

Appendix C

Public Involvement and Information

Appendix C1

Water Resource Presentations at Jemez y Sangre Water Planning Council Meetings



**Table C1. Water Resource Presentations at Jemez y Sangre Water Planning Council Meetings
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Presentation	Presenter	Date
Regional Groundwater Model of the Espanola Basin	Elizabeth Keating, LANL	June 14, 1999
NM Drought Contingency Plans	Chuck Caruso, OSE	June 14, 1999
Protecting Things we Cannot Bear to Lose	Forum put together by Sant Fe Land Use Resource Center	July 12, 1999
Preserving the Irreplaceable	Steve Harris, Rio Grande Restoration	July 12, 1999
Present Environmental Conditions	Roberta Salazar	July 12, 1999
Spanish Water Management and Governance in Northern New Mexico	John Baxter	July 12, 1999
Obeying Natural Laws	Ron Gardiner	July 12, 1999
Environmental History of the Galisteo River Watershed	Jan-Willem Jansens	July 12, 1999
Working on the Watershed	Paige Morgan	July 12, 1999
Stories from the River	Pat D'Andrea	July 12, 1999
Acequias, Public Welfare, Different Perspectives	Nicasio Romero, past Chair NM Acequia Association	August 9, 1999
Acequias' Historical, Economic and Social Significance Through Time	Sylvia Rodriguez, anthropologist and author	August 9, 1999
Sustaining Acequia Communities	José Rivera, professor and author of <i>Acequia Culture</i>	August 9, 1999
Historical Origins and Governance	Josie Lujan, Chimayo farmer and acequia commissioner Santa Cruz Irrigation District	August 9, 1999
A Study in Perseverance or the Acequia Madre Has More Power than the President of the United States	Phillip Bové, Acequia Madre Commissioner	August 9, 1999
Acequia as Nexus/Great Teacher...Effect on Riparian Zones, Roles of Farmer's Market	Stanley Crawford, Dixon farmer, Author of Mayordomo	August 9, 1999
Cultural Benefits, Economic Benefits	Clyde Eastman, rural development economist	August 9, 1999
Law, Customs, Practice and Policies	David Benavides, Community and Indian Legal Services of Northern New Mexico	August 9, 1999

LANL = Los Alamos National Laboratory
OSE = Office of the State Engineer





**Table C1. Water Resource Presentations at Jemez y Sangre Water Planning Council Meetings
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Presentation	Presenter	Date
Groundwater Contamination from Septic Tanks and Natural Uranium in Espanola	Dennis McQuillan, New Mexico Environment Department (NMED)	Sept 13, 1999
Estancia Basin Water Plan	Jack Frost, Santa Fe County Hydrologist	Sept 13, 1999
Potential Water Supply Problems in Los Alamos	Janet Gerwin, League of Women Voters	Sept 13, 1999
Crime Prevention and Watershed Management in Chimayo	Bruce Richardson	Oct 18, 1999
Protection of Traditional Agricultural Land in Rio Arriba County	Moises Gonzales, Assistant Director of Planning, Rio Arriba County Planning Department	Oct 18, 1999
Population Projections for the Jemez y Sangre Water Planning Region	Adelamar Alcantara, UNM & Lindsey Grant, writer	Nov 8, 1999
Santa Fe Effluent Reuse	Bill Landin	Feb 14, 2000
Rio Arriba County Water Needs	Alfredo Montoya, Chair, Rio Arriba County Commission	Feb 14, 2000
NM Rural Water Users Association	Gavin Strathdee, Joe Martinez, Lupe Aragon	Feb 14, 2000
Pueblo Indian Water Rights	Peter Chestnut, Northern Pueblos Tributary Water Rights Association	March 13, 2000
Water Impacts on La Cienega	Elaine Cimino, La Cienega Valley Citizens for Environmental Safeguards	April 10, 2000
Population Study for the Jemez y Sangre Water Planning Council	Adelamar Alcantara, UNM Larry Waldman, UNM Lee Brown, consulting economist	May 22, 2000
Water Supply Analysis	Dave Peterson and Nabil Shafike, Duke Engineering	June 12, 2000
Acequia Involvement in Regional Water Planning	Palemon Martinez, NM Interstate Stream Commission and Manuel Trujillo of the New Mexico Acequia Association	July 10, 2000
Support for Jemez y Sangre Water Planning Council	Mayor Richard Lucero	July 10, 2000
Impacts of Cerro Grande Fire	Ken Mullen, Watershed Management, LANL, and Greg Lewis, Director of Water and Waste Management Division, NMED	Aug 14, 2000

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OSE = Office of the State Engineer





**Table C1. Water Resource Presentations at Jemez y Sangre Water Planning Council Meetings
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Presentation	Presenter	Date
Upper Rio Grande Basin Water Operations Review	Leanne Towne, Bureau of Reclamation	Sept 11, 2000
Espanola Regional Wastewater System	Leonard Padilla	Oct 16, 2000
City of Santa Fe Proposed Surface Diversion from the Rio Grande	Amy Lewis, City of Santa Fe	Sept 10, 2001



Appendix C2
Minutes from Public Meetings

**Jemez y Sangre Regional Water Plan
Public Meeting
Velarde Elementary School
February 1, 2001**

Facilitator/Recorder: Lucy Moore

Presenter: Ed Moreno

Welcome: Elmer Salazar, co-chair of the Jemez y Sangre Water Planning Council, welcomed the group of 20 citizens to the meeting, and thanked them for taking the time to listen, learn and participate in the discussion. He emphasized the importance of water planning, and said it is the only way to protect our water resources for the future, to be sure that they will be here when we need them.

Presentation of Information: Ed Moreno, consultant to the Jemez y Sangre Water Planning Council, presented a summary of information collected to date by the council and provided by consultants. The data included water supplies and use categories for the region as a whole, and for the Velarde sub-basin, as well as population projections. Copies of the overheads were included in the participant packets.

Discussion: Lucy Moore introduced herself and asked the group to introduce themselves. She thanked participants for coming, and asked them to focus on four questions:

- What comments, corrections, or questions do you have about the presentation?
- What planning efforts or information sources in your sub-basin should the planning council know about?
- What are your community's values related to water, the top priorities for the use of water, that you want the planning council to include in the plan?
- What role would you like to play in the water planning effort? The council is recruiting interested people to serve on a subcommittee to develop alternatives, or options, that will insure water availability in the future.

Comments on the Presentation:

- *Population Figures:*
 - methodology seems unsophisticated, using a straight line projection, instead of multiple regression
 - projections are too low for this sub-basin
- *Absence of representation of industrial water use:*
 - mica mill, and other large users, don't seem to appear on charts
 - mill diverts 584 acre feet, and depletes 70 af; has well 440 feet deep

- need to plan for some industry/commercial uses in future for jobs
- *Figures related to irrigated land and agricultural use:*
 - need to reconcile big differences among sources; in the meantime, a 20% increase to the highest figure (round up to 6,000 acres) will be reasonable for discussion purposes
 - need to plan for potential crops that might use more water than current ones
 - need to include Pueblo use of water from local ditches
 - need to protect privacy of acequia users' data
 - metering is controversial
- *Assumptions behind the plan:*
 - should not assume the cities will grow and agricultural will shrink
 - should reflect constraints of water availability
 - consider history, culture and tradition

Local Planning Efforts and Sources of Information:

- Rio Arriba County Agricultural Land Ordinance
- Velarde Mutual Domestic water board considering restrictions to conserve water
- Information from individuals, interview local irrigators for agriculture figures
- Office of the State Engineer, Tierra Amarilla, records on cubic feet per second water flows to acequias
- UNM historical aerial photo files
- Wastewater Steering Committee, plans for treatment plant near San Juan and Chamita
- Experiences and growth management models in other places, in New Mexico and Arizona
- Meeting on Discharge Permit from Mica Mill, February 8, Oñate Center, 6 pm.

Community Values and Priorities of Water Use:

- Preservation of agricultural land
 - important not to decrease amount
- Importance of culture, history and tradition
 - will be difficult to fit into data models, but must be considered
- Water used here should stay within the sub-basin
- Future employment opportunities for next generation; some industry, but not too much
- Water quality crucial to health and welfare of community; impacts quantity

- Freedom to use private property as wish, to develop, irrigate, or build house
- Aesthetic value of maintaining bosque and biodiversity
 - dependence on irrigation to keep bosque healthy
- Community water systems for communities not now served, like Lyden
- Preservation of BLM land, not privatize
- Wastewater treatment

Potential Solutions:

- Water Bank – to capitalize on surplus water, especially during winter
- Conservation measures – Velarde Mutual Domestic may adopt restrictions
- More community wells

Water Planning Process and Local Participation:

- Need to include more acequia voices

**Jemez y Sangre Regional Water Plan
Public Meeting
Hilltop House, Los Alamos
February 7, 2001**

Facilitator/Recorder: Lucy Moore, with help from Dana Bahar

Presenters: Ed Moreno, Jemez y Sangre Water Planning Council
Tim Glasco, Los Alamos County
Steve Hanson, LANL

Welcome: Tim Glasco, Los Alamos County Water Utility, welcomed the group of 30 citizens to the meeting, and thanked them for taking the time to listen, learn and participate in the discussion.

Presentation of Information:

Ed Moreno, consultant to the Jemez y Sangre Water Planning Council, presented a summary of information collected to date by the council and provided by consultants. The data included water supplies and use categories for the region as a whole, and for the Velarde sub-basin, as well as population projections. Copies of the overheads were included in the participant packets.

Tim Glasco, Los Alamos County water utility, presented information on water supplies for the county. Water is supplied from three well fields, the Guaje and the Otowi, which are relatively new, and the Pajarito, which may last 20 more years. Although water supplies are adequate, power is needed to pump and distribute the water, making consumers vulnerable to power shortages. Aquifer test wells show a drawdown of about one foot per year; it is possible that this drawdown is stabilizing. These wells are also tested for perchlorate, tritium, high explosives, and strontium 90. Levels detected are far below standards. (Standards do not exist for perchlorate.) Arsenic has been detected in one of the municipal wells in the 9-11 mg/l range, within acceptable levels. County water rights are 5,430 af/year; to date, there seems no danger in exceeding this right. Los Alamos has a contract for 1,200 af from the San Juan-Chama diversion, although there are questions about whether or not it will be available if the County is ready to use it. Daily per person consumption in Los Alamos is 150 gallons.

Steve Hanson, from LANL, said that the Labs are aggressively pursuing conservation measures to reduce their water consumption. Currently, they use 1,500 af/year, 58% of which is used in cooling towers. An efficiency study reveals that it may be possible, through increase in cycles of concentration, to reduce the cooling tower use by 326 af/year. The Labs are also looking at recycling within the system, potential re-use of County water, sustainable design, water-saving fixtures, and appropriate vegetation. They hope to achieve 40-50% total savings in their water

consumption.

Discussion: Lucy Moore introduced herself and asked the group to introduce themselves. She thanked participants for coming, and asked them to focus on four questions:

- What comments, corrections, or questions do you have about the presentation?
- What planning efforts or information sources in your sub-basin should the planning council know about?
- What are your community's values related to water, the top priorities for the use of water, that you want the planning council to include in the plan?
- What potential solutions are there to meet needs of the future?

Comments on the Presentations:

- *Assumptions behind the plan:*
 - appears parochial
 - don't assume growth is inevitable
 - include goal of decreasing demand, not just meeting demand
 - inappropriate and unfair to depend on water from another sub-basin or region
- *New Kind of Planning Needed:*
 - previously in hands of civil engineers, to provide infrastructure that worked
 - bumping up against the limit of the resource
 - now, need for values, vision of future, to be part of process
- *Planners' Bias:*
 - *Journal North* quote of planner showed personal opinion, inappropriate
- *Population and Water Use Graph*
 - confusing, no hydrology
 - where does .15/af/person/year come from?
- *San Juan Chama Water and endangered species:*
 - endangered species not a threat to SJ-Chama water; Office State Engineer must adjudicate and meter flows in the rivers.

Needed Information:

- Groundwater contamination
- Global warming projected impacts on northern NM

Community Values and Priorities of Water Use:

- *A Global View:*

- should see selves as part of a bigger region, including Southern Colorado
- we are all connected, and all water use is connected
- “My use impacts you, and vice versa.” “We have to work together.”
- need to take global view

- *Sustainability as a Goal*
 - both surface and groundwater
 - must live within our means
 - must conserve now
 -
- Wastewater treatment badly needed in Espanola Valley

- Instream flow should be a beneficial use, with its own water rights.

Potential Solutions:

- Conservation, sooner or later we will hit the wall
- Consider very high rates to discourage waste
- Consider shutting off, or decreasing, water supply, after certain maximum used per month
- Zoning and ordinances – more effective than rates
- Elected officials need to make courageous decisions, even if unpopular
- Office of the State Engineer reforms:
 - Adjudicate water rights
 - meter Rio Grande
 - stop unmeasured releases during the winter
 - control withdrawals by large irrigators in middle Rio Grande Valley
 - grant water rights to industry, municipal as well as irrigation districts
 - include instream flow as beneficial use
- Rapid clean up of contaminated groundwater – Espanola Valley and LANL
- Make acequias more efficient in their use of water
- Change laws and ordinances to allow re-use gray water
- Plant “what belongs here” (Cottonwood); remove what doesn’t (Salt Cedar)

**Jemez y Sangre Regional Water Plan
Public Meeting
El Convento - Espanola, NM
February 13, 2001**

Facilitator: Lucy Moore

Recorder: Rosemary Romero

Presenter: Ed Moreno

Welcome: Moises Gonzales, Rio Arriba County Planner, welcomed the group of 10 citizens to the meeting, and thanked them for attending the meeting.

Presentation of Information: Ed Moreno, consultant to the Jemez y Sangre Water Planning Council, presented a summary of information collected to date by the council and provided by consultants. The data included water supplies and use categories for the region as a whole, and for the Santa Cruz and Santa Clara Basins, as well as population projections. Copies of the overheads were included in the participant packets.

Discussion: Lucy Moore introduced herself and Rosemary Romero and asked the group to introduce themselves. She thanked participants for coming, and asked them to focus on four questions:

- What comments, corrections, or questions do you have about the presentation?
- What planning efforts or information sources in your sub-basin should the planning council know about?
- What are your community's values related to water, the top priorities for the use of water, that you want the planning council to include in the plan?
- What role would you like to play in the water planning effort? The council is recruiting interested people to serve on a subcommittee to develop alternatives, or options that will insure water availability in the future.

Comments on the Presentation:

- It was pointed out that the Santa Clara area has two agricultural systems, the Rio Grande and Santa Clara Creek,. Moises Gonzales identified the areas served by the Rio Grande and those by Santa Clara Creek. The surface water budget will be revised to show the part of the demand on Santa Clara Creek and another portion supplied by the Rio Grande
- There is a need for more data, especially from the State Engineers Office which could help clarify the relationship between population growth and drilling of more domestic wells. The burden of growth seems to fall on domestic wells to make up the difference as indicated on the overheads.

- Planners indicated that it was very important to show the amount of irrigated land for Rio Arriba, Santa Fe and Los Alamos County. From the population projections, indications are that Santa Fe will continue to have the highest growth, while Rio Arriba holds the largest amount of irrigated agricultural lands, which should be protected. Rio Arriba should not be the “sacrificial lamb” for growth in Santa Fe.
- Projected growth in North Galisteo Basin seems to be contradictory, as this area has very large lot sizes and few people. The projected population assumptions show more people than are actually projected by Santa Fe County.

Local Planning Efforts and Sources of Information:

- Rio Arriba has adopted an Agricultural Plan as well as a Comprehensive Plan.
- La Mesilla Acequia Association is working with Senator Cisneros to sponsor a memorial that would not allow water transfers below Otowi Gauge. This would protect the approximately 550 acre feet of water in the area.
- Acequia Associations are now allowed to become political entities and as such can raise funds through taxing or other methods. Raising funds will give acequias more buying or leasing power.
- Santa Fe County has been working with traditional communities to develop their own community plans.
- Miguel Santistevan is a researcher studying the relationship between agriculture, acequias, conservation and ecology.
- Civilization Magazine (Oct/Nov 2000) notes the relationship between community’s abilities to understand issues and influence solutions.
- “What about it?”

Potential Solutions:

- Counties could adopt more stringent regulations on domestic well drilling than the SEO.
- Planners pointed out that there is a large disparity between domestic well users throughout the state on the amount of water that can be used by domestic wells. These figures come from the SEO and should be based on in-door use. The northern part of the state, and particularly the planning area, could help to influence the calculations in order to create more equity between areas.

- Create a water bank for lands that are not using their water for irrigation. This would keep the water in the area, protect water rights and ensure that the water was used.
- Instream flow could protect endangered species. However, the conflict could be that dams are then drained.
- Develop new agricultural systems that use water more efficiently.
- Develop water catchment systems and regulate the amount of water that is used to water grass.
- Solutions should be based on good political foundations and leadership.
- Suggestion for more joint planning efforts between counties such as the one that has been initiated between Santa Fe and Rio Arriba counties.
- Develop a massive educational effort to inform people about different links between use of pesticides and contamination of ground water, increased meat production which affects agricultural lands and loss of biodiversity which affects everyone.

Values and Priorities:

- Water is the life of many areas and should be protected. “Water doesn’t have a price” and should be protected and kept in the communities.
- Rio Arriba County is being very active to protect and provide water for eliciting communities – drying up agriculture is not a solution.
- Using precious resources for golf courses is not acceptable, and all communities should be more careful about using up resources that affect so many people.
- This beautiful area should be protected for future generations – running water has incredible value beyond dollars. This is not the moon, this is not about just the supplies that people need to survive, it is about a much bigger picture. People need to acknowledge that they are part of a larger system and be aware of the amount of water that is being taken out of the system and not replaced.
- Everyone should be responsible for working with the legislature to ensure that bills that are passed are good for everyone and not just for a particular area.

**Jemez y Sangre Regional Water Plan
Public Meeting
Tesuque Elementary School
February 15, 2001**

Facilitator: Rosemary Romero
Recorder: Lucy Moore
Presenters: Ed Moreno, Jemez y Sangre Water Planning Council

Welcome: Francis West, Jemez y Sangre Water Planning Council member, welcomed the group and thanked them for taking the time to participate in this important process.

Presentation of Information:

Ed Moreno, consultant to the Jemez y Sangre Water Planning Council, presented a summary of information collected to date by the council and provided by consultants. The data included water supplies, use categories and population projections for the region as a whole, and for the Tesuque sub-basin. Copies of the overheads were included in the participant packets.

Discussion: Rosemary Romero introduced herself and asked the group to introduce themselves. She thanked participants for coming, and asked them to focus on four questions:

- What comments, corrections, or questions do you have about the presentation?
- What planning efforts or information sources in your sub-basin should the planning council know about?
- What are your community's values related to water, the top priorities for the use of water, that you want the planning council to include in the plan?
- What potential solutions are there to meet needs of the future?

She also encouraged anyone to participate in the council meetings, held the second Monday of every month at the Northern New Mexico Community College, 3 - 6 pm. The Council is recruiting interested citizens to serve on a subcommittee which will develop alternatives for meeting future needs in the region. Anyone wanting to contribute to this effort should contact Amy Lewis, 954-7123.

Comments on the Presentation:

- Population Projections for Tesuque sub-basin:
 - unrealistically high – reflecting “push out” from Santa Fe?
 - even if high – still reflects a big problem
 - should consider constraints to growth
 - Pueblo-owned lands
 - high price of land
 - should not assume same level of in-migration

- Membership of the Council – need for acequia and Pueblo representation

Local Planning Efforts and Data:

- Brian Wilson's 1985 OSE estimates
- Traditional Community Plan, approved by Santa Fe County under Land Use Plan

Needed Information:

- Impact of latest *Aamodt* ruling on water planning
- water use data on hotels, golf courses, etc.

Community Values and Priorities of Water Use:

- Water quality
 - problem created by density of wells and septic tanks
- Preserve character of small rural communities
- Value of local farming
 - to provide high quality, local food
 - aesthetic value to the community
 - acequias a way of life to be protected
- Value of property rights – need to change the “use it or lose it” policy
- Creative re-use of water – realize we are in a desert, and the supply is finite
- Value of struggling together over water issues and finding solutions
- Importance of realizing that we are each responsible for taking care of the land and water

Potential Solutions:

- restrict, or at least deal with, growth
 - fear of following in footsteps of Phoenix or Scottsdale
 - must be fair in restrictions, not punish local people
 - prevent leapfrog development into the county, if city restricts
 - understand the relationship between growth and water use – which users are the large consumers?
 - understand the potential for Pueblo development
 - population growth is a world problem

- Self-imposed water conservation measures, as with Los Caminitos community
 - agreed to .29 af/person
 - fines for excess use, and eventual curtailment of water
- Gray water re-use
- Micro-flow systems, that treat and recycle both black and gray water (992-8089)
 - installed at Bishop's Lodge
 - legal, and cost about \$ 8,000
- Be sure that water is not wasted – if it has to be released to preserve the water right, run it through acequias, or put it to use in some way that is beneficial
- Require re-use and conservation, through building codes and ordinances
 - reduce the use of variances to avoid codes and ordinances
 - composting toilets – like Clivus Multrum
 - “Carefree” water conditioner
 - contains no salt
 - agricultural applications increase productivity by 20-30%
 - could help golf courses conserve water
- Educate newcomers about the value of water and how to conserve – through realtors, etc.

**Jemez y Sangre Regional Water Plan
Public Meeting
Sweeney Convention Center, Santa Fe
February 21, 2001**

Facilitator: Rosemary Romero
Recorder: Lucy Moore
Presenters: Ed Moreno, Jemez y Sangre Water Planning Council

Welcome: Ed Moreno, writer and co-facilitator for the Jemez y Sangre Water Planning Council, welcomed the group and thanked them for taking the time to participate in this important process.

Presentation of Information:

Ed presented a summary of information collected to date by the council and provided by consultants. The data included water supplies, use categories and population projections for the region as a whole, and for the Santa Fe and Caja del Rio sub-basins. Copies of the overheads were included in the participant packets.

Discussion: Rosemary Romero introduced herself and asked the group to introduce themselves. She thanked participants for coming, and asked them to focus on four questions:

- What comments, corrections, or questions do you have about the presentation?
- What planning efforts or information sources in your sub-basin should the planning council know about?
- What are your community's values related to water, the top priorities for the use of water, that you want the planning council to include in the plan?
- What potential solutions are there to meet needs of the future?

She also encouraged anyone to participate in the council meetings, held the second Monday of every month at the Northern New Mexico Community College, 3 - 6 pm. The Council is recruiting interested citizens to serve on a subcommittee which will develop alternatives for meeting future needs in the region. Anyone wanting to contribute to this effort should contact Amy Lewis, 954-7123.

[Below are comments made during the meeting. *In italics are explanatory responses made by Water Planning Council staff.*]

Comments on the Presentation:

- Population Projections
 - Consider constraints, like Pueblo lands
Council deliberately did not consider constraints like land ownership, water

- *availability, etc. in order to show what would happen without*
- appears to be a “juggernaut of growth” – is there any way to stop it?
- the Council should discuss the growth issue, or run the risk of being stereotyped as no-growth
-
- Depiction of flows through Velarde and Santa Cruz
 - need to clarify legal realities – water is owed to downstream users
- Water supply
 - important to consider different uses of water, when consider amounts needed
 - consider scenarios where there is less water, like in the ‘50’s, or years when excess water can be stored, rather than using a median figure
 - recovery time needed for aquifer to restore itself
 - relationship water rights and water supply
 - *Planning must be done, even in the absence of water rights data.*
- Water quality
 - role of contamination in reducing water supplies – reflect in presentation
 - *City wells are treated so that quality in Santa Fe sub-basin is high. There are septic tank contamination problems in the Pojoaque valley which are being addressed through wastewater treatment plans.*
- Information on timing
 - include in presentation information on regulatory requirements, bureaucratic schedules to show how planning and implementation might occur
- Models have range of error which should be reflected

Public Involvement Process:

- Materials distribution
 - distribute fact sheet, other key information, through newspapers, etc., so that participants can study prior to the meeting
 - put material on website, into libraries, and other forums
- Need to reach full diversity of sub-basin and region
 - use additional outreach, including surveys, appearances at local events, etc.

Needed Information:

- Total available ground water in the Santa Fe Basin – “How big is the pond?”
This amount, which is a guess, may be meaningless because of the impracticality of using every drop.
- Systematic survey of water table, regionally and by sub-basin

- Information on the impact to the groundwater of drawing off the top
- Information on the various water uses in the region – who are the biggest users? where could the greatest benefit be gained?
City of Santa Fe, planning department, has figures for water consumption by use, ie. hotel rooms, etc.
- What are the “big ticket items” for water savings? need for a cost benefit analysis of various conservation options
- Compact requirements that might impact water conservation efforts
- Definitions of “adequate” and “reliable”
- Examples of water conservation and growth management elsewhere, including East Bay in California, Albuquerque, NYC, and London, as well as other arid regions in the world

Community Values and Priorities of Water Use:

- Value of open dialogue on growth issues, avoid stereotyped battle between growth and no-growth
- Potential to become a model of wise water management and conservation
- Must provide an adequate and reliable water supply
- Emphasize demand reduction rather than supply increase
- Protect characteristics of area, including agriculture and acequias
- Help farmers to conserve, provide incentives, not disincentives
- No one wants to conserve if that conserved water permits uses that are not in our interest

Potential Solutions:

- Must have cooperation and coordination of city and county, on both land use and water issues
- Increase security of San Juan Chama water supply through in perpetuity agreement
- Increase supplies with check dams on arroyos, targeted plantings to slow down stormwater runoff, increase percolation into groundwater, and add moisture and

aesthetics to the area

- Use effluent to its maximum benefit – return flow credit, or re-use
- Become a model for reduced demand and consumption
 - household audits in NYC reduced consumption by 29% (Scientific American, Feb)
call Sangre de Cristo water company for household audit
 - use our ingenuity
 - use effluent for golf courses
 - city policies and ordinances to encourage and educate, not mandate
 - meter wells
 - use gray water for irrigation
 - convert to drip irrigation
 - use cisterns to catch runoff from roofs, for landscaping, and perhaps bathing, etc.
 - use “real-turf” for recreation
 - “Do not landscape as if you are in Michigan.”
- Improve inspections and enforcement to reduce contamination
- Consider solutions that are not legal today – be creative
- Moratorium on all growth
- Conjunctive use of groundwater and surface water, governed by clearly articulated water policy
 - use surface first, because it is renewable
 - use ground as back up, because it is reliable
- State Water Resources Department (as proposed in this legislative session)

**Jemez y Sangre Regional Water Plan
Public Meeting
Galisteo Fire Department
March 8, 2001**

Facilitator, Recorder, Presenter: Ed Moreno

Welcome: Ed Moreno welcomed the participants to the meeting, approximately six residents of the Lamy/Galisteo area. Everyone introduced themselves.

Presentation of Information: Ed Moreno, consultant to the Jemez y Sangre Water Planning Council, presented a summary of information collected to date by the council and provided by consultants. The data included water supplies and use categories for the region as a whole, and for the Santa Fe River Basin, as well as population projections. Due to the small room and low attendance, the group was walked through the material without overhead slides.

Discussion: Ed Moreno invited the group to respond to these four main topics:

- What comments, corrections, or questions do you have about the presentation?
- What planning efforts or information sources in your sub-basin should the planning council know about?
- What are your community's values related to water, the top priorities for the use of water, that you want the planning council to include in the plan?
- What role would you like to play in the water planning effort? The council is recruiting interested people to serve on a subcommittee to develop alternatives, or options that will insure water availability in the future.

Comments on the Presentation:

- Where did the precipitation data come from in the drought severity index? Is it relevant to New Mexico? The tree ring data says New Mexico data, is it particular to this region?
- On the agricultural diversions chart, do the acequia diverters receive return flow credits for what they divert?
- Quality. Regulations for quality, such as arsenic, would put a burden on smaller community systems. The water quality here is very good.
- Why was 2060 chosen as the planning horizon?
- Were community associations and organizations invited to join the Council?

Local Planning Efforts and Sources of Information

- Galisteo is at the beginning stages of a community plan. A group is organized.
- Hope the moratorium will continue until it is known whether there will be water available.
- There will be demand for water from this sub-basin from other sub-basins. We're concerned about the demand for water from Santa Fe.

