothills are characterized by deep well drained loamy and stony soils and rock outcroppings. This bioregion is also in a thermal belt with temperatures averaging from lows of 24°F to highs in the low 90s.

Photo 4. The East Mesa

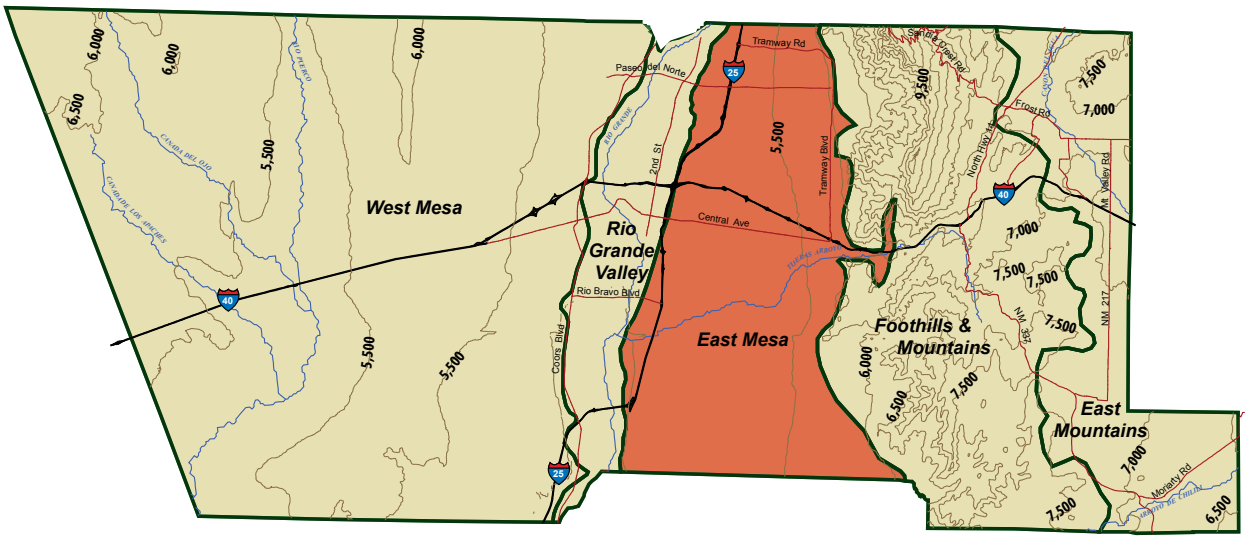



Figure 4. East Mesa Bioregion

**Foothills and Mountains** - The Foothills and Mountains bioregion begins at the foothills on the west side of the Sandia Mountains and ends at the toe slope on the east side of the Mountains. Vegetation in this bioregion includes coniferous and mixed woodland/montane scrub and juniper savanna, or montane and sub-alpine coniferous forest, depending upon elevation and slope orientation, which influence rainfall amounts and sun exposure. Ponderosa pine and fir mixed with aspen trees make up the main vegetation at the highest elevations (10,500-7,500 ft.) with piñon and juniper dominating at the next highest elevations (7,500-5,000 ft.). Below 5,000 feet junipers mingle with shrubs and eventually give way to shrubs and grasses at lower elevations. Precipitation averages range between 11 to 23 inches annually, again varying with elevation and slope orientation. Precipitation is usually dropped on the east side of the mountains so the east and northern slopes tend to be greener than the less shaded western and southern slopes. Soils in this bioregion are shallow with rock underlain to deep on mountains and foothills, they tend to be cobbly, stony and very stony loamy soils. Given their predominantly loose and gravelly texture, these soil associations tend to drain well. Rocky outcroppings are also common in this bioregion. This bioregion has changes in elevation of 3,000 feet, so the relative drop in temperature between the crest at 10,678 feet and the lower elevations at around 6,000 feet can be more than 22°F.

