REFERENCES

For more detailed information on water data see the following reports:

- Brown John R., Nancy Carrillo and Hank Jenkins-Smith, "*Attitudes and Preferences of Residents of the Middle Rio Grande Water Planning Region Regarding Water Issues - Summary Report to the Action Committee of the Middle Rio Grande Water Assembly and the Middle Rio Grande Council of Governments*," UNM Institute for Public Policy, University of New Mexico, June 2000, http://www.unm.edu/~instpp/e_hold/MRG_Water_Issues.pdf.
- *Framework For Public Input To A State Water Plan*; Prepared By The New Mexico Office Of The State Engineer And The Interstate Stream Commission; December 2002
- Grissino-Mayer, H. "*A 2129-year Reconstruction of Precipitation for Northwestern New Mexico, USA*." Tree Rings, Environment and Humanity., Eds. J.S. Dean, D.M. Meko and T.W. Swetnam Radiocarbon: Tucson, AZ. 1996. 191-204.
- McAda, D.P. and Peggy Barroll. *Simulation of Ground-water Flow in the Middle Río Grande Basin Between Cochiti and San Acacia, New Mexico.* U.S. Geological Survey Water-Resources Investigations Report 02-4200, 2002.
- *Middle Río Grande Water Supply Study*, S.S. Papadopulos & Associates, Inc., Boulder, Colorado, August 4, 2000
- Shomaker et al, *Historical And Current Water Use In The Middle Río Grande Region* (June 2000)
- Wilson, Brian, C., et al, *Water Use by Categories in New Mexico Counties and River Basins, and Irrigated Acreage in 2000*, New Mexico State Engineer Office, Technical Report 51, Feb 2003, Santa Fe, NM.
- Stephens, Daniel B. & Associates. *Assessment of Regional Water Quality Issues and Impacts to the Water Supply*. Prepared for Mid-Region Council of Governments, Albuquerque, New Mexico,
- Within the Middle Rio Grande Water Planning Region, a variety of federal, state, county, and tribal laws and regulations govern the use of water. An overview of each of these areas of law, necessary in understanding the water planning efforts, can be found in "*Overview of Water Law Applicable to The Middle Rio Grande Water Planning Region*," and , "*Issues Specific to The Middle Rio Grande Water Planning Region,*" Susan C. Kery, John W. Utton, Peter C. Chestnut, Sue E. Umshler, January, 2003, available either at www.waterassembly.org or from the Mid-Region Council of Governments.
- Judicial determination of rights are made pursuant to §72- 4-17 NMSA 1978 Comp. The Jemez adjudication is *United States, et al. v. Abousleman, et al; Jemez River Adjudication*, United States District Court CIV. NO. 83-1041 JC. The NMOSE's publication, "What is an adjudication?", is available from their office or web site <www.ose.state.nm.us>.

FURTHER INFORMATION

The reports and analyses prepared during the planning process, as well as the entire plan is available on line at www.WaterAssembly.org, or at cost from Mid-Region Council of Governments at 247-1750 or from Cuba Soil & Water Conservation District, P.O. Box 250, Cuba, New Mexico 87013. Project Contacts: Peggy Ohler at 289-3950 or Elaine Hebard at 247-8767.

Thanks to the Steering Committee members, and special thanks to Elaine Hebard, Judith Isaacs, Jennifer Johnson, Charlotte Mitchell, Peggy Ohler and Steve Lucero.

Río Puerco y Río Jemez Sub-Regional Water Plan 2000-2050

Synopsis of the Plan

- what is regional water planning?
- what have we learned?
- what is our water picture?
- what are the issues?
- what are our values?
- what is the plan?
- what are our recommendations?

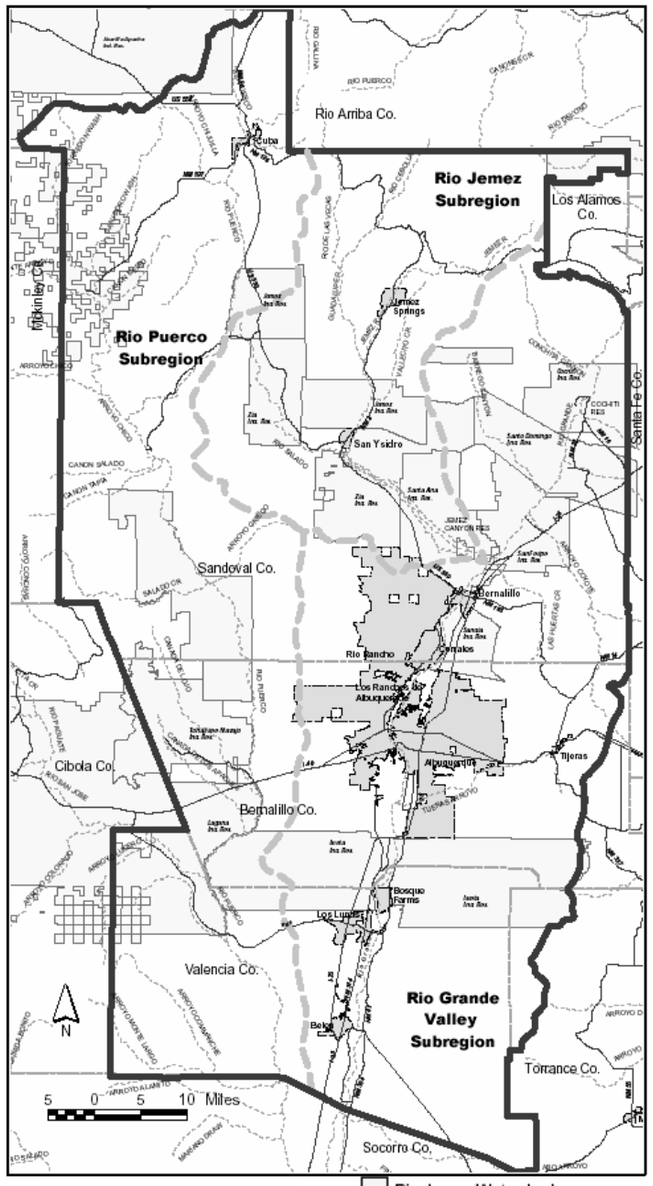
Plan's Mission:

The residents of the Río Puerco y Río Jemez Sub-watersheds promote a sustainable balance between the availability and use of water, promote healthy watersheds, and promote retention of a rural lifestyle to benefit local communities and residents.

THE KEY FACT ABOUT OUR WATER— DEMAND EXCEEDS SUPPLY
OSE 's *Framework, 2002*

The Río Puerco y Río Jemez Subregional Water Plan is a part of the Middle Río Grande Regional Water Plan. The planning is being conducted by Steering Committees, with Cuba Soil & Water Conservation District acting as the fiscal agent.

December 2003



WHAT IS REGIONAL WATER PLANNING?

The regional water plan is to answer five questions:

1. What is the water supply available to the region?
2. What is the region's current and projected water demand ?
3. What alternatives are available to meet the projected demand with available supplies, including management alternatives to increase supply and reduction of demand via conservation or other measures?
4. What are the relative advantages and disadvantages of each alternative?
5. What is the selected set of alternatives that comprise the plan and how will those the alternatives be implemented?

OUR REGION

The Río Puerco and Río Jemez watersheds are part of the Middle Río Grande Region, which in turn is one of 16 water planning regions in New Mexico. We focused on the portions of the Río Puerco and Río Jemez watersheds located in Sandoval County.

Elevations range from over 11,000 ft. at the headwaters of the watersheds to 5,000 ft. at the respective confluences with the Rio Grande. Depending on the elevation, the average rainfall in the basin varies annually between about 10 to 20 inches, but recent drought has reduced that substantially. Surface water supports the region's industry, agriculture, commerce, environment and people, augmented with ground water.

Source: MRCOG.

• When considering aesthetic interests, the state engineer should strive to maintain and improve the agricultural and riparian greenbelts along the flowing waters and ditches in our communities.

• When considering recreational interests, low consumptive recreational uses should be encouraged.

• When considering municipal and domestic needs, the State Engineer should strive to sustain an adequate water supply to meet these needs. The State Engineer should connect water use decisions with local land use decisions.

ONGOING ACTIVITIES

Being added to the plan is a list of potential water projects, as well as examples of efforts underway. The latter provides a clearinghouse where information of successes and failures can be exchanged.

NEXT STEPS

Acceptance and Implementation: The Sub-Regional Water Plan is advisory, not a directive. The next steps are acceptance of the plan and implementation of the actions needed to meet the mission and goals of the plan. This may include increased public awareness and education, incentives, policies, publicity, ordinances, laws, regulations, taxes, water rights purchases, pricing, and other means of managing the consumptive use of water within the subregions. Additional studies and projects that could enhance water supplies may also be required.

Some suggestions:

• Improve Our Water Picture - data is either missing or not complete, making it difficult to answer regional water planning's five questions. In order to better protect our water for future users, a more complete and accurate picture needs to be produced.

• Establish Benchmarks - in order to monitor and perhaps adjust the plan in the future, better data is also needed to observe changes.

• Continue the Steering Committees, expanding them to include local government officials, domestic water associations, tribal members, acequia parciantes, environmental organizations, land use managers (especially Forest Service and Bureau of Land Management), teachers and students, and residents from all walks of live.

• Create subcommittees to carry out many of the tasks of the plan.

• Most of all, celebrate!

The plan is not static. As time goes on, the objectives and actions may change to fit the circumstances. Rather than being a mandate, the plan is the concept that a regional water plan is a manual. It can lay out a long-term process towards finding answers and improving solutions, while establishing a vision and context for the entire watershed. And, of course, each area, such as La Jara or Jemez Springs, may want to have its own water plan. Together, hopefully, they will ensure that the goals of the subregional water plan are met. The plan will not take away water rights, nor absolutely protect them. The public welfare statement and the goals will give the State Engineer guidance as to the community's desires.

of water rights. A strong decision-making process supports "public welfare". Public welfare is equal in importance to the other two statutory criteria (impairment and conservation). Transfers of water rights must be open to all affected stakeholders and use the best available science. The public will be better served if the process encourages negotiation, not litigation. The process must provide reasonable and timely notice to and allow participation by all parties. The process must avoid automatic (or exempt) transfers or permits made outside of public review. Wet water use must be consistent with the administrative transfer of water rights (Double and triple dipping should be avoided). The evaluation of transfer must consider both the positive and negative impacts of the transfer of water rights on both the area of origin as well as the area receiving the water rights.

