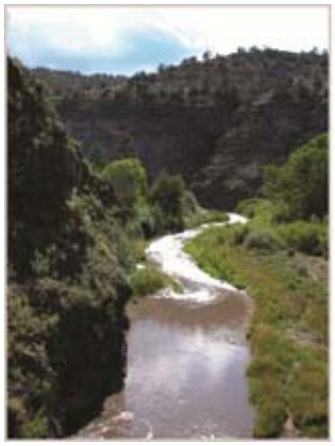

Community Input on Gila Basin

Arizona Water Settlement Act

TOWN HALL

BACKGROUND REPORT

- Participants urged to read this report before the town hall.
- DATE: February 16-17, 2012
- LOCATION: Grant County Business and Conference Center, Silver City, NM

CONVENERS

NM Interstate Stream Commission
Town of Silver City
City of Deming
Luna County
Grant County
Hidalgo County

FACILITATOR

New Mexico First

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CONTENTS

Special Note **6**
Introduction **7**
Purpose of the Town Hall and this Report 7
Sponsors and Conveners 7
Background Report Sponsor 7
Town Hall Sponsors 8
Facilitator 8
Report Authors and Reviewers 8
Southwestern New Mexico **9**
The Gila River Basin 9
The Communities 9
Grant County 10
Catron County 10
Luna County 11
Hidalgo County 11
What the AWSA MEANS TO NEW MEXICO **12**
What the Act Allows 12
Timeline for New Mexico to Comply 12
ISC Process for AWSA proposals 13
Tier One, Tier Two Requirements 13
Timeline 13
Eligible applicants 13
Tier One Process 14
Tier Two Evaluation Process 14
WATER SUPPLY DEMANDS **16**
Research on Southwest New Mexico Water Needs 16
Future Water Demands 16
Climate Change 17
Outreach and Education **18**
Goals of Community Involvement 18

History of Community and State Involvement 18
Gila San Franciso Water Commission 18
Gila-San Francisco Coordinating Committee 18
Gila-San Francisco Collaborative Modeling Team 18
Upper Gila River Science Forum 19
State Involvement-2007 19
State Involvement 2011 20
STAKEHOLDERS VIEWS AND VALUES 21
GOAL: Restore the Watersheds 21
Reasons People Support Watershed Restoration 21
Strategies that Advance Watershed Restoration 21
GOALS: Provide Enough Drinking Water and Grow the Economy 23
REasons People Support These Goals 23
Strategies 23
GOAL: Conserve Water and the Environment 24
REasons People Support Conservation 24
Strategies for Water Conservation 24
GOAL: Support Agriculture 25
Reasons to Support Increased Water for Agriculture 25
Strategies for Supporting Agriculture 25
GOAL: Support Existing Industry 25
GOAL: Protect Habitats and Species 26
QUESTION: Let the Water Flow to Arizona? 26
Frequently Asked Questions 28
Appendix: Tier Two Proposals 30
Project name: Coalition Diversion-Rosgen 30
Project name: Luna Ditch 30
Project name: Sunset and New Model Ditches 31
Project name: Gila National Forest San Francisco River Diversion/Ditch 32
Project name: Pleasanton Eastside Ditch/Conveyance Loss Reduction Proposal 32
Project name: Deming Conservation Fund 33
Project name: Gila Conservation Fund 33

Project name: Stream Dynamics Water Harvesting 34
Project name: Deming Diversion Project 35
Project name: Gila Basin Irrigation Commission (GBIC) 35
Project name: Hidalgo County Off-Stream Storage 36
Project name: Grant County (and partly overlapped with Bayard) Diversion and Storage 36
Project name: Bayard Effluent Reuse 37
Project name: Deming Water Reuse 38
Project name: Grant County Water Commission Regional Supply 38
Project name: San Francisco Watershed Treatment: Mineral Creek, Dry Creek, and Devils Creek 39
Project name: Grant Soil and Water Conservation District Restoration 40
Project name: New Mexico Forest Industry Association 40
Project name: Watershed Restoration and Monitoring – New Mexico State University 41
Project name: Gila National Forest Watershed Restoration 42
Bibliography 43

Special Note

Much of this report was written by the late Lisa Breeden Garcia, who died before it was completed. We honor her memory, acknowledging the hours of research and interviews she conducted. Had she lived to attend the town hall, she would no doubt tell everyone to learn all they can and respect their neighbors.

We can do that.

INTRODUCTION

Purpose of the Town Hall and this Report

The New Mexico First town hall on the Gila River Basin[1] will help communities understand and offer feedback on options associated with the Arizona Water Settlement Act of 2004. The AWSA, described further in this report, allows New Mexico additional water from the Gila system through an exchange with Arizona. The act also makes available significant federal dollars to fund projects that meet water supply demands in the four counties of Grant, Luna, Hidalgo, and Catron.

The New Mexico Interstate Stream Commission will select the water projects. The February 2012 New Mexico First town hall will collect public input for the ISC. The town hall will not select the projects; instead, it will enable community members to share their likes, dislikes, and questions about options under consideration.

To help the public provide informed input, this report offers essential background. It contains history on the AWSA, environmental and economic information on the river and its communities, and various perspectives on how to allocate the federal dollars. In addition, the appendix contains summaries of all 20 potential water projects. The town hall will focus on these 20 projects.

Source: Maps of the World.

Community leaders, stakeholders, and concerned citizens have worked diligently to understand both the opportunities and constraints of the AWSA as they drafted project proposals.

The town hall organizers urge participants to read this report before the event.

Sponsors and Conveners

BACKGROUND REPORT SPONSOR

This report was commissioned by New Mexico's **Interstate Stream Commission**, which has authority under state law to investigate, protect, conserve and develop New Mexico's waters, including eight interstate stream basins. This authority involves negotiating with other states to settle interstate stream disputes and allocating the water from those settlements. The ISC staff analyzes stream flow, reservoir, and other data on the stream systems and analyzes, reviews, and implements related projects in New Mexico. The governor appoints the eight unsalaried members of the ISC. The ninth member is the State Engineer, who under state law is secretary of the ISC.

[1] New Mexico River Map Image: www.mapsoftheworld.com

TOWN HALL SPONSORS

A coalition of city and county governments commissioned the town hall.

- Town of Silver City
- City of Deming
- Luna County
- Grant County

Facilitator

New Mexico First engages people in important issues facing their state or community. Established in 1986, the public policy organization offers unique town halls and forums that bring people together to develop recommendations for policymakers and the public. New Mexico First also produces nonpartisan public policy reports on critical issues facing the state. These reports – on topics like water, education, healthcare, the economy, and energy – are available at nmfirst.org.

Our state's two U.S. Senators – Jeff Bingaman and Tom Udall – serve as New Mexico First's honorary co-chairs. The organization was co-founded in 1986 by Senators Jeff Bingaman and Pete Domenici (retired).