- The Santa Fe City Council should stop fighting and act on water. It's been years they've been talking about San Juan Chama and other water supply issues.
- The big unknown in the Galisteo Creek area is whether Joe Miller will continue to encourage Eldorado to explore in this area for new wells. Even when the Eldorado well in the Lamy area goes dry, the wells closer to Galisteo do not.
- Planning has to be national, not just local or statewide.

Community Values and Priorities of Water Use:

- Rivers and streams need to be preserved. Fish and birds and ecosystems are important.
- We want to preserve the bucolic life: trees, birds, fish, home gardens, and learn to use water better to preserve that. Use methods like soil moisture gauges to avoid overwatering.
- Water is delivered efficiently. We send water downstream that could be used upstream.
- We need to change the way we use water.
- What is the economic cost of water? Poor people would have a harder time affording water if it was too expensive.
- There should be tax credits for poor people to install water-saving methods in their homes.
- There is no new water in this area. It's too far to pump it here from anywhere. We have no choices if the population grows, we'll be in the same boat that we're in now.
- We have to learn to live with less water. All the time, not just in drought years or drought emergencies. We have to change the way we live. How do you do it? It should be a matter of common knowledge. We have always thought about water as always there.
- You have to keep your hands on all the water you have.
- Entitlement means nothing if the water isn't there.

Potential Solutions:

- Are there ways to increase the water supply? What water that goes downstream can be increased?
- Water systems leak, pipes and delivery systems leak. Do the city and county have plans to correct leaking systems?
- When water becomes valuable enough, there will be pipelines to bring it here. A pipeline from the coast.
- Systems are available to treat wastewater and septic water to drinking standards.
- Larger cities are going to have to conserve even more, and especially collect runoff with catchment systems.
- Albuquerque is encouraging people in the foothills to install a lot of water-saving systems in their homes.
- Newcomers will have to learn to conserve.
- Stop using water for flushing and golfing. More water needs to be recycled and grey water used more.

Draft Summary of February 2001 Public Meetings
Major points raised in more than one sub-basin

Comments on Presentations:

- Population projections – inaccurate, too high, confusing
- Assumption that growth will occur – should consider constraints
- Assumption that water will come from agriculture – please don't
- Consideration of water quality issues

Public Welfare:

- Water doesn't have a price
- Keep rural character of the region
- Preserve agricultural and traditional lands in the region
- Keep sub-basin and regional water within area of origin
- Manage growth
- Link land and water issues
- Conserve for the future
- Achieve sustainable water use
- Provide adequate water supply
- Emphasize demand reduction before supply increase
- Protect water quality
- Protect aesthetic values of water uses
- Protect water uses for wildlife
- Protect private property rights, including water rights and land use decisions
- Make wise decisions based on benefit to people and environment
- Allow local decision-making
- Realize the interconnectedness of sub-basins, regions, and all species
- Realize we are all responsible – concept of community
- Importance of working together to find solutions
- See the future as longer than 40 years

Alternatives:

- Conserve – in every possible way
 - Manage growth
 - Enact ordinances, building codes, and enforce them
 - Increase rates
 - Change laws, policies to permit gray water use, cisterns, etc.
 - Change law to end “use it or lose it” policy
 - Meter wells
 - Limit wells
 - Require or encourage agricultural efficiencies
 - Encourage xeriscaping and native planting
 - Ban, limit golf courses
 - City and state office buildings should be better role models
 - Look to other places for models of conservation

- Develop education programs
- Changes in lifestyle – re-define quality of life

- Establish locally controlled water banks
- Create small check dams to capture storm water
- Develop new wells
- Extend South County water system
- Re-use effluent
- Pipe water from Estancia Basin
- Coordination between City and County in planning, both land and water
- Secure San Juan-Chama supply

Jemez y Sangre Regional Water Plan

Summary of Comments Raised at the Public Meeting, October 3, 2002, Cerrillos Fire Station

Facilitators: Lucy Moore and Ed Moreno

Presenters: Joanne Hilton and Amy Lewis

Background: This meeting was held for the purpose of reviewing with the public the results of the alternative analysis and a Charrette held in February of 2002. At the Charrette, experts from both in the state and outside New Mexico gathered to analyze twenty-six alternatives developed by the Jemez y Sangre Regional Water Planning Council in consultation with the members of the public who served on an alternatives subcommittee. From their analysis, consultants worked with the Council to categorize the alternatives into 5 categories: 1) Protect/Restore water supplies, 2) Improve Efficiency, 3) Drought Management, 4) Reduce demand and 5) Increase Supply. The projected gap between supply and demand in the year 2060 is estimated to be 31,500 afy if the supply is not increased or the demand is not reduced. This gap could be greater if water supplies diminish or are damaged by a severe forest fire. In order to address projected gap, several scenarios were developed, each of which emphasized a different approach to meeting the future demand for water. The four scenarios focused on: 1) Conservation, 2) Growth Management, 3) Purchase water rights, and 4) Combination of demand reduction and increasing supply. All of the scenarios included the use of San Juan-Chama with return flow credits.

In addition to the presentations on the alternatives and the scenarios, those who attended this meeting were given a work sheet or Options Chart to fill out expressing a preference for how to meet the future demand. The Options Chart represented the demand/supply gap for the entire Jemez y Sangre Water Planning region in 2060. Attached is the Options Chart for each of the 4 scenarios presented and a blank Options Chart which participants were asked to fill out as a method to provide feedback. In order to develop a scenario, ten blocks, each representing 10% of the gap, were to be selected. A summary of the feedback from all of three public meetings is attached.

Finally, participants at the meeting reviewed the draft Public Welfare Statement developed from previous public meetings.

Discussion: During the evening, those present raised the following issues:

City/County Coordination: Participants asked that the regional water plan include a recommendation that the City and County of Santa Fe work together on all issues where coordination is needed. Specifically mentioned were NPDES permits for stormwater runoff, and implementation of recommendations in the water plan.

Inter-regional Coordination: Participants understood that neighboring regions are also seeking answers to longterm water needs. It will be critical, they said, to communicate and coordinate

with these potential competitors to insure that one region's solution isn't another region's problem.

Role of Human Activities: There were questions about the impact of lifestyle choices on the environment, the ecology and even the climate of the region. How we store water, what we plant, where we build can all have unforeseen impacts. A participant asked how residents could “change our ways” to cause less damage to the ecology of the area. Drought may be a factor, but should not be an excuse on which we blame our water shortages.

Water Storage: Some suggested that reservoirs are not an efficient means for storing water because of losses to evaporation. Smaller check dams or underground storage may be more efficient.

Golf Courses: Some questioned how much water is used on golf courses, and suggested that future needs of the area could be satisfied by closing golf course.

Wet Water v. Paper Rights: There was discussion about the difference between wet water and water rights. Some were concerned that purchase of water rights may result in withdrawals or transfers which are detrimental to the environment or to other needs. A participant objected to the efforts of Santa Fe County to buy water rights from Socorro County. Another was worried that the Buckman wells may be overused given the lack of knowledge of the amount of available water in the aquifer.

Sustainability: There was concern about the sustainability of the aquifer and the danger of over-pumping. Many expressed the need for a good groundwater model that would show aquifer amounts, pumping rates and recharge rates. Living sustainably is a real challenge, pointed out one participant. It is important to provide some incentives if people are expected to make needed sacrifices. Some felt that the local governments and economic forces are encouraging growth for growth's sake, and that this approach is advantageous to the wealthy and hard on the middle class.

Water Quality: A participant pointed out that any water can be made potable, if money were no object. It is important to understand how much potential drinking water is being contaminated and by what sources.

Other ways of reducing demand and increasing supplies: Group members had additional suggestions for meeting future water demands. It was suggested that removal of non-Native plants could increase surface flows. In addition, different types of grasses could be used on golf courses. Construction practices could be regulated so that drinking water is not used during building. Local government could offer incentives for the use of composting toilets. Agriculture could be reduced, although there were caveats about the resulting rise in food costs and impact on growth. The state and local governments could loosen regulations on the use of gray water. The state highway department could improve its road designs to capture water, and to use less asphalt, which requires large amounts of water in its production.

Update Presentation: Group members suggested that in future presentations consultants and the water planning council should update figures which would reflect the City's toilet ordinance, storm water control and runoff, the County's potential transfer of water rights from Socorro, and golf course water use.

[summary written by Lucy Moore. Please contact her with comments or questions. 505-820-2166, or lucymoore@nets.com]

Jemez y Sangre Regional Water Plan
Summary of Comments Raised at the
Public Meeting, October 7, 2002, El Convento, Espanola

Facilitators: Lucy Moore, Ed Moreno

Presenters: Joanne Hilton and Amy Lewis

Background: This meeting was held for the purpose of reviewing with the public the results of the alternative analysis and a Charrette held in February of 2002. At the Charrette, experts from both in the state and outside New Mexico gathered to analyze twenty-six alternatives developed by the Jemez y Sangre Regional Water Planning Council in consultation with the members of the public who served on an alternatives subcommittee. From their analysis, consultants worked with the Council to categorize the alternatives into 5 categories: 1) Protect/Restore water supplies, 2) Improve Efficiency, 3) Drought Management, 4) Reduce demand and 5) Increase Supply. The projected gap between supply and demand in the year 2060 is estimated to be 31,500 afy if the supply is not increased or the demand is not reduced. This gap could be greater if water supplies diminish or are damaged by a severe forest fire. In order to address projected gap, several scenarios were developed, each of which emphasized a different approach to meeting the future demand for water. The four scenarios focused on: 1) Conservation, 2) Growth Management, 3) Purchase water rights, and 4) Combination of demand reduction and increasing supply. All of the scenarios included the use of San Juan-Chama with return flow credits.

In addition to the presentations on the alternatives and the scenarios, those who attended this meeting were given a work sheet or Options Chart to fill out expressing a preference for how to meet the future demand. The Options Chart represented the demand/supply gap for the entire Jemez y Sangre Water Planning region in 2060. Attached is the Options Chart for each of the 4 scenarios presented and a blank Options Chart which participants were asked to fill out as a method to provide feedback. In order to develop a scenario, ten blocks, each representing 10% of the gap, were to be selected. A summary of the feedback from all of three public meetings is attached.

Finally, participants at the meeting reviewed the draft Public Welfare Statement developed from previous public meetings.

Discussion: During the evening, those present raised the following issues:

Drought Impacts: Some questioned the reliability of the San Juan-Chama water given the drought years which may lie ahead. There were also concerns about the disappearing snow pack in the Rockies, and the impact of drought on groundwater resources, since recharge comes from surface supplies. There were fears that agriculture would be the loser if the drought continues.

Alternatives Analysis: A participant asked how each of the alternatives could be analyzed in terms of benefits to the region, in terms of water supply, economy, etc. It was also suggested that

the alternatives need to include cost considerations in their implementation.

Agriculture: There were questions about how agricultural efficiencies could be measured. There was also concern that some of the water that is saved through those efficiencies may be needed by those same ditches, since deliveries now are often inadequate. Irrigators are also worried that water banking or leasing strategies may result in loss of critical mass of irrigators from a certain stream system or acequia. Such a loss could have severe impacts on the landscape, economy and culture of that area.

Otowi Gauge: The group discussed the role of the Otowi Gauge. Some felt it served as an intra-state compact, protecting those above the line from potential buyers below the line. Others suggested that this may be based on a paternalistic assumption, that no one above the line wants to sell water rights below the line. There was also recognition that regions along the Rio Grande naturally want to keep water within their jurisdictions, and that the middle Rio Grande region may not be agreeable to leasing or selling water to this region.

Public Welfare: It was suggested that “rural/wildlands character” include fish. A participant noted that water quality issues may be addressed by a variety of scales of solutions, including those being considered by the Espanola-Pojoaque Valleys Wastewater Treatment Committee.

Percent	10	20	30	40	50	60	70	80	90	100
<i>Acre-Feet</i>	3150	6300	9450	12600	15750	18900	22050	25200	28350	31500
Conservation	Reduce NEW indoor and outside demand by 10%	Reduce NEW indoor and outside demand by 25%	Reduce ALL outside use and NEW inside by 25%	Reduce ALL outside use by 50% and all NEW inside by 25%	Reduce ALL outside use by 70% and all NEW inside by 25%					
Growth Management	Reduce Projected Growth Rate by 10%				Reduce Projected Growth Rate by 50%					
Purchase Agricultural Water Rights Below Otowi	1,016 Acres of MRGCD (2% of Ag Land)	2,032 Acres of MRGCD (4% of Ag Land)	3,048 Acres of MRGCD (5% of Ag Land)	4,064 Acres of MRGCD (7% of Ag Land)	5,080 Acres of MRGCD (9% of Ag Land)					
Purchase Agricultural Water Rights Above Otowi	2,400 Acres (12% of JyS Ag Land)	4,850 Acres (24% of JyS Ag Land)	7,300 Acres (36% of JyS Ag Land)	9,700 Acres (49% of JyS Ag Land)	12,100 Acres (60% of JyS Ag Land)					
Allow More Domestic Wells										
Utilize San Juan-Chama Water	Utilize LA, SJ Pueblo, Espanola SJC		Return Flow Credit on all SJC		Leased & Return Flow Credit on leased SJC					

Scenario 1 Emphasize Conservation

Percent	10	20	30	40	50	60	70	80	90	100
<i>Acre-Feet</i>	<i>3150</i>	<i>6300</i>	<i>9450</i>	<i>12600</i>	<i>15750</i>	<i>18900</i>	<i>22050</i>	<i>25200</i>	<i>28350</i>	<i>31500</i>
Conservation	Reduce NEW indoor and outside demand by 10%	Reduce NEW indoor and outside demand by 25%	Reduce ALL outside use and NEW inside by 25%	Reduce ALL outside use by 50% and all NEW inside by 25%	Reduce ALL outside use by 70% and all NEW inside by 25%					
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Allow More Domestic Wells	12,200 additional domestic wells									
Utilize San Juan-Chama Water	Utilize LA, SJ Pueblo, Espanola SJC		Return Flow Credit on all SJC		Leased & Return Flow Credit on leased SJC					

Scenario 2 Emphasise Growth Management

Percent	10	20	30	40	50	60	70	80	90	100
<i>Acre-Feet</i>	3150	6300	9450	12600	15750	18900	22050	25200	28350	31500
Conservation	Reduce NEW indoor and outside demand by 10%	Reduce NEW indoor and outside demand by 25%	Reduce ALL outside use and NEW inside by 25%	Reduce ALL outside use by 50% and all NEW inside by 25%	Reduce ALL outside use by 70% and all NEW inside by 25%					
Growth Management	Reduce Projected Growth Rate by 10%				Reduce Projected Growth Rate by 50%					
Purchase Agricultural Water Rights Below Otowi	1,016 Acres of MRGCD (2% of Ag Land)	2,032 Acres of MRGCD (4% of Ag Land)	3,048 Acres of MRGCD (5% of Ag Land)	4,064 Acres of MRGCD (7% of Ag Land)	5,080 Acres of MRGCD (9% of Ag Land)					
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Allow More Domestic Wells	12,200 additional domestic wells									
Utilize San Juan-Chama Water	Utilize LA, SJ Pueblo, Espanola SJC		Return Flow Credit on all SJC		Leased & Return Flow Credit on leased SJC					

Scenario 3 Emphasize Purchasing Water Rights

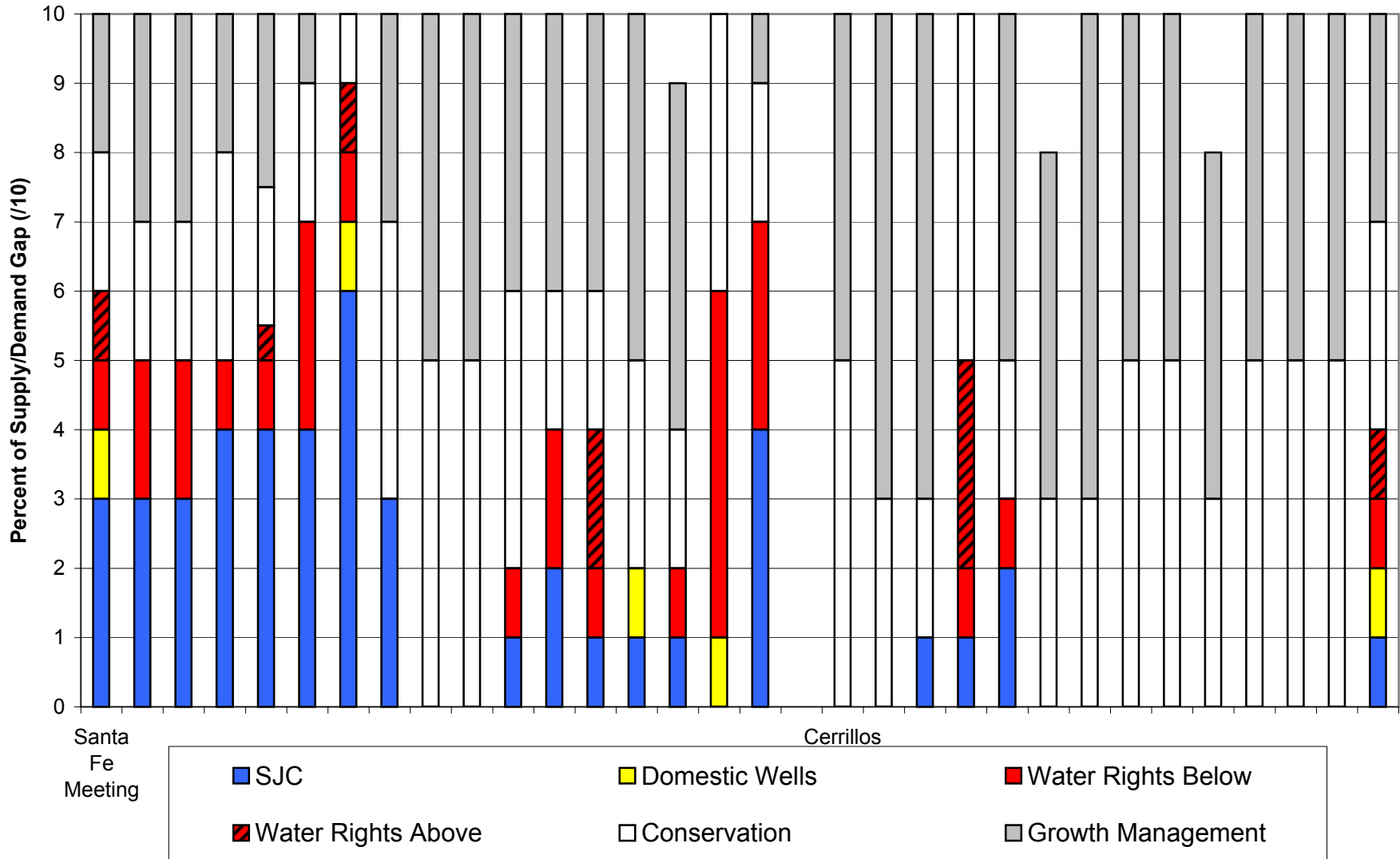
Percent	10	20	30	40	50	60	70	80	90	100
Acre-Feet	3150	6300	9450	12600	15750	18900	22050	25200	28350	31500
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Allow More Domestic Wells	12,200 additional domestic wells									
Utilize San Juan-Chama Water	Utilize LA, SJ Pueblo, Espanola SJC		Return Flow Credit on all SJC							

Scenario 4 Reduce Demand and Increase Supply from Numerous Sources

Percent	10	20	30	40	50	60	70	80	90	100
Acre-Feet	3150	6300	9450	12600	15750	18900	22050	25200	28350	31500
Conservation	Reduce NEW indoor and outside demand by 10%	Reduce NEW indoor and outside demand by 25%	Reduce ALL outside use and NEW inside by 25%	Reduce ALL outside use by 50% and all NEW inside by 25%	Reduce ALL outside use by 70% and all NEW inside by 25%					
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Allow More Domestic Wells	12,200 additional domestic wells									
Utilize San Juan-Chama Water	Utilize LA, SJ Pueblo, Espanola SJC		Return Flow Credit on all SJC		Leased & Return Flow Credit on	leased SJC				

Create your own scenario for making up the deficit: Select among the options to come up with 100% of the amount needed to meet the projected water demand.

Public Input on Scenarios Fall 2002 Jemez y Sangre Water Planning Council



**Jemez y Sangre Water Planning Council Workshop
on Critical Management Areas and Area of Origin**

November 22, 2002

Radisson Hotel, Santa Fe, New Mexico

Facilitators/Recorders: Roberto Chene, Lucy Moore and Ed Moreno

Purpose, Introductions and Ground rules: Lucy welcomed the group and explained that this workshop was a result of significant conversations at the Charrette* held by the Water Planning Council last spring and at subsequent Council meetings. These conversations focused on the dilemma of protecting areas within the region from exploitation of water resources while meeting future demands in the region. Council members understand the complexity of the issues, and wanted to learn more in order to make some difficult decisions as the Regional Water Plan becomes a reality in the next few months. There was no goal to reach consensus, but rather to give the council and others the chance to explore the issues. Lucy asked that participants treat each other with respect, and be aware of limited time to speak. She asked participants to introduce themselves. An attendance sign-up sheet was provided.

Except where noted, there was no consensus among those present on the following points.

CRITICAL MANAGEMENT AREAS: Attorney Susan Kery, who had co-authored a paper for the Jemez y Sangre Regional Water Planning Council, presented information on Critical Management Areas, and the potential for their designation in the region (see paper for summary). Following the presentation, participants discussed the concept and its applicability in this region.

Problem Areas/Candidates for Critical Management Designation:

Issues of Scale: There were differences of opinion about the appropriate scale in which to consider designation. Some felt that the critical management area should be over-arching, including as broad an area as possible (region, or even entire basin, or state) in order to offer the greatest coverage. Others felt that the designation was a tool more appropriate when applied on a smaller, site-specific scale, since specific facts and conditions (hydrological, legal and political) must serve as the justification for the designation.

North Galisteo Basin/highway 14: Santa Fe County representatives explained that the County has already applied for the designation for an area in the North Galisteo Basin, bisected by Highway 14. Drying wells is the justification for the application.

* For copies of the White Papers prepared for the Charrette, covering a wide variety of alternatives for balancing demand and supply in the future, visit the D.B. Stephens website: www.dbstephens.com/publications

Pueblo Actions to Protect Fragile Areas: Pueblo spokespersons offered information on the situation and response on some Pueblo lands. San Juan Pueblo has passed an indefinite moratorium on building new homes between the acequias and the river on Pueblo land, in order to protect fragile water resources. Nambe Pueblo has experienced drying springs down gradient of a newly lined irrigation ditch, suggesting a connection between surface flow and spring supply. Santa Clara Pueblo representative encouraged the Water Planning Council to consider Pueblo needs and activities during the development of the Plan.

Types of Areas Appropriate for Consideration: Participants identified several areas that might be good candidates for Critical Management designation:

- areas where wells are drying up
 - areas which demonstrate contamination
 - areas where surface water is being depleted
 - areas with thinner aquifers
 - areas which are not sustainable – raising questions about the time frame for sustainability – 10 years? 50 years? more?
 - areas where there is a significant groundwater decline
 - areas which are within a certain distance of a spring, or are in the source area for that spring
 - areas that have suffered serious fire damage
 - areas that are at risk for serious fire damage
- **Possible Restrictions or Actions to be Applied in Critical Management Areas:**
Participants explored a variety of management tools which could be used to protect CMAs. No consensus was reached on any of the tools below:
 - moratorium, or growth cap
 - limits on transfers in and exports out of the area that would be detrimental
 - land use zoning
 - use of water for recharge in areas that would benefit the CMA, as in the case of a spring which could be recharged by application of water in an area outside the CMA
 - No increase in diversions within the CMA
 - Stringent regulation of domestic wells (existing or new) such that wells are metered and use restricted to certain amount
 - Require new developments to be hooked into a community water system-no new domestic wells
 - Allow replacement and supplemental wells
 - Allow a certain amount of increase drawdown on nearby wells within a CMA when evaluating a water right transfer based on a certain lifetime of the aquifer
 - Require water right transfers through groundwater only from within a CMA

Who will implement the restrictions, use the tools? Participants offered the following entities as those potentially responsible for managing the CMAs and administering restrictions:

- Counties
- Cities
- Pueblos
- Office of the State Engineer
- New Mexico Environment Department
- Homeowners Associations, Mutual Domestic, etc.
- Private sector, developers, water brokers, etc.
- US Forest Service

Implications

A ban on increasing existing diversions would necessitate importation of water if demand increases.

Recommendations: Those present agreed on the following two recommendations:

- 1) Water planners in all sectors need more accurate, more complete and current data on nitrate contamination in the region's groundwater, including amounts of contamination, sources, trends, and depth.
- 2) The Critical Management Area tool is worth exploring in this region. A vote was held with the following results:
 - The Council should use this tool in planning within the area, learning more about specific applications in specific areas. **14 votes**
 - More information is needed about the use of CMA as a tool, and the Council should explore whether or not it is appropriate. **11 votes**
 - The Council should not consider the use of CMA as a tool. **0 votes**

AREA OF ORIGIN: John Utton, attorney working with Susan Kery on the workshop briefing paper, and David Benavides, attorney with Northern New Mexico Legal Services, presented information on the Area of Origin concept and its applicability in this region.

The concept of Area of Origin (AOO) is that people in the area where water originates, or where the water rights have been historically utilized, have a right or a legal opportunity to maintain that water within those boundaries, as long as there are significant benefits that accrue to communities, economies, cultural preservation, or other benefits, or to prevent the harm that would result from the loss of access to that water, as defined by the area itself. David emphasized that in his view AOO protection is not about preserving an agricultural way of life – although that can be a result of AOO protection – but about empowering those within rural communities to benefit from the use of the resource. If land moves from agriculture to development, the community should lead the development so that they may receive the jobs and other benefits.

David and John cited relevant cases, including those involving Ft. Lyons, Big Thompson, and the California Owens Valley. There are clearly issues of Tribal sovereignty, property rights and market value which are also part of the whole picture. In addition, any laws regulating transfers must apply out of state as well as in state.

Ways of Protecting Area of Origin: During the discussion, several ways of protecting an area of origin were identified:

Geographic Boundary: It is possible to pass laws which forbid the movement of water out of an Area of Origin unless certain conditions are met. The law could simply prohibit the transfer of water out of the AOO. Or, the law could incorporate a spectrum of standards against which to measure the proposed transfer. The standards could be based on insuring some or all of the following:

- benefit over time for the area and community
- impact on numbers of people
- the right remains in the community
- economic activity remains in the community
- greater rural economic development occurs
- agricultural base is not eroded

Within this region, the Otowi Gauge, a measuring point required by the Rio Grande Compact, has served as a de facto protection for the area north of the gauge. Its power may be overestimated, according to some, but many are very reluctant to give it up, not seeing any more effective alternative to keep water north of the gauge.

Mutual Agreement of Entities: The group was intrigued with the potential for protecting areas of origin through the negotiation of agreements between entities. EBID and Las Cruces may serve as a model. There was discussion about what kind of entities might enter into negotiations – acequias, acequia associations, water user groups, local government – and what kind of standards [see above] might guide the negotiations. The implication of this kind of negotiation is that there are entities with responsibility and authority for managing water on behalf of others, and that these entities – one with water supplies and one needing water supplies – choose to enter into a mutually beneficial agreement. There may be structures or policies which provide incentives or disincentives for these kinds of arrangement.

Marketplace, with protection: Some advocated the marketplace as the appropriate forum for water transfers, and suggested that protections for “the little guy” could be built into transactions. For instance, mutual domestics or acequias could have the right of first refusal on sales or leases out of the basin. The free market could operate within the AOO.

Public Welfare Statement: Each regional plan must include a statement of the public values of that region. This public welfare statement, which may speak to third party impacts and

the need for equity, provides guidance to the State Engineer when making decisions about transfers.

Regional Water Plans: An individual regional water plan may include recommendations banning or restricting the export of water out of that region. This would be distinct from the Public Welfare statement in the plan, which may also address criteria for export.

State Water Plan: This document, in process by the Interstate Stream Commission, may speak to transfers out of certain areas, and set regulations for those transfers.