Future Use of Our Water Resources Consistent With the Public Welfare

The "public welfare" requires that our use of the water resources be consistent with five guiding principles:

#1 - we respect the essential role of water in maintaining our spiritual and cultural values;

#2 - we maintain and improve the health of our region's water resources; i.e., the greatest benefit to water users in the watershed is to slow the rate of flow and keep as much water up here (in the mountains) and within the watersheds as we can;

#3 - we encourage conservation and discourage waste (e.g., impractical or unreasonable use);

#4 - we optimize the efficient use of our limited water resources in the context of restoring watersheds; and

#5 - we enhance a rural agricultural economy as opposed to urban growth.

The state engineer should consider the following competing water demands when evaluating new appropriations and transfers of water rights: including but not limited to health and safety concerns, economic interests, agricultural interests, environmental interests, social and cultural interests, aesthetic interests, recreational interests, and municipal and domestic interests.

• When considering health and safety concerns, the state engineer should strive to maintain and improve the quality of our water resources as a basic human right to safe drinking water.

• When considering economic interests, the state engineer should evaluate both the positive and negative impacts of the transfer of water rights on both the area of origin as well as the area receiving the water rights. Economic concerns should not be a primary consideration.

• When considering agricultural interests, the state engineer should strive to develop and maintain a vibrant and efficient agricultural ecosystem, recognizing that agriculture has economic, ecologic, historic, and cultural values.

• When considering environmental interests, the state engineer should maintain and improve ecosystem biodiversity. The state engineer should also consider instream flows as being essential for the region.

• When considering social & cultural interests, the state engineer should protect water uses which support the diversity of communities, cultures and traditions existing in our region. The promises contained in the Treaty of Guadalupe Hidalgo should be acknowledged and honored.

Our water use is constrained by physical and legal factors, not to mention cultural and religious. The arid climate is quite variable. Neighbors are entitled to their share. Downstream users may also be impacting water resources, particularly in the Río Jemez. Due to increases in demand within and without the basins, the subregions must take steps now to protect and conserve available water resources.

HOW IS OUR WATER MANAGED?

Two agencies, the Office of the State Engineer (OSE) and the Interstate Stream Commission (ISC), have the primary responsibility for managing our water. The New Mexico Environment Department (NMED) has lead supervision over water quality.

To administer the water, the Office of the State Engineer (OSE) issues a permit for the right to use a certain amount. These permits, or "water rights," are assigned a date, the priority of which governs administration. Pueblo water rights, not managed by the OSE, are paramount (have the most seniority), and have not been quantified, nor have the future needs and thus uses been quantified for tribal entities. Water rights in the Río Puerco, except for the Nacimiento Ditch, have not been adjudicated, while those in the Río Jemez, with the exception of federal and Pueblo rights, have. However, downstream on the Río Grande, such a judicial determination of water rights has not been done. Providing further constraints, a water shortage-sharing agreement for the Río Jemez is a delicate balance between users. Domestic well permits are issued by the OSE.

Water rights to all of the surface water have been issued – so new users have to acquire permits from existing users. Transfers of use or transfers from one point of diversion to another are regulated. The State Engineer has the authority to deny an application if it impairs other water rights holders, is contrary to conservation of water or is detrimental to the public welfare. A public welfare statement, a reflection of the public interest in the watershed, creates a mechanism to ensure that those things we value are not lost and those things that are needed for our future are protected.

The Río Grande Compact helps to ensure that water is shared by three states. The share of the Middle Río Grande, including the subregions, is governed by this agreement, which the ISC administers on behalf of New Mexico.

NMED, along with the US Environmental Protection Agency, monitors water quality for various users and uses. Water may be managed to benefit species listed as endangered due to human actions.

WHAT WE LEARNED AND ACCOMPLISHED

During the planning process, information was gathered and analyzed, and alternatives posed and recommended. In order to answer the supply question, the way water is used must be considered. And the way water is used is partly a function of the land itself, partly of the land uses and partly of the administrative functions overlaying it all. As such, an investigation to the extent practical was performed. Better information will provide a better basis for future decisions. To ensure that the alternatives reflect the visions and values of the residents, public involvement is key. Watershed planning and management is a cooperative effort by stakeholders, municipalities and government agencies to create a long-term management plan for water resources within the watershed.

Land Use

Land status governs water management regimes in place and potential for change. The Río Jemez watershed is approximately 1,017 square miles. The Río Puerco subregion extends from Sandoval County through Bernalillo County and into Valencia County, and has an area of approximately 2,119 square miles. The portion in Sandoval County is 22%.