Report Authors and Reviewers

This New Mexico First report was prepared by Lisa Breeden Garcia, Heather Balas, and Elizabeth Perrachione. Reviewers included:

Craig Roepke, Interstate Stream Commission
Mary Reece, Bureau of Reclamation
Anthony Gutierrez, Grant County
Rick McInturff, Deming City Manager
Allyson Siwik, Gila Conservation Coalition
Tom Bates, Gila San Francisco Water Commission
Peter Russell, Town of Silver City

In addition, the following community members contributed to this report via interviews or questionnaires:

Lawrence Brookey, City of Deming
Kim Clark, Grant County economic development
Rick Holdridge, Luna County
Tink Jackson, Office of State Engineer
Vance Lee, Hidalgo County Commission
Rick McInturff, Deming City Manager
Hugh McKeen, Catron County Commission
Mary Reece, Bureau of Reclamation
Craig Roepke, Interstate Stream Commission
Dutch Salmon, conservationist
Topper Thorpe, Stakeholders Group
Peter Russell, Town of Silver City
Jerry Schickedanz, New Mexico State University
Gerald Schultz, retired hydrologist
Mary Alice Murphy, reporter

Many thanks to all reviewers and contributors for sharing their time and expertise.

SOUTHWESTERN NEW MEXICO

The Gila River Basin[2]

The Gila River originates in western New Mexico and runs through three counties before flowing into Arizona. The river is part of the Gila River Basin. The Gila River meanders through the Gila Wilderness (which was the first federally designated "wilderness area" in the United States). The Gila is one of New Mexico's last rivers without a dam or major diversion, and the wilderness area is home to numerous endangered species, natural hot springs, hundreds of miles of trails, as well as the historic Gila Cliff dwellings. The region is a popular recreation destination for hiking, fishing, camping, and nature walks.

While most New Mexicans think of the Gila River as a New Mexico resource, the majority of it actually flows in Arizona.

Figure 2: Gila Water Basin
Source: Bureau of Reclamation website

In addition to recreation, the Gila River and its tributary, the San Francisco River, provide irrigation in the three New Mexico counties of Grant, Catron, and Hidalgo. The use of surface water for crops dates back to the 1800's. Historically, more than 75% of the water taken from the Gila has been used for agriculture.[3] The river flow also recharges aquifers in the region, and the water is a crucial economic element to southwest New Mexico.

Because the Gila and San Francisco Rivers are tributaries of the Colorado River, the future of the Gila Basin in New Mexico was included in the 1964 U.S. Supreme Court decree in the Arizona v. California case. Disagreements with the outcomes of that case led to the Arizona Water Settlements Act of 2004 to resolve many remaining water use disputes. New Mexico's two U.S. Senators, Pete Domenici and Jeff Bingaman, were key to the AWSA negotiations on the settlement of issues impacting the Gila River and its surrounding basins, aquifers, and the people who rely on the water.

The Communities

The four counties of Grant, Luna, Catron, and Hidalgo already collaborate on water planning, because they comprise the Southwest Water Planning Region. The regional water plan currently addresses the municipal, agricultural, industrial, recreational, and environmental needs of the region.[4] The plan projects modest population and economic growth for the region.[5] Other factors affecting the amount of water the communities may need include climate change, agriculture irrigation techniques, conventional industries such as mining, and potential industries including renewables.[6] In addition, the New Mexico Department of Workforce Solutions

[2] Gila Water Basin map: http://www.usbr.gov/lc/phoenix/biology/azfish/gilabasinmap.html
[3] (AMEC Earth % Environment, Inc.)
[4] (Daniel B. Stephens and Associates p. 2)
[5] (Daniel B. Stephens and Associates p. 9)
[6] (AMEC Earth % Environment, Inc. p. 19)

projects a 15% increase in jobs for the region by 2018. Economic growth is expected largely in healthcare, social assistance, and education. The state projects downturns in hiring for agriculture and the utilities industry.[7]

All these factors influence the potential selection of water projects to be funded by the AWSA.

GRANT COUNTY

Silver City is the largest community in Grant County,[8] with vibrant marketing to draw tourists to attractions including the Gila Cliff Dwellings and the numerous recreational lures of the Gila Wilderness and Gila National Forest. Silver City actively engages with the surrounding communities of Bayard, Hurley, and Santa Clara for art festivals, historic mining tours, bicycle and motorcycle runs, birding, hunting, fishing, backpacking and trail riding. Silver City is a college town, home to Western New Mexico University, as well as a growing retirement community.

Figure 3: Map of Grant County. Source: UNM website

Traditionally, Grant County residents earned their paychecks through silver or copper mining and agriculture.[9] While there is less mining currently than in years past, Freeport-McMoran remains one of the area's largest employers. Other economic drivers are government, healthcare, retail, as well as the accommodation and food service industries.[10]

The 2010 Census lists the population of Grant County at 29,514.[11] The Bureau of Business and Economic Research at the University of New Mexico projects a 28% growth by 2035 to 43,190.[12]

Future Grant County water needs include recreation, environmental protection, agriculture, mining, and increased population.

CATRON COUNTY

At nearly 7,000 square miles, Catron County[13] is New Mexico's largest by geography. With a portion of three national forests within the county, hiking, camping and fishing are major draws for recreational visitors. Reserve is the county seat, and there is rich mining history in the town of Mogollon. Other historic draws are the legends of famous Apache leaders who once lived in Catron County including Geronimo and Cochise. A major tourist attraction is the Catwalk national recreational trail along Whitewater Creek near Glenwood.

Figure 4: Map of Catron County. Source: UNM website

[7] (Solutions)
[8] Grant County map: http://hsc.unm.edu/community/countyreportcards/grant.shtml
[9] (Daniel B. Stephens and Associates p. 3-5)
[10] (Southwest Office of Regional Data/www.swordnm.info/) http://www.wnmu.edu/sword/(2)GrantCty_Emp_by_Industry_2001&2008.pdf
[11] (U.S. Census Bureau)
[12] (Research)
[13] Catron county map: http://hsc.unm.edu/community/countyreportcards/catron.shtml

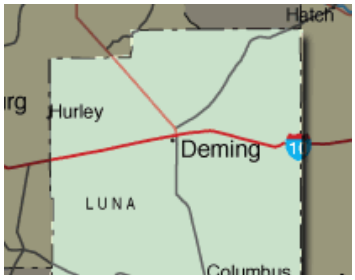

Figure 5: Map of Luna County. Source: UNM website

Government, healthcare, retail (including the accommodation and food service industries) are the county's main employers.[14] While Catron County is large in size, it contains the smallest population in the four county region. The current population is 3,725 with projected growth to 4,292 by the year 2035.[15] [16]

LUNA COUNTY

Deming was founded in 1881 as a juncture of the Southern Pacific and Atchison, Topeka and Santa Fe Railroads, making it unique as the country's second transcontinental railway. Deming remains the largest city in Luna County[17] with marketing aimed as a gateway for businesses looking to expand into Mexico. Luna County is home to four state parks offering numerous recreational activities including Rockhound State Park and Pancho Villa State Park, and every summer the community draws tourists to its annual Deming Duck Race.

Government and government enterprises, agriculture, retail, and manufacturing are the major economic drivers in Luna County, and leaders predict growth around new industries involving energy generation, food processing, and manufactured housing.[18] Its location on I-10 brings a significant number of travelers through town, purchasing gas, food, and motel stays. Luna County is home to 29,095 New Mexicans, and the population is expected to grow to 35,647 by 2035.[19] [20]

HIDALGO COUNTY

Situated in New Mexico's "boot heel," Hidalgo County[21] features year-round sunshine, desert and mountain scenery, and recreational activities that attract fans of hiking, hunting, astronomy, and rock-hounding. Lordsburg is the largest community and the county seat. The village of Rodeo is a growing artist colony and one of the world's foremost birding destinations. A very popular tourist attraction is the ghost town of Shakespeare just southwest of Lordsburg.