Photo 5. Typical Foothill Scene at Sunset

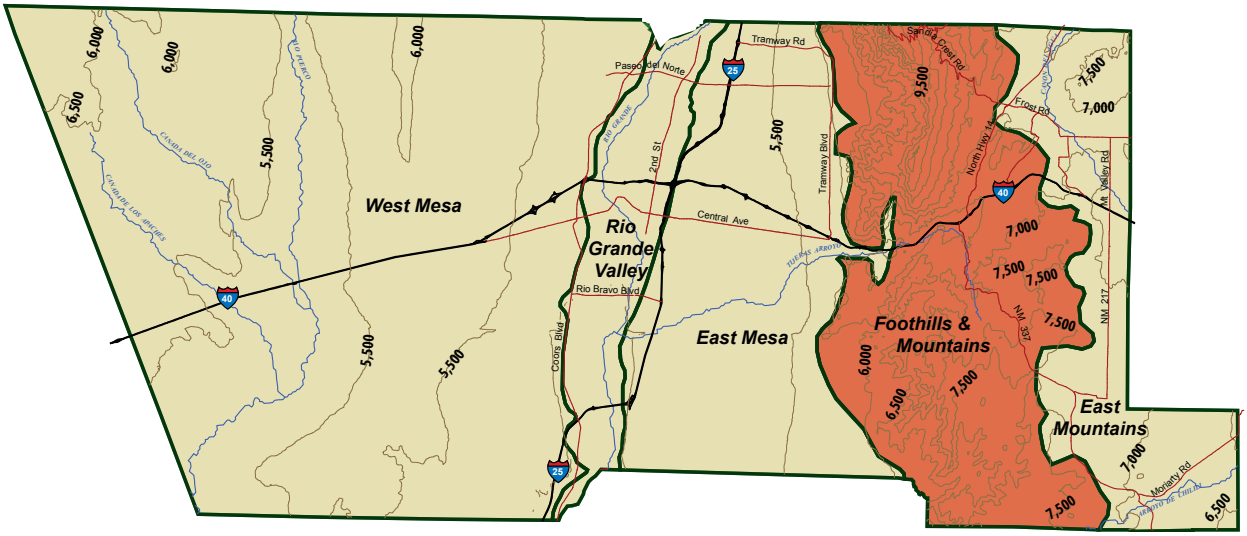



Figure 5. Foothills & Mountains Bioregion

**East Mountain** - The East Mountain Bioregion begins at the toe of the eastern slope of the Sandia Mountains and encompasses some of the Manzano and the San Pedro Mountains. Annual precipitation averages between 13 to 14 inches. The increased precipitation supports the coniferous and mixed woodland/montane scrub and juniper savanna vegetation types found in this bioregion. Vegetation on the eastern slope is denser, and the grasses in the savanna are more robust due to higher precipitation levels. There are pockets of farmland and rangeland in the far southeast and toward the northeast corner of the county. Soils in this bioregion can be deep in the uplands or very shallow with rock underlain, dependent on location. The soils are generally well drained and loamy. The soils are loamier than some bioregions and have a higher organic content due to the increased vegetative cover. The elevation changes from about 7,500 to 6,500 feet, but winds are common and produce a chilling as well as desiccating effect.

Photo 6. Geology, and Vegetation Typical in East Mountain Biozone

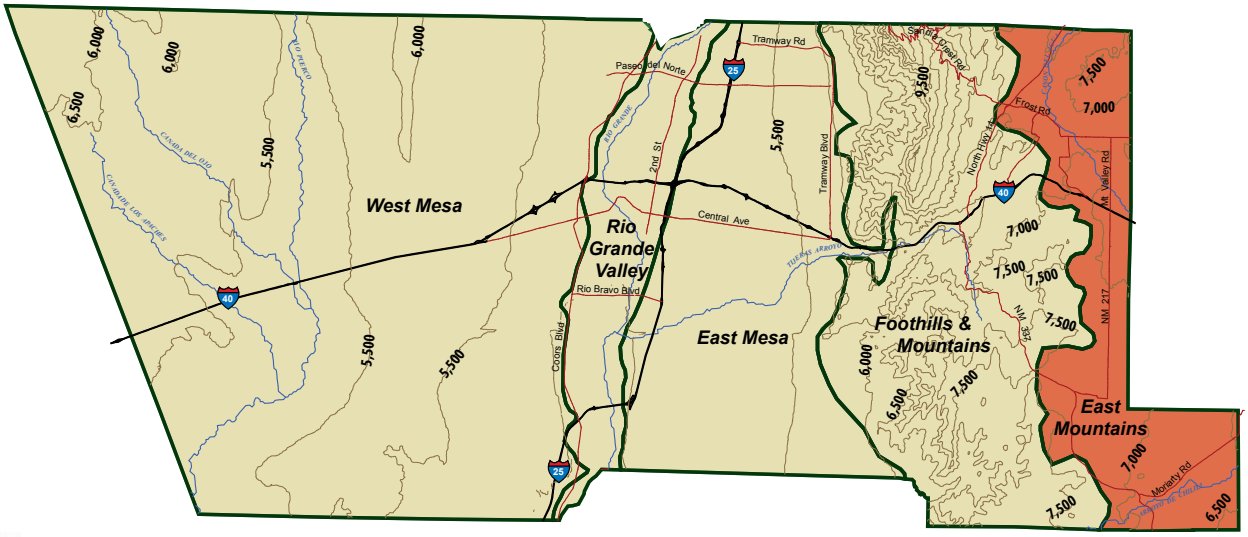
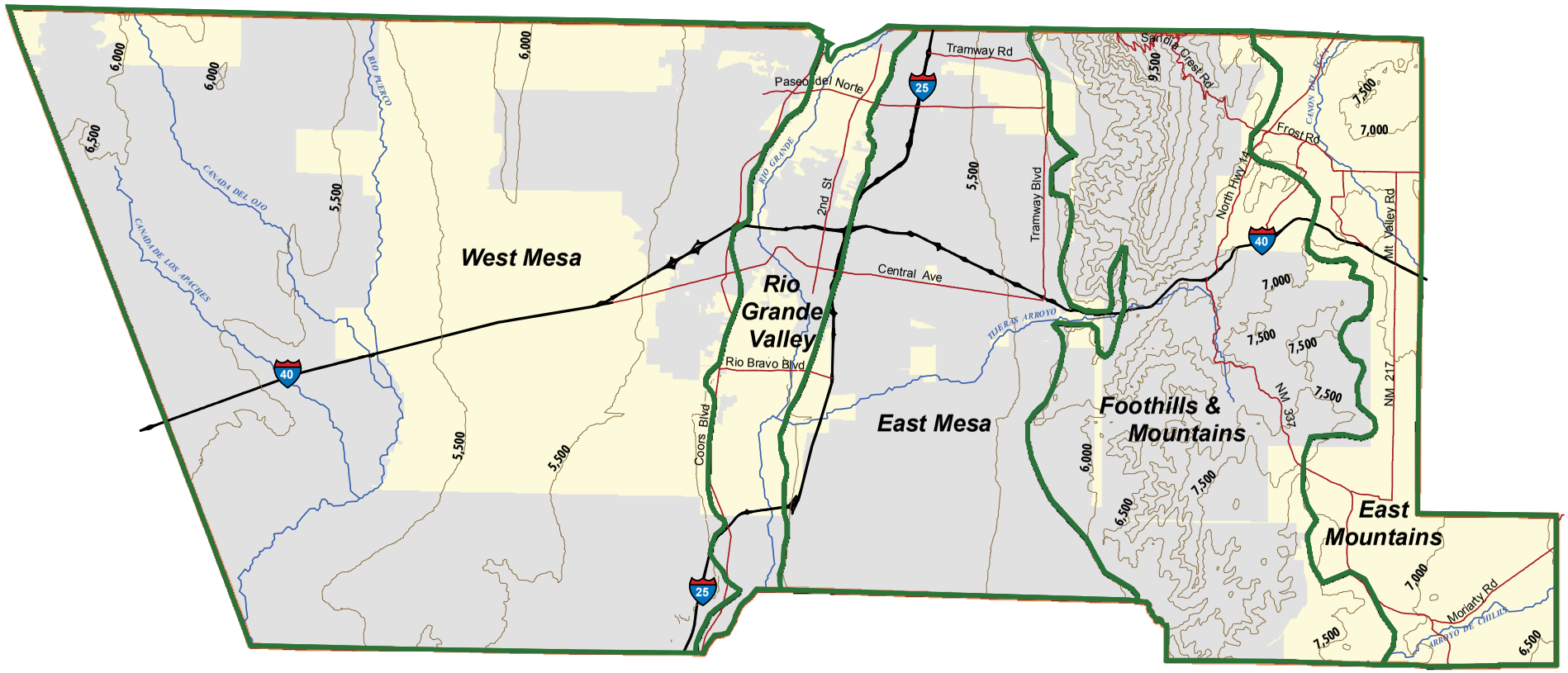