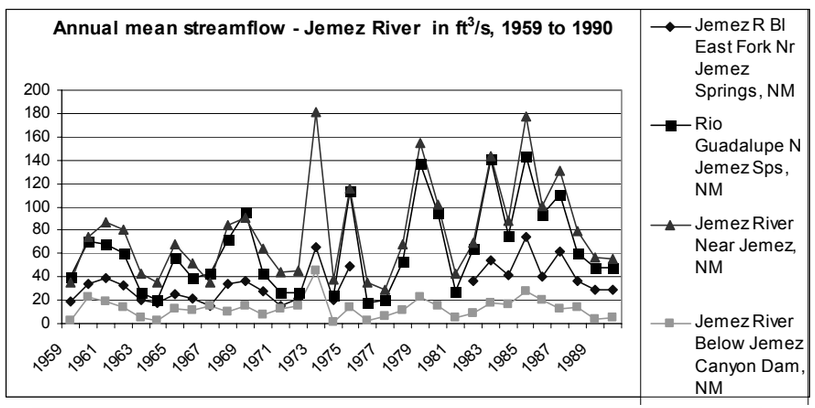
Río Jemez			**Río Puerco (In Sandoval County)**		
Ownership	Acres	Percentage	Ownership	Acres	Percentage
State Lands	7,027	1.05%	State Lands	43,848	5.16%
Tribal Lands	214,099	31.94%	Tribal Lands	150,130	17.65%
Private Lands	44,244	6.60%	Private Lands	257,161	30.23%
Bureau of Land Management	64,494	9.62%	Bureau of Land Management	335,990	39.50%
Forest Service	251,108	37.46%	Forest Service	63,460	7.46%
Valles Caldera Nat. Preserve	86,942	12.97%			
State Park	268	0.04%			
National Park Service	303	0.05%			
Dept. of Defense	1,809	0.27%			
Totals	**670,294**	**100.00%**		**850,589**	**100.00%**

Source: BLM (correspondence of 9/24/03 & 10/7/03)

In addition to recreation, land use on public lands includes logging and grazing by permittees. Land use on tribal lands and private lands include ranching, agriculture, residential and commercial uses. Given the data discrepancies, a better picture of how land is used is needed.

Water Supply

The Río Jemez contributes an average of 45,000 acre feet per year to the Río Grande, and the Río Puerco contributes an average of 30,000 acre feet per year. (Papadopulos) Surface water in both basins is limited. The Río Jemez has "no flow for many days" beneath the Jemez Canyon Dam, and the Río Puerco has, "no flow for many days," to, "no flow for extended periods,"



Annual mean streamflow - Puerco River Compilation, in ft³/s, 1959 to 1990
Source: USGS

- Protect agricultural lands from development
- Protect and improve the quality of the domestic supply of surface and ground water
- Provide for increased, consistent and sustainable sources of both domestic and agricultural water

Goal: Promote Conservation Of Water
- Develop water-wise residents and communities
- Increase efficiency of water use

Goal: Promote Education For Area Residents Regarding The Connection Between Land Use, Water And Environmental Health, And Ways To Conserve Water
- Create water conscious communities and assist future generations in learning about water
- Educate people (farmers and non-farmers) about the importance of land and water stewardship, and farming and ranching

Goal: Provide For Monitoring The Implementation Of The Water Plan
- Public participation in the water planning process and water management

Río Jemez y Río Puerco Public Welfare Statement

Public welfare must be considered by the State Engineer when making decisions concerning applications for transfer and new appropriations of water rights. A process of drafts and discussion was conducted by the Steering Committees in drafting a Public Welfare Statement for the subregion, culminating with receiving comments at the Open Houses.

Introduction

This public welfare statement is for the Río Jemez and Río Puerco watersheds, being subregions to the Middle Río Grande Regional Water Planning Region. It is part of our subregional water plan to provide guidance to the State Engineer in decisions concerning applications for transfer and new appropriations of water rights that affect the Río Jemez or the Río Puerco. This public welfare statement will accomplish its purpose if conflicts are reduced in the subregions, and if decisions reflect the long-term future needs of the subregions, rather than merely responding to immediate demands. This must not be a static, final statement, but an iterative and evolving declaration which is continuously monitored by the public to ensure that it accurately reflects the welfare of the public, always remembering that there are unknown users and perspectives concerning our water resources that will need to be given a voice in the future.

General Statement

Water has many important values to the people in our subregions which need to be appreciated and fairly balanced to ensure the overall safety, security and well-being for the subregions. Such values include cultural, spiritual, economic, environmental and hydrologic viability for the subregions. In times of scarcity, everyone must share the responsibility for living within the shortage. We recognize the current deficit situation and have a duty to balance water use with renewable supply, starting now and in the future. Decisions should be made so as to keep as many options as possible open for future generations.

Process

We believe the “public welfare” must be safeguarded by the State Engineer through active management of our limited water resources in the decision-making process used to evaluate new appropriations and transfer

will balance wild and cultivated lands that accommodate drought, fire, wildlife, and limited human populations.

Rural Communities Scenario - A Rural Community vision foresees a future for the Río Puerco watershed which reflects its unique prehistoric and historic, natural, cultural, and economic traditions. This vision takes advantage of modern innovation to accommodate a shift to an ethic that upholds respect for land, water, air, and all living things.

THE PLAN

Combined Río Puerco and Río Jemez Sub-Regional Scenario -Combinations of the alternative actions were then used to build scenarios. From various perspectives, scenarios were developed which included the mission, goals and top three alternatives. The scenarios were presented to the public at workshops in May 2003. From there, they were blended and refined by members of the Steering Committees.

Fifty Year Water Plan For The Río Puerco And Río Jemez Sub-Regions

Contains the mission, goals, objectives, potential actions, length of time, funding and policies, and benefits.