Acequia Bylaws: Under state law, acequias have powers to adopt bylaws governing the actions of their members with respect to transfers. A bill may be introduced this legislative session to clarify that authority. Although AOO is a geography-based concept, rather than community-based, acequias may be able to exercise power over water transfers through bylaws.

Perspectives: Participants offered their perspectives on the concept. In general, the discussion covered a range of approaches, from allowing the market place to dictate the movement of water to a complete prohibition against transfers of water from an AOO.

Homebuilders: A spokesperson for the homebuilding industry said that it is important for their welfare to maintain access to water in adjacent areas, and with the minimum of red tape.

Acequias: Acequia representatives pointed out that they are already moving to make Area of Origin protection a reality in New Mexico. From their point of view, maintaining control over the water resource is critical to the survival of the acequia communities. Water is a resource tied to the land and the community, and if uses are to be changed, those communities should be the ones to make the choices and receive the benefit.

A distinction was made between AOO protections and measures that would give acequias decision making authority over individual water right transfers.

Pueblos: The area of northern New Mexico covered by the Jemez y Sangre Regional Water Plan has a rich and complex history. It is important that those creating the plan and those who consider implementation of part or all of the plan understand this history and its implications for the future. Pueblo observers in the planning process remind the Council of their unique position in the region. As original inhabitants they have witnessed the arrival of many waves of newcomers and in many cases have been generous neighbors, helping early settlements survive. As subsequent waves have arrived it has been more difficult to accommodate the greater numbers and the increasing competition for resources.

Now, in the beginning of the 21st century, Pueblos and other traditional communities feel threatened by the pressures of growth in the area. Although it seems that other populations move freely around the country, most Pueblo and traditional community people are committed to this

land and its resources. If conditions become too stressful, or resources too scarce, they will not and cannot move elsewhere. They will remain, as they have for hundreds of years. Their historic presence and commitment to the land and resources have guaranteed the survival of a beautiful and unique region. They request that those in decision-making positions understand the need for continued protection of these unique resources – natural, cultural and historic – and that the right of self-determination for these traditional communities be honored.

The group discussed including language in the Regional Water Plan which would express the unique character and values of this region, and that would emphasize the important role of history in the formation of the region – culturally, socially, economically and physically.

Others: Some questioned the validity of prohibiting water from leaving a region. Was it appropriate or necessary, they asked, to preserve the current patterns of population distribution and water use, or should they be subject to the market forces? Others felt that the movement of water was closely related to the distribution of wealth, and should be controlled and regulated in the interest of creating a more equitable society. They were not comfortable with the free market system determining the fate of communities. Because the water movement has such a major impact on the communities that lose the water, they felt that there should be some consensus-based review process to assess the public welfare of the communities.

Models: The group discussed the current negotiations between the Elephant Butte Irrigation District and the City of Las Cruces, where both the agricultural interests and the city are benefiting from reallocation of water from agriculture to urban uses. Salt River Project, originally an irrigation district, now provides water to Phoenix. Ex-farmers are now shareholders, benefiting from the asset as the times changed. There are also examples of the State (ISC) appropriating water for the benefit of a region, as with the Salt Basin near Alamogordo, and a county (Lea County) applying for the reservation of a water right for future use.

There was agreement that an inventory is needed that identifies and describes processes which allow for stakeholder review in the transfer of an article of commerce, such as in the west where AOO protections have been implemented.

Transfers vs. Sales and Leases: Although individuals have the right to sell or lease water rights, the State Engineer must approve transfers from one location to another or one type of use to another. Some advocate that these transfers should protect the area of origin through consideration of social costs and benefits to the exporting region. Some extended that concept to suggest that transfer decisions should result in the redistribution of wealth in some areas, or in subsidies for certain areas. It was acknowledged that minimal water has presently been transferred from agriculture to urban use to date.

There were concerns about the leasing of water, and the difficulty of regaining that water once another user has become dependent on it. It may be desirable to have a drought option system for leasing, where an irrigator only leases during a drought year, when farming is not

productive or financially viable.

Some suggested that an AOO importing water should be limited in the amount or source of water that is imported from another region. Is it fair, they asked, for an area to expect to be supplemented with water from elsewhere, when they have restricted their own water leaving their area. Participants observed that any region which does seek to import from another region should practice serious water conservation measures of its own water resource.

Others noted that AOO protections do not have to imply an absolute prohibition against import of water from another region, but could set up criteria that allow such a transfer to occur. It is not clear whether the priorities of the state would override those of the region. There is danger in a system that provides no limitations on export, as it would set a precedent that would allow the water to be exported out of the state.

Scale Issues: It was suggested that the AOO needs to be big enough to allow for productive negotiations and creative solutions, as between EBID and Las Cruces. John Utton also reported that he is representing a group of acequia associations who have formed a larger geographic organization to have more power over water rights transfers from the upper Chama River region.

During the AOO discussions the group also grappled with the dilemma of where to draw the boundary of an AOO and the implications for the definition of community. The Jemez y Sangre water planning region could be seen as a community of interests sharing the same hydrological basin and the same regional economy. On the other hand, there are clearly communities within that region which are distinct, and which may feel threatened by their relationship with the larger community. How can we handle the different scales of community within our region, participants asked. How can we protect certain fragile or unique areas and maintain the connections which are alive and vital within the region as a whole?

Recommendations: Those present agreed on the following:

- The plan should recognize the long history of many communities in the region and should not work against their long-term interests. An inventory of processes that allow for consensus-based transactions in instances where AOOs have been protected, and mechanisms for that protection, would be very beneficial in further considering AOO protection in this region. The inventory is not restricted to AOOs, but could include any process that allows for a stakeholder or consensus process involving an article of commerce, where the activity may impact the local community.
- The Jemez y Sangre Water Planning Council may incorporate language about consensus-based transactions in the public welfare statement.

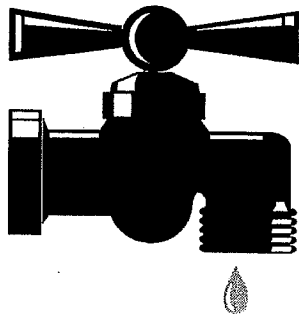
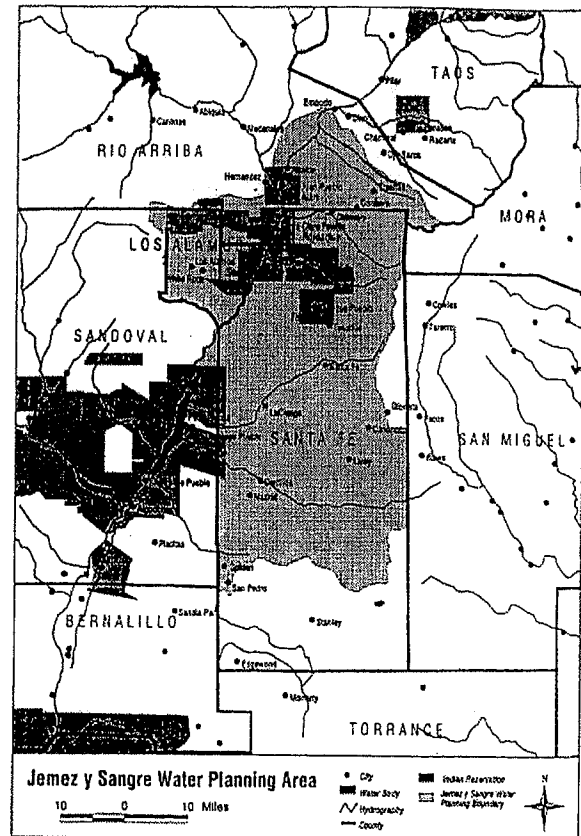
Appendix C3

Fact Sheets

**How can I learn more?
How can I get involved?**

There are a number of ways to participate. Get on the mailing list to keep in touch with what's happening. Come to a special water planning meeting for your subregion. Or have a water planning participant come to speak and listen to your group. Fill out the form and tell us what you're interested in.

Early meetings will seek information and opinion before the plan is developed. Later meetings will ask for public response and advice on draft plans and, still later, on final plans.



**JEMEZ Y SANGRE WATER
PLANNING REGION**

Water for the Future

Regional Water
Planning: Why is it
important?

Why should we care about the "Jemez y Sangre Regional Water Plan"?

We live in an arid environment. A plan can help us, as a community, to

- ❖ understand how we can balance our water use with our water resources and
- ❖ plan how we can balance our diverse water needs: municipal, agricultural, tribal, environmental.

How much water are we using? Do we have enough water for our future needs, and where is it coming from? How much growth could we expect and what will that mean for our water demand? What values will our plans reflect?

What kind of future do we want?

Regional water planning means getting together as a community and trying to answer those questions, based on technical data and information.

What is Regional Water Planning exactly?

There are 16 water planning regions in New Mexico, established by the Interstate Steam Commission (ISC). Each region can write its own water plan for the ISC to accept and integrate into a statewide water plan.

In this region, a committee oversees writing the plan -- hiring experts to collect information, making sure community concerns

are considered, and evaluating different ways to meet our future water needs.

Our region is the watershed, or valley of the upper Rio Grande, between the Jemez and the Sangre de Cristo Mountain Ranges.

Who's involved?

In 1998, a wide range of governments, organizations and individuals signed a cooperative agreement to begin regional water planning for north central New Mexico. Those representatives formed the Jemez y Sangre Water Planning Council to lead the water planning process in our region. Members of the Council are:

Acequia Madre
US Bureau of Indian Affairs
US Bureau of Reclamation
City of Espanola
City of Santa Fe
Eldorado Area Water & Sanitation District
Garcia Ditch
Las Acequias de Chupedero
League of Women Voters
Los Alamos Co. Board of Public Utilities
Los Alamos National Laboratory
New Mexico Rural Water Association
North Central NM Economic Dev. District
Rio Arriba County
Rio Grande Restoration
Santa Fe Area Home Builders Assoc.
Santa Fe County
State Land Office
1000 Friends of New Mexico
To date, several Pueblos have been observing the process and participating informally.

The Council meets monthly and meetings are open to the public.

What's happening now?

Right now, the Council is gathering information on how much water we really have and how much we are using. The Council's Public Involvement Committee is beginning to seek out groups and leaders throughout the region to ask about their concerns, goals and priorities for water.

What happens to our region's plan?

The plan will be recommended for adoption and implementation by each affected city, county, pueblo, acequia, and others.

Some things for communities in our region to think about

Regional water planning means understanding the water resource limitations we face and what opportunities exist.

Among the questions we will be asking are:

What happens to our water supply in a drought year? If municipalities use renewable surface water during wet years, can that save ground water to supply need in drought years? If they carefully conserve will there be enough water for increased uses of water in the future?

How can we best reuse wastewater? Can we store water more efficiently? How can we protect water quality? Can we increase our local water supply by changing how we manage our watershed, limiting fire suppression, reducing forest density and the like?

I'm interested.

Put me on the mailing list so I can learn about developments in the regional planning process and what public meetings are scheduled to identify problems, issues, concerns and evaluate information and proposals for water management.

I'd like information on water planning for a meeting of my group.

NAME

ORGANIZATION AFFILIATION(S) IF ANY

ADDRESS

(Please include e-mail) address if there is one)

TELEPHONE

(Please include both home, work and fax, if there is one)

PARTICULAR AREAS OF INTEREST

My comment or question is:

Jemez Y Sangre Regional Water Planning Council
801 W. San Mateo
Santa Fe, NM 87501

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Address _____

City _____

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Planning also means understanding the trade-offs involved with different alternatives for meeting future water needs. It means setting goals so that we will have water for the uses we have determined are critical and then developing and evaluating alternatives for meeting those goals. Planning may mean proposing changes in water law and city or county land use codes.

Will water plans protect the region's traditional communities? Should we decide to limit use of water for landscaping or to limit where people can build? Is it acceptable to limit use of domestic wells? Do we need to or should we influence how much or how fast we grow?

Planning means developing a document that governmental organizations will be able to, and want to adopt. Plans won't work unless policy makers agree to implement the alternatives that have been selected.

Water planning will not determine who has water rights, and is completely separate from the legal process of water rights adjudication.

Water rights, however, are not the same as having real water to use.

Wise water planning and management can help make sure real water is available to water rights holders.



Jemez y Sangre Water Planning Council

Fact Sheet

Regional Water Planning and Public Welfare

WHY MUST PUBLIC WELFARE BE ADDRESSED IN THE REGIONAL WATER PLANNING PROCESS?

In 1987, the New Mexico Legislature passed a law that established a process for regional water planning. That law required regional water plans to give an "adequate review of ... the effect on the public welfare."

WHY DID THE LEGISLATURE INCLUDE PUBLIC WELFARE IN THE LAWS ESTABLISHING REGIONAL WATER PLANNING?

In the early 1980's, El Paso applied to the New Mexico State Engineer Office to obtain a permit to appropriate water. The State Engineer, relying on a statute that barred exportation of New Mexico's water resources, denied the application. El Paso sued and a federal court ruled that our statute violated the interstate commerce clause of the U.S. Constitution. The court relied on a U.S. Supreme Court case that prohibited bans against exportation of water on economic grounds, but indicated that a state may prevent "uncontrolled" transfers of water out-of-state based on conservation and public welfare considerations.

In response to the El Paso ruling, the New Mexico legislature amended a number of water statutes to give the State Engineer authority to deny an application if it is contrary to conservation of water or detrimental to the public welfare of the state. Significantly, these criteria apply to all new appropriations and transfers, not just to interstate transactions. The legislature also enacted statutes that established a process for regional water planning.

If we can prove that we need the water for our citizens, we can defend against attempts by other states to appropriate our water for use outside the state.

WHY IS PUBLIC WELFARE IMPORTANT?

Public welfare is important for two reasons.

First, when the U.S. Supreme Court provided a means for protecting our water from appropriations by other states, the court emphasized that state statutes must "regulate evenhandedly to effectuate a legitimate local public interest." Therefore, if we hope to retain our water in state to protect our communities, cultures and environment and to promote sustainable use of our water resources, we must apply those same concerns to applications for water to be used in-state. A regulation that clearly applies to all applications--interstate and intrastate--will accomplish the objective of keeping water in New Mexico more effectively.

Second, without public welfare, we have no mechanism for ensuring that the those things we value are not lost and those things that are needed for our future are protected. The public welfare criterion enables us to ask questions about our use of water. For example, do we want to promote sustainable uses of our water? Do we want to dry up our rural areas to supply municipalities? Do we want to encourage industries that need large amounts of water to move here?

WHAT IS PUBLIC WELFARE?

The legislature did not define public welfare, nor has the State Engineer Office or the Interstate Stream Commission. One question for both the state and the Jemez y Sangre region is whether or not we want to define

public welfare broadly and, if so, what should be included. The following is a list of public welfare values, most of which are compiled from definitions of public welfare in other western states.

- (1) health and safety;
- (2) economic consequences, including impacts on the existing economy and area of origin of water rights, maintenance of traditional rural and agricultural economies, recreation, and external costs;
- (3) encouragement of conservation and discouragement of waste or impractical or unreasonable uses of water;
- (4) environmental and ecological consequences, including impacts on fish, wildlife and plants, ecologically critical areas, riparian ecosystems, wetlands, and watershed management;
- (5) sustainability, sustained yield, groundwater recharge, and aquifer management;
- (6) water quality;
- (7) loss of alternative uses of water that might be made within a reasonable time if not precluded or hindered by the proposed application;
- (8) opportunities for reuse of return flows;
- (9) protection and enhancement of historic, cultural and natural resources, and aesthetic values;
- (10) preservation of public and trust lands, water and open space;
- (11) scientific study;
- (12) whether high-quality water is being used when locally available low-quality water would suffice;
- (13) public welfare as defined in the regional and state plans or by elected officials in land use planning;
- (14) benefit and harm to the applicant and other persons;
- (15) whether the applicant sets a precedent;
- (16) cumulative impacts; and
- (17) short and long-term consequences of application.

WHAT HAPPENS IF PUBLIC WELFARE IS DEFINED NARROWLY?

If public welfare is defined very narrowly, then it will not have much impact on the way water is managed. We will continue to base decisions only on whether:

- there is unappropriated water available;
- a new use or location will impair existing users; and
- whether the new use or location is contrary to conservation of water.

This fact sheet has been written by the Jemez y Sangre Regional Water Planning Council. For more information, contact Amy Lewis, Water Resources Planning Coordinator at 954-7123 or 801 W. San Mateo, Santa Fe, NM 87505. August, 2000



Jemez y Sangre Water Planning Council

Fact Sheet

A Brief Description Of Water Law In New Mexico

HOW NEW MEXICO MANAGES WATER

Since 1907, the New Mexico State Engineer has regulated water use. Initially the State Engineer only had authority over surface water. Since 1931, this authority has applied to all **declared groundwater basins** as well. The State Engineer is appointed by the Governor and confirmed by the New Mexico Senate. The State Engineer must act upon any application for new water uses or any application to change the point of diversion or the purpose or place of use of water (usually referred to as a **transfer**). The State Engineer must deny an application when he determines that the use would result in **impairment** (i.e., diminished supplies or water quality) to existing users or that the proposed use is contrary to the **public welfare** or conservation of water. After an application is filed with the State Engineer, existing users and others may file **protests** stating why the State Engineer should not approve the application. If a protest is filed, the protestant or applicant may request a hearing or the State Engineer may require a hearing. State Engineer decisions can be appealed to the district court.

An adjudication is a lawsuit filed to determine “all rights to the use” of water within a stream system. Water rights are never fully determined until there is an adjudication because a water right is measured under state law by the water put to actual beneficial use. For example, the State Engineer may permit Joe Smith to use 40 acre-feet of water per year. However, if Joe Smith only uses 20 acre-feet under the permit, a court will not automatically grant Smith a right to 40 acre-feet per year. For purposes of water planning, municipalities and counties are allowed to apply for a permit for sufficient water to meet need for the succeeding 40 years. However, if the water is not used within the time frame, there is no “water right” to the amount of the permit. Adjudications begin with a hydrographic survey of the stream system that maps all water uses, surface and groundwater. The priority date declared by the water user is deemed correct until the court determines the priority date. Many adjudications are on-going in the Jemez y Sangre Water Planning area, two of which are: State of New Mexico v. Aamodt (Pojoaque, Nambe and Tesuque basins) and State of New Mexico v. Anaya (Santa Fe River basin). These adjudications are not completed. In the future, there will likely be another adjudication in the region: the adjudication of the mainstem of the Rio Grande.

Water quality is generally controlled by the New Mexico Environment Department and the Water Quality Control Commission. The State Engineer, when ruling on applications, can take effects on water quality into consideration.

REGIONAL WATER PLANNING

The New Mexico legislature enacted a statute in 1987 enabling regions in the state to plan their water future. Pursuant to that statute, the Jemez y Sangre Water Planning area was established in 1998. Water planning was initiated at the regional level so that unique characteristics of each region of the state could be equally protected. Regional water plans determine future water demand and, based upon the available supply, determine how the region will balance demand and supply. Through this process, the region can significantly impact any evaluation of what uses of water are consistent with the public welfare.

THE PRIOR APPROPRIATION DOCTRINE

In water rich areas of Europe and the United States, water is acquired from natural watercourses on or adjacent to a person's land. If the use is reasonable, there is no limit on the quantity that can be put to use. This is called the riparian doctrine. Because of the scarcity of water in the West, a different doctrine developed to define rights to water. New Mexico and other western states use some version of the prior appropriation doctrine. In New Mexico, two clear principles govern establishment of water rights:

1. Priority of appropriation shall give the better right.
2. Water may be used only for beneficial purposes.

An appropriation means dedication of water for a beneficial purpose. Priority of appropriation is often summarized as first in time, first in right. This means that the person who first puts water to use has the senior priority and each additional user has a junior priority. The senior priority holder is entitled to receive the full quantity of water that the senior priority holder can apply to beneficial use or the maximum quantity permitted, whichever is less. Junior priority holders must satisfy their uses out of what remains in order of their relative seniority. Beneficial use has not been fully defined. Only waste and mine dewatering have been ruled to be a non-beneficial use of water.

ESTABLISHING WATER RIGHTS

As discussed previously, after 1907 or the date when the State Engineer declared authority over any groundwater basin (1956 for most of the Rio Grande basin), one must obtain a permit to use water from the State Engineer. These uses will have as a priority date the date the application for a permit was filed. If water use began before 1907 or the date when the State Engineer declared authority over any groundwater basin, then the date the use began, whether surface or ground water, determines the priority of the right. When these uses are transferred, the priority date is retained, but the amount of water that can be transferred may be significantly less.

Pursuant to New Mexico statute 72-12-1, the State Engineer "shall" approve applications for domestic wells. Domestic wells may use up to three acre-feet per year. However, when these rights are adjudicated, the adjudicated right will depend on what has actually been used. A water right may be declared forfeited, and it can be abandoned for non-use.

FEDERAL WATER RIGHTS

On federal lands (e.g., Forest Service, Park Service, Bureau of Land Management) water rights are reserved by the United States for use on those lands. The priority date of federal reserved water rights is the date the United States reserved the land for the particular use, not the date that the actual use began. In some cases, the United States may have state law rights under the prior appropriation system, if for instance, the United States acquires lands with existing water rights.

PUEBLO AND TRIBAL WATER RIGHTS

The Pueblos of New Mexico can have state law created rights in some instances where they acquire lands with appurtenant pre-existing state law water rights. They can have federal reserved water rights where lands outside Pueblo grants have been reserved for them by the United States. Pueblos also have a third type of water right, referred to as Mechem doctrine or aboriginal water rights. The Pueblos of New Mexico, unlike many other tribes, reside on lands that they have never left. While the United States recognized those prior holdings thereby giving Pueblo rights to land and water federal protection, these rights do not depend on any federal action for their existence. In *Aamodt*, Judge Mechem held that these rights have the senior priority right as the Pueblos were the first land holders. This right extends to historically irrigated acres, livestock watering, municipal and domestic uses. Historically irrigated acreage means all lands used for irrigation as of 1846 and any additional lands placed into irrigation from 1846 to 1924. In addition to senior priority, these rights cannot be lost through forfeiture, abandonment, or other forms of non-use.

Pueblos are governments, and pursuant to their inherent powers as confirmed by federal law, each Pueblo has authority to regulate water quality and water use by users within Pueblo boundaries.

INTERSTATE STREAM COMPACTS

Streams and rivers ignore political boundaries. Where a river runs through several states, those states form a compact to determine each state's share. The United State Congress must approve these compacts. New Mexico is a party to several compacts, including the Rio Grande, Pecos and Colorado compacts. The compacts obligate New Mexico to deliver water to other states. No matter how vested a water right might be, if using it violates a compact, it cannot be used. Compacts can place significant constraints on the water supply available for use.

This fact sheet was written by the Jemez y Sangre Water Planning Council. For more information, contact Amy Lewis, Water Resources Planning Coordinator at 954-7123 or 801 W. San Mateo, Santa Fe, NM 87505. November 2000



Jemez y Sangre Water Planning Council

Glossary

Acre-foot of water: The amount of water that would cover an acre to a depth of one foot or about 325,829 gallons.

Adjudication: A legal proceeding in which a court determines the validity, priority, and amount of a water right.

Aquifer: A geologic formation that is saturated with water and sufficiently permeable to yield a usable quantity of water to wells or springs.

Appropriation: The right to use water for a beneficial use.

Compact: An agreement between two or more states that has been approved by the U.S. Congress and allocates the water in the rivers and streams flowing through those states.

Consumptive Use: Water that is evaporated or transpired and is lost from the water system.

Declared ground water basin: An area with reasonably ascertainable boundaries that has been designated by the State Engineer to prevent impairment of existing water rights. Once a basin has been declared, applicants must apply to the State Engineer to appropriate ground water from the basin.

Depletion: The net reduction in surface-water flow between two specified points in the flow system.

Domestic Wells: Domestic water rights are also known as "72-12-1" water rights after the section of the water code that requires the State Engineer to approve all applications for a well to supply a household for domestic uses, livestock and irrigation. A regulation adopted by the State Engineer allows domestic well users to use up to 3 acre-feet per year.

Evapotranspiration: The combined processes of simple evaporation and plant transpiration by which water is converted to vapor and lost to the system.

Forfeiture: If a water right is not used for a four-year period and for one additional year after notification, the right is forfeited. Water rights not used prior to 1965 do not require a one-year period of non-use after notification.

Impairment: When the supplies of an existing user are diminished in quantity or quality by a new use or change in an existing use.

Instream Flow: Water in a stream or river for fish, wildlife, recreation, watershed or other

purposes.

Mining Water: Mining water usually refers to underground water resources that are being pumped out of the ground at a rate greater than water is replenished in the system by recharge.

Native Water: Water that naturally originates in streams or river. San Juan/Chama Project water which is pumped from the Colorado River basin into the Chama River basin is not native water.

Priority Date: The date indicating when the water right was first exercised. The priority date determines the seniority of the water right. Senior water rights holders are entitled to receive their full water right before junior water rights holders receives any water.

Recharge: Recharge is water that is added to groundwater storage from infiltration of rain, snow or stream flow.

Return Flow: Return flow generally refers to water that is returned to the hydrologic system. For example, when a field is irrigation, that water that flows off the field and back into the stream is considered return flow.

Riparian: Riparian refers to the habitat and life forms along streams, lakes and wetlands.

San Juan/Chama Project Water: San Juan/Chama Project water refers to water transported from the Colorado river basin into the Chama River basin. Several cities, counties and water companies have entered into leases with the Bureau of Reclamation for use of that water.

State Engineer: The New Mexico statutes give authority over water to the State Engineer who is appointed by the governor.

Transfer: The State Engineer must approve applications for the new use of water or the sale, change of use or location, or lease of a water right; this procedure is generally referred to as a water rights transfer.

This fact sheet was written by the Jemez y Sangre Water Planning Council. For more information, contact Amy Lewis, Water Resources Planning Coordinator at 954-7123 or 801 W. San Mateo, Santa Fe, NM 87505. July 2000



Jemez y Sangre Water Planning Council

Sub-Basin Water Supply and Demand Summary

Velarde Sub-Basin

OVERVIEW

The water budget for the Velarde sub-basin shows that for an average year there is currently an adequate supply of water. By 2060, the projected population change would increase water demand by approximately 325 afy. Domestic wells could be developed to meet demand, however, development of additional municipal water supplies will require acquisition of existing water rights. Water quality issues must be addressed in the sub-basin as groundwater resources are developed. Surface waters below the Velarde sub-basin and Otowi gauge are fully appropriated and include Rio Grande Compact deliveries.

SUB-BASIN CHARACTERISTICS

The Velarde sub-basin lies entirely within Rio Arriba County. The sub-basin includes Alcalde, Estaca, Velarde, and small portions of Espanola and San Juan Pueblo.

The Velarde sub-basin, covering an area of 167 square miles, mostly drains the Sangre de Cristo Range in the vicinity of the Truchas Peaks. A small portion of the sub-basin west of the Rio Grande, which drains slopes on the east side of Black Mesa, does not contribute measurable volumes to the local surface water supply.

The Velarde sub-basin extends from an altitude of 12,300 feet above mean sea level at its highest point to 5,572 feet at its outlet on the Rio Grande, encompassing some 6,730 feet of elevation relief. The average elevation of the watershed is 6,847-feet.

The main streams draining the mountain slope are Rio de Truchas and Cañada de Las Entrañas. Arroyos that drain lower elevations include Arroyo del Pueblo, Arroyo Ocote, Cañada Ancha, Arroyo del Palacio, Arroyo de Los Chavez, Arroyo de Ranchitos and Arroyo de Los Borregos.

PRECIPITATION

The Velarde sub-basin receives an average annual precipitation of 12.2 inches.

SURFACE WATER SUPPLY AND DEMAND

Surface water inflow to the Velarde sub-basin consists primarily of Rio Grande flow at Embudo, and runoff from the Sangre de Cristo Mountains east of the river. Runoff from the west side of the river in the vicinity of Black Mesa is imperceptible within the total sub-basin budget.

The average annual flows at the Embudo gauge during the years 1963 to 1986 (816 cfs) were used to compute part of the area's surface water inflow, while tributary inflow (2,420 afy) was derived using the elevation-area-yield approach, which accounts for evapotranspiration losses.

Irrigated acreage is concentrated along the Rio Grande and along reaches of the Rio de Truchas. Reported 1995 irrigated acreage in the area was used to estimate irrigation diversions, depletions, and return flows. Free water surface evaporation losses from the Rio Grande channel were estimated assuming a river distance of 16 miles from Embudo to the watershed outlet and a river width of 100 feet.