Figure 6: Map of Hidalgo County. Source: UNM Website

The mining town of Playas was sold recently to New Mexico Tech University, and Playas is now used for homeland security training. Major employment in Hidalgo County includes government, retail (including accommodation and food service), and agriculture.[22] Hidalgo County's growing economic promise includes a major chile processing plant, a tilapia farm, as well as geothermal and solar energy industry. The 2010 Census lists Hidalgo County population at 4,894,[23] with projected growth to 8,051 by 2035.[24]

[14] (Southwest Office of Regional Data/www.swordnm.info/) ww.wnmu.edu/sword/(2)catroncty_emp_by_industry_2001&2008.pdf
[15] (U.S. Census Bureau)
[16] (Research)
[17] Luna county map: http://hsc.unm.edu/community/countyreportcards/luna.shtml
[18] (Southwest Office of Regional Data/www.swordnm.info/) www.wnmu.edu/sword/(2)LunaCty_Emp_by_Ind_2001&2008.pdf
[19] (U.S. Census Bureau)
[20] (Research)
[21] Hidalgo County map: http://hsc.unm.edu/community/countyreportcards/hidalgo.shtml
[22] (Southwest Office of Regional Data/www.swordnm.info/) www.wnmu.edu/sword/(2)HidalgoCty_Emp_by_Ind_2001&2008.pdf
[23] (U.S. Census Bureau)

WHAT THE AWSA MEANS TO NEW MEXICO

What the Act Allows

In 2004, the AWSA allocated up to an annual average of 14,000 acre-feet of water in any 10-year consecutive period, and funding of between $66 million to $128 million for water projects to benefit the four southwest New Mexico counties.[25]

Specifically, the AWSA allows the Secretary of Interior to contract with water users in New Mexico for additional water from the Gila River, its tributaries, and underground water resources up to an annual average 14,000 acre-feet of consumptive water use.[26] Consumptive use is water used, but not returned to the source (in this case, the river system). To receive this additional water from the Gila system, New Mexico must pay the Central Arizona Project (CAP) to assure delivery of an equal amount of exchange water to downstream users of the Gila River. Exchange water costs are yet to be finally calculated. The current estimates range from $100 to $122 per acre-foot.[27] (See p. 29 of this report, item 11, for more information on the exchange.)

Federal funding for the water projects starts at $66 million to pay for proposals that meet water supply demands in the Southwest Water Planning Region.[28] If the state decides to build a diversion, storage, or delivery project that triggers a water exchange with Arizona, the state may access up to $62 million more for construction costs.[29] Such a project is referred to in the AWSA as a "**New Mexico Unit**".[30] The water users who contract with the Secretary of Interior for the water will be responsible to cover construction costs that exceed the $128 million potentially available through the AWSA.

The ISC will select the projects submitted to the Secretary of Interior for use of the AWSA money allocation and the potential additional water exchange.

Timeline for New Mexico to Comply

Starting in 2012, $66 million will transfer to New Mexico in ten equal annual payments, and the money can be used for any water project that meets a water supply demand in the region. New Mexico has until December 31, 2014 to notify the Secretary of the Interior about plans to consume water from the Gila Basin. Any New Mexico Unit plan must comply with the National Environmental Policy Act (NEPA), the Endangered Species Act, as well as other applicable environmental regulations – and a Record of Decision must be completed by 2019. This deadline can extend to 2030 if there is a delay through no fault of New Mexico.

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[24] (Research)
[25] (Arizona Water Settlement Act)
[26] (Arizona Water Settlement Act)
[27] Range developed by ISC and Bureau of Reclamation.
[28] (Arizona Water Settlement Act) Exact language of the AWSA regarding federal funding reads: "for the purpose of paying costs of the New Mexico Unit or other water utilization alternatives to meet water supply demands in the Southwest Water Planning Region of New Mexico, as determined by the New Mexico Interstate Stream Commission in consultation with the Southwest New Mexico Water Study Group or its successor, including costs associated with planning and environmental compliance activities and environmental mitigation and restoration."
[29] (AWSA Framework)
[30] See p. 26 for a more detailed explanation of a New Mexico Unit.

Depending on the types of water projects selected and the rate of return on funds held in the Lower Colorado Basin Development Fund, New Mexico can receive up to an additional $62 million. This additional funding can only be used for construction of a New Mexico Unit, and will be lost if New Mexico does not inform the Secretary by 2014 how it will use the additional AWSA water.[31]

ISC Process for AWSA proposals

The ISC is responsible for administering the AWSA process. The ISC accepted applications for projects that meet water supply demands.

TIER ONE, TIER TWO REQUIREMENTS

The ISC, after gathering extensive stakeholder input, adopted a two-tiered process for evaluating possible water projects. Applications that satisfy both tiers may be considered by the ISC for further assessment and possible funding. The Tier One evaluation process determined if proposed projects met basic requirements of the act and conformed with ISC policy. The more detailed and technical Tier 2 evaluation will narrow the list of potential projects to those the ISC determines are most appropriate for further study, assessment, and refinement.

TIMELINE

June 2011	Tier One proposals submitted
July 2011	Evaluation panel's initial review submitted to ISC
August 2011	Evaluation panel's final recommendations submitted to ISC
September 2011	ISC ruled on which proposals advance to Tier Two
October 2011	Draft Tier Two proposals submitted for initial review
December 2011	Final Tier Two proposals submitted
February 2012	Evaluation panel's ranking of proposals to be released, along with recommendations to ISC
February 2012	New Mexico First town hall
February 2012	ISC ruling on which proposals move to the "assessment process"
Summer 2012	Contract for technical and legal reviews required for remaining proposals[32]
Summer 2013	Complete legal and technical reviews
Fall 2013	Input from community stakeholders
Winter 2013	Initial evaluation panel recommendation to ISC
February 2014	Final evaluation panel recommendation to ISC
March 2014	ISC ruling on which projects to submit to the Secretary of Interior
December 2014	Notice to Secretary of Interior

ELIGIBLE APPLICANTS

- Local governments or municipalities
- Soil and water conservation districts
- Irrigation districts or commissions

[31] (Arizona Water Settlement Act)
[32] Assessments include ecological, engineering, hydrologic, ability to pay, cost-benefit analyses, etc.

- Acequias[33]
- Other political subdivisions of the State of New Mexico
- Institutions of higher education or a consortium of such institutions
- Nonprofit organizations or associations
- Private individuals
- Corporations
- Federal agencies

TIER ONE PROCESS

The first phase of the water projects' evaluation, the Tier One process, is complete. An evaluation plan assessed the Tier One applications using the following criteria:

- Whether the proposal was for the "New Mexico Unit," a 'water utilization alternative,' or both
- If the proposal would meet a 'water supply demand' in the Southwest New Mexico Water Planning Region
- Whether the proposal considered the Gila environment and how any negative impacts might be mitigated
- If the proposal considered the historic uses of and future demands for water in the Southwest New Mexico Water Planning Region and the traditions, cultures, and customs affecting those uses

Forty-five applications were submitted to the ISC for Tier One consideration. The proposals covered a broad range from irrigation improvements to watershed development to main stem dams. [34] [35] The evaluation panel determined that 21 of the proposals met all four criteria and were eligible for further evaluation in Tier Two.[36]

TIER TWO EVALUATION PROCESS

Final Tier Two proposals were due in December of 2011 and addressed the following items:

- How the proposal would extend the water supply through conservation or increase the supply through the development of new water
- The technical viability of the proposal, including any technical or engineering studies that support the proposal
- Estimated costs of the proposal
- Use of best available science to illustrate how the proposal impacts the environment of the Southwest Planning Region, the Gila River, its tributaries, or associated riparian corridors
- Economic or cost analysis information and data for the proposal
- How the proposal addresses various stakeholders' needs or issues
- How the proposal benefits one or more of the four counties in the Southwest New Mexico Planning Region
- How the proposal would benefit the economy, agriculture, municipalities, recreation or other interests

[33] As per Merriam Webster dictionary online (http://www.merriam-webster.com/dictionary/acequia) an acequia is: an irrigation ditch or canal.
[34] As per Merriam Webster dictionary online (http://www.merriam-webster.com/dictionary/watershed) a watershed is: a region or area bounded peripherally by a divide and draining ultimately to a particular watercourse or body of water.
[35] (AWSA Proposals for Planning)
[36] Of the 21 applicants that passed the Tier One evaluation process, 20 submitted proposals for Tier Two.