Figure 6. East Mountains Bioregion




Map 1. Bernalillo County Biozregions

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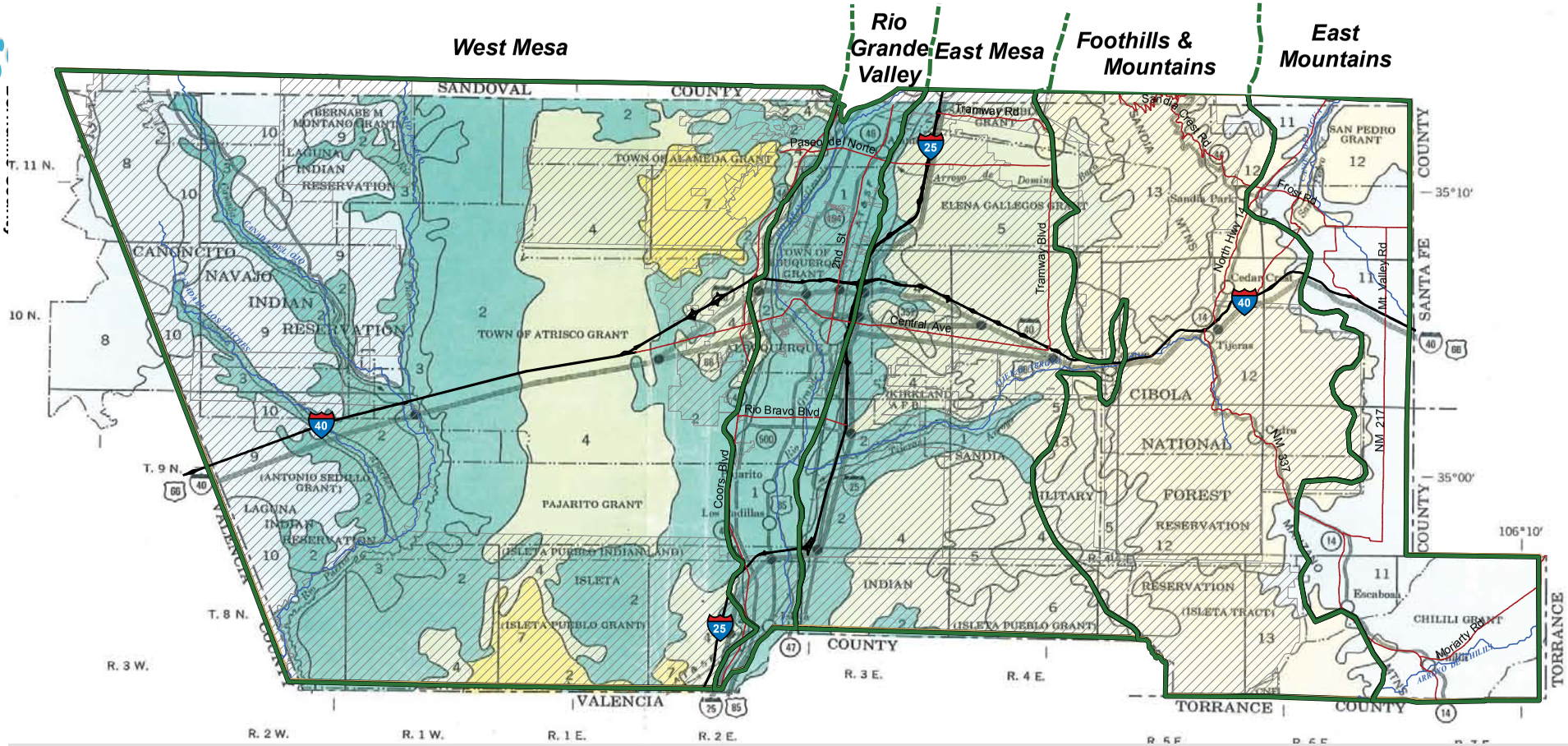