Evapotranspiration losses near the Rio Grande and Rio de Truchas areas were computed using an estimated riparian acreage of about 1,000 acres, as measured from the 1992 Landsat map.

Inflow from groundwater to surface water along the Rio Grande has been estimated at about 0.5 to 1.0 cfs per river mile. For the 16 miles between Embudo and the San Juan Pueblo, the Rio Grande was assumed to gain in flow from groundwater discharge at a rate of 0.5 cfs per mile, which resulted in a total annual river gain of 5,800 afy.

The remaining budget component, loss of surface water to groundwater, was estimated at 1,800 afy by comparing all components. The outflows are assumed to occur in areas of the sub-basin lying at higher elevations than the Rio Grande.

Assessment of the surface water budget indicates that surface water is considered fully appropriated in the Velarde sub-basin. However, Pueblo water rights remain to be determined. There appears to be sufficient flow in the main stem of the Rio Grande for agricultural purposes during 10 year drought and minimum flow conditions. Surface water use off the main stem at higher elevations in the sub-basin would likely be impacted during periods of drought.

GROUNDWATER SUPPLY AND DEMAND

Assessment of the groundwater budget indicates that groundwater resource is extensive and largely not utilized in the Velarde sub-basin. The estimated groundwater storage in the aquifer is 9.6 million acre-feet. However, because surface waters are fully appropriated, stream-connected groundwater appropriations or transfers will be conditioned to require retirement of surface water rights to offset any depletions caused by groundwater pumping.

EXISTING USES

Water is used for agricultural and domestic purposes in the Velarde sub-basin. Domestic supplies are provided through mutual and individual domestic water supply wells. Approximately 26,400 afy of surface water and 46 afy of groundwater are used for irrigation purposes. Approximately 667 afy of groundwater is pumped for municipal/domestic purposes. Water is also used for livestock purposes.

WATER QUALITY

In general, the water supplies meet applicable water quality standards. However, water quality concerns exist due to septic tank discharges. For example, there is an area of high nitrate in excess of drinking water standards in Alcalde.

POPULATION AND DEMAND PROJECTIONS

Under the most likely growth scenario, the Velarde sub-basin population will increase from its current population of about 4,500 to about 6,600 in the next 60 years. The population change would increase water demand by approximately 325 afy. Domestic wells could be developed to meet demand, however, development of additional municipal water supplies will require acquisition of existing water rights. Water quality issues must be addressed in the sub-basin as groundwater resources are developed.

SPECIAL CONSIDERATIONS

Surface waters below the Velarde sub-basin and Otowi gauge are fully appropriated and include Rio Grande Compact deliveries. Per the Rio Grande Compact, New Mexico must maintain flow conditions that existed in 1929 to meet Compact requirements. Additionally, Pueblo water rights remain to be determined.

Summary water quantity and quality data taken from "Water Supply Study Jemez y Sangre Water Planning Region, New Mexico," Duke Engineering, & Services, Albuquerque, New Mexico, (August 2000) or as referenced. Population data taken from "Population Projections for the Jemez y Sangre Water Planning Region, Bureau of Business and Economic Research, University of New Mexico, July 2000.



Jemez y Sangre Water Planning Council

Sub-Basin Water Supply and Demand Summary

Santa Clara Sub-Basin

OVERVIEW

The water budget for the Santa Clara sub-basin shows that for an average year there is sufficient water to meet current demands. The quality of surface water and groundwater is quite good (although surface water quality will be degraded for a few years following the Cerro Grande fire). Domestic water demand is projected to increase from 720 acre feet per year (afy) today to 1077 afy in year 2060. Current projections indicate that there will be sufficient groundwater to meet population-based needs for the next sixty years. As with other areas in the region, care will be needed to assure that shallow groundwater is not contaminated by additional septic systems as the population grows.

SUB-BASIN CHARACTERISTICS

The Santa Clara sub-basin encompasses 84 square miles on the eastern slopes of the Jemez Mountains north of Los Alamos and southwest of Espanola. The sub-basin is bounded on the west by the crest of the Jemez Mountains, on the south by the Los Alamos sub-basin, on the east by the Rio Grande, and on the north by the drainage divide located north of Santa Clara Canyon. The majority of land in this sub-basin is within the Santa Clara Pueblo reservation boundary in Rio Arriba County.

Santa Clara Creek is the only perennial stream in this sub-basin, but it has several ephemeral tributaries along its reach. The headwaters of Santa Clara Creek are at an elevation of 11,525 feet and its discharge at the Rio Grande is at an elevation of 5,523 feet, for a total relief of about 6,000 feet.

PRECIPITATION

The Santa Clara sub-basin receives an average of 18.2 inches of precipitation annually, mainly from mountain snow and summer monsoon rains. Evaporation and evapotranspiration is higher in the lower and more heavily vegetated reaches of the Santa Clara Sub-Basin, and accounts for a significant decrease in total available water.

SURFACE WATER INFLOW AND OUTFLOW

Inflow from rain and snow melt runoff for the sub-basin was calculated as 5,570 afy using the elevation-area-yield approach of Reiland (1975). Outflow occurs as stream loss to groundwater (510 afy), evaporation/evapotranspiration (550 afy), and diversions for irrigation (1,620 afy). The diverted irrigation water is estimated to yield a return flow of about 890 afy.

Surface water flow into the Rio Grande is estimated to be 3,780 afy using flow measurements on Santa Clara Creek near Espanola and yields for ephemeral tributaries estimated by the elevation-area-yield method (Reiland 1975).

GROUNDWATER INFLOW AND OUTFLOW

Groundwater inflow is estimated to be 3,760 afy from mountain front recharge, 510 afy from stream channel recharge, and 850 afy return flow, mostly from irrigation, for a total of 5,120 afy.

Groundwater outflow is estimated to be 1,120 afy to municipal/industrial and domestic uses, 1,250 afy to evapotranspiration (to a depth of 20 ft) and 2,740 afy to groundwater moving slowly (underground) out of Santa Clara sub-basin into adjacent sub-basins, for a total of 5110 afy.

WATER QUALITY

Water quality information for Santa Clara Creek is limited; however, it is probable that it is similar to Rito de los Frijoles in Bandelier National Monument to the south. Both Rito de los Frijoles and Santa Clara Creek drain Tertiary volcanic tuff composing the eastern flank of the Jemez Mountains, and both watercourses are subject to some recreational and cattle grazing land use.

It should be noted that the Cerro Grande fire in May 2000, burned through the headwater area of Santa Clara Creek so that runoff and water quality are certain to be altered for a number of years. It is also worth noting that in the Espanola area high density rural housing (with septic systems) is commonly associated with local groundwater contamination problems.

EXISTING USES

Surface water is used predominantly for agriculture. Approximately 699 acres are irrigated. Livestock also graze in the mountains during mild weather periods. Santa Clara Canyon has been developed into a recreational area with three retention ponds for fishing, numerous picnic sites, and south of the canyon is Santa Clara ruins visited by many tourists each year.

Santa Clara Pueblo and adjacent communities south of Espanola currently use 1120 afy of groundwater for domestic and municipal/industrial purposes.

PROJECTED DEMAND

The population in the Santa Clara sub-basin is estimated at 4,800 in 1999, and is projected to grow to 7,180 in the next 60 years (BBER). Most people reside either in Santa Clara Pueblo south of Espanola or in southwestern Espanola, west of the Rio Grande River. Future growth will likely take place in these same general areas of the sub-basin.

Groundwater used only for domestic purposes, based on population, is projected to grow from 720 afy to 1077 afy by the year 2060. Municipal/industrial demand (mainly in Espanola) will likely grow over the next 60 years, but future growth will be constrained by limited availability of water rights. Surface water usage for irrigation is projected to remain essentially constant during this period.

Summary water quantity and quality data taken from "Water Supply Study Jemez y Sangre Water Planning Region, New Mexico," Duke Engineering, & Services, Albuquerque, New Mexico, (August 2000) or as referenced. Population data taken from "Population Projections for the Jemez y Sangre Water Planning Region, Bureau of Business and Economic Research, University of New Mexico, July 2000.



Jemez y Sangre Water Planning Council

Sub-Basin Water Supply and Demand Summary

Santa Cruz Sub-Basin

OVERVIEW

The Santa Cruz sub-basin encompasses an area of about 200 square miles to the east of Espanola. It includes the Rio Quemado, Rio Medio and Rio Frijoles stream drainages and numerous associated arroyos. It is projected that the population in this sub-basin will double in the next 60 years from 20,000 to 40,000, and that the demand for groundwater for domestic use will also double from 3,000 acre feet per year (afy) to 6,000 afy. Surface water demand, principally for irrigation, is projected to remain constant to 2060. While surface and groundwater quantities appear sufficient to meet future population demands as projected through the year 2060, water appropriations and water quality issues will likely grow as the population increases. Surface and groundwater quality is generally quite good, except in some local communities where septic tanks and leach fields have raised nitrate levels in groundwater.

SUB-REGION CHARACTERISTICS

The Santa Cruz sub-basin is east of Espanola, bounded on the west by the Rio Grande, on the north by the Velarde sub-basin, on the east by the crest of the Sangre de Cristo Mountains, and on the south by the Pojoaque - Nambe sub-basin. Most of the Santa Cruz sub-basin is in extreme northeast Santa Fe County and southeast Rio Arriba County.

The Santa Cruz sub-basin encompasses just over 200 square miles draining the western flanks of the Sangre de Cristo range between Pecos Baldy on the south and Truchas Peaks on the north.

The elevation ranges from 12,980 feet in the Sangre de Cristo range to 5,490 feet at the Rio Grande, a relief of 7,490 feet from east to west. The main stream draining the sub-basin is the Santa Cruz River and its principal tributaries are the Rio Quemado, Rio Medio, and Rio Frijoles. Other significant drainages within the lower elevation areas of the sub-basin flow only after major storm events and include Arroyo Seco, Arroyo Madrid, and Arroyo de la Mesilla

PRECIPITATION

The average annual precipitation within the sub-basin is 16.3 inches, with the higher elevations getting substantially more than the lower elevations. The combined surface water evaporation and evapotranspiration through vegetation accounts for a significant decrease in available water supply each year.

SURFACE WATER INFLOW AND OUTFLOW

Surface water inflow from the combined drainage areas of the Rio Medio, Rio Frijoles (using gauging station data) and Rio Quemado (using the elevation-area-yield approach) at the mountain front is estimated to be 26,280 afy.

Inflow from groundwater (springs and seeps) is assumed to be negligible because a net stream loss is computed for the Santa Cruz sub-basin. Return flow from irrigation is estimated to be 10,760 afy.

Surface water outflow includes stream loss (to groundwater) of 5,190 afy for all streams in the sub-basin; diversions for irrigation (19,700 afy), and water losses to evaporation and evapotranspiration of 3,680 afy combined. Surface water outflow to the Rio Grande averages 8,470 afy, which includes the Santa Cruz watershed as measured at a gauging station near Riverside and estimated yields (using the Reiland method) from Arroyo Seco and Arroyo Madrid.

GROUNDWATER INFLOW AND OUTFLOW

The total inflow to groundwater is estimated to be 10,650afy. Inflow is estimated to be 3,080 afy from mountain front recharge, 5,190 afy from surface water infiltration along stream courses, 1,760 afy from adjacent sub-basins, and 620 afy from return flow of irrigation and municipal/industrial sources.

Groundwater outflow is estimated to be 3,000 afy for domestic and municipal use, 2,400 afy to evaporation and 7,130 afy to outflow from the sub-basin.

EXISTING USES

Surface water is utilized primarily for agricultural purposes with an estimated 9890 irrigated acres (using the method of Wilson and Lucero 1997, but also noting considerable uncertainty) in the sub-basin.

Groundwater is tapped primarily for rural domestic use and by the City of Espanola for municipal uses.

WATER QUALITY

Surface water quality is generally good within the sub-basin with only iron and manganese levels noted as being somewhat elevated when sampled in the late 1980s. The groundwater quality is generally very good except in the more congested areas, where septic tanks and drain fields have locally raised nitrate levels.

PROJECTED DEMAND

Most residents in the sub-basin reside in Espanola or in communities to the east along state road 76, including Santa Cruz, Chimayo, Portrero, Cordova and Truchas, or south, including La Mesilla and Arroyo Seco near US 285. The Santa Cruz sub-basin population is estimated to be about 20,000 in 2000.

Under the most likely population growth scenario, the population will grow to about 40,000 by the year 2060 (BBER, Draft, July 2000). Most of the future population growth will be in the same general areas as the present population centers. The Santa Fe County portion of the sub-basin, southeast of Espanola/Riverside, is expected to see the greatest growth over the next 60 years (BBER, Draft, July 2000). The increased population will result in a greater demand for groundwater for domestic use, from 3,000 afy in year 2000 to 6,000 afy in 2060. Little change in surface water demand (mainly for agriculture) is projected during this period.

Summary water quantity and quality data taken from "Water Supply Study Jemez y Sangre Water Planning Region, New Mexico," Duke Engineering, & Services, Albuquerque, New Mexico, (August 2000) or as referenced. Population data taken from "Population Projections for the Jemez y Sangre Water Planning Region, Bureau of Business and Economic Research, University of New Mexico, July 2000.



Jemez y Sangre Water Planning Council

Sub-Basin Water Supply and Demand Summary

Los Alamos Sub-Basin

OVERVIEW

The Los Alamos sub-basin meets current water demand through use of ground water. By 2060, the population change could increase water demand by approximately 660 afy. It appears the State Engineer's recognized water right of 5,541 afy could meet the demand. The primary concern for the sub-basin is the sustainability of groundwater pumping. Additionally, naturally occurring constituents, such as arsenic, and historic releases of hazardous substances from Los Alamos National Laboratory, such as radionuclides, are a concern. The Cerro Grande fire heightened these concerns.

SUB-BASIN CHARACTERISTICS

The Los Alamos sub-basin encompasses Los Alamos County with small portions extending into Rio Arriba and Santa Fe counties. The sub-basin is in the Jemez Mountains with the landscape consisting of relatively high mountains and plateaus cut by deep canyons.

Portions of Santa Clara Pueblo and San Ildefonso Pueblo occupy the eastern part of the sub-basin with the Rio Grande forming the eastern boundary. Most sub-basin residents live in Los Alamos or White Rock. Landholdings are largely federal, including Los Alamos National Laboratory.

The watersheds within the sub-basin encompass a total area of approximately 173 square miles. The sub-basin extends from a high elevation of 10,423-feet above mean sea level in the Jemez Mountains to about 5,360-feet at the Rio Grande where the southernmost tributary (Rito de los Frijoles) joins the main stem river; thus the total elevation relief is about 5,060 feet.

Rather than comprising a single, main watershed with a distinct outlet, the Los Alamos sub-basin actually contains several canyons that flow southeastward to eastward and are directly tributary to the Rio Grande. They include Guaje Canyon, Los Alamos Canyon, Pajarito Canyon, Water Canyon, Ancho Canyon, and Canyon de los Frijoles. Several other smaller canyons are tributary to these major canyons. When considering full stream lengths within each watershed, almost all streams are considered ephemeral/intermittent.

PRECIPITATION

The sub-basin receives an average annual precipitation of about 17.7 inches.

SURFACE WATER SUPPLY AND DEMAND

Surface water inflow at the mountain-front in the Los Alamos sub-basin was estimated at 2,790 afy using the elevation-area-yield approach, which accounts for terrestrial ecosystem ET losses. Runoff, spring discharge from perched aquifers, and sanitary wastewater discharges enhance surface water flows. Using estimates of flat free water surface areas and riparian areas, total ET was estimated to consume 1,990 afy of surface water.

Stream losses on the plateau are significantly greater than can be explained by ET and thus represent a source of recharge for the groundwater system. This mechanism, however, probably produces far less water than does recharge from the Sierra de los Valles and possibly from Valles Caldera. Assessment of the surface water budget indicates that no human use is made of surface waters, thus the system is in a natural state.

GROUNDWATER SUPPLY AND DEMAND

The regional aquifer beneath the Pajarito Plateau occurs in rocks of the Puye Formation, Cerros del Rio Basalts, and Tesuque Formation. The aquifer is unconfined in the west and confined in its eastern portion near the Rio Grande. The flow of groundwater is east or southeast, towards the Rio Grande.

The Rio Grande is the main discharge area for the regional aquifer. The aquifer primarily is recharged by underflow of groundwater from the Sierra de los Valles. However, there is leakage from alluvial groundwater in canyon bottoms on the Pajarito Plateau, and from intermediate perched groundwater.

Assessment of the groundwater budget indicates net depletion of groundwater due to pumping could be as little as zero or as large as 2,000-3,000 afy, depending on assumptions about recharge rates. It is unclear whether municipal pumping has reduced discharge to the Rio Grande. Ongoing studies indicate water levels in the aquifer may be stabilizing and current-pumping rates may be sustainable. Estimated groundwater storage is 11 million acre-feet. However, because surface waters are fully appropriated, stream-connected groundwater appropriations or transfers will be conditioned to require retirement of surface water rights to offset any depletions caused by groundwater pumping. The Long Range Water Supply Plan for Los Alamos County indicates annual water level declines between 1 and 2 feet per year compared with the 500- to 1,500-foot-thick saturation zone of the aquifer.

Los Alamos County administers the New Mexico State Engineer recognized water right of 5,541.3 afy. Approximately 80 percent of the right have been used over the past 10 years. The County holds the 1,200 acre-foot San Juan/Chama contract, which could potentially allow diversion of up to 1,550 afy to fully consume the water. According to Los Alamos County Long Range Plan, present County development plans could result in an 11 percent increase in water usage. Additional Laboratory water use is more difficult to forecast, but likely to remain stable because of aggressive water conservation efforts.

WATER QUALITY

The Los Alamos County public water supply meets drinking water quality standards. In addition to the public water supply, there are a few individual domestic water supply wells. Concerns exist relative to residual contamination associated with historic operations of Los Alamos National Laboratory. The Laboratory is taking corrective action under its Environmental Restoration Project to address these concerns. The Laboratory has an ongoing surveillance and monitoring program to assess the quality of surface water and groundwater. In addition, the public water supply is monitored to ensure it meets applicable water quality standards.

EXISTING USES

The Los Alamos groundwater supply is used for municipal, domestic, and industrial purposes (approximately 4000 afy). Groundwater and surface water are also used for livestock purposes (minimal).

POPULATION AND DEMAND PROJECTIONS

Under the most likely growth scenario, the Los Alamos sub-basin population will increase from its current population of about 20,000 to 23,000 in the next 60 years. The population change would increase water demand by approximately 660 afy, which is consistent with the Los Alamos County Long Range Plan. It appears the New Mexico State Engineer recognized water right of 5,541.3 afy could meet this demand.

SPECIAL CONSIDERATIONS

The primary concern for the Los Alamos sub-basin is if the current pumping rate is sustainable. Additionally, naturally occurring constituents (for example, arsenic) and historic releases of hazardous substances (for example, radionuclides) are a concern in groundwater. Per the Rio Grande Compact, New Mexico must maintain flow conditions that existed in 1929 to meet compact requirements. Additionally, Pueblo water rights remain to be determined.

Summary water quantity and quality data taken from "Water Supply Study Jemez y Sangre Water Planning Region, New Mexico," Duke Engineering, & Services, Albuquerque, New Mexico, (August 2000) or as referenced. Population data taken from "Population Projections for the Jemez y Sangre Water Planning Region, Bureau of Business and Economic Research, University of New Mexico, July 2000.



Jemez y Sangre Water Planning Council

Sub-Basin Water Supply and Demand Summary

Pojoaque-Nambe Sub-Basin

OVERVIEW

The Pojoaque-Nambe watershed is the focus of the Aamodt lawsuit, first filed in 1966 in an attempt to adjudicate the waters of the sub-basin. Little is known about much of the sub-basin's water resources due to a lack of measuring capacity for inflows, diversions and domestic wells. The population of the region, due to its proximity to the population center of the region in Santa Fe, is projected to grow at a faster rate than other sub-basins farther from Santa Fe.

SUB-BASIN CHARACTERISTICS

The Pojoaque-Nambe sub-basin drains an area of 123 square miles. The elevation ranges from 12,621 feet at the peaks of the Sangre de Cristo Range, to 5,494 at the Rio Grande. The main streams in the watershed are the Nambe River, the Rio En Medio, Chupadero and the Tesuque, all of which combine to form the Pojoaque River. The average slope of the river is 182 feet per mile.

The Nambe River is the principal stream in the watershed and has the only surface water reservoir in the watershed. The normal reservoir storage capacity is 2,023 acre feet.

PRECIPITATION

The closest long-term precipitation station to the sub-basin is Santa Fe. The average precipitation is 13.84 inches but has varied from 5.03 inches to 21.75 inches.

SURFACE WATER SUPPLY

Reiland has estimated that the average surface water inflow to the sub-basin from the four major streams is 12,820 afy. However, the surface flow of the Rio en Medio and the Rio Chupadero have not been monitored. Excluding the Tesuque runoff, the estimated runoff is about 10,000 afy. Diversions in the sub-basin total 4,870 afy. The surface water outflow is 5,500 afy.

Because of a projected increase in population, much of it relying on wells on irrigated land, there is expected to be an unquantified concomitant decrease in surface water in those areas.

GROUNDWATER SUPPLY

Koopman (1975) estimated that the groundwater in storage in the Pojoaque-Nambe and Tesuque sub-basins is 55 million acre-feet. The estimated inflow to the groundwater is 4,500 afy from mountain front recharge, 5,000 from seepage of streams and rivers and other factors, for a total inflow of an estimated 13,730. Groundwater diversions are estimated at 940 afy, and springs contribute about 4,000 afy to rivers and streams.

WATER QUALITY

In general the quality of the groundwater in the sub-basin is good. However, in local areas water quality problems exist. Some areas have naturally occurring high levels of fluoride and uranium. Areas of higher population density have increasing levels of nitrate associated with the use of septic tanks

EXISTING USES

The hydrographic survey found 3,538 acres of irrigation (including the Tesuque sub-basin) based on 1959 aerial photos. In a 1995 report (Wilson and Lucero) the irrigated acreage was estimated to be 2,255 acres, a 36 percent decrease over 36 years.

The use of groundwater is mainly for domestic use and is currently a relatively small amount of 943 afy.

PROJECTED DEMAND

Population in the sub-basin is estimated to grow substantially from the estimated 2000 population of 6,280 to 9,580 in 2020, then to 14,799 in 2040, and to 22,383 by the end of the planning period in 2060. The use of groundwater is projected to increase, up to an estimated 3,357 afy.

SPECIAL CONSIDERATIONS

The irrigated acreage in the watershed is involved in an adjudication lawsuit that began in 1966. The U.S. District Court has recently increased the pueblos' irrigated acres of 1,094 by 407 acres. In drought years, the surface water supply is not sufficient and, as senior water right holders, the pueblos have exercised their priority to curtail the use of water by junior users. With the increased senior rights of the pueblos, shortages will increase as the additional new acreage is put into production.

The Pojoaque-Nambe Sub-Basin lacks sufficient data for precise understanding of water inflow and outflow. Duke Engineering suggests that much more data should be collected about irrigation diversions, depletions and return flows to arrive at a more accurate calculation of surface flows.

Summary water quantity and quality data taken from "Water Supply Study Jemez y Sangre Water Planning Region, New Mexico," Duke Engineering, & Services, Albuquerque, New Mexico, (August 2000) or as referenced. Population data taken from "Population Projections for the Jemez y Sangre Water Planning Region, Bureau of Business and Economic Research, University of New Mexico, July 2000.

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Jemez y Sangre Water Planning Council

Sub-Basin Water Supply and Demand Summary

Tesuque Sub-Basin

OVERVIEW

The Tesuque sub-basin is located north and east of Santa Fe and is drained by the Tesuque and Little Tesuque creeks. The projected six-fold population growth in the Tesuque sub-basin over the next 60 years will put a strain on water demand, and particularly for domestic use groundwater. Groundwater demand is projected to increase from about 730 acre feet per year (afy) to 4500 afy in 2060, while surface water demand remains constant. While current supply/demand analyses indicates that there will be sufficient water to meet domestic demand to 2050, after that date new sources of supply may need to be secured. Surface and groundwater quality is generally good in the Tesuque sub-basin, although there are signs that minor contamination may be entering surface water from upstream development. As demand for water grows, the potential for contamination will increase, especially in localities with higher population densities.

SUB-BASIN CHARACTERISTICS

The Tesuque sub-basin is located north of Santa Fe with headwaters in the Sangre de Cristo Range south of Lake Peak. The Tesuque sub-basin watershed encompasses 77 square miles and ranges from 11,850 feet on the east to 5,750 feet at the confluence of the Rio Tesuque and Pojoaque Creek, for a total relief of 6,100 ft. across the sub-basin.

The Tesuque and Little Tesuque creeks flow generally west from the Sangre de Cristo Range until they converge to form the Rio Tesuque. The Rio Tesuque then flows north-northwest until it joins Pojoaque Creek to form the Pojoaque River, which in turn flows west to the Rio Grande.

PRECIPITATION

Precipitation averages 15.3 inches per year, most of which results from winter snow, and brief but intense summer thunderstorms. Higher elevations receive significantly more precipitation than the lower areas along the Rio Tesuque. Evaporation and evapotranspiration, especially along the heavily vegetated stream drainages, results in a significant decrease in the total available water within the Tesuque sub-basin.

SURFACE WATER INFLOW AND OUTFLOW

The surface water budget includes an estimated 3,500 afy inflow for the combined drainage area of Tesuque and Little Tesuque Creeks and their ephemeral tributaries.

Inflow from groundwater adds 1,815 afy and return flow from irrigation and municipal/industrial sources another 1,115 afy, for a total estimated inflow of 6,430 afy. Outflows include 2,110 afy to irrigation and municipal/industrial uses, 2,500 afy as stream losses to groundwater, 1,280 afy to evapotranspiration, and 540 afy as flow into the Pojoaque River, for a total outflow of 6,430 afy.

GROUNDWATER INFLOW AND OUTFLOW

Groundwater budgets for the Tesuque sub-basin include inflow from mountain front recharge of 2,460 afy, stream channel recharge of 2,500 afy, flow from adjacent sub-basins of 3,500 afy, and return flow from irrigation and municipal/industrial use of 155 afy for a total estimated inflow of 8,615 afy.

Outflow estimates include 729 afy to domestic use (based on per person average), 2,400 afy to evaporation, 1,815 afy groundwater discharging to surface water, and 4,000 afy flow out of the sub-basin, for a total of 8,944 afy.

WATER QUALITY

Surface water quality in the Tesuque sub-basin is characterized as very good overall with iron, lead and aluminum being the three inorganic constituents that occasionally are found to be elevated. The source of the increase is unknown, but might be natural weathering of the granitic core rock in the Sangre de Cristo Range or from runoff over roads, building sites or the Santa Fe Ski area, or some combination of events.

Groundwater is also of high quality in most of the Tesuque sub-basin with only a few localized areas having elevated nitrate levels due to agricultural fertilizers or more concentrated septic leach fields. Except in local areas where nitrate levels are high, the calcium-bicarbonate groundwater is potable and contains relatively low levels of total dissolved solids.

EXISTING USES

It is estimated that about 475 acres are currently under irrigation within the Tesuque sub-basin, and approximately 2,110 afy of surface water will be used for agricultural purposes in year 2000. In addition, current domestic/industrial users in the sub-basin consume about 310 afy of groundwater. Total surface and groundwater usage in year 2000 is estimated to be 2,420 afy.

PROJECTED POULATION GROWTH AND WATER DEMAND

The population of the Tesuque sub-basin was 4,670 in 1999, and is projected to grow to 30,422 by the year 2060 (BBER). A majority of the current population is located in or near the village of Tesuque along the Rio Tesuque, or in the Pueblo of Tesuque, also along the stream but a few miles to the northwest. As the population grows in the coming decades, it is projected that agriculture use of surface water will increase only moderately from 1,210 afy now to 1,740 afy in 2060; however, it is also possible that agricultural usage will decrease as projected domestic demand increases from 729 afy to 4,563 afy by year 2060. Collectively, the projected growth in population will significantly increase the demand for water in the Tesuque sub-basin over the next 60 years.