TIER TWO EVALUATION PANEL

Each of the following departments selected a representative to serve on the panel. Together, the panel has expertise in water infrastructure, agriculture, Gila ecology, conservation, hydrology, watersheds, water supply, and water rights.

- Energy Minerals and Natural Resources Department
- Interstate Stream Commission staffer
- NM Department of Agriculture
- NM Department of Game and Fish
- NM Environment Department
- Office of the State Engineer

The panel also includes an independent observer, nominated by stakeholders within the community. The role of the non-voting observer is to assess the fairness of the evaluation.

WATER SUPPLY DEMANDS

Research on Southwest New Mexico Water Needs

There are 13 recognized groundwater basins within the four counties of the Southwest Water Planning Region. There are distinct conditions in every basin, and understanding these conditions is critical to assessing water supply and demand for consideration of proposals for the AWSA.

The ISC and the AWSA Stakeholders Group called on numerous experts to produce an accurate assessment of historic water flow and water use. Data on geological, population, municipal, agricultural, and industrial uses were analyzed to project water demands by 2050 in the Southwest Water Planning Region.

Future Water Demands

The AMEC SWNM Regional Water Supply Study produced the following conclusions:

- The population of southwest New Mexico will grow at a modest rate and will translate to modest increases in water uses directly linked to population. This increase includes residential and commercial uses, but these two categories account for less than 10 percent of the current water use in the area.
- Irrigated agricultural demands will remain stable or potentially increase. There are two main types of agricultural water sources: groundwater and surface water. Among groundwater farmers, conversion from flood to drip and sprinkler irrigation is expected to produce higher crop yields and lead to increases in water consumption. Because drip irrigation does not recharge the aquifer, future increased agricultural water demands could be met, in part, through additional water.[37] [38] [39]
- In areas where irrigation comes from surface water, the relatively high frequency of water supply shortages and deficit irrigation suggests there is a pent-up demand for increased water. Another pressure on farmland acreage is the transfer of domestic well rights to homeowners for gardens and similar home use. The AWSA water can help relieve that pressure. (For some people, such transfers are negative, because they cause farmland to become fallow. For others, such transfers are positive, because they allow more homeowners to have water, including outdoor faucets for gardening, on their properties.[40])
- A downturn in copper mining would mean less water demand for active mining. However, even if the downturn becomes permanent, the industry will still need significant water for long-term reclamation activities that will continue for as much as 100 years.
- Industrial and power generation water demands may be expected to increase, particularly for solar, biofuels, and geothermal. (Concentrated focus solar thermal energy generation can require significant amounts of water while solar panel or geothermal power generation would be expected to reduce water consumption.)

[37] (AMEC Earth % Environment, Inc. p. ES-4, 16, 17)
[38] (Skaggs p. 1-9)
[39] (ISC meeting minutes, p. 14) At the September 2011 ISC meeting, ISC authorized additional study of agricultural conservation and wetlands, including drip irrigation.
[40] (Bates)

This data, and other reports released in recent years, were intended to inform community members' proposals for AWSA-funded water projects. Both the Town of Silver City and the City of Deming have developed more specific water use evaluations for those communities over the next 40 years.

Climate Change

The 2009 Gila Planning Economic Forum included forecasts of the impact of climate change on the Gila and its tributaries. Dr. David Gutzler, Professor of Earth and Planetary Science at the University of New Mexico, stated that stream flows in southwestern rivers, especially snow-fed rivers like the Gila, face significant decrease with global warming. Based on projected temperature trends, Gutzler warned the primary snowmelt now common for the Gila in February and March will be less pronounced and occur earlier in the year, and that the annual low flow of the Gila before the summer monsoon season would be aggravated.[41]

Gutzler also noted that "Precipitation is a less certain variable in the models, and precipitation exhibits higher levels of natural variability compared to temperature, so the projected precipitation changes are smaller and less robust than projected warming." [42]

[41] (Economic Forum p. 11)
[42] (Economic Forum p. 11)

OUTREACH AND EDUCATION

Goals of Community Involvement

Planning for AWSA-funded projects has been underway since 2001. The ISC's goals for community involvement included:

- Consulting with all affected stakeholders
- Bringing together experts on water, geology, ecology, economics, and infrastructure to assess future water needs of the four counties
- Determining how the AWSA can help protect the culture and historical significance of the Gila
- Assessing how the water of the Gila can be used to help communities, farmers, and industry while protecting and possibly improving the environmental functions of the river

History of Community and State Involvement

GILA SAN FRANCISO WATER COMMISSION

This commission was originally established in 2005 as the Southwest New Mexico Water Planning Group. The entire four-county region worked together under that entity, through a non-binding memorandum of understanding. The group's name and legal structure changed in 2007. It adopted a Joint Powers Agreement and become the Gila San Francisco Water Commission. Today, the commission includes: elected officials from Catron, Grant, Hidalgo and Luna counties; the communities of Bayard, Deming, Hurley, Lordsburg, Reserve, Santa Clara, Virden, and Columbus; the Soil and Water Conservation Districts of Deming, Grant, Hidalgo and San Francisco; and the Gila Basin Irrigation Commission. Of the local elected government entities in the Southwest Region, only the Town of Silver City declined to join when the Commission formed.

GILA-SAN FRANCISCO COORDINATING COMMITTEE

In 2005, the Gila-San Francisco Coordinating Committee was created via a memorandum of understanding. The MOU was signed by the State of New Mexico, ISC, Southwest New Mexico Water Planning Group, Bureau of Reclamation, and US Fish and Wildlife Service. The committee's mission was to evaluate the environmental effects of potential water withdrawals on fish and wildlife resources under the terms of the Consumptive Use and Forbearance Agreement. (The CUFA describes the terms under which diversions by the New Mexico Unit may occur without objection by downstream users who are party to the settlement.[43])

GILA-SAN FRANCISCO COLLABORATIVE MODELING TEAM

Another group, the Gila-San Francisco Collaborative Modeling Team, was established by Sandia National Laboratories in 2008. Working with Gila Basin stakeholders, a simplified model of the water resources in Southwest New Mexico was developed. The process brought value because the people who took part in it learned a great deal about regional water supply. However, the ultimate results of the modeling effort were not

[43] (Office of the State Engineer p. 6)

released because of challenges associated with the construct (or method) used in the model. It could not be used to inform future decisions.[44]

UPPER GILA RIVER SCIENCE FORUM

The Gila San Francisco Coordinating Committee organized a research conference called the Upper Gila River Science Forum. It took place October 2006, bringing in experts on river ecosystem management. The goal was to help the committee determine what scientific research was needed for a comprehensive evaluation of future water management decisions. The forum results were used by the Gila San Francisco Coordinating Committee and independent scientists to design a work plan coordinating 12 scientific investigations.