Goal: Restore And Manage The Watersheds On Public And Private Land To Enhance Water Retention And Quality And To Reduce The Threat Of Wildfire, And To Preserve Natural Systems Dependent On Water

- Restore a fire-adapted watershed
- Decrease soil erosion and increase water retention and infiltration
- Reduce, prevent and repair incising of arroyos
- Reduce, prevent, and repair habitat loss along streams, arroyos, and in wetland and riparian areas
- Increase the bio-diversity and production on public and private lands including wild and domestic species
- Provide, consistent and sustainable sources, and adequate distribution of rangeland water
- Maintain agriculture and ranching as part of the whole ecosystem
- Maintain the scenic and ecological conditions which attracted our ancestors and us to the area

Goal: Support The Cultural And Spiritual Values Of Water, And The Universal Need For And Importance Of Water

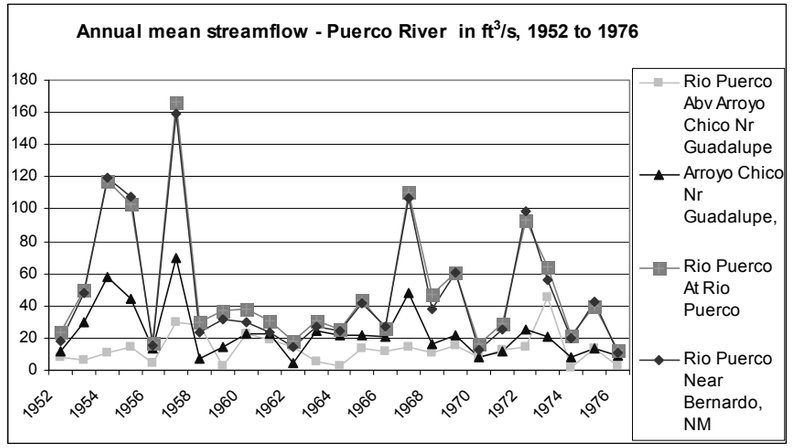
- Realize the spiritual benefits of ancient forests, free-flowing rivers, living deserts and the abundance of life flourishing in all these areas, aside from the economic benefits

Goal: Ensure Treaty, Water, And Acequia Rights To Preserve And Protect Local Agricultural Traditions

- Maintain the integrity of the traditional acequia systems that have existed for generations
- Promote agriculture and its beneficial use of water
- Increase efficiency of irrigation ditch systems
- Keep water with the land
- Promote respect for rural, tribal, farming, and ranching lifestyles

Goal: Retain Land Use Patterns That Support And Ensure A Rural Lifestyle And Economy

- Base regional growth, planning, and zoning on retaining the health of the entire ecosystem
- Develop a program that systematically fosters cooperation among various sectors of the sub-regions with water as a primary focus
- Create a sustainable economy that bolsters self-sufficiency of the sub-regional communities, and helps prevent loss of the agrarian lifestyle



along most of its length. (Shomaker) Temperature, rainfall and snowfall vary within Sandoval County, depending particularly with elevation. However, this amount varies considerably from year to year, as shown by the next two graphs - one for each watershed - compiled for the years when data was available for all gages.

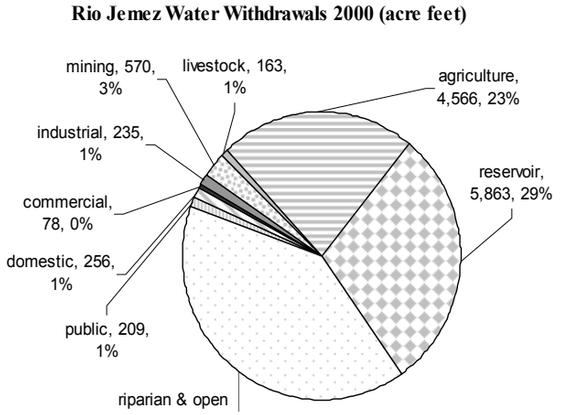
What is clear is that, like other watersheds in New Mexico, in the Río Jemez and Río Puerco there is a wide variation as to water supply. Shortages may result in a water priority call on the river. If New Mexico is unable to meet its Rio Grande Compact obligations, there will be a search for available water, as has occurred in the Pecos River Basin.

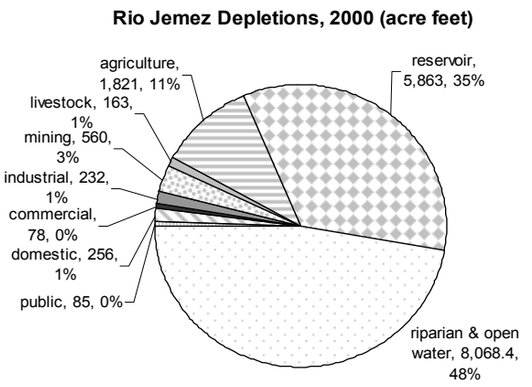
In addition to the variability of the climate under normal conditions, the region also regularly incurs drought conditions. In 2003, substantially less precipitation has been received than normal. For example, from October 2002 to September 2003, Jemez Springs received 65% of its average. Ultimately, a Drought Plan and a Conservation Plan are expected be included.