Summary water quantity and quality data taken from "Water Supply Study Jemez y Sangre Water Planning Region, New Mexico," Duke Engineering, & Services, Albuquerque, New Mexico, (August 2000) or as referenced. Population data taken from "Population Projections for the Jemez y Sangre Water Planning Region, Bureau of Business and Economic Research, University of New Mexico, July 2000.



Jemez y Sangre Water Planning Council

Sub-Basin Water Supply and Demand Summary

Caja del Rio Sub-Basin

OVERVIEW

The water budget for the Caja del Rio sub-basin shows there is an adequate supply of water for users in the sub-basin. However, the Buckman wells will continue to supply water to the Santa Fe sub-basin. By 2060, the population change could increase water demand by approximately 290 afy. Domestic wells could be developed to meet demand, however development of municipal supplies would require acquisition of existing water rights.

SUB-BASIN CHARACTERISTICS

The Caja del Rio sub-basin is situated in the western part of Santa Fe County and includes a portion of San Ildefonso Pueblo. The Rio Grande forms the western boundary of the sub-basin. The Caja del Rio sub-basin, located between the combined Tesuque and Pojoaque-Nambe watershed on the north and the Santa Fe River sub-basin on the south, has a combined drainage area of about 158 square miles.

Elevations in this sub-basin vary from 7,400 feet at the highest point to about 5,150 feet at the Rio Grande near the sub-basin's south boundary. The largest stream is Canada Ancha, which drains the northern portion of the sub-basin and flows from southeast to northwest. The slope of its channel is 80 feet per mile.

The Caja del Rio sub-basin does not actually contain a single main stream that defines its area. Instead several watercourses and arroyos originating within it are directly tributary to the Rio Grande.

Two additional drainages occurring in the northern half of the sub-basin are defined respectively by Thirtyone Draw and Arroyo Eighteen. Drainages in the southern half include Santa Cruz Arroyo, Arroyo Tetilla, and Arroyo Colorado, the latter two of which combine to form Canada de Cochiti, a tributary to the Rio Grande.

PRECIPITATION

The Caja del Rio sub-basin receives an annual average precipitation of 12 inches.

SURFACE WATER SUPPLY AND DEMAND

The only surface water flow records that are apparently available for the Caja del Rio sub-basin are a few measurements of spring flows close to the Rio Grande. Because all watercourses in the sub-basin are ephemeral and currently ungauged, surface inflow to the watershed (1,350 afy) was estimated using the elevation-area-yield approach. The estimate of the groundwater discharged to surface water is zero.

Total evapotranspiration was estimated at 200 afy. Comparison of all aforementioned budget components resulted in an estimated stream loss to groundwater of 1,150 afy.

Assessment of the sub-basins' surface water budget indicates that surface waters are in a natural state and utilized in small amounts by livestock.

GROUNDWATER SUPPLY AND DEMAND

Assessment of sub-basin's groundwater budget indicates that groundwater is used for domestic and livestock purposes. However, the Buckman wells, which supply the City of Santa Fe, pump 4,911 afy, have caused a water level decline of 500 feet over 30 years.

The groundwater supply is believed to be extensive with an estimated storage of 20.3 million acre feet, under certain assumptions. However, because surface waters are fully appropriated, stream-connected groundwater appropriations or

transfers will be conditioned to require retirement of surface water rights to offset any depletions caused by groundwater pumping.

WATER QUALITY

Assessment of water quality in the sub-basin indicates localized impacts to surface waters associated with cattle use. Additionally, the Buckman wells experience elevated levels of natural radionuclides of concern.

EXISTING USES

Groundwater is used for domestic (approximately 88afy) and livestock (minimal) purposes in the sub-basin. Surface water is also used for livestock purposes (minimal).

POPULATION AND DEMAND PROJECTIONS

Most of the sub-basins residents reside in the Las Dos area in the eastern region of the sub-basin. Under the most likely growth scenario, the Caja del Rio sub-basin population will increase from its current population of about 550 to about 2,500 in the next 60 years. The population change would increase water demand by approximately 290 afy. Domestic wells could be developed to meet demand, however, development of municipal supplies would require acquisition of existing water rights.

SPECIAL CONSIDERATIONS

The Buckman wells will continue to supply water the Santa Fe sub-basin. Per the Rio Grande Compact, New Mexico must maintain flow conditions that existed in 1929 to meet Compact requirements. Additionally, Pueblo water rights remain to be determined.

Summary water quantity and quality data taken from "Water Supply Study Jemez y Sangre Water Planning Region, New Mexico," Duke Engineering, & Services, Albuquerque, New Mexico, (August 2000) or as referenced. Population data taken from "Population Projections for the Jemez y Sangre Water Planning Region, Bureau of Business and Economic Research, University of New Mexico, July 2000.



Jemez y Sangre Water Planning Council

Sub-Basin Water Supply and Demand Summary

Santa Fe River Sub-Basin

OVERVIEW

The Santa Fe River Sub-Basin is meeting present demand through the use of groundwater pumped from various wells within the city and runoff from the Santa Fe River watershed, totaling about 9,100 afy. Additional water totaling about 4,900 afy is transferred into the sub-basin from the Buckman wellfield near the Rio Grande, in the Caja del Rio sub-basin. Population in the sub-basin is projected to reach 157,092 by the year 2060, which would require additional water supplies of about 13,200 afy. The wastewater treatment plant discharges about 6,500 afy to the Santa Fe River, contributing to recharge of the groundwater aquifers downstream.

SUB-BASIN CHARACTERISTICS

The Santa Fe River watershed, which drains the southern extent of the Sangre de Cristo Range and covers a total area of 284 square miles, is the location of the City of Santa Fe, the municipality with the largest population within the region. Major tributaries to the river include Arroyo Hondo, Arroyo Calabasas, Cienega Creek, and Alamo Creek. The Santa Fe River is perennial from Santa Fe Lake at 11,700 feet amsl to Nichols Reservoir and from the city wastewater treatment plant to Cochiti Lake. The natural outlet for the Santa Fe River is at the Rio Grande about 2 miles south of Cochiti Lake, but the river's discharges are diverted northward to the lake about 3 miles upstream of the natural outlet. The elevation at the lake outlet is approximately 5,250 feet, which results in a total elevation relief for the watershed of 6,900 feet.

PRECIPITATION

The average annual precipitation on the watershed is 12.4 inches. The minimum recorded precipitation is 5.03 inches and the maximum is 21.75 inches for the period 1868-1996.

SURFACE WATER SUPPLY AND DEMAND

The amount of inflow from precipitation into the Santa Fe River is estimated at 7,850 afy, which includes estimated inflow from Arroyo Hondo. The Santa Fe River watercourse loses a significant amount of its flow to groundwater. The losses appear to occur within and near the City of Santa Fe, and downstream of the Santa Fe wastewater treatment plant, which discharges its effluent to the river. The amount of seepage to the groundwater amounts to 3,770 acre-feet per year on average above La Cienega and 4800 afy below La Bajada. The Santa Fe River gains in the reach below La Cienega Springs and above La Bajada at an average rate of 2,170 afy.

Estimated return flow in this sub-basin represents the combination of average waste water treatment plant discharge of 6,500 afy to the Santa Fe River during the years 1993-1997, and estimated irrigation return flow of 1,560 afy. Water is diverted from the Santa Fe River for both irrigation and municipal uses, the total of which is estimated at 7,290 afy. The irrigation diversion is computed at 2,665 afy. The estimated municipal diversion is about 4,625 afy, which is the average diversion for the period 1990 to 1999.

The total amount of evapotranspiration is estimated at 1,180 afy based on an estimated 80 acres of free water surface area subject to 45 inches per year evaporation and 440 acres of riparian land subject to an evapotranspiration rate of 24 inches per year. The surface water outflow of 1,110 afy is calculated as the residual from combining all other budget components. The outflow value is reasonable considering the large losses downstream of the gauging station (Santa Fe River above Cochiti Lake). The average flow is 8,450 afy measured at the gauging station during the years 1970-1997 and seepage losses could be as high as 8700 afy.

GROUNDWATER SUPPLY AND DEMAND

Recharge to the groundwater occurs from the 3,770 afy of stream losses discussed above. A total of 5,050 afy is estimated to recharge the groundwater at the mountain front. Another 1,000 afy recharges the groundwater as inflow from the North Galisteo sub-basin, and 285 afy recharges the groundwater from irrigation and domestic well use.

An average of 4,574 afy is diverted from the aquifer in the Santa Fe sub-basin from the City of Santa Fe wells and domestic wells. Evapotranspiration from shallow groundwater is estimated to be 1,200 afy and discharge through springs is estimated at 2,170 afy. The total flow out of the Santa Fe sub-basin to other sub-basins is 4,120 afy, 1,050 afy of which moves toward the Caja de Rio sub-basin, 500 afy to the North Galisteo sub-basin and another 2,570 afy to the Rio Grande.

WATER QUALITY

The water quality of the Santa Fe Sub-Basin is naturally very good, but hard due to the concentrations of calcium and magnesium. The total dissolved solids concentrations is generally less than 350 milligrams per liter (mg/L). Nitrate, from an unknown source, has been detected in many of the city wells at concentrations slightly above the 10 mg/L standard. Downstream of the City's wastewater treatment plant, nitrate concentration in the groundwater range from 4 to 6 mg/L. Within the City limits, leaking underground storage tanks have contaminated the groundwater in several locations. chlorinated solvents have contaminated one city well and PCE from a dry cleaners has been detected beneath the Railyard property. This site is being developed as a Brownfields Superfund Site.

EXISTING USES

Groundwater and surface water are used for municipal and irrigation purposes.

POPULATION PROJECTIONS

Under the most likely growth scenario, the Santa Fe sub-basin population will increase from its current population of about 87,700 to 157,100 in the next 60 years. The population change would increase water demand by approximately 13,200 afy.

SPECIAL CONSIDERATIONS

The City and County of Santa Fe have rights to San Juan-Chama water, that when imported and combined with return flow credits, could meet the growing demand for water until 2040.

Summary water quantity and quality data taken from "Water Supply Study Jemez y Sangre Water Planning Region, New Mexico," Duke Engineering, & Services, Albuquerque, New Mexico, (August 2000) or as referenced. Population data taken from "Population Projections for the Jemez y Sangre Water Planning Region, Bureau of Business and Economic Research, University of New Mexico, July 2000.



Jemez y Sangre Water Planning Council

Sub-Basin Water Supply and Demand Summary

North Galisteo Creek Sub-Basin

OVERVIEW

The North Galisteo Creek Sub-Basin is the drainage area that, at the lowest points of its major arroyos, feeds into the Galisteo Creek near Cerrillos. The dominant activity in the sub-basin is the community of Eldorado and its suburbs, which are one of the fastest-growing areas in the entire Jemez y Sangre region. In 1970, the North Galisteo Creek Sub-Basin was ranked eighth out of the 10 sub-basins in the region in population, with fewer than 900 inhabitants. By the turn of the century, the population had grown by more than 1,000 percent to more than 10,000 people. The region relies heavily on groundwater to serve the growing population, and taps the only flowing stream in the adjoining South Galisteo Basin for the majority of its present water needs.

SUB-BASIN CHARACTERISTICS

The North Galisteo Creek watershed lies immediately south of the Santa Fe River watershed. The sub-basin has a drainage area of 93 square miles and an elevation relief of 2,510 feet, with land elevations varying from 8,230 to 5,720 ft. Despite its name, Galisteo Creek does not actually flow within the sub-basin. Galisteo Creek is the defining watercourse for the South Galisteo Creek watershed, however the drainages in North Galisteo Creek watershed eventually empty into Galisteo Creek. The main stream within it is the southwestward-trending Gallina Arroyo, which is formed by the merger of Cañada de las Minas and Cañada Ancha in the foothills near the southern extent of the Sangre de Cristo Range. San Marcus Arroyo joins Gallina Arroyo about two miles upstream of the watershed's outlet at Galisteo Creek.

PRECIPITATION

The watershed receives an average annual precipitation of about 13 inches.

SURFACE WATER SUPPLY AND DEMAND

Surface water inflow in the North Galisteo Creek sub-basin was calculated at 900 afy. Evapotranspiration from an estimated riparian area of 65 acres near stream channels that are typically dry was estimated at 130 afy. The remaining budget balance of 770 afy was assumed to recharge the groundwater system through stream losses.

GROUNDWATER SUPPLY AND DEMAND

The North Galisteo Creek receives little mountain front recharge. A total of 1,550 afy of recharge occurs as inflow from adjacent sub-basins and another 260 afy recharges from return flow through septic tanks. With the 770 afy of stream losses estimated to recharge the aquifer, the total recharge to this sub-basin is estimated to be 2,580 afy.

Groundwater diversions occur through municipal (403) and domestic (112) pumping for a total of 515 afy. Another 500 afy is estimated to occur through evaporation of shallow groundwater and 2050 afy are estimated to leave the sub-basin to adjacent sub-basins. The total discharges from groundwater amount to 3065 afy, or 485 afy more than the estimated recharges. Because little to no data exist to support the estimated budget values for the North Galisteo Creek sub-basin, all of its estimated components are considered very uncertain.

WATER QUALITY

Water quality is generally very good, but hard due to concentrations of naturally occurring calcium and magnesium. Given the few potential sources for contamination in this sub-basin, very little groundwater contamination problems exist. Nitrate is found in wells along the mountain front in concentrations commonly ranging from 3-5 mg/L as N. Pesticides were detected in Canoncito wells.

EXISTING USES

Groundwater is used for domestic and minor commercial uses only.

POPULATION PROJECTIONS

Under the most likely growth scenario, the North Galisteo sub-basin population will increase from its current population of about 11,100 to 49,500 in the next 60 years. The population change would increase water demand by approximately 5,750 afy. The sub-basin is one of the fastest growing in the region. In 1970, the U.S. Census measured its population at 898 people. By 1990 it had grown to about 5,800 and by 2000 to 11,100. It has climbed from eighth most populated sub-basin in 1970 to the fourth largest. By 2020 it is projected to be home to more than 18,000 people. By 2040, the Eldorado and surrounding communities will surpass Los Alamos in size with an estimated 30,326 people. By 2060 it will be nearly as large as the population of the three sub-basins that comprise greater Espanola.

SPECIAL CONSIDERATIONS

Summary water quantity and quality data taken from "Water Supply Study Jemez y Sangre Water Planning Region, New Mexico," Duke Engineering, & Services, Albuquerque, New Mexico, (August 2000) or as referenced. Population data taken from "Population Projections for the Jemez y Sangre Water Planning Region, Bureau of Business and Economic Research, University of New Mexico, July 2000.

Jemez y Sangre Water Planning Council ◀ 2001



Jemez y Sangre Water Planning Council

Sub-Basin Water Supply and Demand Summary

South Galisteo Creek Sub-Basin

OVERVIEW

The South Galisteo Creek Sub-Basin includes the upper villages of Galisteo and Lamy, the lower villages of Cerrillos, Madrid and Golden, and the sparsely populated areas in between. As a sub-basin, its population will grow, but will not at the rates of its neighbor to the north, which includes the fast-growing community of Eldorado. The South Galisteo Sub-Basin will grow from about 1 percent of the region's total population in 2000 to 2 percent of the total by 2060.

The region relies almost entirely on groundwater for its domestic uses, primarily through individual water wells. The sub-basin is presently able to meet demand, however the supply to meet the projected demand beginning at the present time is undetermined.

SUB-BASIN CHARACTERISTICS

The South Galisteo Creek watershed is comprised of a sub-basin whose borders do not everywhere coincide with natural drainage boundaries. Part of the eastern boundary of the defined sub-basin is formed by the eastern boundary of Santa Fe County. The entire western boundary of the sub-basin coincides with the border between Santa Fe County and Sandoval County.

The South Galisteo Creek watershed is the largest of the study sub-basins, encompassing an area of about 527 square miles. The Ortiz Mountains form part of the watershed's south boundary. In upper portions of the watershed, Apache Canyon River and Galisteo Creek combine to drain about 32 square miles of the southern end of the Sangre de Cristo Mountains. For the initial 15 miles below the confluence of these two streams, Galisteo Creek flows toward the southwest. West of Galisteo, the creek flowing west-northwest and continues until it joins the Rio Grande about 5 miles west of the Santa Fe County/Sandoval County line.

Tributaries to Galisteo Creek include Cañada Estacada, Arroyo de la Jara, Gavisco Arroyo, Cunningham Creek, and Arroyo Charro. The South Galisteo Creek watershed varies in elevation from 10,500 feet in the Sangre de Cristo Mountains to about 5,400 feet at the western Santa Fe County line.

The hydrologic system is structurally complex and most of the rock formations are not considered aquifers. Most of the rocks have low permeability and storage capacity. Some of the geologic units that do form an aquifer, but generally they are thin, entirely bounded laterally by low permeability rocks that receive little recharge. Thus, on a regional scale, they are not considered to be significant water bearing units.

PRECIPITATION

The sub-basin receives an annual average precipitation of 14 inches.

SURFACE WATER SUPPLY AND DEMAND

About 6,240 afy of surface-water inflow was calculated for this sub-basin. Irrigation return flow of 170 afy also was computed. Groundwater discharge to surface water of 890 afy was estimated by balancing all other budget components. Irrigation diversions of 290 afy were estimated for 88 acres of land. Water losses to ET were calculated at 2,570 afy, assuming 1,050 acres of riparian vegetation experiencing an evapotranspiration rate of 26 inches per year, and 125 acres of free water surface area undergoing an evaporation rate of 45 inches per year. Surface outflow from the watershed, estimated at 4,440 afy, was based on the annual average measured flow at Galisteo Creek below Galisteo Reservoir during the period 1970-1997.

GROUNDWATER SUPPLY AND DEMAND

Mountain front recharge to the groundwater system in the South Galisteo Creek area is estimated to be 5,500 afy. Inflow from adjacent basins is estimated at 1,050 afy and recharge from domestic use is estimated at 105 afy. The total recharge rate to groundwater is estimated at 6,655 afy. Diversions from the groundwater system include 210 afy from domestic wells, 1,300 afy from evapotranspiration from shallow groundwater and 890 afy of spring flow. A total of 4,600 afy of groundwater is discharged from the basin to the north and to the west (Rio Grande). Discharges exceed recharge by 345 afy.

WATER QUALITY

Water quality is naturally quite variable in the South Galisteo sub-basin. Total dissolved solids can reach as high as 3,500 milligrams per liter (mg/L), much higher than the drinking water standard of 1,000 mg/L. The cyanide heap leach operation in the Ortiz Mountains resulted in cyanide and metals contamination in the groundwater and surface water near the mine. The pesticide Atrazine has been detected in wells in Lamy, Girls Ranch and in Glorieta, and a leaking underground storage tank has resulted in gasoline contamination of groundwater near Galisteo.

EXISTING USES

A relatively small amount of surface water is used for irrigation and groundwater is diverted for domestic use. Historically, water was used for the heap leaching operation and dewatering the gold mine in the Ortiz Mountains. This operation has ceased, although efforts have been made within the past decade to resume mining.

POPULATION PROJECTIONS

Under the most likely growth scenario, the South Galisteo sub-basin population will increase from its current population of about 2,900 to 15,300 in the next 60 years. The population change would increase water demand by approximately 1,856 afy.

SPECIAL CONSIDERATIONS

The water budgets are very poorly understood in this sub-basin.

Summary water quantity and quality data taken from "Water Supply Study Jemez y Sangre Water Planning Region, New Mexico," Duke Engineering, & Services, Albuquerque, New Mexico, (August 2000) or as referenced. Population data taken from "Population Projections for the Jemez y Sangre Water Planning Region, Bureau of Business and Economic Research, University of New Mexico, July 2000.

Appendix C4

Newsletters, Press Releases and Newspaper Articles



**Jemez y Sangre
Water Planning Council**

NEWS

The Jemez y Sangre Water Planning Council meets every month.
Call Coordinator Amy Lewis at 954-7123

Spring 2000

Regional Water Planning Picks Up Speed

**By Estevan Lopez
Santa Fe County Land Use and
Utilities Director
Chairperson of the Jemez y Sangre
Water Planning Council**

Regional water planning in north central New Mexico is about the things that matter most in the life of our communities: land, climate and culture. During the next several months, people from Santa Fe, Española, Los Alamos and surrounding communities will talk about those things in light of our most important natural resource – water.

Why we need to plan

In the Jemez y Sangre Water Planning Region, we can no longer assume there will be enough water for all of the people who could be living here in 2060. The JyS Water Planning Council was formed so that this region can better understand its water supply, as well as present and future demands for water.

The need came to light nearly 20 years ago when the City of El Paso claimed water from New Mexico. The judge in the lawsuit ruled that New Mexico could only prevent the export of water if it had a plan for its use.

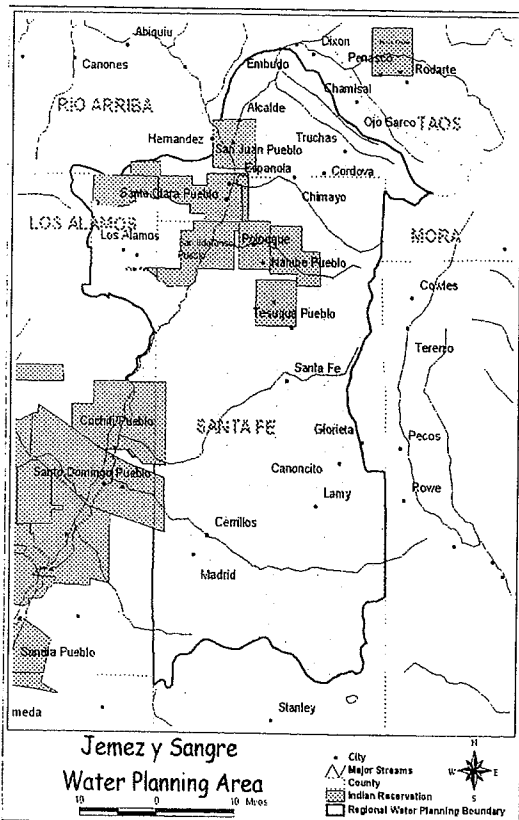
**Hydrology Study – Page 2
Population Study – Page 2
Public Involvement – Page 3
Council Membership – Page 3
Public Welfare – Page 4
Public Meetings – Page 4**

Second, the Council has defined 10 sub-regions in the region to include every watershed and community, and will convene meetings about water and the public welfare with the residents of those sub-regions. Residents will have opportunities to say what is important to them, their families, their jobs and their cultures.

Third, residents will help the Council identify what alternatives exist to change the use or supply of water if a serious imbalance exists, and what choices may have to be made to balance supply and demand.

The questions affect us all and may be difficult or impossible to answer.

Finally, all of the local governments in the region will have to study the recommended plan. They will be asked to give final approval to the plan or make change. Ultimately, the plan will be subject to state and federal law.



Ultimately, the Jemez y Sangre plan and 15 other regional water plans will be unified in a state water plan by the New Mexico Interstate Stream Commission.

The council's job

The Council's task is three-fold:

First, the Council will gather data showing how much water is available in the region, taking into account snow, rain, runoff, recharge, aquifer characteristics, recycling and legal or administrative restrictions. The data will also show present usage for city residential, agricultural, environmental and industrial uses.

The Council will then develop reasonable population projections and future water uses within the region. These crucial data will reveal any imbalance in the supply and demand of water or if an imbalance is likely to develop.

WATER IS LIFE

SPLASHES

Mike Hamman takes job with Jicarilla Apache Tribe

Mike Hamman, who represented the City of Santa Fe on the JyS Water Planning Council, has left his position as director of the city's Sangre de Cristo Water Division.

Hamman has taken a position as tribal water administrator with the Jicarilla Apache Tribe. He is responsible for helping the tribe draft its 100-year water plan and integrating it with the tribe's land use, economic development and environmental goals. He will also be responsible for leasing and allocations of water and helping develop the infrastructure to serve the tribe's population and services.

Estevan Lopez promoted at Santa Fe County

Estevan Lopez, the utilities director for Santa Fe County, has been promoted to Land Use Director. He is presently serving in both capacities. He is chairman of the JyS Water Planning Council.

Contribute articles to this newsletter. Call Ed Moreno at 466-1183.

Jemez y Sangre Water Planning Council NEWS

The Jemez y Sangre Water Planning Council NEWS is published by the City of Santa Fe under a Community Outreach Grant from the Los Alamos Laboratory Foundation.

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Hydrology is Job One for Plan

The Jemez y Sangre Water Planning Council, through its fiscal agent the City of Santa Fe, has contracted with Duke Engineering & Services, Inc. to perform the water resource assessment.

The study will result in two sets of reports: 1) well-founded water budgets for the basins comprising the region, and 2) realistic appraisals of water quality in the region.

The study is funded by the Interstate Stream Commission grant that is supporting the regional water plan, as well as a grant from the U.S. Bureau of Reclamation. Members of the technical subcommittee selected Duke from four proposals. The key personnel are Dave Peterson, Nabil Shafike and Cindy Ardito. The project is expected to be completed by May 1, with a draft report and components delivered this spring.

Duke Engineering will:

- Gather and provide available data on water quantity and quality from sources including Los Alamos National Laboratory, the N.M.

Environment Department, Bureau of Reclamation, local governments, and irrigation districts in the study area.

- Evaluate weather, precipitation and snowpack data from various sources, and compiling a history of droughts in the region.
- Develop surface water budgets for the region and the subregions using streamflow data, gauging station reports, data from reservoirs and dams and state engineer databases.
- Quantify existing groundwater supplies by describing the region's geology and aquifers, reviewing aquifer pump tests from the three counties in the region, locating monitoring wells, examining historic water table data, discussing land subsidence and describing means of aquifer recharge and estimating available storage.
- Prepare reports comparing water rights and actual use in each sub-basin, using data compiled by LANL.

How Many People Are Too Many?

One of the critical components of the regional water plan is estimating the demand for water for the next 60 years. One of the most important factors is an estimate of the number of people who will live and work in the region.

The Jemez y Sangre Water Planning Council has contracted with demographers from the University of New Mexico Bureau of Business and Economic Research. The scope of work includes these two major tasks:

- Establish short- and long-term historic population levels in the region and subregions, using U.S. Census data and annual BBER population estimates for the past decade.

- Project "conservative" and "most likely" projections of population from 2000 to 2060, using demographic trends, with variations based on assumptions of migration, birth and death rates.

The team will create scenarios for population growth, including employment changes at Los Alamos National Laboratory or a new large manufacturing company in the region.

The study, which is expected to be completed this spring, will incorporate a number of sources of information, including housing sales, tax records and school enrollment. The research is being conducted by Adelamar Alcantara and F. Lee Brown of the BBER.

Council Represents Diversity of Northern N.M.

The Jemez y Sangre Water Planning Council reflects the diversity of groups and individuals in northern New Mexico who are interested in water and its role in our future. They will guide the planning process, which will continue into 2001. The structure of the Council is designed for maximum public involvement.

The Council

The Council is the first level of public involvement. Council members represent local governments, acequias, irrigation districts, advocacy groups, and state and federal water, land and resource management agencies that can influence the quality, quantity and availability of surface or ground water. There are 22 entities on the Council.

The Subcommittees

The second level is subcommittees, comprised of individuals with specific expertise in various subject matter areas. The subcommittees are: technical, population/water demand, public involvement, legal and pueblos.

The subcommittees are open to any interested individuals from the region who feel their expertise can be valuable to the planning effort. Many experts have volunteered their time and experience. The subcommittees have developed proposals for contractors to perform various tasks, such as hydrology, demographics and public involvement.

The General Public

The third level is the largest and most important: citizens from throughout the region who will be invited to share their knowledge and opinions at public meetings to be scheduled. *A series of public meetings will be held in each of the ten subregions beginning this summer.*

At those meetings, the results of the population and water demand studies will be presented, water budgets will be discussed. These meetings are the opportunity for

History of the Jemez y Sangre Water Planning Council

In 1998, under an enabling state law, several state and local governments, organizations and individuals signed a cooperative agreement to begin regional water planning for north-central New Mexico. Those representatives formed the Jemez y Sangre Water Planning Council.

The Council was organized, its membership was established and the boundaries of the region were established. The Council formed committees responsible for legal issues, population and water demand, technical issues, public involvement and public welfare, pueblos and data.