Map 2 produced by the Natural Resources Conservation Service, shows the major soils in the areas as illustrated by the different colors. Average annual precipitation as presented by: (Precipitation: 'precip_a_nm.shp', New Mexico Resource GIS Program, University of New Mexico, originator: Chris Daly of Oregon State University and George Taylor of the Oregon Climate Service at Oregon State University, http://rgisedac.unm.edu/climate/nmprecipshp.zip; 1998) is depicted on Map 3.Vegetation commonly found in the five Bioregions is shown in Map 4, this information came from (Vegetation: 'veg0001.shp', New Mexico Resource GIS Program, University of New Mexico, http://rgisedac.unm.edu/vegetaion/veg1shp.zip; 1997).

# Map 2. Bernalillo County Soils

**SOIL ASSOCIATIONS***

**DEEP SOILS ON FLOOD PLAINS AND DISSECTED TERRACES**

1. Gila-Vinton-Brazito association; Level or nearly level, well drained loamy soils mainly on the flood plain along the Rio Grande
2. Bluepoint-Kokan association: Nearly level to steep, somewhat excessively drained or excessively drained sandy and gravelly soils on dissected terraces and alluvial fans
3. Hantz-Gila association: Level or nearly level, well drained loamy soils mainly on the flood plain along the Rio Puerco

**DEEP SOILS ON ALLUVIAL FANS, MESAS, AND PIEDMONTS**

4. Madurez-Wink association: Level to moderately sloping, well drained loamy soils on piedmonts
5. Tijeras-Embudo association: Level to moderately sloping, well drained loamy and gravelly soils on alluvial fans
6. Latene-Nickel association: Nearly level to moderately steep, well drained loamy and gravelly soils on mesas and fans

**MODERATELY DEEP OR SHALLOW SOILS ON BASALT FLOWS**

7. Alameda-Akela association: Level to gently rolling, well drained loamy and cobbly soils

**VERY SHALLOW TO DEEP SOILS oIN UPLANDS**

8. Penistaja-Travessilla-Bond association: Deep to very shallow, nearly level to strongly sloping, well drained loamy soils over sandstone
9. Penistaja-Otero association: Deep, nearly level to moderately sloping, well drained loamy soils underlain in places by sandstone
10. Shingle-Kim association: Deep to very shallow, level to gently rolling, well drained loamy soils over shale and sandstone
11. Silver-Witt-Laporte association: Deep to very shallow, level to moderately steep, well drained loamy soils underlain in places by limestone

**SHALLOW TO DEEP SOILS ON MOUNTAINS AND FOOT SLOPES**

12. Seis-Orthids association: Shallow or moderately deep, level to very steep, well drained, very cobbly, stony, and very stony loamy soils
13. Kolob-Rock outcrop association: Deep, moderately steep to very steep, well drained loamy and stony soils and Rock outcrop

*Terms for texture in the titles of associations refer to the texture of the surface layer of the major soils in the associations.