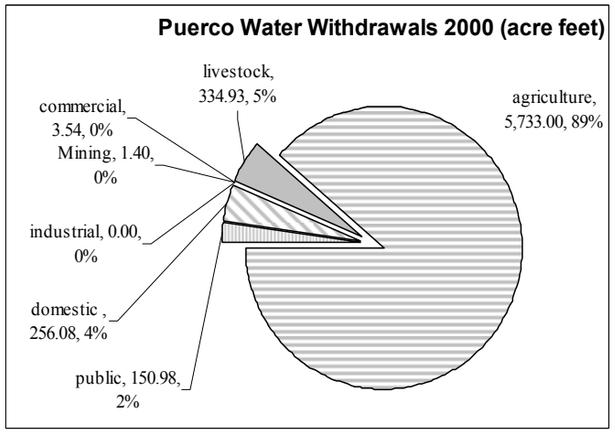
Water Use

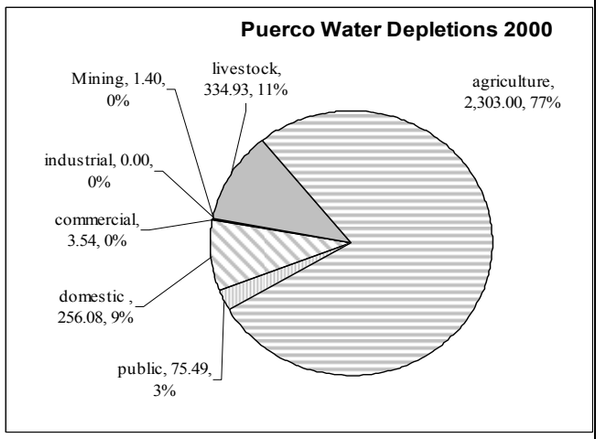
How water is used is in great part framed by how water has been used in the past as well as being a response to the topography and climate. Comparing supply with use, or demand, gives a water budget of inflows and outflows. The challenge here is the lack of specific data, making it difficult to reconcile supply and demand. Particularly lacking is data as to the water usages and needs of the watershed itself. In meeting after meeting, concerns were raised about springs drying up, about the number of trees in the forest, and about new users and uses in the watershed and downstream. Suggestions were made to restore the watershed, such as reducing the number of trees by logging or fire, so as to build back the "sponge." In turn, the watershed would be better able to supply the needs of those in its folds. Better information and understanding with respect to water usage will in turn provide better guidance to decision-makers.

Every five years, the OSE reports water usage in New Mexico. The two pairs of figures on the next page show withdrawals and depletions for each of the watersheds. Water withdrawn is that which is either diverted from its natural path in the surface-water system or pumped from wells. Some of this water may return to









Source: OSE, 2003

Acre Foot**:** The amount of water that will cover one acre to a depth of one foot– 325, 851 gallons.

either the surface-water or groundwater system, which is why depletions are a more accurate measure. Depletions or Consumptions are that part of a withdrawal that has been evaporated, transpired, or incorporated into crops or products, consumed by people or livestock, or otherwise removed from the water environment.

While the OSE does not report riparian usage, it was reported for the Río Jemez by the Bureau of Reclamation. Unknown is the amount consumed by riparian vegetation in the Río Puerco, though it is likely to be substantial.

(qualitative scenarios), and tables and figures incorporating numerical data, often generated by sophisticated computer models (quantitative scenarios).

Using the mission, goals and top alternatives, teams created scenarios reflecting an environmental view, an agricultural/ranching view, and a suburban view. The scenarios were then "converged" to become the framework for the subregional plan. The following vision statements were part of the scenarios presented at the May Workshops.

Río Jemez Vision Statements

Agricultural And Ranching- Agriculture and ranching are a part of the whole ecosystem. For us, they are both a part of our livelihood and of our culture. We highly value the rural nature of the region. Our group would like to see that agriculture and ranching continue to function as an integral part of our region. As stewards, we recognize the importance of nurturing the land and husbanding the water.

Environmental Perspective - The environmental vision reflects a shift in attitude from exploitation of the land to stewardship of forests, rangeland and riparian areas. Our children and their children will have the economic and spiritual benefits of ancient forests, free-flowing rivers, living deserts and the abundance of life flourishing in all these areas. The water plan preserves the greatest amount of biological diversity (domestic and wild) while restoring and maintaining a healthy ecosystem. The water plan protects local history and traditions and our land-based economy (including tourism). We envision keeping people on the land by integrating conservation and environmental issues with best management practices in forestry, ranching and agriculture

Exurban/Suburban/Development/Growth - In the next 5-10 years one can imagine a vision in which better-planned regional suburban growth occurs in the Jemez and Nacimiento mountain areas to the north of Albuquerque. This plan would try to encourage areas of higher density where there is the most water available, so that water rights need not be transferred. North of Rio Rancho, this growth would gently interact with the existing rural pueblo and ranching lifestyles allowing the area to maintain cultural and religious traditions as well as to maintain the environment. Education of newcomers and tourists will help to minimize conflicts. Water use will be coordinated among the various municipal water systems and the pueblos, and conservation practices (industrial, farming, ranching and domestic) will be mandatory.

Río Puerco Vision Statements

Agriculture & Ranching - The vision of the Cuba area's agricultural community is to perpetuate the area's historical, cultural, agricultural, economic and ecological values by becoming actively involved in strategic planning of natural resources, implementing adaptive, viable, effective, and sustainable management practices, rehabilitating farm and range lands, and reducing, and planning rotation of, fallow acres within the area. We envision preventing conversion of agricultural land to housing and, despite the increasing demand for water in urban areas, keeping water and agriculture in our area. We envision planning and implementing projects that will improve our lands and help to enhance and sustain the community's agrarian economy into the next century, serving as a role model to adjacent areas in their agrarian and ecological enhancement efforts, providing support to these efforts.