Later that year, the Council responded to a request for proposals from the New Mexico Interstate Stream Commission to conduct regional water planning. The ISC gave the proposal the highest ranking and in December 1998 awarded the region \$240,000 to complete its regional water plan.

The member organizations of the Council are:

- Acequia Madre
- US Bureau of Indian Affairs
- US Bureau of Reclamation
- City of Española
- City of Santa Fe
- Eldorado Area Water & Sanitation District
- Garcia Ditch
- La Acequia de la Canada Ancha
- Las Acequias de Chupadero
- League of Women Voters
- Los Alamos Co. Public Utilities Dept.
- Los Alamos National Laboratory
- New Mexico Rural Water Users Association
- North Central NM Economic Development District
- Pojoaque Valley Irrigation District
- Rio Arriba County
- Rio Grande Restoration
- Santa Fe Area Home Builders Association
- Santa Fe County
- NM State Land Office
- 1000 Friends of New Mexico
- Santa Fe / Pojoaque Soil and Water Conservation District

OBSERVER STATUS

- The Pueblos of San Ildefonso, Nambe, Pojoaque, Tesuque, Santa Clara and San Juan
- Santa Fe Land Use Resource Center

people to tell the Council what is important to them in the use and future management of water.

The Pueblos

The pueblos that reside in the region have a unique role in water planning because of their historic and legal status. Six pueblos monitor the planning process as observers, not as official members of the council.

The pueblos are represented at the council by the Northern Pueblos Tributary Water Rights Association. Peter Chestnut is the liaison between the pueblos and the council.

The Result

The Council is responsible for crafting alternatives for how to address water supply limitations. The Council members, representing their organizations, will attempt to meld the diverse interests and viewpoints into a comprehensive plan. The plan then will be presented to the local governments responsible for implementing the plan.

Anyone interested in receiving notice of meetings or serving on a subcommittee, contact Amy Lewis at 954-7123 or at alewis@ci.santa-fe.nm.

Contribute to this newsletter. Call Ed Moreno at 466-1183

What is Public Welfare? Answer Is Crucial to Water Plan

Under the 1987 state law that established the regional water planning process, plans must give an "adequate review of ... the effect on the public welfare."

"Public welfare" is important because of the lawsuit in which the city of El Paso attempted to appropriate New Mexico water. The court said New Mexico could prevent "uncontrolled" water exports only if it could rely on stated conservation and public welfare considerations.

That criteria applies to all new appropriations and transfers, not just interstate transactions. The New Mexico legislature established a process for regional water planning, in which we can defend against attempts by other states to appropriate our water for use outside the state if we can prove that we need the water for our citizens.

The state legislature also gave the State Engineer authority to deny a water rights application if it is contrary to conservation or harms the public welfare of the state.

Public welfare has not been precisely defined in New Mexico. Other western states have defined it in various

ways. Protecting the public welfare means being aware of public health and safety, economic, cultural, agricultural and recreational consequences, historic, cultural, natural and aesthetic resources, conservation and prevention of waste, prevention of environmental and ecological consequences, sustainability, water quality, future opportunities, return flows to the rivers, preservation of public lands and open space, scientific use of water, and cumulative impact.

The key to defining public welfare in the Jemez y Sangre region is the participation of residents of the region.

Individuals and groups can still get involved with the council. Let us know if you would like a council representative to address your organization, or if you have information or expertise in an area that is important to the regional water plan. Call Amy Lewis at 954-7123.

Public meetings

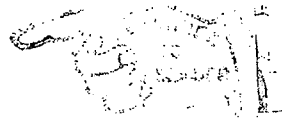
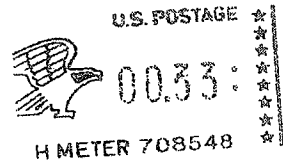
The Jemez y Sangre Water Planning Council will conduct public meetings throughout the region during the late summer of 2000 to gather public comments about water use in the region. Interested individuals should contact Amy Lewis at the Sangre de Cristo Water Division at the City of Santa Fe, 954-7123.

Contribute to this newsletter. Call Ed Moreno at 466-1183.

City of Santa Fe
Jemez y Sangre Water Planning Council
Sangre de Cristo Water Division
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Santa Fe, NM 87504-0909



The Jemez y Sangre Water Planning Council NEWS is published by the City of Santa Fe under a Community Outreach Grant from the Los Alamos Laboratory Foundation.



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Santa Fe, NM 87501-9997



Jemez y Sangre Water Planning Council

NEWS

Regional water planning
for the Rio Grande
watershed, from Embudo
to La Bajada.

Spring 2001

Alternatives Will Assure Adequate Water Supply for the Future

What can people living and working in the Jemez y Sangre region do to make sure there is enough water to support the population here for the next 60 years? The Alternatives

Subcommittee of the Jemez y Sangre Water Planning Council is studying the possible answers to that important question.

The alternatives that are being considered to balance water supply and

demand are comprehensive (see accompanying table).

They range from intensive conservation programs to better management of forests

continued on page 3

JEMEZ Y SANGRE REGIONAL WATER PLAN

ALTERNATIVES

The list of alternatives developed by the Alternatives Subcommittee is arranged in four major categories: Increasing Regional Supply, Moving or Adding Diversions within the Region, Importing Water, and Reducing Demand.

Increasing Regional Supply

- Forest/woodland watershed management—for greater yield of snowmelt and runoff
- Conjunctive use—strategic and selective use of groundwater and surface water during dry and wet years
- Stormwater management—collecting flashflood runoff with checkdams for future use
- Groundwater treatment—desalination and removal of trace constituents
- Water harvesting through rooftop collection
- Reservoir management
- Building new reservoirs
- Loss reduction by efficient water delivery systems
- Wastewater reuse as return flow credits, artificial groundwater recharge, irrigation, manufacturing and industry
- Cloud seeding
- Appropriation of water from above-average runoff
- Replacement of septic tanks
- Wellfield management and well dispersal
- Repair and maintenance of municipal and community distribution systems

Moving Or Adding Diversions Within Region

- New municipal, community and industry wells through rights acquisition
- New domestic wells
- Water banking
- Establishment of a water marketplace

Importing Water

- San Juan-Chama water
- Other potential transfers of water rights into the region

Reducing Demand

- Conservation
- Education and awareness
- Incentives/efficiency/accountability through metering and monitoring, low-flow devices, xeric landscaping, industrial efficiencies
- Growth management and land use planning
- Drought management planning

CRITERIA

The Alternatives Subcommittee has established seven categories of criteria for assessing the feasibility of each alternative and its potential effect on society, the economy and the environment in the short-run and the long-run.

Then, each alternative will be given a score representing its potential for increasing the supply of water, improving the effectiveness of existing water systems and reducing demand.

The criteria are as follows:

- Technical feasibility—Does the knowledge and technology exist to implement the alternative?
- Economic feasibility (cost)—What would it cost to implement the alternative?
- Public/political feasibility—What political considerations or other public sentiments exist that would affect the possibility of implementing the alternative?
- Legal feasibility—Is the alternative allowed under current law, or would it require a change in law to implement?
- Social/cultural impact—How will the alternative affect society, traditions and communities?
- Economic impact—What effect would the implementation of the alternative have on the business and jobs climate in the region?
- Environmental impact—How would implementing the alternative affect the environment?

SPLASHES

Sundheimer Named City Water Director

Marlene Sundheimer has been named director of the City of Santa Fe's Sangre de Cristo Water Division. She will begin her job on June 18.

Sundheimer has been serving as the deputy commissioner for the City of Cleveland's Division of Water since 1999. Before then, she was the water division's risk manager for six years and assistant director of law for Cleveland's legal department. The Cleveland water utility employs over 1,000 staff members and has over 400,000 service connections, compared with 30,000 connections of the city of Santa Fe.

Sundheimer has a bachelor's degree in political science from Hiram College and a law degree from the Marshall College of Law, Cleveland State University. Prior to her service with the city of Cleveland, she was in private law practice. ≈

Jemez y Sangre Water Planning Council

NEWS

The Jemez y Sangre Water Planning Council NEWS is published by the City of Santa Fe under a Community Outreach Grant from the Los Alamos Laboratory Foundation.

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Region Residents Turn Out for Supply/Demand Meetings

The Jemez y Sangre Water Planning Council conducted public meetings throughout the region in February 2001 to present water supply data and population forecasts through 2060.

More than 200 people attended 11 public meetings in Velarde, Los Alamos, Espanola, Tesuque, Pojoaque, Santa Fe, Eldorado, Cerrillos, La Cienega and Galisteo.

Duke Engineering and the UNM Bureau of Business and Economic Research prepared the detailed reports on the water supply and population projections for the region. The Supply/Demand Subcommittee worked for six months to prepare the information for presentation to the public in a format that shows how much water is available and how much could be needed. The data was adapted for presentation by Amy Lewis, Paul Aamodt, Francis West, Bob Vocke and Ed Moreno.

The data show that, in general, there is sufficient groundwater and surface water in the northern parts of the region to serve the population's municipal, industrial, domestic and agricultural demand for the present, although water quality is a concern. In the southern part of the region, there appears to be sufficient surface water for agriculture, but the groundwater supplies are gradually being depleted, and population is growing much faster.

The "most likely" population projections show that the demand for water will exceed the supply in almost every sub-basin over the next 60-years, which must not occur. Thus Jemez y Sangre Water Planning Council is looking at alternatives to reduce demand and increase supply.

People who attended the public meetings received basic information about the supply of available water in the region and the population projections. Comments were recorded and summarized by the facilitation team, and everyone who signed up on the attendance sheet received a draft of the comments made at the meeting they attended.

Among the more frequent comments made about the data were concerns about the population projections, that they were confusing, or inaccurate, or simply too high. Others said that the data presumed that population growth would occur but that constraints would have to be considered. Others objected to the suggestion that water needed for growth would come from agriculture. The population projections were purposely not constrained by land or water availability so that decision-makers and the public could easily see what changes may be required. Some participants wanted more information about water quality.

The participants also were asked to state what they considered to be in the public's welfare with respect to water. (See Public Welfare article, page 4.)

The Council's contract facilitation team, Lucy Moore, Rosemary Romero and Ed Moreno conducted the meetings. In case you missed the meetings, you can get the summary information and submit your comments by contacting Amy Lewis, Sangre de Cristo Water Division, 505-954-7123. ≈



The "most likely" population projections show that the demand for water will exceed the supply in almost every sub-basin over the next 60 years

"Alternatives Will Assure Adequate Water Supply," continued from page 1

and watersheds to ensure a sustainable water supply for homes, farms and businesses. The alternatives will be evaluated using a series of criteria that look at legal, political, economic, and technical feasibility, and socioeconomic, cultural and environmental impact.


The alternatives will also be evaluated to determine their potential for significant new supply or demand savings in the short-run and the long-run. Finally, they will be customized, wherever possible, to take into account particular circumstances in all 10 sub-basins of the region, which extends from Embudo to Madrid, and from Los Alamos to Santa Cruz.

The Alternatives Subcommittee has placed the alternatives and criteria into a matrix, which allows each alternative to be evaluated under each criteria. The Jemez y Sangre Council is planning to assemble a large team of experts in hydrology, economics, law, sociology and other disciplines to help draft preliminary assessments for the alternatives.

The completed matrix of alternatives and criteria will then be presented to the public in a second round of public meetings, tentatively set for later this fall.


Once the public has a chance to comment on the alternatives, they will be revised and adopted by the Jemez y Sangre Water Planning Council. The matrix will help the Council determine which alternatives are the most promising and how they will be incorporated in the draft regional water plan that will be submitted to governmental councils and boards in the region.

The accompanying table shows the alternatives that the Alternatives Subcommittee has identified as having some potential for increasing the supply, quality or availability of water, or reducing or managing the demand for water, and the criteria by which they will be assessed.

For more information about the work of the Alternatives Subcommittee, contact Paul Aamodt at 667-7247 or Claire Kerven at 665-4320. 

Fall Meetings Will Be Scheduled on Alternatives

This fall, the public will have a chance to talk to the JyS Council about the proposed alternatives for balancing water supply and demand, the definition of the "public welfare" relative to water, and other issues important to the regional water plan. At least three meetings will be held within the region.


If you are on the mailing list for this newsletter, the Jemez y Sangre Water Planning Council *NEWS*, you will receive notification of the public meetings. If you are not a subscriber to the *NEWS*, contact Amy Lewis at 505-954-7123. 

Legislature Funds Regional Water Planning

The 2001 New Mexico Legislature considered more than 100 bills and hundreds of capital outlay requests related to water. The legislation ranged from specific tasks in existing water adjudication lawsuits to the complete reorganization of the state agencies that oversee water, environmental protection and natural resources.

A complete list of legislation that was introduced, and whether they passed or failed, is available at www.nmwaterconnections.org.

Among the most important bills for regional water planning was the General Appropriations Act, which appropriates \$1.5 million to continue the regional water planning process. The Jemez y Sangre Water Planning Council is slated to receive \$150,000 to continue the planning process that is under way. This appropriation is being augmented by an additional \$45,000 for regional water planning provided by the U.S. Bureau of Reclamation. Other significant bills related to water include:

- House Joint Memorials 14 and 6, endorsing and asking the State Engineer to formalize the policy of prohibiting the transfer of water rights from lands above Otowi Gauge to lands below it. The memorials passed both houses with one dissenting vote. The memorials are non-binding, but express the desires of the legislature. The intent of the memorials is to encourage keeping water within its area of origin and, in one memorial, to protect acequia-based communities.
- Senate Bill 602 gives municipalities the authority to limit the drilling of new 72-12-1 water wells (primarily domestic wells) within their city limits if they are near existing municipal water lines. The Senate narrowly passed the bill but it was approved unanimously by the House. The bill gives cities, towns and villages the ability to control domestic wells within their boundaries, allowing better control and management of water resources. 

Public Welfare Statements Being Drafted

Residents of the Jemez y Sangre region who participated in the first public meetings in February were asked to talk about what they consider to be in the public's welfare with respect to water. This information is important because consideration of the public welfare is one of the criteria required by law in order for New Mexico to protect its water resources for its domestic and commercial needs.

The Public Involvement/Public Welfare Subcommittee has begun the process of converting the public comments into the statements that define the public welfare of the Jemez y Sangre region.

The draft statements will be presented at the second round of public meetings this fall and the public will have an opportunity to comment and recommend changes in the statements. Ultimately, they will be incorporated into the final JyS regional water plan. Some of the common themes that emerged were:

Water is a priceless commodity. Everyone should realize the interconnections of water and wildlife throughout the region. Everyone is responsible for its use and its conservation. Everyone must work together within a long-term perspective.


The rural, agricultural character of the region and its traditions should be preserved.

The aesthetic values and environmental benefits of water should be protected.

Water should be kept within the sub-basin and region where it originates. Private property rights and water rights should be protected. Local decision-making should be allowed and decisions made to benefit people and the environment.

Growth should be managed and land use should be linked to water use.

Conservation, demand reduction, sustainability and assuring an adequate supply are important values.

For more information about public welfare, contact subcommittee chair Conci Bokum at 505-986-3831. 



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Jemez y Sangre
Water Planning Council

NEWS

Regional water planning
for the Rio Grande
watershed, from Embudo
to La Bajada.

Summer 2002

Regional Water Planning Reaches Important Phase

The collaborative regional water planning process that has been under way in North-Central New Mexico since 1998 is reaching an important stage.

This fall, the Jemez y Sangre Water Planning Council will present to the public a series of alternatives that have been identified as having the potential to close the gap between the supply of water and the demand for water that is projected to exist in the future.

The Council is a diverse organization that comprises all of the local governments, many state and federal agencies, as well as acequia associations, industry groups and interested nonprofit organizations. The six Pueblo tribes in the region have an open

invitation to participate to any extent they desire. Numerous individuals with technical or professional expertise are also participating on committees.

Regional water planning is funded by the New Mexico Legislature through the State Engineer's Office and the Interstate

Stream Commission. Although the plan drafted by the Jemez y Sangre Council is not binding on any of its members or local governments, it will help the region focus on long-term planning and help the state protect its water resources for future generations. ≡

Public Meetings Set on Water Plan

Three public meetings have been scheduled to present scenarios, alternatives and the public welfare statements to the public for the first time.

SANTA FE Wednesday, October 2, 7-9 pm, Sweeney Convention Center

CERRILLOS / SAN MARCOS Thursday, October 3, 7-9 pm, Turquoise Trail Fire Station (across from San Marcos Feed and Cafe)

ESPAÑOLA Monday, October 7, 7-9 pm, El Convento, Española Plaza

Council members will also be scheduling presentations before local government bodies and other interested groups. For more information, contact Amy Lewis at 982-0405.

PLANNING SCENARIOS: Meeting the Supply / Demand Gap of 31,500 AFY by 2060

How will the Santa Fe, Española and Los Alamos area close the gap between projected demand for water and the available supply in the future?

The Jemez y Sangre Water Planning Council estimates that, based on demographers' projections, a gap of 31,500 acre feet per year of water (AFY) would exist by 2060 without an increase in supply, a decrease in demand, or a combination of the two.

That is more than the amount of water that is being used at the present time for municipal and industrial (M & I)

purposes. The M & I category includes residential, commercial and all other non-agriculture water uses.

This fall, the Jemez y Sangre Water Planning Council will focus on that projected gap when it presents to the public several planning SCENARIOS about the future regional water supply. In the scenarios are 29 specific ALTERNATIVES that have been evaluated by a team of experts and the Council. Included in those 29 are eight alternatives that would help close the projected gap between the available

supply and the projected demand for water by the year 2060.

The alternatives fall under the major categories of reducing demand through conservation and growth management, and shifting supply among areas of the region through purchases and transfers.

The remaining 21 alternatives were studied, but rather than narrowing the projected gap between supply and demand, those are more oriented toward efficiency, protecting and restoring exist-

continued on page 2

PLANNING SCENARIOS

continued from page 1

ing supplies, and drought mitigation.

All of the alternatives are detailed in the sidebar below.

The estimate of the water demand in the regional water plan's planning time-frame—60 years—is based on an assumption that the average per person use is about 0.15 acre-feet of water per year in the region outside of Santa Fe. The amount in Santa Fe, because of the increased commercial, governmental and tourist-related industries, is 0.183 acre-feet per person per year in Santa Fe, says Council co-chair Bob Vocke, a Los Alamos

National Laboratory natural resources scientist involved in the alternatives investigation. The 0.15 acre-feet per person average is about 50,000 gallons a year.

"Under the demographers' 'most likely' population projection, the additional population would require 31,500 acre-feet of water to be acquired or shifted from one location to another, if we continued to grow unrestrained and continued to consume the same amount of water per person," said Vocke.

Council member Conci Bokum of 1000 Friends of New Mexico emphasized

that the scenarios include all efforts to close the supply-demand gap, including identifying sources of new water and reducing demand through conservation and managing growth.

The Council's population projections, prepared by the UNM Bureau of Business and Economic Research, indicate that the population in the Jemez y Sangre region would increase from 162,486 estimated in 2000, to 254,869 by 2030, and to 357,101 by 2060. Those "most likely" projections are based on recent birth, death, immigration and emigration rates.

PLANNING SCENARIOS

The planning scenarios were developed in part from public comments received during a dozen public meetings in 2001, and a detailed analysis of the alternatives conducted by a team of experts earlier this year.

The Council has developed four water-supply scenarios as a convenient way to focus public attention on difficult choices in long-term water resources planning. The scenarios will help the public more easily focus on future quality of life for their communities and everyone living in the Jemez y Sangre region.

Three of the scenarios represent broad public policy themes: maximizing conservation, growth management and moving water from agriculture to municipal, industrial, and domestic uses. The fourth scenario would close the gap through a mixture of alternatives from each of the other three scenarios.

Although none of the planning scenarios alone would likely satisfy the regionally projected water demand in 2060, the scenarios will focus the discussion toward the long-term policy implications of each group of alternatives. The public discussion will assist the Council in its deliberations toward the final plan.

In addition to the alternatives that comprise the scenarios, many alternatives were

identified that would protect the region's water resources overall, providing general stability and reliability of the water supply for all water users.

Scenario 1—Emphasize Conservation

This scenario presents an aggressive conservation program in which all efforts are utilized to save water that is being used by all users in the region. The conservation scenario is projected to have significant impact on the gap, reducing the projected demand approximately 17,300 AFY. This scenario relies less on alternatives that would reduce the projected growth rate or moving water into the region or moving it from place to place within the region.

Example: A comprehensive, mandatory program of water conservation would prohibit all outdoor use of water and require the adoption of building codes that mandate conservation for indoor plumbing fixtures in all new homes. Rates would be increased to discourage use.

Pros: Minimal impact on agriculture; cost-effective to implement.

Cons: Significant effect on certain industries such as landscaping; effectiveness declines with smaller water systems.

Scenario 2—Emphasize Growth Management

This scenario presents a strategy that restricts the amount of new residential and new commercial construction. It represents a potential demand reduction of 15,500 AFY to close the gap between supply and projected demand. Growth management also requires certain other restrictions on building methods and locations to make the optimum use of water, the best use of existing infrastructure and giving communities a basis for planning for growth. This scenario includes some water conservation related to new construction but does not count heavily on moving water into or within the region.

Example: A community elects to limit the growth rate that it will allow to occur, thereby reducing the amount of new water that will be required to serve those homes and businesses. The scenario projects population growth at half the rate projected by the BBER. A slower growth rate allows better water resource management.

Pros: Encourages community sustainability; minimal effect on agriculture.

Cons: Potential negative effect on affordability of housing and on the construction industry.

Based on those projections, and the average amount of water used by residents in the region, the Council has identified a potential gap of 31,500 acre-feet per year by 2060.

"The study was based on status quo conditions as of 2000," said Vocke. "The Council did not attempt to modify the population projection through any policy decisions that might be made in the future, which gave us an unbiased view of what the future could be, based on no significant changes in conservation, growth management or water transfers."

The scenarios will help the Council

focus on the most important policy decisions for future water resources management and adjust the future water demand accordingly.

Once the plan is submitted to the State Engineer and the local governments in the region, they will decide whether and how to implement the plan. The plan will make recommendations that have ramifications for future land use, growth, the environment, the economy and society.

That is why it is critical for residents to review the scenarios and give the Council their input. ≍

Scenario 3—Emphasize Purchasing Water Rights

This scenario focuses on shifting the use of existing water from agriculture to urban and suburban uses, where most of the population growth is projected to occur. It does not focus on reducing demand. It represents the third-largest single source of closing the gap between the supply and demand, with an impact estimated at 11,000 AFY, which could affect about 45 percent of irrigated agriculture in the region. The scenario is intended to concentrate the public policy discussion on the value of agriculture and the traditional lifestyle of rural northern New Mexico, especially where the culture is closely tied to acequias and farms.

Example: Local governments and businesses would purchase agricultural water rights from individual farmers, acequia associations or indigenous tribes through the open market, at negotiated prices between willing sellers and willing buyers.

Pros: Urban quality of life is preserved; water invested in higher-value uses.

Cons: "Area of origin" protections are presently inadequate to protect rural communities and smaller mutual domestic water systems; increased reliance on domestic wells would impair overall supply.

Scenario 4—Reduce Demand and Increase Supply from Various Sources

This scenario includes a combination of the alternatives in the first three scenarios, and is intended to present the effects of trade-offs among the negative and positive consequences of the critical alternatives. It would maximize the use of return flow credits by returning wastewater into the water supply system, estimated at 13,400 AFY when fully implemented.

Example: Fully utilizing contract San Juan-Chama water, leasing a portion of Jicarilla-Apache San Juan-Chama water and obtaining the corresponding return flow credits could result in an increase of available water of about 20.6 acre-feet per year and could be done relatively easily compared to the other scenarios. Meanwhile, managing growth and water conservation has potential savings of another six AFY. The purchase of about 3,000 acre-feet per year of water rights and allowing another 2,000 acre-feet of water per year through new domestic wells would increase the supply by 5,000 acre-feet per year in this scenario.

Pros: Minimal negative impact on all sectors, quality of life.

Cons: New domestic wells harm senior water rights; greater vulnerability to droughts and other shortages. ≍

SPLASHES

Eldorado Voters OK Tax to Buy Water System

Voters in Eldorado, a significant component in the overall water budget for the Jemez y Sangre water planning region, have authorized a property tax levy to purchase the El Dorado Utilities Inc. water system.

Almost 69 percent of the 1,418 people who voted in the Aug. 20 election cast "yes" votes to give the Eldorado Water and Sanitation District Board the authority to issue up to \$7.9 million in bonds to buy the privately-owned water utility.

The voter approval allows the District to begin negotiations to purchase El Dorado Utilities Inc., which was created by Eldorado developer AMREP, to serve the community. Meanwhile, El Dorado Utilities has entered into an agreement to be purchased by Utilities Inc. of Northbrook, IL, which in turn has been purchased by nv NUON of Amsterdam, Netherlands.

Voters in Eldorado and surrounding communities served by the water system said that the availability of water was too important a local resource to be in the control of private entities far from New Mexico. ≍

Jemez y Sangre Water Planning Council NEWS

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Public Meetings Will Focus on Public Welfare

An important and necessary ingredient of the Jemez y Sangre regional water plan is a PUBLIC WELFARE statement, written as a result of the many public comments received during the first round of public meetings in early 2001.

The term "public welfare" was used in a landmark water case in which the federal courts said New Mexico could protect its water from export and transfer to other states, but only if it planned for its use. One of the tests of planning is whether water was being used to benefit the "public welfare" of the people of the state.

"The public welfare statement describes what is important to the people of the region with respect to water," said Council member Conci Bokum of 1000 Friends of New Mexico. "The public welfare will help guide the policy decisions that need to be made in order for this region to have a sustainable future in its water supply."

Although the term "public welfare" was not clearly defined in the law, it is up to each region of the state to draft its own definition by declaring what attributes of the region that rely upon the use of water should be protected.

The Council will return to residents this fall seeking input on the public welfare statement, as well as the scenarios and alternatives being developed to guide the development of the plan. Once sufficient public input has been taken, the Council will finalize the statement and incorporate it into the plan. The draft public welfare statement is below:

PUBLIC WELFARE

Water is the element that interconnects all people and their environment in the Jemez y Sangre region, and the region to the larger environment that is the earth. Every person living in the region

expects enough water for basic needs, and every person has the responsibility to protect water resources and use their share wisely. Using the best possible information, water planning and decision-making should balance diverse needs and reflect the values of the region.

Rural Character

Residents of the Jemez y Sangre region place great value and importance on the preservation of the rural character of the region. Urban and rural residents alike appreciate and wish to maintain the historic, agriculture-based communities, rural vistas, wildlife habitat and attributes of natural landscapes including rivers, streams and trees.

Water Sustainability

Residents understand that the history of the region reflects water scarcity and cycles of drought. It is a high priority of residents of the region to serve current and future human needs without long-term depletion of the available water supply, while maintaining acceptable water quality and healthy interdependent ecological systems. Sustainability requires a combination of efforts, including encouraging conservation and efficiency by all sectors at every scale, discouraging activities that deplete or degrade the water supply, planning for population growth and land use, seeking new water sources that do not impair other regional values, and improving the use of existing water supplies.

Economic Sustainability

Each sub-region has unique economic

needs and conditions that depend on the availability of water. It is important to have quality jobs and a healthy economy in order to maintain a good quality of life in the long term.

Water Quality

Water quality is a significant element in the region's water supply. In many sub-basins, the available groundwater has been compromised by contamination, either human caused or natural. Wastewater treatment and reuse of treated water should be expanded throughout the region. The available water should be protected from potential contamination from the impacts of human activities or natural events.

Rights and Responsibilities

Water planning must be carried out in a context of respect for water rights and property rights. Like all rights, the right to use water, especially in an arid region, is married to the responsibility to use water efficiently and wisely. The Jemez y Sangre region respects the senior water rights of the pueblos in the region and recognizes pueblos' tribal sovereignty.

Decision-Making

In this demographically and geographically diverse region, it is necessary for all governmental and private entities to work together to achieve the goal of a balanced and sustainable water future. Fostering healthy, vibrant communities requires a commitment to open, inclusive dialogue and decision-making.



*"You don't need a
weatherman to know
which way the wind blows."*

—Bob Dylan

2002 Drought Among the Worst in Memory

Bob Dylan said, "You don't need a weatherman to know which way the wind blows."