**Legend**

- Bioregion Boundary
- Non - County Lands

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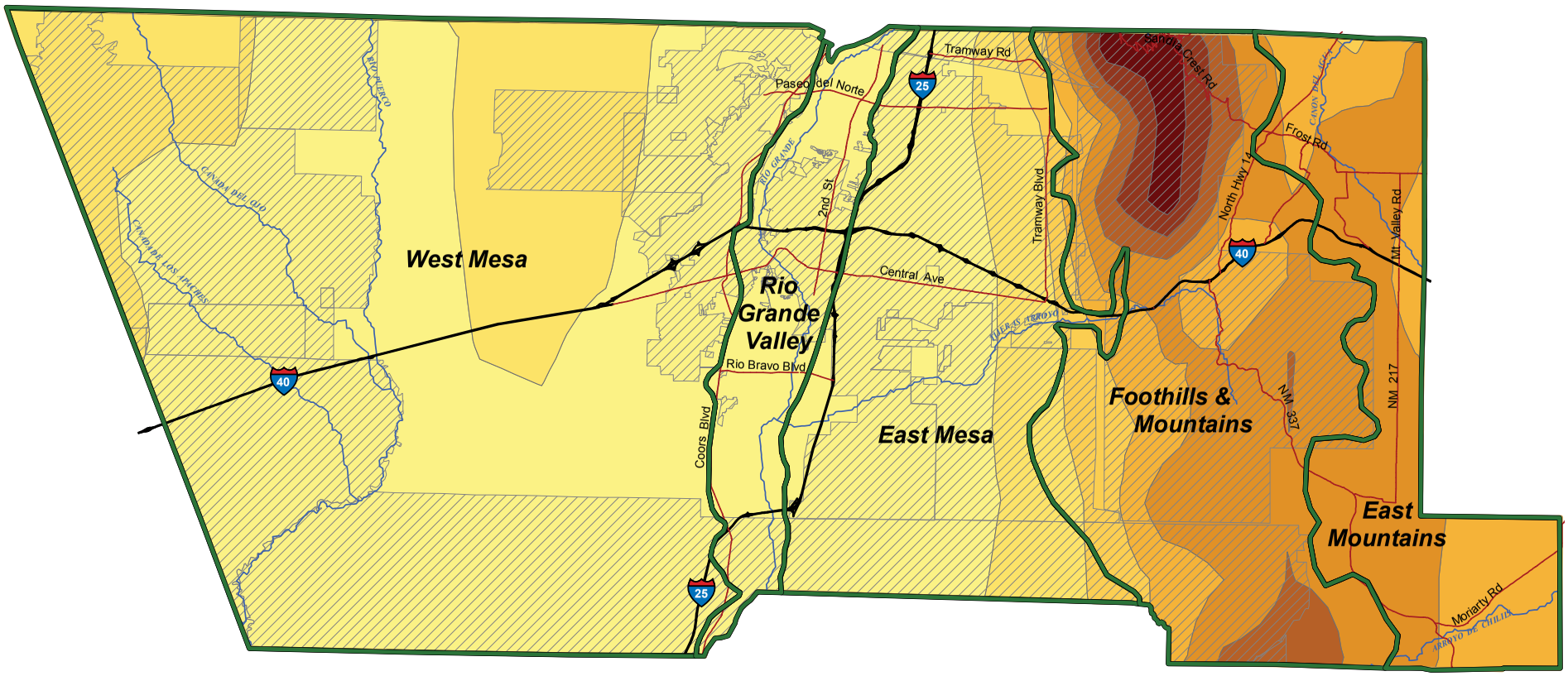


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## Map 3. Bernalillo County Precipitation with Bioregions

**Legend**

- Bioregion Boundary
- Non - County Lands
- Less than 9 inches
- 9 - 11 inches
- 11 - 13 inches
- 13 - 15 inches
- 15 - 17 inches
- 17 - 19 inches
- 19 - 21 inches
- 21 - 23 inches

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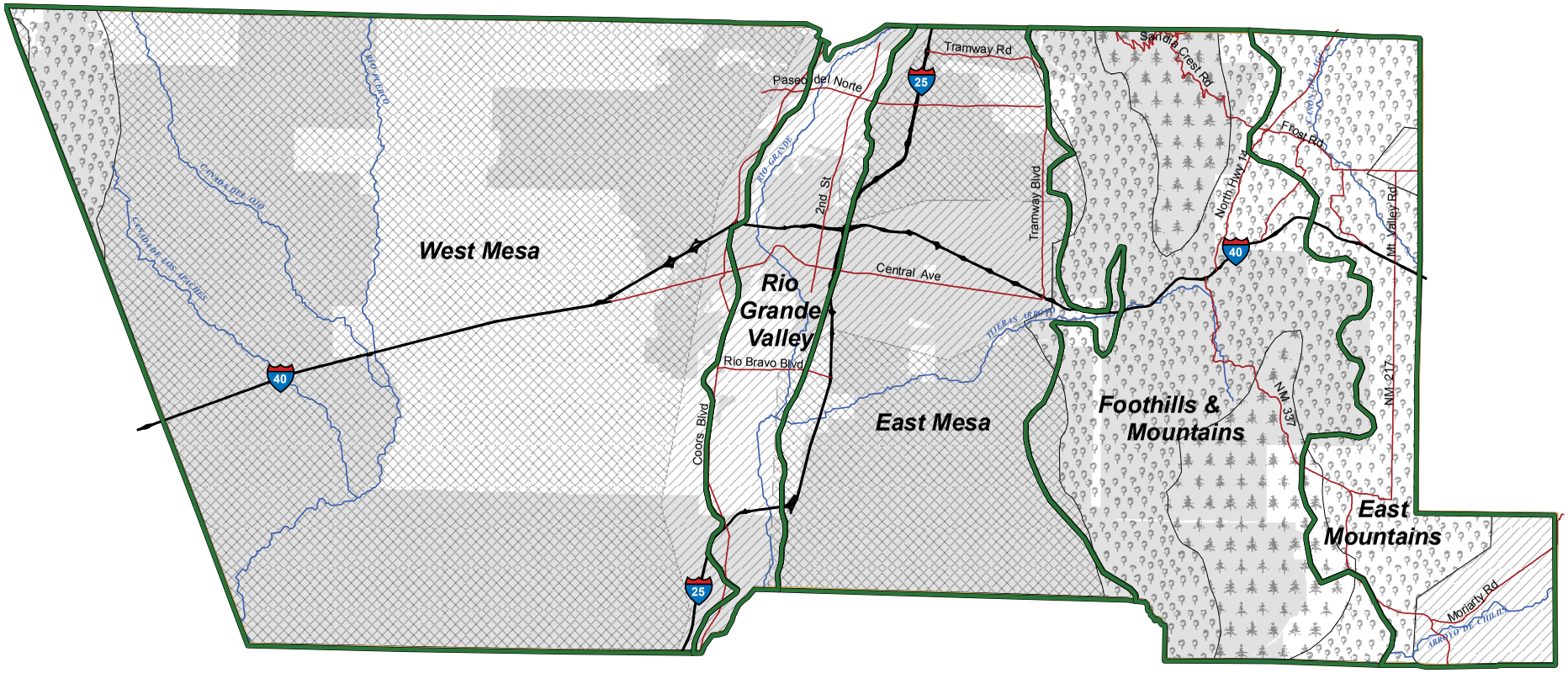