Natural Balance Scenario - People living within the watershed will understand and live within the natural constraints of climate, fire, soils, and biological communities. Everyone will benefit from a fire-adapted watershed with enhanced water retention and healthier forests, grasslands and watercourses. The landscape

lifestyle to benefit local communities and residents.

Non-Prioritized Goals

- Restore and manage the watersheds on public and private land to enhance water production, retention, and quality, to reduce the threat of wildfire, and to preserve natural systems dependent on water.
- Support the cultural and spiritual values of water, and the universal need for and importance of water.
- Ensure treaty, water and acequia rights to preserve and protect local agricultural traditions.
- Retain land use patterns that support and ensure a rural lifestyle and economy.
- Promote the conservation of water.
- Promote education for area residents regarding the connection between land use, water and environmental health, and ways to conserve water. These concepts should be incorporated into the curriculum of area schools.
- Provide for monitoring the implementation of the water plan.

Alternative Actions

At many public meetings and workshops across the region over the past four years, the general public developed suggestions to manage the regions' water, and prioritized them:

1. Protect Water Rights
2. Manage and Restore our Watersheds
3. Manage Growth and Land Use Together
4. Reduce Water Demand
5. Increase Water Storage Capacity in Rural Areas
6. Manage Drought
7. Reuse Wastewater (Gray)
8. Identify fire-fighting water
9. Prohibit sale of water from region
10. Implement Public Education Program
11. Install Domestic Supply Wells
12. Reduce Water Loss in Acequias
13. Capture Flood Flows
14. Use Surface and Groundwater in Combination
15. Remove Trace Elements From Water to Increase Supply

SCENARIOS AND VISIONS

Scenarios are descriptions of possible futures. They attempt to identify different assumptions about how current trends will unfold, how critical actions may play out, and what additional factors may come into play. While scenarios do not predict, they may paint pictures of possible futures, and explore the differing outcomes that might result if basic assumptions are changed. They form an appropriate tool for analyzing how driving forces may influence the future, and in assessing the associated uncertainties. The role of policy choices in shaping the future is highlighted wherever possible. Using the alternative actions, scenarios can be told in many ways. The two most common methods used in scenario analysis are descriptive, written narratives

Noteworthy is the household water usage, sometimes approximately 40 gallons per capita per day. When compared to the per capita usage in urban areas, upwards of 175 gpcpd, it provides a platform when considering conservation.

Furthermore, no category exists for cultural and spiritual water usage. One goal of the two watersheds is to "support the cultural and spiritual values of water, and the universal need for and importance of water." Other participants felt strongly that the river had a right to have water. No data is included as to the value of recreation, such as fishing, but certainly in some locales that is an important activity.

Water Use Arrangements

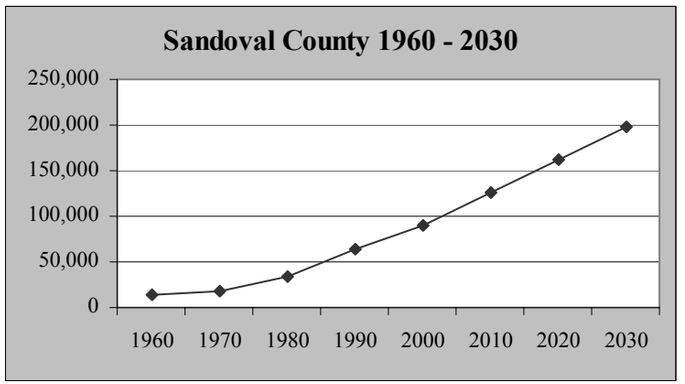
Found in the main text is a brief discussion highlighting issues of Tribal, Acequias, Treaty of Guadalupe Hidalgo and Adjudications. As noted above, part of the region has been adjudicated. During the process, much education and learning about history and each other took place, bringing the irrigators together. Together, they could see that actions needed to be taken to improve the situation so that downstream irrigators and Pueblo members had water. Not only did they agree in writing to "take steps to improve the efficiency of their diversion and irrigation systems, to work together to seek funding necessary to implement improvements, and to address the need for a storage facility (ies)," they have taken subsequent steps in fulfillment. One tangible result is the joint lobbying effort, receipt of $1.2 million and a list of projects (*Río Jemez (Abousleman) Indian Water Rights Settlement Proposal For Investigation,* February 12, 2001,).

There are numerous water use strictures to be found, often in connection with land use. One perhaps often overlooked entails water quality standards. The designated uses of a given reach of stream has may well influence present activities and regulations.

Population

Population statistics play an important part in water planning. People use water in a variety of ways, most of which change the water usage from a primal state. Until fairly recently land use in the region depended solely on surface water. Surface water users are sensitive to drought conditions, and must temper usage accordingly.