STATE INVOLVEMENT-2007

The Gila San Francisco Coordinating Committee convened a technical subcommittee that included state and federal agencies, local governments, and stakeholders including environmental organizations and water users. In December 2006, the subcommittee produced a consensus set of 12 scientific projects that would investigate and establish the baseline ecologic conditions on the Gila Basin. The estimated funding required totaled $945,000.

In 2007, the New Mexico Legislature passed House Bill 2, which included a line item authorizing the $945,000. The conservation community objected. Governor Bill Richardson vetoed funds to support the studies. He issued policy statements in 2007 and 2008 directing ISC to revise the AWSA public input process.

In the June 2008 policy statement, Governor Richardson said, “First, it will be the policy of this administration that there be no planning or consideration of constructing any dam on these rivers, and I will do all I reasonably can to make that policy permanent… The planning process must specifically include consideration of non-diversion alternatives to meet the current and future water demands of the region.”[45]

When interviewed about the process, Allyson Siwik of the Gila Conservation Coalition said the language of the bill “presupposed an outcome that hadn’t been decided at that point.”[46] Siwik called the Governor’s actions significant and said the veto led to the creation of a broader, multi-stakeholder process.

Craig Roepke of ISC saw the veto differently. He said the Governor’s actions shut down the planned scientific work. He added that an unfortunate outcome was “the withdrawal of most local government and economic interests from participation in the AWSA planning process.”[47]

SOUTHWEST NEW MEXICO STAKEHOLDERS GROUP

In October 2007, the ISC supported the establishment of the Southwest New Mexico Stakeholders Group. It was comprised of community leaders, agricultural users, industrial representatives, environmentalists, and concerned citizens. Generally referred to as “the Stakeholders Group,” it developed a consensus goal “to

[44] (Roepke)
[45] (Richardson)
[46] (Siwik)
[47] (Roepke)

determine how to utilize the AWSA in a cost-effective manner balancing historical and future demands against uncertain supply while protecting the environment."[48]

In 2008, the ISC asked the Bureau of Reclamation to develop a planning framework to assess potential management policies or projects considering the values of the stakeholders. The adopted plan modeled Reclamation's appraisal level analysis and created a framework for integrating hydrologic, geomorphic and ecological science with socioeconomic considerations including taking into consideration the participation and input of the variety of stakeholders invested in this lengthy process.[49]

The Stakeholders Group convened the **Gila Planning Economic Forum** in May 2009. The intent was to provide assessment tools on the economic impact of the AWSA. The forum, attended by over 100 people, included an update on climate change in the region and demographic trends in the four Gila Basin Counties.[50]

In June, the **2009 Gila Science Forum** was held to look at the effects of flow modification on the Gila. Later that month the group heard from four consultants on recommendations to address supply and demand concerns.

In November, after almost four years of monthly meetings and forums, the group submitted over 50 projects to the ISC for consideration. According to Roepke, the ISC asked the group to submit a smaller number of projects reflecting full group consensus, but they were not able to do so.[51] Peter Russell, Director of Community Development for Silver City, praised the effort and said, "The stakeholders group has provided a forum where issues involving the AWSA can be discussed by all interested parties, where studies to identify local water supplies and demands as well as ecological issues have been proposed and endorsed and supported."[52]

The state spent $800,000 to fund the work of the Stakeholder's Group as well as a number of studies, including the AMEC report referenced in this document.[53]

The Stakeholders Group's membership and participation has become open to anyone interested in the issue. Group member Tom Bates feels the group has developed appreciation for the disparate viewpoints. "Values in our group vary from not taking any water from either the Gila or San Francisco Rivers, to putting a dam or dams on the rivers to meet supply demands in the area."[54]

STATE INVOLVEMENT 2011

The New Mexico Legislature passed, and Governor Susana Martinez signed, legislation creating a fund in the state treasury to receive federal monies allocated through the AWSA.

[48] (Process)
[49] Additional information is available at http://www.awsaplanning.com/Framework.html.
[50] (Western New Mexico University p. 2)
[51] (Roepke)
[52] (Russell)
[53] (AWSA Planning Process) To review the studies, please go to the following link: http://www.awsaplanning.com/Studies.html
[54] (Bates)

STAKEHOLDERS VIEWS AND VALUES

There appears to be a common misconception that the AWSA resolution will *either* protect the environment *or* protect the regional economy. The fact is that federal law requires it to do both,[55] as does the ISC policy statement on AWSA decisions.[56] Noted Roepke in New Mexico First's 2011 questionnaire, "The policy adopted by the ISC provides that the funds should be used to protect and better the Gila ecology *and* provide for present and future water demands."

Another misconception is that proposed water projects fall into two basic categories: environmental or economic. The reality is that, just as people's values on this subject are varied, so are their rationales for proposing different projects. The following section describes commonly held community goals and strategies for addressing them. Readers will note that the strategies often compete.

Unless otherwise noted, all quotes come from a 2011 New Mexico First questionnaire.

GOAL: Restore the Watersheds

REASONS PEOPLE SUPPORT WATERSHED RESTORATION

- Healthy forest
- Healthy rivers and streams with plenty of fish
- Increased economic activity
- Vibrant farms and gardens
- Return to the "good old days"

STRATEGIES THAT ADVANCE WATERSHED RESTORATION

- Groundwater recharge (naturally occurring and managed)[57]
- Increased controlled logging or burning to reduce the number of trees and enhance water supply [58]
- One or more dams or diversions to control flow, prevent flooding, and prevent erosion[59]
- Closure of unwarranted roads in the forests[60]
- Restoring wetlands and marshes along riverbanks[61]

Different people support different strategies. For example, Hugh McKeen, Catron County Commissioner, supports a range of approaches that might return the Gila and San Francisco Rivers to earlier flows.

[55] (Arizona Water Settlement Act) p 53.
[56] (New Mexico ISC Gila Policy Statement)
[57] (AWSA Watershed Working Group Project Consolidation p. 1)
[58] Data is mixed on potential water enhancements from tree thinning. One ponderosa pine forest study found that increased evaporation from thinned areas reduced long-term water availability. (K. Simonin) An Australian study found that water yield improved for a few years after thinning but then returned to pre-thinning levels. (Hawthorne) The California Forestry Association cites data that thinned forests can improve groundwater recharge and runoff. (California Farm Bureau Federation)
[59] (McKeen)
[60] (AWSA Watershed Working Group Project Consolidation p. 2)
[61] (AWSA Watershed Working Group Project Consolidation p. 3)

"When I was a kid, the rivers provided water for vibrant farms and gardens up and down the many streams. Wildlife flourished and the economy was good," McKeen wrote. "Today, the grasslands that infiltrated the rainfall into the underground aquifers are gone; the tributaries that had year-round streams no longer exist. We have catastrophic fires, dry streams, rampant flooding, and the advent of endangered species. Logging that once provided a healthy economy and a much needed thinning of the forest was curtailed by the Mexican Spotted Owl. … Our abundant natural resources have been squandered and our watershed health continues to decline. The San Francisco is a dying river; there is absolutely no water in it many times during the year. By all means, a portion of the AWSA money should be used to restore our watersheds." McKeen favors major restoration projects that either store water in natural aquifers or create one or dams to store water for recreational, in-stream flow, municipal, or irrigation purposes.[62]

Richard McInturff, Deming City Manager, offered a related perspective.[63] "The Gila River should be a thriving, robust, sustainable ecosystem. If the ecosystem is not improved as a result of our efforts, we will have failed." He recommended "a simple diversion project to mitigate seasonal flood events that are harmful to the existing ecosystem."[64] "Let's try for a 'win/win' on the environment and full benefits from the Arizona Water Settlement Act," McInturff concluded.