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## Map 4. Bernalillo County Vegetation Map with Bioregions

**Legend**

- Bioregion Boundary
- Non - County Lands
- Montane or Sub-Alpine Coniferous Forest
- Urban, Farmland or Open Water
- Coniferous and Mixed Woodland / Montane Scrub / Juniper Savanna
- Desert Grassland / Great Basin Desert Scrub / Plains-Mesa Sand Scrub

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## D. Glossary

**100-YEAR DESIGN STORM.** That storm whose precipitation within a six-hour period and resulting runoff has a one percent chance of being equaled or exceeded in any given year. A special condition may require/allow use of storms of longer duration.

**ALBUQUERQUE BERNALILLO COUNTY WATER UTILITY AUTHORITY. (ABCWUA).** The Albuquerque Bernalillo County Water Utility Authority or its authorized agent. It includes the water and wastewater facilities and all operations and management of such facilities necessary to provide water and wastewater service.

**AMAFCA.** The Albuquerque Metropolitan Arroyo Flood Control Authority.

**ATHLETIC FIELD**. Turf area which is used to hold athletic events or practices. Parks that have substantial areas used for athletic events or practices will be considered Athletic Fields.

**BMP.** Best management practice. Best management practices are schedules of activities, prohibitions or practices, maintenance procedures and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control runoff, spillage or leaks, sludge or waste disposal or drainage from raw material storage. With regard to construction these practices may include structural devices or nonstructural practices that are designed to prevent pollutants from entering water or to direct the flow of water.

**BUBBLERS**. Irrigation heads which deliver water directly to the soil adjacent to the heads.

**CHANNEL STABILITY.** A condition in which a channel neither degrades to the degree that structures, utilities or private property are endangered, nor aggrades to the degree that flow capacity is significantly diminished as a result of one or more storm runoff events or moves laterally to the degree that adjacent property is endangered.

**CHANNEL**. Any arroyo, stream, swale, ditch, diversion or watercourse that conveys storm runoff, including manmade facilities.

**CITY.** The City of Albuquerque.

**COMPREHENSIVE PLAN.** The Albuquerque/Bernalillo County Comprehensive Plan and amendments thereto.

**CONCEPTUAL GRADING AND DRAINAGE PLAN.** A plan prepared in graphical format showing existing and proposed grading, drainage, control, flood control and erosion control information in sufficient detail to determine project feasibility.

**COUNTY ENGINEER.** The engineering manager of the engineering division of the County Public Works division or his designee.

**DESIGN STORM**. A storm which deposits a stated amount of precipitation within a stated period over a defined area and which is used in calculating storm runoff and in designing drainage control, flood control and erosion control measures.

**DETENTION POND.** (see also water catchment basin and retention pond). Refers to a depressed area or basin that has been constructed for the purpose of holding stormwater on a site for a period of time and then releasing it into a conveyance system to where it can be used or returned to the river. The length of time and size of the basin is subject to regulations set forth by the Office of the State Engineer and the Department of Environmental Health.

**DEVELOPED LAND.** Any lot or parcel of land occupied by any structure intended for human occupation, including structures intended for commercial enterprise.

**DEVELOPER.** Any individual, estate, trust, receiver, cooperative association, club, corporation, company, firm, partnership, joint venture, syndicate or other entity engaging in the platting, subdivision, filling, grading, excavating or construction of structures or facilities.

**DOWNSTREAM CAPACITY.** The ability of downstream major facilities to accept and safely convey runoff generated upstream from the 100-year design storm.

**DRAINAGE COVENANT.** A legal document executed between a real property owner and the county and, in general, identifies, addresses and defines a drainage facility or facilities, maintenance, county's right of entry, demand for removal or repair, failure to perform by owner and emergency work by county, liability of county, indemnification, cancellation of agreement and release of covenant, assessments, notification, term, binding of property, changes and severability. The drainage covenant shall be in a form provided by the county.

**DRAINAGE MAINTENANCE.** The cleaning, shaping, grading, repair and minor replacement of drainage, flood control and erosion control facilities, but not including the cost of power consumed in the normal operation of pump stations.

**DRAINAGE MANAGEMENT OR TREATMENT.** The treatment and/or management of surface runoff from all storms up to and including a ten-year design storm.

**DRAINAGE MANAGEMENT PLAN.** A plan prepared and adopted by the county, city or AMAFCA which details the drainage controls required within a particular watershed, arroyo corridor or other designated drainage district. The drainage management plan shall comply with an arroyo corridor plan if one has been adopted.