This year, it was blowing dry and the regular monsoons made only a brief appearance in July. The drought has increased fears that the supply of water is insufficient to meet the demands of a growing population.

Average precipitation in New Mexico has made 2001-2002 the sixth worst since 1895. By the start of summer, conditions were getting worse. The precipitation during the winter of 2001-2002 was the lowest ever recorded in New Mexico. Because headwaters areas in Colorado have been equally dry, streams in New Mexico have been at record lows. Fires were breaking out and spreading all over New Mexico, southern Colorado and the rest of the West.

Although summer rainfall was forecast to be about normal, a weak El Niño wouldn't provide much relief, experts said.

Source: New Mexico Drought

Planning Team:

weather.nmsu.edu/drought/advjune2002.htm

Experts Probe Alternatives to Balance Long-Term Water Supply and Demand

The scenarios that are used to focus attention on future water management and usage call on the water savings or acquisition that would be achieved through 29 alternatives that were evaluated by the Council.

More than 20 experts in hydrology, planning, economics, rural communities, water system facilities and agriculture met for four days in February to examine the

technical, legal, financial and socioeconomic feasibility of the various alternatives.

The alternatives were discussed and evaluated on the basis of their potential to increase supply, reduce demand and increase the availability of existing water through system efficiencies, protection of the environment and drought mitigation.

The alternatives under discussion to balance water supply/demand are:

ALTERNATIVES THAT PROTECT AND ENHANCE EXISTING WATER SOURCE:

Alternatives to Meet Current Demand through System Efficiencies

- Re-use wastewater
- Line irrigation ditches
- Repair leaks in water systems
- Establish a regional water system
- Utilize underground aquifer storage and recovery
- Optimize reservoir storage/management
- Pipe water directly from Heron and Abiquiu reservoirs

Alternatives to Protect Supply for Existing Demand

- Restore and manage high-altitude forests, piñon-juniper woodlands and riparian areas
- Manage stormwater
- Utilize cloud seeding to increase precipitation, runoff and infiltration
- Initiate more effective wellfield management
- Conjunctive use of surface water and groundwater in wet and dry years
- Remove trace constituents from groundwater
- Remove sediments from reservoirs
- Desalinate groundwater

Alternatives to Mitigate Drought

- Water banking
- Conservation

ALTERNATIVES THAT REDUCE DEMAND OR INCREASE AVAILABLE SUPPLY:

Alternatives that Reduce Demand

- Manage growth and land use
- Water conservation, with variations for indoor and outdoor use, and new and existing construction

Alternatives to Add or Move Water Rights to the Region

- Use San Juan-Chama water through full utilization of existing contracts, leases from the Jicarilla Apache Tribe and applying return-flow credits for wastewater discharged back into the water supply
- Transfer water across Otowi Gauge
- Purchase water rights in the marketplace
- Drill new domestic and mutual domestic wells
- Speculative alternatives to add or move water rights
- Line agriculture ditches and transfer rights to domestic uses
- Re-appropriate water to 1929 conditions at Otowi Gauge
- Build new reservoirs
- Appropriate and use water from runoff flows during spill years

NEW MEXICO IN CRISIS: Regional Water Planning is More Important than Ever

By Elmer Salazar, Co-Chairman, Jemez y Sangre Water Planning Council

New Mexico and much of the West are in a drought unseen in a century. Local governments are considering and implementing emergency moratoria and conservation measures. From Cerrillos to Chimayo, the National Guard has been called out to truck water to residents whose domestic wells are going dry or are contaminated.


Though emergency measures grab the headlines, the Jemez y Sangre Water Planning Council is taking a quieter, longer-term view. That's because the Council has been developing a long-range water plan for north central New Mexico. The Council represents local governments, water users and various interested groups in Santa Fe, Los Alamos and southern Rio Arriba Counties, and is consulting with the Pueblos in the region.

The regional water plan is designed to look 60 years into the future. When complete, it will identify ways that north central New Mexico can work on its water supply and demand gap for at least the next 60 years.

This long-range plan, if done well, will help the Jemez y

Sangre region withstand future droughts in a more organized, less stressful manner. Officials must respond to the present crisis the best way they can, but throughout the region, people are experiencing long-term water quality and quantity problems that have been growing worse for years. Once a regional plan is implemented, it will help us avoid recurring crises over water.

The Council is organized under the auspices of the New Mexico Interstate Stream Commission and part of a statewide effort to plan water use regionally. The plan, which will be finalized within the coming year, will be submitted to the Office of the State Engineer and the Interstate Stream Commission, and then offered to local governments for their consideration.

Although the plan is not mandatory, it should be influential because the Council is a broad-based organization and its work will reflect a tremendous amount of public input from its members and people who live in the region. The New Mexico Water Trust Board gives priority to funding projects supported in the regional plans, giving a greater voice to the plans. 

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Jemez y Sangre Water Planning Council

FIRST ROUND OF PUBLIC MEETINGS SET FOR REGIONAL WATER PLANNING

Residents of north central New Mexico will have a chance during February to tell regional water planners what they think about water, what it means to their communities, and how they might want to see it administered over the next 60 years.

The Jemez y Sangre Water Planning Council is working on the regional plan and the council will host the first round of public meetings throughout the region.

The Jemez y Sangre region includes the northern two-thirds of Santa Fe County, the southeastern tip of Rio Arriba County, and all of Los Alamos County. Generally speaking, it includes every community in the Rio Grande drainage area between Embudo and Cochiti Lake. The area is divided into 10 sub-basins, representing major rivers and streams.

The council has commissioned two important reports that will be discussed at the meetings.

The first is an engineering report that summarizes all of the known sources of water in rivers, streams and underground, how much of it is known to exist, how it is used, and its quality. The second report projects what the population of the region through the year 2060.

Along with the two reports, people will have a chance to discuss the challenges of increased demand, the possibilities of increasing supply, and possible ways to deal with imbalances.

The information gathered at the meeting will be used by the council to identify possible alternatives for the management of water for the next 60 years. The array of alternatives will be put before the public in a second round of public hearings later in 2001.

For more information about the Jemez y Sangre Regional Water Plan may call Amy Lewis, water resources planning coordinator, City of Santa Fe, at 505-954-7123.

SCHEDULE OF FIRST ROUND PUBLIC MEETINGS – FEBRUARY 2001 – All Meetings 7:00 – 9:00 p.m.

February 1	Velarde Elementary School -Velarde
February 7	Hilltop House Hotel – 400 Trinity Drive – Los Alamos
February 8	La Cienega Community Center – La Cienega
February 13	El Convento – 1 Camino de los Espanoles – Espanola
February 15	Tesuque Elementary School – Tesuque
February 19	Eldorado Elementary School – El Dorado
February 20	Sweeney Convention Center – Santa Fe
February 21	Santa Fe Community College- Jemez Room – Santa Fe
February 22	Pojoaque Elementary School – Pojoaque
February 27	Cerrillos – St. Joseph’s Parish Hall – Cerrillos



Jemez y Sangre Water Planning Council

NEWS

Regional water planning
for the Rio Grande
watershed, from Embudo
to La Bajada

Winter 2002-03

Draft Plan Ready for Public Presentation

The Jemez y Sangre Water Planning Council (JySWPC) has finished the first draft of the Regional Water Plan and will present it to the public and government entities this spring.

“Once it is approved by the Council, the plan will give local government leaders the opportunity to look farther into the future than the present water crisis so they can develop rational programs for meeting the future demand for all of their residents. This can be done while protecting the unique character of the region,” said Bob Vocke, co-chairman of the JySWPC.

The draft plan presents water supply and availability along with projected population growth in the region, which show that the region must save or transfer 31,500 acre-feet per year by the year 2060. That is more water than residents presently use for non-agricultural purposes.

Readers can also see the alternatives that were studied for fulfilling future demand, and how the Council determined the effectiveness of each. And finally the plan outlines scenarios for the region, focused on similar conditions in the areas around Española, the Pojoaque valley, and the fast-growing Santa Fe area. Los Alamos and Galisteo scenarios are also presented.

The document contains extensive background information on the region, including geography, climate, natural

resources, present uses of water, the history of the JySWPC, the public involvement process and the guiding principles contained in the Public Welfare Statement.

Two key reports that formed the foundation for the plan are summarized in the plan. The first is a technical report by Duke Engineering & Services,

continued on page 2

General Findings Expose Looming Water Crisis in Jemez y Sangre Water Planning Region

A water crisis is looming in the Jemez y Sangre region during this century, according to the factual findings that will be published along with the Jemez y Sangre Regional Water Plan. The water plan focuses on water supply and demand to 2060, when the children of today's newborns will be raising their own families.

Because of the normal arid climate and existing population, the region's water supply is already vulnerable to many factors, according to the General Findings of the plan. Among those:

- Groundwater pumping exceeds recharge, resulting in an undesirable decline in the amount of available water in some areas of the region.
- The proliferation of domestic wells is beginning to affect senior water rights and surface water supplies in some areas of the region.
- Surface water supplies 74 percent of the region's water and it is vulnerable to fire drought and watershed health degradation.

These factors are critical now, but the vulnerability will only increase as population in the region continues to grow. Using the previous quarter-century of demographic data, demographers

project that the population could increase from the current 160,000 to about 360,000 by the year 2060.

That would require communities and individuals in the region to acquire or conserve the equivalent of 31,500 acre-feet of water per year. That is more than the approximately 27,000 afy presently used for municipal, domestic and commercial demands.

Other critical factors related to future demand include:

- San Juan-Chama project water might fulfill about 40 percent of the difference between supply and demand by 2060 if expected yields are realized, however those estimates are optimistic.

- Inter-region transfers of water from agriculture to urban uses would have public welfare implications if provisions were not made to take small, farming communities' needs into account.

- By themselves, neither conservation, growth management nor transfers of water within the region will fill the gap between supply and demand by 2060.

- Based on existing climate records, New Mexico will experience extended periods of drought during this century, with years much drier than in recent times.



Draft Plan Ready for Public


continued from page 1

estimating the quantity, availability and quality of groundwater and surface water throughout the region. An estimate was prepared for each of the 10 sub-basins in the region.

The second is a study by the University of New Mexico Bureau of Business and Economic Research, estimating the number of people that would be living in the region if recent population growth trends continued.

The plan also presents a summary of current water uses, a summary of conservation approaches to meeting the future demand, and projected water uses in the future.

Copies of the draft plan are on file in Santa Fe at the LaFarge Library on Llano Street and the Main Library downtown, as well as at the public libraries in


Española and Los Alamos. Copies of the technical White Papers used to evaluate the alternatives are available at www.dbstephens.com/publications. 

Is Implementation in the Future of Regional Water Planning?

What happens after the Jemez y Sangre Water Planning Council completes its work and submits a plan for acceptance by the Interstate Stream Commission (ISC) during Spring 2003?

Council members have begun exploring the role of the Council as a vehicle for the implementation of the regional water plan. To prepare its submission to the ISC, the Council will

ask the local governments in the region to endorse the plan, although that does not require any action on their part. The Council will be taking up that question in the next few months.

For more information or to comments on the Council's future role, contact Amy at amychilderslewis@earthlink.net or Bob Vocke at 505-667-4335 or Vocke@lanl.gov. 


Use Less Water, Get More Water:

JyS Recommendations Will Help Meet Future Demand

The Jemez y Sangre Water Planning Council has proposed a number of alternatives for local governments and other entities to pursue in order to help the region meet the projected future demand for water.

The recommendations cover the two-dozen alternatives that were evaluated by technical experts, staff and the Council during the past year. They are organized in five categories.

Categories I, II and III describe methods of protection, restoration and management of water supplies in a way that stabilizes and improves existing supplies, especially during drought periods, but not result in quantifiably new water. For those, the Council strongly recommends that appropriate regulatory and natural resource management agencies pursue their implementation.

Categories IV and V would result in quantifiable changes in the water supply or population demand to meet projected future demands. For those, the Council does not recommend how communities should close the projected gap between supply and demand, however, it does suggest the major options, all of which would require extensive public participation and coordination among agencies. 

Category I: Recommended Actions To Protect Existing Supplies	
<ul style="list-style-type: none"> • Restore watersheds. • Manage storm water to enhance recharge. • Conduct pilot cloud seeding projects. • Manage water resources sustainably through better understanding of hydrogeology. • Establish Critical Management Areas to protect groundwater resources. • Develop conjunctive use strategies. 	<ul style="list-style-type: none"> • Appropriate flood flows. • Remove trace constituents to protect human health. • Address septic tank water quality degradation. • Clean up contaminated groundwater. • Continue funding programs to protect surface water and groundwater. • Support restoration of stream reaches to their designated uses.
Category II: Recommended Actions To Improve System Efficiency	
<ul style="list-style-type: none"> • Require wastewater reuse. • Encourage rainwater collection. • Line ditches. • Remove sediment in Santa Cruz Reservoir and investigate Nambé Reservoir. 	<ul style="list-style-type: none"> • Repair leaks in water systems. • Consider aquifer storage and recovery (ASR) of excess water. • Pursue increased storage capacity in Abiquiu Reservoir.
Category III: Recommended Actions To Address Drought	
<ul style="list-style-type: none"> • Develop drought contingency plans. 	
Category IV: Recommended Actions To Reduce Projected Demand	
<ul style="list-style-type: none"> • Pursue water conservation. 	<ul style="list-style-type: none"> • Consider growth management.
Category V: Recommended Actions To Increase Water Supply	
<ul style="list-style-type: none"> • Pursue diversion of SJC water as appropriate. • Limit use of domestic wells. 	<ul style="list-style-type: none"> • Transfer water rights through consensus process.

Water Planning Partners Step Up to the Plate

Among the 24 organizations that are members of the Jemez y Sangre Water Planning Council are three that have contributed significantly to the planning work with substantial staff participation, administrative support and funding.

The City of Santa Fe, Los Alamos National Laboratory and the U.S. Bureau of Reclamation have contributed significantly to the JySWPC and have ensured the success of the planning process.

The bulk of the funding for the Jemez y Sangre Regional Water Plan was appropriated by the New Mexico Legislature through the Interstate Stream Commission. The ISC funding has totaled \$390,000.

U.S. Bureau of Reclamation

The U.S. Bureau of Reclamation (BOR) is virtually synonymous with water management in the West and New Mexico. Its projects are important and help provide reliable water supplies to New Mexico's smallest villages and its largest cities.

Steven Bowser, Water Resource Planner & Engineer with the BOR, has contributed his agency's expertise as its delegate to the Jemez y Sangre Water Planning Council.

"We have an interest in all water issues in New Mexico especially involving the Rio Grande and Pecos Rivers, where we operate facilities," said Bowser. "We want to be involved in the process and stay on top of things so we know what proposals are being made that might affect our operations."

Beyond his involvement, the Bureau has made three substantial grants to the Council totaling \$167,000. The Bureau supported the research and report by Duke Engineering and Services, which quantified the water resources of the region. Later, it provided funding for the planning charrette, which brought together technical, legal, financial and other experts to evaluate the alternatives that had been suggested by the public. Finally, the Bureau has provided partial funding to complete the draft report that will go to the public this spring and provided funding for Amy Lewis to continue as the water planning coordinator, previously provided by the City of Santa Fe.

Los Alamos National Laboratory

Bob Vocke, Chief Natural Resources Scientist for the Risk Reduction and Environmental Stewardship Division at Los Alamos National Laboratory, has been the Council's chairman for two years as part of the Laboratory's support for the Jemez y Sangre water planning efforts. He describes the contribution as the equivalent of a half-time employee assigned to with the Council.

"The Laboratory is committed to continually improving social, environmental, and economic performance of its operations through cultural and natural resource trusteeship; energy and water conservation; precautionary actions; community collaborations; and environmental stewardship of operations.

The Lab's "in kind" contributions have included chairing the Council, participating on subcommittees, providing administrative support including copying materials and mailing, technical database development for the water supply study and hosting the Area of Origin workshop.

In addition to direct laboratory support, the Los Alamos National Laboratory Foundation provided \$6,000 in funding for the first edition of four newsletters that were published during 2000 and 2001.

City of Santa Fe

The City of Santa Fe, one of the original organizers of the Jemez y Sangre Water Planning Council, provided essential services at the beginning of the water planning process. As part of the joint powers agreement, the city agreed to provide "in-kind" support through the assignment of a half-time staff member to the Council.

"The city was committed to water planning and created the position specifically for this purpose," said hydrologist Amy Lewis, who was tasked by the city to work for the JySWPC.

Lewis performed virtually all the essential staff work during the first four and a half years of the Council's existence. After leaving the city in early 2002, she remained the Council's primary staff member under the Council's contract with the Bureau of Reclamation.

SPLASHES

Estevan Lopez Named Interstate Stream Engineer; Governor Calls for State Plan

Gov. Bill Richardson has named a new State Engineer, a new Interstate Stream Engineer, and intends to introduce legislation to develop a state water plan (SWP).

John D'Antonio, former Director of the OSE's Water Resource Allocation Program and former Environment Department secretary, was named State Engineer, responsible for water rights administration and overall agency management. Estevan Lopez, the former Santa Fe County manager who was the first chairman of the Jemez y Sangre Water Planning Council, was named Interstate Stream Engineer, responsible for compact administration and related issues.

The Interstate Stream Commission will be responsible for water planning. At press time, legislation had been introduced setting up a procedure and a committee to develop the SWP.

Jemez y Sangre Water Planning Council NEWS

The Jemez y Sangre Water Planning NEWS is published by the City of Santa Fe and distributed through the support of the Los Alamos National Laboratory.

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Focus on Area of Origin and

The JySWPC conducted a special workshop in late 2001 focusing on two critical subjects and their potential for improving the management and use of the region's scarce water resources: Area of Origin protections (AO) and Critical Management Area designation (CMA).

The workshop was attended by many JySWPC members as well as a number of local elected and appointed officials from the City of Santa Fe, Santa Fe County, City of Española, Rio Arriba County and Los Alamos County.

Area of Origin Protections Explored

One of the most difficult issues facing the Jemez y Sangre Water Planning Region is how to fill the gap between supply and demand using locally available water without needlessly drying up the historic, traditional communities that give New Mexico much of its distinctive character.

That was one of the subjects of a November workshop of the Jemez y Sangre Water Planning Council. The subject of Area of Origin protection (AO) is a crucial issue for the Jemez y Sangre region because of the large number of Pueblos and historic rural villages whose livelihood and culture have depended on surface water irrigation since long before the Industrial Revolution changed society forever.

The workshop brought out several alternative perspectives on the issue, ranging from total prohibitions on transfers out of originating areas, to letting the marketplace determine

where and how water is used.

Communities such as Velarde, Chimayo, San Juan Pueblo and La Cienega, founded during an agricultural era are emblematic of New Mexico's cultural distinctiveness and charm. Their quietly gurgling acequias and riparian wildlife attract tourists and new residents alike.

Water has been the lifeblood of those communities since they were established, but population growth in the region is pressuring some individuals in those communities to sell their water rights to serve the needs of growing cities.

Several workshop participants suggested that the local economy, employment and quality of life would

be jeopardized if growing population areas did not have access to available water in nearby rural areas. Given that population patterns and the agricultural value of water has diminished in recent decades, it was argued that available water should be available where it is needed.

Others suggested that the rural water users form alliances to market water jointly to the larger, growing cities such as Santa Fe. A model for that activity was cited in southern New Mexico, where the Elephant Butte Irrigation District is marketing its water to fast-growing Las Cruces and playing a major role in overall development in that region.

Under current New Mexico water

Right: JyS Co-chairman Elmer Salazar gestures during the AO and CMA workshop, while Co-chairman Bob Vocke looks on. Below: David Benavides discusses Area of Origins protections



Critical Management Areas

law, already, “parciantes” or shareholders in an acequia organization, have elected to sell their rights to water brokers as they abandon agriculture as a way of living, and advocates say that poses a threat to their existence.

Attorney and advocate David

Benavides says the individual power to transfer rights is the power to kill a community whose traditions depend on ditch irrigation. Even the individuals

who crafted interstate stream compacts decades ago realized that richer states could out-bid poorer states for water and leave the poorer state with not enough water for its own needs. The same principle should apply to smaller communities under pressure to sell water to larger towns and cities, he says.

AO’s would let certain communities protect their water resources by letting them act collectively to veto certain sales if they are found to be harmful, or to negotiate as a community with potential water rights purchasers and lessees, and to plan for its own future needs.

The communities themselves are changing from an agricultural foundation to a “suburban” type of social and economic base, wherein at least one member of every household may work at a regular job in Santa Fe, Española or Los Alamos. So how can the essential character of those communities be preserved, or should they be preserved?

Benavides suggested possible

criteria for evaluating whether a transfer would benefit or harm a community, specifically: The benefit over time for the area and community, the number of people who benefit from a transfer, whether the economic activity remains in the

≡ Individual power to transfer rights is the power to kill a community whose traditions depend on ditch irrigation. ≡

-David Benavides, attorney

community and whether the agricultural base is eroded.

The workshop participants agreed that the regional water plan should recognize the long history of many communities in the region and should not work against their long-term interests. The group also agreed that it would be helpful to have an inventory of cases and processes that allowed for consensus-based transactions where AO’s were protected and how it was accomplished.

Legislation is planned in the 2003 session that would affirm acequias’ right to enact bylaws restricting the individual sale of water rights from the acequia, said Benavides. AOs could be recognized in regional water plans, the forthcoming State Water Plan or other forms of agreement.

For more information on this topic, contact David Benavides at 982-9886 ext 111.

Critical Management Areas Discussed

The Jemez y Sangre Water Planning Council has agreed to study and possibly use the Critical Management Area (CMA) designation to focus attention on locations that present unique challenges and problems in

water management for the long-term future.

Council contract attorney Susan Kery presented a summary of CMA principles, procedures and their potential for their use in the region at a

November workshop.

The Council and others in attendance considered the CMA concept and agreed it would be worth exploring it as a valuable tool for planning. Opinions of the group on the use of CMA’s ranged from devising a global designation that would cover large-scale situations, such as a region-wide water shortage, to more localized problems, such as where a community water system is going dry due to exhaustion of its aquifer.

The types of water problems that could be appropriate for a CMA designation include those involving proven contamination, thin aquifers or unsustainable water supplies, proximity to needed springs or risk of fire damage, such as watersheds. A CMA would trigger certain management options, including building moratoria, mandatory community systems, strict regulation of domestic wells or limits on water transfers or diversions in or out of the area.

Steering Committee Makes Progress on Wastewater System Planning

The Española Valley / Pojoaque Valley Wastewater Steering Committee is proceeding with technical studies and project planning for a large-scale wastewater system in Santa Fe County and Rio Arriba County.

The project area also includes the Pueblos of Nambe, Tesuque, Pojoaque, San Ildefonso, Santa Clara, and San Juan. The project is one of the first projects in the nation involving tribal and non-tribal participation.

The steering committee operates through the North Central New Mexico Economic Development District (NCNMEDD), the council of governments organization that serves Santa Fe, Los Alamos and Rio Arriba Counties, as well as, Taos, San Miguel, Colfax and Sandoval Counties. The District is an active member of the Jemez y Sangre Water Planning Council.

The NCNMEDD began a water quality study in September 1999, identifying 17 wastewater management

areas based on population and geography, developing population estimates for each area, assessing alternative septage treatment for each area, and estimating costs.

The project was started from funds from the Regional Development Corporation, the U.S. Economic Development Administration and the Environmental Protection Agency.

The technical report completed by consultant ASCG Inc. is being used to develop a Project Implementation Matrix and goals for the project, according to staff member Angela Schackel Bordegaray of the NCNMEDD, who is working with Edmund Gonzales of ELG Engineering.

The matrix is being developed to organize components of the project in each of the 17 areas, along with central contact information. The matrix will provide a guide to the short- and long-term activities. It will be presented at a series of public meetings over the next

several months.

Among the areas of implementation is continued coordination with the New Mexico Environment Department on water quality testing and septic tank management programs.

Rio Arriba County, Santa Fe County, and the City of Española have passed resolutions endorsing sustained effort at a regional wastewater solution and officially naming a team to work on that process, comprising Rio Arriba County Manager Lorenzo Valdez, Santa Fe County Public Utilities Director Gary Roybal and Española Mayor Richard Lucero.

Also, Mayor Lucero and Santa Clara Pueblo Governor Denny Gutierrez are pursuing a joint treatment facility for the city and Pueblo, appointing members of each community to a task force for discussion.

For more information, contact Angela Schackel Bordegaray at 827-7313 or visit www.nm.localgov.net/nc. ≡

Jemez y Sangre Water Planning Council
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The Jemez y Sangre Water Planning Council NEWS is published by the City of Santa Fe and distributed through the support of the Los Alamos National Laboratory.

TUESDAY
August 10, 1999

North
EDITION

Acequia Traditional Values Touted

BY DALE LEZON
Journal Staff Writer

To some people, local acequias are more than irrigation ditches; they are cultural and social resources in traditional communities in northern New Mexico.

About 150 people attended a regional water planning forum Monday at Northern New Mexico Community College in Espanola for the Jemez y Sangre Water Planning Region. The region includes Santa Fe, Española and Rio Arriba, Los Alamos and Santa Fe counties and other areas.

Titled "Protecting Things We Cannot Bear to Lose," the forum focused on the need to protect acequias in northern New Mexico in part as a way to help preserve traditional communities.

Protecting the acequias promotes community among neighbors, said

Mike Mayr, a member of the Del Caño acequia in Nambé.

"I was a stranger," said Mayr, who moved from California to Nambé about six years ago. "I didn't know anybody 'til spring time, ditch cleaning time."

Now, Mayr said, other ditch users are his friends and the acequia promoted their social mingling. "We eat dinner together. It all came about because of the acequia," he said.

State Engineer Tom Turney said Monday's forum helped him better understand the importance of acequias as community and cultural resources rather than solely as irrigation tools.

"It probably will influence my future decisions," Turney said.

The forum also helped the Jemez y Sangre Water Planning Council, a group of community members and local government officials develop-

ing the region's water plan, understand locals' thoughts about acequias, council member Consuelo Bokum said.

Sponsored by the Santa Fe Land Use Resource Center, the forum is part of a proposed statewide regional water planning process.

The state is divided into between 10 and 16 water planning regions and eight are developing their water plans.

Once all the regions have established their plans, Turney said he will compile them into a state water plan.

Turney said he secured about \$1.7 million from the Legislature in 1998 to fund the regional plans and the first eight should be completed by about July 2000. Other regions will complete their plans at later dates, Turney added.

Each region has a planning council made up of representatives from

local governments and concerned entities, such as acequia associations.

The Jemez y Sangre Water Planning Council meets the second Monday of each month and has been gathering public comment about local water issues for nearly one year, Bokum said.

"In our region we have to balance all the (water) needs of the people who live in it," Bokum said.

Among the speakers at Monday's forum were Phillip Bové, commissioner of the Acequia Madre de Santa Fe; David Benavides, an attorney specialized in water and acequia laws; and Stan Crawford, an acequia commissioner in northern New Mexico.

Santa Fe and Santa Fe County water officials also attended the forum.

Perspective

Acequia-environmental link is crucial

We would like to thank the Jemez y Sangre Water Planning Council, the Santa Fe Land Use Resource Center, General Service Foundation, New Mexico Endowment for the Humanities and all the participants and observers for the two forums held at the Northern New Mexico Community College on July 12 and Aug. 9.

Both forums titled "Protecting things we cannot bear to lose" focused on the importance of protecting our rivers and watersheds and preserving the acequias and traditional communities. The attendance at both forums was excellent and beyond our expectations. The presentations were outstanding and the dialogue and questions from the participants and observers demonstrated the critical need to continue these forums. The issues discussed are vitally important in the continuous process of regional water and land-use planning.

One of the most important things to come out of these two forums was the realization of the inseparable link between protecting the environment and preserving the acequias and traditional communities. In the past, some attempts have been made to portray environmentalism and acequias and traditional communities as having competing interests. This was dispelled by demonstrating that all are inseparable and co-dependent.

How can one protect the environment and not protect the traditional communities and acequias? All are, in the final analysis, one and the same. The perceptions that somehow the environment and traditional communities were somehow at odds were put to rest.

This, then, is the challenge for all of us: to continue the dialogue and understanding in order to properly plan for future land use and water use. We must not lose this wonderful opportunity, because the alternative will certainly be to allow other interests such as industrial and unchecked land development to fill the void because we failed to act.