There is significant disagreement about the notion of dams or diversions being part of watershed restorations plans. Allyson Siwik of the Gila Conservation Coalition believes that the communities should use the $66 million on non-diversion alternatives that will "meet the region's future water needs at low cost and maintain the Gila River's in-stream flows." She wrote: "As the last free-flowing river in New Mexico and one of the few remaining in the southwest, the Gila Conservation Coalition believes that the Gila should be left alone as it is today."[65]

Todd Schulke of the Center for Biological Diversity has described his vision for a ditch head design that would improve water delivery.[66] Schulke believes re-engineering the ditch heads could keep water in the main channel of the Gila while also delivering irrigation water even in low flow periods.

Rick Holdridge of Luna County also opposes dams on the main streams of the Gila or the San Francisco, but suggested that holding water in adjacent canyons could be useful. He also suggested removing water-using plants from the river drainage areas to improve water flow.[67]

Dutch Salmon describes himself as a conservationist involved with the Gila River since 1982.[68] He says he wishes that New Mexico would "take the $66 million offered, divide that funding equitably between the four counties, and let each county spend their respective portions on water utilization projects as they see fit." Salmon added

[62] (McKeen)
[63] (McInturff)
[64] Lawrence Brookey, City of Deming, offered a similar perspective in his questionnaire.
[65] (Siwik)
[66] (Gila Conservation Coalition)
[67] (Holdridge)
[68] (Salmon)

that achieving consensus on the issue of building a diversion dam is unlikely and justifying a diversion dam is a "mighty task."[69]

GOALS: Provide Enough Drinking Water and Grow the Economy

REASONS PEOPLE SUPPORT THESE GOALS

- Growing populations in the four counties
- Intent of the AWSA was to "develop" the 14,000 acre feet of water for the people of southwest New Mexico
- Desire for cultivating new economic sectors, such as geothermal and solar energy
- Maintain a culture and community for future generations

STRATEGIES

- Develop new wells and pipeline infrastructure to connect the communities
- Fund infrastructure needed to capture and store the 14,000 acre feet of water
- Allocate any additional water by a central body (not spread across the four counties) so that water use can change with water need over time, or, as others advocate, keep decision-making more decentralized
- Create one or more dams or diversions
- Focus on water conservation *instead* of dams or diversions (*see next section)*

"More important that the settlement is reserving the 14,000 acre feet of water for New Mexico," wrote McInturff. "Nothing seems to happen without water. It is a key component for economic growth."[70]

Tink Jackson, Office of the State Engineer, echoed the concern. "The southwest part of New Mexico does not have the water resources that will be needed to sustain current uses and growth in the future. The water provided under this act is our future."[71]

Lawrence Brookey, City of Deming, is responsible for ensuring that the city's present and future residents have enough water. "Deming's water supply is depending on both conservation and developing new sources," he wrote. "The AWSA is an opportunity to fund projects that will help provide a sustainable supply of drinking water to the Deming area." [72]

Kim Clark of the Grant County economic development group, Prospectors, also offered her opinions on the AWSA. "I would like to see both the *water* and the *funds* used to benefit the people living in the four county area. I see a whole suite of projects approved to put the water to beneficial use – large and small projects alike. … Municipal, agriculture and conservation projects – in that order."[73]

For people in Catron county, one of the potential benefits through the AWSA is the possibility for more homeowners to have outdoor faucets for watering vegetable gardens or other outdoor plants. Currently, having

[69] (Salmon)
[70] (McInturff)
[71] (Jackson)
[72] (Brookey)
[73] (Clark)

outdoor faucets constitutes an illegal violation for many Catron county residents.[74] However, some people contest whether the AWSA could address this issue.

The Gila Conservation Coalition believes the future water needs of the Gila River Basin can be adequately addressed through conservation.[75]

GOAL: Conserve Water and the Environment

REASONS PEOPLE SUPPORT CONSERVATION

- Protection of precious, limited resources
- Prevention of wasteful practices that damage the community and environment
- Meeting all or some current and future municipal water needs by using water better
- Protection of recreational space and habitats

STRATEGIES FOR WATER CONSERVATION[76]

- A permanent loan fund for homeowners, businesses, and farmers to implement proven conservation practices[77]
- Recapture of treated wastewater
- Leak detection and repair of municipal water systems
- Reducing municipal demand (shower head replacement, low-flow toilet program, watering ordinances)
- Water harvesting (rainwater capture)
- Agricultural conversion to drip irrigation from flood irrigation
- Agricultural conservation via ditch improvements and metering

Peter Russell, Director of Community Development for Silver City, said Silver City has proposed recapturing treated wastewater and Bayard has a proposal to reuse effluent from its regional treatment plant for irrigation at cemeteries, parks and recreational areas. He believes that both of these proposals can serve as models for other communities in the state.

Allyson Siwik, Gila Conservation Coalition, wrote that her organization believes that “developing Gila River water” is not warranted based on need or on cost. “Our future water needs can be met cost-effectively through municipal and agricultural conservation and sustainable use of groundwater supplies,” she said.[78]

[74] (Bates)
[75] (Gila Conservation Coalition) check this source
[76] (Compilation of Water Conservation Projects)
[77] (Holdridge) (Siwik) Questionnaire input by Rick Holdridge, 2011
[78] (Siwik)

GOAL: Support Agriculture

REASONS TO SUPPORT INCREASED WATER FOR AGRICULTURE

- Agriculture is an integral part of the southwest New Mexico culture and economy
- Need for dependable and adequate water supply throughout the year
- Desire to fulfill existing water rights for irrigation and stock tanks, and restore any rights lost in the 1964 adjudication (see p. 29, item 10)
- Expand agricultural production options
- Allow for new cropping alternatives

STRATEGIES FOR SUPPORTING AGRICULTURE

- One or more dams
- Irrigation diversions
- Improvements and repairs to existing aceqiuas

Topper Thorpe, co-chair of the Stakeholders Group, is a southwest New Mexico farmer. He noted, "Many involved in the AWSA process do not depend on the river or the water for all or part of their livelihood and are insensitive to the damage from flooding on lands, farms, homes, or roads adjoining the river."[79] He also said that the future population will increase and with it the demand for water. Thorpe believes that that AWSA funds must be used to build infrastructure to capture and store water, to meet future agricultural, environmental, recreational, flood control and safety needs.