**DRAINAGE PLAN.** A short, detailed plan prepared in graphical format with or on a detailed grading plan addressing onsite and off-site drainage control, flood control and erosion control issues for lots or parcels of less than five acres.

**DRAINAGE REPORT.** A comprehensive analysis of the drainage; flood control and erosion control constraints on and impact resulting from a proposed platting, development or construction project.

**DRAINAGE RIGHT-OF-WAY.** A public right-of-way acquired whether in fee or in easement, by the city, county, AMAFCA, the MRGCD, or the state for the primary purpose of handling storm drainage.

**DRAINAGE**. Storm drainage.

**DRIP IRRIGATION.** Low pressure, low volume irrigation applied slowly, near or at ground level to minimize runoff and loss to evaporation.

**DROUGHT STATUS.** Level of drought as defined by the New Mexico Drought Monitoring Committee. Four drought levels include; Drought Advisory, Drought Watch, Drought Warning, and Drought Emergency.
(1) Drought Advisory
(2) Drought Watch
(3) Drought Warning
(4) Drought Emergency

**DROUGHT.** An extended period of low precipitation in an area which occurs in sufficient length or magnitude to cause water shortages and/or crop damage.

**ENERGY STAR.** A United States government-backed program that provides an energy performance rating system for household appliances. Appliances with the Energy Star label attached have met energy efficiency guidelines set by the United States Environmental Protection Agency and the United States Department of Energy.

**EPA.** United States Environmental Protection Agency.

**EROSION CONTROL PLAN.** A plan for the mitigation of damages due to soil erosion and to deposition.

**EROSION CONTROL.** Treatment measures for the prevention of damages due to soil movement and to deposition.

**FLOOD CONTROL.** The treatment measures necessary to protect life and property from the 100-year design storm runoff.

**FLOOD HAZARD AREA.** An area subject to inundation from the 100-year design storm runoff.

**FLOODWAY.** The channel of a river, arroyo or other watercourse and adjacent land areas that must be reserved in order to safely discharge the 100-year design storm runoff.

**FUGITIVE WATER.** The flow or release of any water from any activity or process onto adjacent property or the public right-of-way. Fugitive water does not include runoff from natural precipitation.

**FULLY DEVELOPED WATERSHED.** A hydrologic condition in which all areas upstream and downstream of a point in question are assumed completely developed, including any undeveloped areas which are assumed to be developed in accordance with mid-range development densities as established by the comprehensive plan, appropriate area plans or sector plans, adopted facilities master plans and the hydraulic and hydrologic standards established by this article.

**GRADING PLAN.** A plan describing the existing topography and proposed grading, including retaining wall locations and details, interfaces with adjacent properties, streets, alleys and channels, referenced to mean sea level (1929 or 1988 datum) such as city benchmark or NMSHTD benchmark, and showing sufficient contours, spot elevations and cross sections to allow a clear understanding by reviewers, contractors and inspectors.

**GRAYWATER.** Wastewater from bathroom sinks, bathtubs, showers , and laundry which is not used to wash diapers or other similarly soiled or infectious garments.

**HAND WATERING.** The application of water for irrigation purposes through a hand held hose, including hoses moved into position by hand and left to flow freely or through a shut-off nozzle.

**HIGH EFFICIENCY TOILET.** A toilet fixture that flushes a maximum volume of 1.3 gallons (4.9 Liters) per flush or less and meets minimum performance standards from a list approved by Bernalillo County. High Efficiency Toilets may include dual-flush toilets. Dual Flush toilets must not exceed 1.1 gallons (4.2 Liters)per flush for liquids and 1.6 gallons (6.0 Liters) per flush for solids.

**HIGH-WATER-USE PLANTS.** Plants that are classified as high-water-use on a list approved by Bernalillo County.

**HIGH-WATER-USE TURF.** Turf grass that is classified as high-water-use on a list approved by Bernalillo County.

**INFILTRATION RATE.** The amount of water absorbed by the soil per unit of time, usually expressed in inches per hour.

**LANDSCAPE AREA.** The entire parcel minus any undisturbed un-irrigated natural areas, building footprints, driveways, non-irrigated portions of parking lots, decks, patios or other non-porous areas.

**LOW IMPACT DEVELOPMENT.** A planning and design approach to development that emphasizes the integration of site design and planning techniques that conserve natural systems and hydrologic functions with a goal of maintaining the natural hydrologic characteristics of developing watersheds. Many of the approaches involve individual site design for stormwater management to prevent runoff where it can be used to supplement landscape irrigation requirements, improve water quality and recharge groundwater supplies.

**LOW-WATER-USE PLANTS.** Plants that are classified as low-water-use on a list approved by Bernalillo County.

**MAJOR ARROYO.** Any channel whose watershed exceeds 320 acres in a 100-year design storm, whether such watershed is in its natural or unaltered state or has been altered by development, runoff diversions or detention facilities.

**MAJOR FACILITY.** Any facility, including a street or alley, which would collect, divert or convey a peak discharge of more than 50 cubic feet per second (50 cfs) or store two acre-feet or more of runoff in the event of a 100-year design storm.