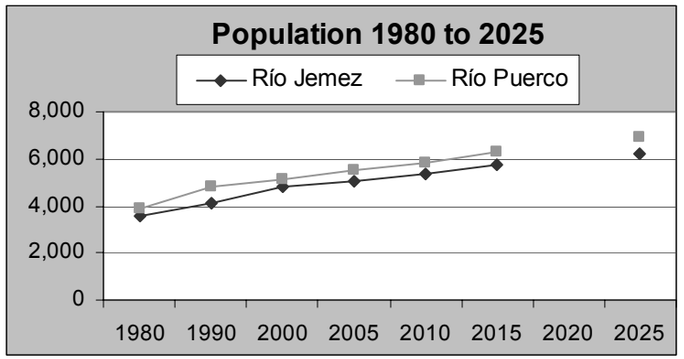
Except with domestic wells, in order to pump groundwater, since the pumping affects the surface water supply, groundwater users have to obtain existing surface water rights. The rationale is that the surface water will replenish the water being removed. For example, Rio Rancho relies on groundwater for its public water supply and Intel relies on groundwater for its industrial processes. Since all of the surface water has been allocated, surface water rights will have to come from other users and perhaps for elsewhere to meet additional needs. Population



Source: US Census Data; projections by UNM BBER

growth and new urban uses in these downstream areas then affect the water resource and thus water planning in the subregions.

Rio Rancho, located just south of where the Río Jemez enters the Río Grande, accounts for much of the sharp growth curve after 1970. According to US Census statistics, in 1980, Rio Rancho accounted for 29% of the County's population, in 1990, it was 51% and in 2000 it grew to 58%. Together, the communities of Bernalillo, Corrales and Rio Rancho accounted for 22% of the County's population in 1970, 46% in 1980, 69% in 1990 and 73% in 2000. In comparison, the population in the subregions is small, but increasing.



Source: US Census Data, 1980, 1990, 2000; DASZ Projections, Mid-Region Council of Governments--January 2003

Geographic area	2000 Population	Geographic area	2000 Population
Cuba Village	590	Jemez Pueblo CDP	1,953
La Jara CDP	209	Jemez Springs Village	375
Torreon CDP	297	Ponderosa CDP	310
		San Ysidro Village	238
		Santa Ana Pueblo CDP	479

Note: Census designated place (CDP) is a densely settled concentration of population that is not within an incorporated place but is locally identified by a name
Source: *MRCOG - 2000 Census Profiles For New Mexico And Areas In Or Near The MRGCOG Region*

Quantifying Future Water Demand

A basic question to be answered in regional water planning is "what is the region's projected water demand ?" Often that is answered by projecting population trends, recognizing population to be a driving force. Population increases in the region are projected to be 20-25% in the next 25 years, and for the County as a whole more than 50%. Future demand can be a function of future activities. For example, if paving Highways 550 and 26 brings more tourism to the subregions, the water usage may well increase. Visions of how a region might grow are important considerations in projecting future water usage. Scenarios were created by teams in each watershed envisioning how it might look in 50 years.

Population increases, likely as they are to occur, will increase demands on water. If all of the water is allocated, and demand already exceeds supply, where will that water come from? Conservation measures, while important, may not be enough. A unifying theme for Río Jemez in particular was to be able to plan for the future with at least as much water as currently available. The present lack of water in ditches and wells underscores the fears that already the water budget is overdrawn. If the budget is to be fixed, the prevailing wisdom was that the watershed would need to be restored. Restoring it would not necessarily result in increased stream flow as much as springs would be replenished and could satisfy needs of a growing community. Another consideration for the regions is the unquantified water rights and future water rights of the Pueblos. Although the rights of the non-Indians have been adjudicated with respect to the Río Jemez, there is uncertainty as to what will the final amounts be and how will adjustments be made. Only by being conservative in future planning can this be incorporated.

WHY PLAN?

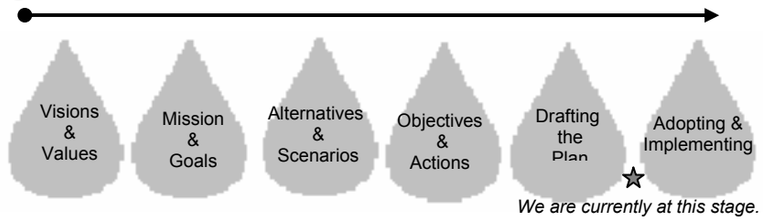
Summing up the above information, often there is not enough water to meet current needs. Watershed deterioration, erosion and forest density affect the quantity and quality of water. At the same time, water usage is increasing and new water uses are seeking water from present users. Water use is constrained by supply, as well as water rights holders and Compact obligations. Future water use is impacted by growth within the subregions as well as downstream. Traditional cultures and values, highly desired by workshop participants, may conflict with newer values and uses. Drought exacerbates the situation further.

The subregional water plan is an effort to counter current trends by planning for the future, together.

PUBLIC INVOLVEMENT

Developing the Sub-Regional Water Plan was an open, inclusive and participatory process. More than 175 people contributed time, energy and effort in its creation. All parts of the process encouraged public involvement, input and discourse on the contents of the plan.

The Planning Process



- Steering Committees made up of diverse constituencies representing a variety interests
- Monthly memos - used to ensure input to plan was broad based and timely
- Workshops - meetings to obtain input from the public.
- Annual Assemblies - Subregions provided updates to the MRG Region.
- Public Opinion Survey - One survey recording regional public opinions on water issues
- Technical Analysis -Expert scientific analysis of some alternative actions.
- Web site and Newspaper Articles - used to inform the public

OUR VALUES

At the February 2003 Workshop, the participants adopted the Mission and Goals of the Plan, and prioritized Alternatives.

Mission Statement

The residents of the Río Puerco y Río Jemez Sub-watersheds promote a sustainable balance between the availability and use of water, promote healthy watersheds, and promote retention of a rural