Nicasio Romero
mayordomo

El Ancon Acequia Association

El Dorado Sun

LOCAL CULTURE, AREA POLITICS, GLOBAL CONCERNS . . . NOVEMBER 1999

Water Planning Underway in Santa Fe, Espanola, Los Alamos Area

by Estevan Lopez, Santa Fe County Utilities Director, Chairperson
of the Jemez y Sangre Regional Water Planning Council

Regional water planning in North central New Mexico is about the things that matter most in the lives of our communities: land, climate and culture.

During the next two years, people from Santa Fe, Espanola, Los Alamos and surrounding communities will talk about those things in light of our most important natural resource — water.


In the Jemez y Sangre Regional Water Planning Region, we can no longer assume there will be enough water for all of the people who could be living here in 2060. The region extends from Embudo in the north to Madrid in the south, from the Jemez Mountains in the west to the Sangre de Cristos in the east. People in communities throughout the region will have numerous opportunities to participate in the creation of the regional water plan.

The Jemez y Sangre Regional Water Planning Council was formed in response to the need for New Mexico to understand its water supply and present and future uses. The need came to light nearly 20 years ago when the City of El Paso claimed water from New Mexico. The judge in the lawsuit ruled that New Mexico could only prevent the export of water if it had a plan for its use. Ultimately, the Jemez y Sangre plan and 15 other regional water plans will be unified in a state water plan by the New Mexico Interstate Stream Commission.

The task of the Council is three-fold:

First, the Council will gather data showing how much water is available for use in the region, taking into account snowfall, rain, runoff and recycling, as well as the various legal restrictions and allocations that exist. The data also will show present usage for city residential, agricultural

and expanding what's possible. . .

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Water Planning Resumes in Santa Fe, Española, Los Alamos Area

By Estevan López, Santa Fe County Utilities Director, Chairperson of the Jemez y Sangre Regional Water Planning Council

Regional water planning in north central New Mexico is about the things that matter most in the life of our communities: land, climate and culture. During the next two years, people from Santa Fe, Española, Los Alamos and surrounding communities will talk about those things in light of our most important natural resource—water.

In the Jemez y Sangre Regional Water Planning Region, we can no longer assume there will be enough water for all of the people who could be living here in 2060. The region extends from Embudo in the north to Madrid in the south, from the Jemez Mountains on the west to the Sangre de Cristos on the east. People in communities throughout the region will have numerous opportunities to participate in the creation of the regional water plan.

The Jemez y Sangre de Cristo Water Planning Council was formed in response to the need for New Mexico to understand its water supply for present and future uses. The need came to light nearly 20 years ago when the City of El Paso claimed water from New Mexico. The judge in the lawsuit ruled that New Mexico could only prevent the export of water if it had a plan for its use. Ultimately, the Jemez y Sangre plan and 15 other regional water plans will be unified in a state water plan by the New Mexico Interstate Stream Commission.

The task of the Council is three-fold:

First, the Council will gather data showing how much water is available for use in the region, taking into account snowfall, rain, runoff and recycling, as well as the various legal restrictions and allocations that exist. The data will also show present usage for city residential, agricultural, environmental and industrial uses. The Council will then attempt to reach agreement on population and future uses of water within the region. This crucial step will reveal whether there is currently an imbalance in the supply and demand of water or if an imbalance is likely to develop.

Second, the Council has defined 10 sub-regions in the region to include every watershed and community, and will convene meetings about water and the public welfare with the residents of those sub-regions. In two series of meetings, residents will have their say about what is important to them, their families, their jobs and their cultures.

Third, residents will help the Council identify what alternatives exist if there is a serious imbalance between supply and demand, and what choices may have to be made to make sure there is enough water to support the

projected demand.

The questions may be difficult or impossible to answer. What effect do domestic wells have on a community's overall water supply, and when would a community system be beneficial? What kind of interaction over the use of water should occur between growing cities and rural areas? Under what criteria should competing uses of water be evaluated? The Council may not be able to settle every question. The local governments in the region will have to give final approval to the plan and ultimately the plan will be subject to state and federal law.

Residents of the region can help the Jemez y Sangre Regional Water Planning Council formulate and possibly answer these tough questions. The Council meets at 3 p. m. on the second Monday of every month at Northern New Mexico Community College in Española. Residents can also get on the Jemez y Sangre mailing list to stay abreast of the planning process.

Any resident who would like additional information about the Jemez y Sangre Regional Water Plan may call me at 986-6210 or Amy Lewis, water resources planning coordinator, City of Santa Fe, at 505 954-7123.

NMAA, continued

between parciantes and the association to place water rights within the community system, which will be managed and distributed by the association. Currently 12 parciantes are participating in the program.

During the question and answer period, David stated that the methods described by Peter and Arnold could be models for acequias to protect their water rights. When asked what might happen if these methods are challenged, he replied: "It's better to do something than nothing." Peter concurred, saying that while statute authority is the best guarantee for acequias, the political climate in New Mexico makes any legislative-driven changes risky. In the meantime, community-based programs like that of the Acequias de Chamisal y Ojito are good ways for acequias to be proactive.



JAN 13 1999

NETWORKNEWS

publication of the Santa Fe Neighborhood Network

JANUARY 2000

Editors Note:

The Neighborhood Network is a community-based association, linking the activities and concerns of the people of Santa Fe, first to each other, then to our City government and process. We sponsor informational forums, provide citizens with neighborhood contacts, and keep people informed through our Newsletter. The Network can also provide your association with a meeting place if you contact me, Lois Goodman(986-9933)and reserve a Monday night. The success of the Network is dependent upon the participation of all of us. Representatives from neighborhoods need to attend various City and EZC meetings, help is needed in contacting neighborhoods to tell them about upcoming issues, and material for the newsletter is needed in an edited format. The Newsletter tries to represent the various communities in Santa Fe, however if your neighborhood was not contacted, please let me know and we will save a place in our next issue. **A General Meeting of people interested in helping with the Network will be held JANUARY 31, 2000, at 7:00 PM, in the Southwest Conference Room of St Vincent Hospital. Please plan to attend in order to lend your support to the organization.**

JOURNAL



EDITION

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Enter Slaying Case

Missing Charges in Video-Store Killings

NEW MEXICO

N.M. Babies Get Rough Start

State Above Average for Unwed Parents

PAGE A 1

PAGE B 1

COMMODITY



JOSH STEPHENSON/JOURNAL

Welding class at Santa Fe High School.

Matter

11 students for welding honor



Standards Joins two plates. He's a contender for a national student welding competition in May.

Study: Area Water Woes Will Worsen

Aquifers Already Being Drained

BY JENNIFER MCKEE
Journal Staff Writer

The equation between water and people in northern New Mexico will grow further out of balance in the next 60 years, according to studies released this month by a regional water planning team.

The Jemez y Sangre Water Planning Council has spent two years studying estimates of population growth and the availability of water in the region. The council, a county and state group supplied with some federal funding, took those findings on the road this month. The group met at El Dorado Elementary School on Monday night and will meet again tonight at the Sweeney Center in Santa Fe.

The findings are mostly common sense: Population will increase in the next 60 years and, unless something changes, water supplies will not.

The group estimated the population of northern New Mexico will almost triple in the next 60 years, growing from approximately 160,000 today to more than 350,000 in 2060.

Amy Lewis, water resource planning coordinator for the city of Santa Fe and one of the staff people on the council, said the figure represents growth based on previous population patterns and does not include the possibility that a future water shortage might curtail that growth.

For the purposes of the study, the council did not estimate any new drinking water sources, like new wells, but studied only existing wells and water systems.

The council divided the region

The city's San Juan-Chama project, which would bring new water to the city's municipal water supply, will keep Santa Fe satisfied until only 2040. After that, according to the studies, the city will need an additional water supply or risk running dry.

into several drainages or water basins. According to their statistics, water is flowing out of the area faster than it's flowing in, which means that even with today's population, northern New Mexico is draining its aquifers, Lewis said.

Based on that, she said, the region must do something about water use, even if the population remains virtually unchanged for 60 years.

The future looks particularly grim for Santa Fe. The Santa Fe Sub-basin area, which includes the city, will need an extra 13,200 acre-feet of water by 2060 to accommodate the city's estimated population by then. An acre-foot is a standard measure of water and refers to one acre of land covered in a foot of water.

The city's San Juan-Chama project, which would bring new water to the city's municipal water supply, will keep Santa Fe satisfied until only 2040. After that, according to the studies, the city will need an additional water supply or risk running dry.

Tonight's meeting, which will focus on Santa Fe, is scheduled to start at 7 p.m.

Demand might exceed water supply in 60 years, report says

By **BEN NEARY**
The New Mexican

Santa Fe County's population will nearly triple over the next 60 years, and unless new sources of water are found to meet domestic needs, demand will greatly exceed the supply, according to a report prepared by the Jemez y Sangre Water Planning Council.

The council, which includes local governments, acequias and federal agencies, will hold a series of public meetings beginning Thursday and continuing throughout February to discuss reports the council has commissioned on increasing demand for water, its limited supply and possible ways to make up the difference.

The council has received state and federal money to come up with a regional water plan. Ultimately, the Jemez y Sangre plan will take its place as one of 16 such plans that will cover the state.

The Jemez y Sangre planning area includes the northern two-thirds of Santa Fe County, the southeastern tip of Rio Arriba County and all of Los Alamos County.

Amy Lewis, water-resource planning coordinator with the City of Santa Fe, drafted grant applications to secure funding for the Jemez y Sangre Water Planning Council. She serves as an organizer and spokeswoman for the council.

The University of New Mexico Bureau of Business and Economic Research prepared a study predicting population increase over the next 60 years in the planning area.

The study predicts the population of all of Santa Fe County, not

just the water planning area, will grow from 128,000 to 362,000 by 2060. For all of Rio Arriba County, the study predicts the population will increase from 38,000 to 46,000. And for Los Alamos County, it predicts the population will increase from 19,000 to nearly 22,000.

Lewis said the council estimates it will take an additional 31,000 acre feet of water to meet the increased demand in the planning area by the year 2060. Of that amount, she said that water from the federal San Juan/Chama diversion project could provide perhaps 12,000 acre feet.

The San Juan/Chama project carries water into New Mexico from southern Colorado through a tunnel system. An acre foot is about 325,000 gallons, the amount of water that would cover an acre to a depth of 1 foot.

"We're left with 19,000 acre feet where we don't know where that's going to come from," Lewis said. "Will it come from agriculture? Will it come from Jicarilla Apache's San Juan/Chama water that will be leased to the region?"

Unless the area works now and addresses regional supply and delivery questions, Lewis said the pressure will increase to try to make up any shortfalls by increasing reliance on domestic wells.

"What I'm trying to show is that if we don't plan, if we don't talk to each other, and we stick our head in the sand and continue to go as we have been going, and the state engineer continues to allow domestic wells, the (shortfall) could get filled in with domestic wells," Lewis said.

But domestic wells have a cost. Some places in the study area already see water being drawn

out of the aquifer faster than it's naturally being replenished.

The council wants to get public involvement at this point to start the discussion about what the alternatives are to planning for the region's water future, Lewis said.

"If people really want to stop growth, we have to discuss what the implications are," Lewis said. "That means my son couldn't stay here, and have a job and a family. People want to keep doing what they're doing on their land, but they don't want their neighbor to impact them."

Under state law, the New Mexico State Engineer's Office has authority to consider whether particular applications to transfer water rights meet the standard of satisfying public welfare. Lewis said the public meetings are intended to help come up with a definition of public welfare.

The following meetings, all from 7 p.m. to 9 p.m., are scheduled:

- Thursday, Velarde Elementary School.
- Feb. 7, Hilltop House, Los Alamos.
- Feb. 8, La Cienega Community Center.
- Feb. 13, El Convento, Española.
- Feb. 15, Tesuque Elementary School.
- Feb. 19, Eldorado Elementary School.
- Feb. 20, Room 5, Sweeney Convention Center, Santa Fe.
- Feb. 21, Jemez Room 3 at Santa Fe Community College.
- Feb. 22, Pojoaque Elementary School.
- Feb. 27, St. Joseph's Parish Hall, Cerrillos.

Your words will count at water-planning sessions

With luck, snowpack on the Jemez and Sangre de Cristo ranges will spare Northern New Mexico another tinderbox spring and early summer. With greater fortune, and with plenty of participation from people all over el norte, our area will worry less about withered crops and concern itself with water planning against dry years to come.

For the past couple of years, a group called the Jemez y Sangre Water Planning Council has been preparing several important reports:

■ A summary of all the known sources of water in rivers, creeks and aquifers; how much engineers and hydrologists think there is; and an educated guess as to water quality.

■ A projection of population growth for the next 60 years. For Rio Arriba and Los Alamos Counties, the experts don't think it will be substantial; for Santa Fe County, however, we could be looking at more than 350,000 people by 2060.

That's a lot of bathtubfuls for this high desert — not to mention for the downriver cities of Albuquerque, Las Cruces-El Paso-Juárez and on down to the Gulf of Mexico. Nearly all of them depend on the Rio Grande — which, in some years, isn't so *grande* even where the Rio Chama flows in and few folks are taking it out.

It took lawsuits from Texas to put New Mexico officialdom in a water-planning mood in the first place. Since then, environmentalists have descended on the courts with their own agendas, forcing upstreamers to take a serious look at our water needs — and how much of the stuff we can count on in years to come.

El norte and the rest of the state are long past due for water planning. And rather than letting big-city bureaucrats do it, the process should include those who will be affected by it.

With that in mind, the Jemez y Sangre council, which includes community water associations, homebuilders' groups and acequias, as well as local, state and federal governments, including the Bureau of Indian Affairs, is holding public meetings throughout February. The 7 p.m. sessions begin at Velarde Elementary School Thursday. They're being posted in the communities of sub-basins between Embudo and Cochiti Lake. *The New Mexican*, among others, will carry notices. Santa Fe will be the scene of two meetings: Feb. 20 at Sweeney Center and Feb 21 at Santa Fe Community College.

The water council wants to hear from you: How much will you, your family, your neighbors need? What does water mean to your community? How would you like to see it managed over the next 60 years?

Your words, in the month to come, could carry weight for decades to come.

THE SANTA FE
NEW MEXICAN

Saturday, January 27, 2001

The West's Oldest Newspaper

Founded 1849

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202 F. Marcy St. Santa Fe, N.M. 87501

the river and riparian vegetation died, then heavy rainfall

Commission, if adopted, would reinforce Mayor Larry

said. "If a farmer wants to sell water rights, the city should be

exhausted our immediate quick-fixes."

City water planner addresses future supply

In late January the *Santa Fe Real Estate Guide* interviewed hydrologist Amy Lewis, Santa Fe's water resource planning coordinator and a member of the Jemez y Sangre Water Planning Council.

What is the subject and purpose of the February JYSWPC meetings?

Lewis: The meetings will be the first public presentation of two major studies which the JYSWPC has developed. The first is a population study which gives us an idea of how much our population will grow over the next 60 years. The second is a water supply analysis which summarizes what we know about our water budgets in 10 sub-basins within the region.

The council has taken the information from the two studies and projected how much water we may need to meet the projected population and where that water might come from. The results show that over the next 60 years an additional 31,000 acre-feet/year (afy) will be required to meet the municipal and domestic needs of the region, above the 22,000 afy presently diverted for those purposes. Only about 12,000 afy of additional supply (above what is already diverted) is available from San Juan-Chama presently contracted by the city and county of Santa Fe and the city of Española (assuming we get return-flow credits).

That means 19,000 afy must come from other San Juan-Chama water, other irrigation rights on the Rio Grande, or the demand must be reduced, or a combination of these. But if

we don't plan and choose to ignore this problem, the water could be diverted through individual domestic wells that are automatically granted by the Office of the State Engineer under state law.

The purpose of the February meetings is to convey this information that we have gathered and obtain information about existing water plans and begin the process of sorting through this dilemma the region faces. My hope is that we can be creative and build a community out of this problem. My fear is that the problem will be divisive and divide us more.

I understand that Colorado does not release water into the Azotea Tunnel in times of drought, so our San Juan-Chama water supply is not guaranteed?

The San Juan-Chama water is stored in reservoirs and not dependent on monthly flows. Even though we have been told that our contracted right of 5,605 afy is a "firm yield" we should be prepared for times of drought. Our goal is to move to a more conjunctive use of our water resources, rely on renewable supplies (surface water) as much as possible when it is available and rest the aquifer so that we can tap that during times of drought.

Does the city allotment of San Juan-Chama water expire after each year, so if we don't use it we lose it?

We pay to store our unused San Juan-Chama water in Heron Lake.

With all the snow we've had, will the city relax the 5-month-old water restrictions soon?

The city manager is considering lifting the Stage 3 restrictions but may wait for the Feb. 1 runoff report from the Natural Resource Conservation Service to make the final decision.

Is the city doing any thinning in the watershed?

The city is working with the U.S. Forest Service to treat up to 7,000 acres in the watershed. A draft environmental impact statement should hit the streets in the next few weeks. This will involve cutting trees up to 16 inches (not all trees up to 16 inches) and prescribed burns.

In the meantime the City of Santa Fe is beginning on the first stage of treatment on about 250 acres of its own land. We will thin up to 6-inch trees and haul the material out of the canyon for latillas, firewood or chips. The city has hired a contractor to perform this work. No prescribed burns will be performed by this contractor.

The motivation is to reduce the risk of a catastrophic fire which could result in severe erosion, filling our reservoir with sediment and debris. I have pictures of Los Alamos Canyon Reservoir which I took in December and it looks like a primordial ooze. This is what we are trying to prevent.

The Santa Fe River supplies 40 percent of our water needs, a supply we can not afford to go without. We are also curious to see if the water yield is increased by the thinning project, but it is not the motivating force.



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February 21, 2001



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Report: City's thirst for water can't keep pace

By BEN NEARY/The New Mexican, The New Mexican - 2/21/2001

Faced with a planning report concluding that Santa Fe's population will nearly triple over the next 60 years while water resources will fail to keep pace, many city residents on Tuesday said local governments should consider strict conservation measures as well as moratoriums on growth.

The Jemez y Sangre Water Planning Council, which includes local governments, acequias and federal agencies, is holding public meetings around the county to get comments on possible ways to meet the rising demand for water. More than 60 people attended Tuesday's meeting at Sweeney Center in Santa Fe.

The study, which is scheduled to be finished next year, covers the northern two-thirds of Santa Fe County, the southern tip of Rio Arriba County and all of Los Alamos County. It's intended to be one of 16 regional water plans that ultimately will cover the entire state.

The study predicts that over the next 60 years, the population in Santa Fe County will increase from 128,000 to 362,000. Rio Arriba's population will increase from 38,000 to 42,000 while Los Alamos will increase from 19,000 to 22,000, the study predicts.

The increase in population in the planning area translates into an increase in demand for water of 31,000 acre feet per year, the council's study says. Only about 12,000 acre feet of that can be covered by water from the federal San Juan/Chama diversion project, leaving the area about 19,000 acre feet short.

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The Meeting Place

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The San Juan/Chama project brings water into New Mexico from southern Colorado through a tunnel.

An acre foot is about 325,000 gallons, the amount of water that would cover an acre to a depth of 1 foot.

The city and county of Santa Fe have contracts with the federal government for the San Juan/Chama water that expire in the year 2016.

However, Amy Lewis, water-resource planning coordinator with the city of Santa Fe, told Tuesday's meeting that city officials intend to meet with Sen. Pete Domenici, R-N.M., today to ask him to try to make the San Juan/Chama water rights perpetual.

Lindsey Grant, a writer on population issues who is working with Jemez y Sangre Planning Council, said people might dismiss as absurd projections that Santa Fe County's population will nearly triple over the next 60 years.

But Grant said, "Well, Las Vegas, Nev., is absurd, too."

Under comments from the audience, Nan Bourne of Santa Fe said the information on growth had been presented as a juggernaut bearing down on the city.

"We act like there is nothing we can do about it," Bourne said. "I would say, put a moratorium on growth until we know exactly what we have."

George McLaughlin, who said he moved to Santa Fe recently from the Midwest, said he believes it would be disastrous to stop growth in the area. However, he said residents need to practice conservation measures.

"I am appalled how many people who come from areas like I did who want to landscape their homes just like the places they left," McLaughlin said. "Sodded lawns have no place out here."

Melia Lewis of Santa Fe said citizens must conserve water. She said New York City undertook a massive conservation campaign

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when faced with shortages.

"To me, it feels very challenging as well as very exciting, instead of looking for new sources all the time," Lewis said of the conservation measures. "The information is there, and I think it would be a wonderful challenge to the city to say, instead of being water gluttons, to say, 'We live in the desert. We chose to live in the desert.' "

Carolyn Sigstaedt, a city resident who recently ran unsuccessfully for Santa Fe County Commission, said the area needs to install meters on wells. "How can we know where we're going if we don't know how much we're using?" she said.

The council has three more public meetings remaining on the report:

- Today, at Jemez Room 3 at Santa Fe Community College.
- Thursday, at Pojoaque Elementary School.
- Tuesday, at St. Joseph's Parish Hall in Cerrillos.

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Water study: Future of Santa Fe bleak

► *Public Utilities Committee gets 21 proposed solutions to water crisis*

By **TOM SHARPE**
The New Mexican

Santa Fe and vicinity face a bleak water future, with water demand outpacing supply over the next half



century, unless governments cooperate, says a new regional water study.

Ed Moreno of the Jemez y Sangre Water Planning Council, which sponsored the study, Wednesday offered city councilors on the Public Utilities Committee 21 proposed solutions to

the continuing water crisis.

The five categories include improving system efficiency, mitigating drought, reducing demand, increasing supply and restoring and protecting the supply for existing demand and the environment.

The most alarming part of Moreno's presentation concerned population projections for Santa Fe County and the surrounding area, includ-

Please see **WATER**, Page B-4



Ed Moreno from Sangre y Jemez Water Planning Council speaks during this week's public utilities meeting.

Luis Saturno Sanchez
The New Mexican

ing parts of Los Alamos and Rio Arriba counties.

Based on its growth in the 1990s, Santa Fe County is expected to grow from 120,000 residents today to 300,000 by 2060 and the entire region from 170,000 to 365,000.

Water supplies, however, will increase only fractionally, according to the study.

"That's a pretty significant gap overall in the amount of water needed," Moreno said as he held up a chart showing a growing water shortage. "Velarde, Española, Los Alamos won't grow nearly as fast as Santa Fe and the suburbs — Tesuque, Eldorado, La Cienega."

The study assumes each person in the outlying region will need about .15 acre-foot of water a year while each person in Santa Fe, because of industry and commercial uses, will need about .83 acre-foot. One acre-foot equals 325,851 gallons.

Asked by Councilor David Coss if the initial study had turned up any promising techniques for alleviating what looks like a permanent state of water crisis, Moreno mentioned cloud seeding.

"It probably has a lot more potential than people originally thought, but not enough to include the amount (of extra rain) where you could bank on it," he said.

Moreno said the Jemez y Sangre Water Planning Council is one of 16 planning groups in New Mexico started in response to a federal judge's order in a water case. He said the local council, made up of 20 representatives from city, county and smaller government entities, is ahead of other groups in Taos, Mora and Las Vegas, N.M.

Asked by Councilor Matthew Ortiz whether area pueblos are participating in the planning group, Moreno said the region's six tribes are represented at meetings, but they have declined to join the group, fearing its decision might conflict with American Indian water rights.

Moreno said three meetings are planned to gather public input on the 21 white papers: 7-9 p.m. Oct. 1 at the Lucero Center in Española, 7-9 p.m. Oct. 2 at the Sweeney Center in Santa Fe and Oct. 3,

god **FRIDAY**
September 27, 2002

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Pueblo and lithographs from the "C the Territor (1882-83) ad appeal.



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EDITION

Meeting the Need: Water Alternatives for the 21st Century

The Jemez y Sangre Water Planning Council is working on the regional water plan and has analyzed 21 possible alternatives for achieving a sustainable water supply for the 21st Century.

alternatives to help local governments meet and/or reduce the gap between supply and demand of 31,500 acre-feet.

Public meetings have been scheduled in the region where residents can examine the alternatives, talk about key scenarios for our water future, and make recommendations to elected or public officials.

Moreover, the plan will also recommend ways to meet and/or reduce the demand while protecting those aspects of life in northern New Mexico that are special and which depend on water. That concept, known as PUBLIC WELFARE, will also be discussed at the public meetings.

The Council expects to present the plan to the public and key state and local officials in early 2003.

The Jemez y Sangre region includes the northern two-thirds of Santa Fe County, southeastern Rio Arriba County and all of Los Alamos County -- every community between Embudo and Madrid whose watersheds drain into the Rio Grande.

PUBLIC INPUT IS NECESSARY AND VALUABLE

It is projected that the population of the Jemez y Sangre region will double over the next 60 years, based on trends that existed in the 1990s. The plan will recommend

For information about the Jemez y Sangre Regional Water Plan, call Amy Lewis, contract hydrologist and coordinator for the Council, at 982-0405, or consultant Ed Moreno, 466-1183.

SCHEDULE OF MEETINGS - OCTOBER 2002

All Meetings 7:00 - 9:00 p.m.

Santa Fe	Wednesday, October 2	Sweeney Convention Center
Cerrillos / San Marcos	Thursday, October 3	New Turquoise Trail Fire Station (across from San Marcos Feed & Cafe)
Española	Monday, October 7	El Convento, Española Plaza



Water Council Sets 3 Public Meetings

Journal Staff Report

The Jemez y Sangre Water Planning Council will hold three public meetings to discuss plans to meet future water needs in the tri-county area.

The council covers the northern two-thirds of Santa Fe County, southeastern Rio Arriba County and all of Los Alamos County.

Meetings from 7 to 9 p.m. will be held Wednesday at the

Sweeney Convention Center in Santa Fe, on Thursday at Turquoise Trail Volunteer Fire Department's new fire station in San Marcos and on Oct. 7 in Española at the Misión Convento in the Plaza.

SATURDAY
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EDITION

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Forum overflows with water questions

► *Water Planning
Council trying to
come up with
regional plan*

By **WENDY BROWN**
The New Mexican

The planners of a public meeting Thursday night for the Jemez y Sangre Regional Water Plan said they wanted to hear the water concerns of people who live in the N.M. 14 area south of Santa Fe.

They weren't disappointed. The only time the questions stopped in the packed room was during presentations on the plan.

"If there were no golf courses, how would that go toward saving water?" asked Michael Kluck, who lives near N.M. 14.

Amy Lewis, a hydrologist working on the plan, told Kluck he'd made an excellent point. Las Campanas, she said, had used 10 percent of Santa Fe's water supply this summer for golf.

The Jemez y Sangre Water Planning Council has been working since 1998 to come up with a regional water plan, and the meeting was one of three planned for this week and next. The 24-member council is made up of city and county governments and other organizations in an area that includes Los Alamos County, parts of Rio Arriba County and most of Santa Fe County.

Ed Moreno, a facilitator hired to run the meeting, said the plan will go to the state Interstate Stream Commission when it is completed, but city and county governments will probably end up putting most of the plan to use.

The council also held a public meeting Wednesday in Santa Fe, and about as many people attended that meeting as the N.M. 14 meeting, held at the Turquoise Trail Fire Station, said Moreno.

About 40 people attended each meeting.

The council wanted to hold a meeting in the N.M. 14 area because the drought had been "especially acute" there this summer, Moreno

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THE SANTA FE NEW MEXICAN

Friday

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WATER

Continued from Page B-1

said.

Marge Johnson, who lives in the N.M. 14 area, asked whether the council had looked into the ways people had changed the ecology through their lifestyles.

Lewis told Johnson the council had looked at the ways people had changed the ecology — by paving roads, for example.

"There's been an acknowledgement of how we've messed up the system, and we have to look at ways to change it back," Lewis said.

Hugh Nator wanted to know how the council was addressing water sustainability. "Until we know how much water we have ... we won't know how much we're falling behind on sustainability," he said.

The hydrologists assured Nator they are addressing the issue by tracking the area's water availability as best they can. Other members of the audience touched on agriculture, construction and the vast amount of water it takes to cool a power plant.

The council will hold its third public meeting in Española from 7 p.m. to 9 p.m. Monday at El Convento in the Española Plaza. The council has held public meetings periodically throughout the planning process, Moreno said, and although the final plan will be many inches thick, the council plans on producing a summary for lay people.