Vance Lee is chair of the Gila San Francisco Water Commission. He says if water were diverted for agricultural purposes, it would only be diverted during the flood stage. "The lower reaches of the river that go dry ever year could look better if water was diverted during flooding and released during low flow. If the water was diverted in the upper reaches and let out for agricultural use downstream, the river could keep running even during dry times."[80]

GOAL: Support Existing Industry

Mining is a key element of the southwest New Mexico economic history. Currently employing about 900 community members, the industry is considered an important factor in an increasingly diverse regional economy. While the predicted general trend is a downswing in mining, reclamation at mines in the Gila Basin will continue for many years. The mines are believed to have adequate water rights for the industry's present and future operations, and, as a result, are not directly involved in the AWSA deliberations.

[79] (Thorpe)
[80] (Lee)

GOAL: Protect Habitats and Species

Protection of threatened species and habitats is a recurring concern when AWSA proposals are discussed. "The Gila River's gallery forests are high value bird habitat supporting one of the highest concentrations of breeding birds in America including the federally endangered southwestern willow flycatcher, and other regional specialties like the common black-hawk, Montezuma quail, and the elf owl," wrote Siwik. "The Gila River also provides one of the most intact native fish communities in the Lower Colorado River Basin including the federally threatened loach minnow, spike dace, and Gila trout." These concerns underlie Siwik and others' opposition to utilizing water from the Gila.

Others, however, see water diversions as a tool for keeping water flowing and thus protecting habitats. For example, the 2011 drought forced farmers to sell livestock[81] and also dried up stretches of the Gila River that are habitat for endangered species. According to Craig Roepke, the problems might have been mitigated if New Mexico had a CUFA-compliant water storage project in place for the last two years. The ISC CUFA model[82] indicates that almost 30,000 acre-feet of water could have been stored and used to maintain minimal agricultural and environmental needs for another two and a half years of drought like 2011. (The model takes into account 25% storage loss.) In addition, diversions are not the only way to keep the river flowing. Ditch head design proposals as well as replacing dirt ditches with piping or concrete are other strategies proposed that could preserve habitat. (See appendix on these and other proposals.)

Regardless what strategies are used, few community members question the value of these species and others in the Gila Wilderness. The National Environmental Policy Act (NEPA) requires rigorous review of any project utilizing Federal funding or requiring Federal approval. The act requires the federal government "to use all practicable means to create and maintain conditions under which man and nature can exist in productive harmony."[83]

QUESTION: Let the Water Flow to Arizona?

The community has struggled to agree on potential projects. Some people are concerned that if concrete solutions are not developed and agreed upon, the water will simply flow into Arizona, where it will be used for their own purposes. The Gila San Francisco Water Commission, chaired by Vance Lee, holds the position that the water allowed through the AWSA should be diverted and stay in New Mexico: "Diversion and impoundment of the water should be the priority."

McInturff wrote something similar. "Arizona and business interests in Arizona are hoping we fail in this endeavor, and I suspect they have a camel's nose under our tent and are quite satisfied with a stalemate."

However, other community members are not bothered by the notion of letting the water flow into Arizona. For them, that choice would be the healthiest for the river and ecology. Dutch Salmon, quoted previously in this report, gave a presentation to an Arizona watershed group in 2007. He was quoted in their local newspaper: "I'd

[81] (Thorpe)
[82] (Model) The Gila CUFA Model was built using the provisions, constraints, and permissions contained in the AWSA and the CUFA. It is the model upon which New Mexico based its position during AWSA negotiations. It was and continues to be used by the ISC, SNL, and even by opposition in Arizona.
[83] (US Environmental Protection Agency)

like to see that 14,000 acre feet continue to run into Arizona. We're working hard for the river, and we don't mind if you guys end up with the water."[84]

Peter Russell, quoted previously in this report, objected to this section, arguing it overly emphasizes conflict between environmental and economic concerns. Of the proposals under consideration, about one-third would create a "New Mexico Unit" thus diverting water and potentially qualifying the region for the additional federal funds. The remaining two-thirds would not divert water from the Gila or San Francisco Rivers, and therefore are not influenced by the differing perspectives in this section. (Each proposal summary in the appendix notes whether the proposal is for a New Mexico Unit or a Water Utilization Alternative.)

[84] (Salmon)

FREQUENTLY ASKED QUESTIONS

1. **How much water *IS* 14,000 acre-feet?** One-acre foot is equal to about 326,000 gallons of water. 14,000 acre feet would be enough to irrigate about 3,000 acres of alfalfa, or to meet the domestic needs of about 64,000 average homes a year.[85]

2. **What is a New Mexico Unit?** An activity or infrastructure that develops additional water from the Gila Basin (requiring a water exchange with Arizona) to meet a water supply demand. Such a demand might include: municipal, recreational, agricultural, or industrial purposes. The New Mexico Unit could deplete all or a portion of the 14,000 acre feet of additional water provided by the AWSA.[86]

3. **To what degree does the AWSA apply to the San Francisco River as well as the Gila?** The AWSA allows up to 14,000-acre feet annual from the Gila Basin, including the reaches of the San Francisco. The most that can be depleted from the San Francisco is 4,000-acre feet a year. [87]

4. **What restrictions, if any, are there on the first level of funding provided to New Mexico under the AWSA?** Are there any circumstances under which the state would not be eligible to receive it all? The projects must meet a water supply demand.

5. **What restrictions are there on the second level of funding?** Funding must be used to develop a "New Mexico Unit" that withdraws water from the Gila Basin.[88]

6. **Is AWSA funding indexed to future year dollars?** Yes. According to construction costs indexes, the state expects that the $66 million may be in excess of $100 million once the funding is indexed. [89]

7. **Which agency is in control of the $66 million in AWSA funding once the money transfers to New Mexico?** New Mexico Interstate Stream Commission.[90]

8. **What types of projects must go through the National Environmental Policy Act (NEPA) process?** Probably any projects on federal land or requiring federal action, and certainly a New Mexico Unit.[91]

9. **If a dam or diversion were built, how often would it divert running water from the river?** Under the AWSA, water could only be diverted under rare conditions. The ISC conducted a historical analysis of stream flows going back to 1936. If the AWSA were in effect during those 70 years, 7% of the total flows would have been diverted on an average of 10 days out of 100.[92]

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[85] (Roepke)
[86] (Roepke)
[87] (NM Consumptive Use and Forbearance Agreement section 4.4)
[88] (Roepke)
[89] (Roepke)
[90] (Arizona Water Settlement Act p. 52)
[91] (Roepke) and (Arizona Water Settlement Act p. 53)
[92] (NM Interstate Stream Commission)

10. **What is the connection between the AWSA and the 1964 Decree?** Prior to 1964, the New Mexico Office of the State Engineer estimated that there were over 22,000 acres of irrigated land in the Gila Basin. The US Supreme Court's 1964 decree in the Arizona v. California decision recognized only approximately half the land and associated irrigation rights. Reasons for the reduced water rights included an extended drought in the 1950's, a series of floods, and the fact that some farmers had been serving in the Korean War and not using their water rights. Community members describe the rights as "lost in the decree." Having water diversions available for exchange to use in lieu of those water rights could be a use for the water in the AWSA, but the act does not require it.[93]

11. **What is the connection between the AWSA and the Gila River Indian Community?** The Gila River Indian Community, located near Phoenix, owns the senior water rights in the Gila River. If New Mexico depletes 14,000-acre feet of water on its side of the state border, that water does not stay in the river and – theoretically – does not make it across Arizona to the Gila River Indian Community. The Gila River Indian Community is also located very near the Central Arizona Project (CAP). The CAP is the largest and most expensive aqueduct system ever constructed in the U.S., supplying water to much of central and southern Arizona (and gets its water from the Colorado River). If New Mexico diverts the 14,000 acre feet of Gila Basin water, it will pre-pay the federal government the fixed operation and maintenance costs (currently between $100 and $122 per acre foot per year) to replace the Gila water with CAP water for the Gila River Indian Community.