**MASTER PLANNED FACILITY.** Any drainage control, flood control or erosion control facility recommended in the Albuquerque Master Drainage Plan (1981), amendments thereto, or any voter approved general obligation bond financed drainage control, flood control or erosion control facility.

**MEDIUM-WATER-USE PLANTS.** Plants that are classified as medium-water-use on a list approved by Bernalillo County.

**MINOR FACILITY.** Any facility which would collect, divert or convey a peak discharge of 50 cubic feet per second (50 cfs) or less, or store less than two acre-feet of runoff in the event of the 100-year design storm.

**MRGCD.** The Middle Rio Grande Conservancy District.

**MULTIPLE USE FACILITY.** A drainage control, flood control or erosion control facility in which other secondary uses are planned or allowed including, but not limited to, recreation, open space, transportation and utility location.

**NEW DEVELOPMENT.** Any subdivision application or building permit issued for new construction. New Development does not include additions to existing single family residential buildings. A stand-alone structure with water and waste water service is considered New Development.

**NEWLY SEEDED.** Seed planted in a prepared area with the intent of establishing a turf area.

**NPDES PHASE II.** National Pollution Discharge Elimination System, Phase II.

**NUISANCE WATERS.** Those waters leaving a site and entering a public street, which do not result from precipitation, such as landscape overwatering or car washing.

**PARK.** An area of land set aside for public use including permanently maintained cemeteries.

**PROJECT DESIGN SWALE (DRAINAGE DITCH, BORROW DITCH OR BAR DITCH).** A swale or ditch parallel to the driving surface to convey stormwater runoff from the street right-of-way.

**PRUDENT LINE (EROSION LIMIT LINE).** That line which will not be disturbed by erosion, scour or meandering of a natural (unlined) arroyo, channel or watercourse over a period of 30 years and which will not be disturbed by a 100-year storm occurring at any time during the 30-year period. The prudent line shall be so located as to include all freeboard required to contain the wave action of the 100-year design storm.

**PUBLIC RIGHT-OF-WAY.** The area of land acquired or obtained by the city, county, or state primarily for the use of the public for the movement of people, goods, vehicles, or stormwater. For the purposes of this ordinance the public right-of-way shall include sidewalks, curbs, streets, and stormwater drainage inlets.

**RESPONSIBLE PARTY.** The owner, tenant, manager, supervisor, or person in charge of the property, facility, or operation during the period of time the violation(s) is observed.

**RESTRICTED PLANTS.** Plants that are classified as restricted on a list approved by Bernalillo County.

**RETENTION POND.** (See also water catchment basin and detention pond). Refers to a depressed area or basin that has been constructed for the purpose of holding stormwater on a site until it infiltrates. The length of time and size of the basin is subject to regulations set forth by the NM Office of the State Engineer and the NM Department of Environmental Health.

**RUNOFF.** Precipitation, snowmelt, or irrigation water that is not absorbed by the soil and moves across ground surfaces.

**SPRAY IRRIGATION.** The application of water to landscaping by means of a device that projects water through the air in the form of small particles or droplets.

**STORM DRAINAGE SYSTEM.** Arroyos, storm drains, roadways, culverts, bar ditches, ponds, pump stations, dams, detention ponds, retention ponds, inlets and appurtenant structures and other facilities which convey stormwater.

**STORMWATER POLLUTION PREVENTION PLAN.** The information and program required by EPA, NMED and/or the county for construction phase stormwater management.

**STORMWATER QUALITY CONTROL.** The treatment methods necessary to protect and enhance the quality of stormwater.

**STORMWATER.** Stormwater runoff, which is flow on the surface or in the subsurface that percolates from the ground resulting from precipitation.

**TEMPORARY DRAINAGE FACILITY.** A nonpermanent drainage control, flood control or erosion control facility constructed as part of a phased project or to serve until such time that a permanent facility is in place including, but not limited to, desilting ponds, berms, diversions, channels, detention ponds, retention ponds, bank protection and channel stabilization measures.

**TEN-YEAR DESIGN STORM.** That storm whose precipitation within a six-hour period and resulting runoff has a ten percent chance of being equaled or exceeded in any given year. A special condition may require/allow use of storms of longer duration.

**URBANIZED AREA.** That area identified in the most current US Census as having a population in excess of 50,000 persons, or a density of 1,000 persons per acre or greater.

**WATER UTILITY AUTHORITY CUSTOMER.** Any person, association, corporation or other entity receiving Albuquerque Bernalillo County Water Utility Authority water service.

**WATER WASTE.** The nonbeneficial use of water. Nonbeneficial uses include but are not restricted to:

1. Landscape irrigation water applied in such a manner, rate and/or quantity that it causes runoff onto adjacent property or public right-of-way;
2. Landscape irrigation water which leaves a sprinkler, sprinkler system, or other application device in such a manner or direction as to spray onto adjacent property or public right-of-way;
3. Water provided through the Middle Rio Grande Conservancy District or community acequia systems for irrigation purposes applied in such a manner, rate and/or quantity that it overflows the area being watered and runs onto adjacent property or public right-of-way.

**WATERCOURSE.** Any river, creek, arroyo, canyon, draw or wash or any other channel having definite banks and bed with visible evidence of the occasional flow of water.

**ZONING ADMINISTRATOR.** The official designated to enforce the County Comprehensive Zoning Ordinance, as may be amended from time to time.

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