[93] (Roepke)

APPENDIX: TIER TWO PROPOSALS

Proposal summaries in this section were submitted by the contacts and/or authors of each proposal. They are listed in the order in which they appear on the agenda. Distinction is made as to whether a proposal classifies as a New Mexico Unit project or Water Utilization Alternative project. This information is offered because only New Mexico Unit projects would enable New Mexico to receive the larger amount of funding from the AWSA.

Ditch and Diversion Improvements

PROJECT NAME: COALITION DIVERSION-ROSGEN
Project submitted by: Allyson Siwik, Executive Director, Gila Conservation Coalition
Project budget: $2,150,000
County/counties affected: Cliff-Gila Valley, Grant County
Water Utilization Alternative Project

Project Description:

This project is for a water utilization alternative that proposes to design, engineer, and construct Rosgen-style rock vane diversion structures on all three of the existing ditches in the Gila Valley.

Right now diversions from the Gila River are dependent on existing push-up earthen dams that must divert the entire river into the irrigation ditch in order to function. These dams do not allow for an ecological maintenance flow to stay in the main channel of the river and therefore cause the river to dry up during periods of low flow. During high flows these earthen dams wash out and need to be rebuilt. Alternately, the Rosgen-style diversion is a cross-vane grade control structure that can withstand high flows while its flow-thru design can parcel even a low flow, some to the ditch, some passing through to maintain a minimal flow in the channel. This keeps the river wet to the benefit of fish and other aquatic/riparian resources. Additionally, the Rosgen design incorporates an adjustable return flow head gate to keep sediment in the river and out of the irrigation ditch, cutting down on maintenance costs to irrigators. This project presents an opportunity to find a win-win solution for irrigators and the environment.

PROJECT NAME: LUNA DITCH
Project submitted by: Janice Kiehne, Secretary/Treasurer 1892 Luna Irrigation Ditch Association
Project budget: $1,363,000
County/counties affected: Luna and Catron Counties
Water Utilization Alternative Project

Project Description:

In 1892, an Irrigation Ditch Association was formed in Luna, New Mexico to organize diversion of water for farming and subsistence gardening. A dam was constructed in the San Francisco River near what is now Alpine,

Arizona. Water is released from this dam into the river channel and diverted from the river into the ditch system west of Luna. The system has received necessary maintenance over the years, but has not been upgraded or improved since the 1890's.

The 1892 Luna Irrigation Ditch Association AWSA project proposal would both conserve our precious water supply and address environmental concerns raised about the diversion system. The project would eliminate the need to enter the San Francisco River each year with heavy equipment to build an in-stream diversion structure out of the river substrate. Instead, a permanent diversion structure would be designed to minimize the impact on the river ecosystem while still assuring adequate diversion of water from the river channel to charge the irrigation system. The current, unlined, dirt irrigation ditch system would be replaced by lined or piped ditch systems that would result in conserving an estimated 419 acre feet of water per year that is currently lost through seepage, evaporation and illegal diversions.

PROJECT NAME: SUNSET AND NEW MODEL DITCHES
Project submitted by: Tom Lovett, President, Sunset and New Mexico New Model Canals
Project budget: $18,000,000
County/counties affected: Hidalgo County, Virden Valley & NM on both sides of the Gila River
Water Utilization Alternative Project

Project Description:

This proposal is to line both canals with HDPE (high density poly-ethylene) pipe. The piping would result in a covered ditch that includes gates and cleanouts. Seventy-five percent of the surface water irrigation acreage on the Gila River is served by these two canals. This project will improve water usage, stop leaking of unlined and dilapidated canals, and lower maintenance and repair costs for many years.

There are several good reasons for lining these canals with HPDE pipe. The first is water loss. Currently, these two canals – which are concrete and dirt lined – lose between 20 to 30 percent of the water that runs through them. This loss is generally due to unwanted plants and weeds that grow in the un-piped, uncovered canals. This also has an environmental impact, as the pipe-lined canals would reduce and/or stop all weed growth. This means no more chemical spraying and burning to control the weeds.

Lining the canals with pipe would also eliminate the danger of drowning, to people and animals. Safety is of the utmost importance. There are economic benefits as well. The lined ditch would reduce maintenance costs. Saving water, improving safety, and helping the environment is beneficial for everyone. There would be meters on the diversions, which would meet AWSA regulations. The ditches would need no improvements for the next 100 years. This project would also provide needed jobs to the Virden area. It is important, however, to do this work soon. The price of HDPE pipe is based on oil prices, which in 2012 are lower than they have been at any time in the past. When oil prices go up, the price of HDPE pipes will go up tremendously as well.

PROJECT NAME: GILA NATIONAL FOREST SAN FRANCISCO RIVER DIVERSION/DITCH
Project submitted by: Carolyn Koury, Watershed Program Manager, Gila National Forest
Project budget: $45,000 for feasibility study, plus potential additional funds
County/counties affected: Catron County
Water Utilization Alternative Project

Project Description:

The Ditches/Diversions proposal is for stream diversion improvements on one diversion on the San Francisco River (Balke Ditch). This is essentially a demonstration project. The feasibility portion of this work includes provision to evaluate both whether any type of new construction will be superior to the existing push-up structure, and which of several types of improvements may be optimal for the particular location. If the proposed feasibility study indicates the viability of an alternative to the push-up structures now being employed, then this proposal recommends that additional funds be made available for construction. Other ditch owners have similar ditch issues, and it is expected that a successful project would stimulate additional interest on NFS lands. If the feasibility study indicates that physical changes to the existing push-up diversion may not be practical because of unstable bed or banks, inordinate length, cost, or environmental issues, other alternatives will be evaluated, such as collection galleries (e.g., Ranney wells), shallow water screens, or wells. No construction would take place until the results of the feasibility study are available to decision makers. The feasibility study alone is $45,000. If the feasibility study shows favorable results, additional funds will be sought for design, construction, and maintenance costs of the chosen diversion method.

PROJECT NAME: PLEASANTON EASTSIDE DITCH/CONVEYANCE LOSS REDUCTION PROPOSAL
Project submitted by: Rob Overacker, Vice-President, Pleasanton East-side Ditch Company
Project budget: $900,000
County/counties affected: Catron County (Pleasanton, Pleasanton Valley)
Water Utilization Alternative Project

Project Description:

This project proposes to extend The San Francisco Basin water supply through reduction of conveyance Losses. Diversions of San Francisco River flows into the Pleasanton Valley of southern Catron County date to at least 1880 and are presently used to water permanent pastures, truck-farm crops, orchards, gardens, native plant nurseries and livestock. The 20,000 foot Pleasanton Eastside Ditch annually delivers approximately 925 acre feet of adjudicated water to 24 members of the Pleasanton Eastside Ditch Company (PEDCo). PEDCo members hold rights that vary from 0.75 ac. to 100 ac., with priority dates in the 1885-1895 range. These water rights are generally senior within the San Francisco Basin of New Mexico. PEDCo was formally incorporated in 1962 at the time the old dirt-banked Pleasanton Eastside Ditch was concrete lined. The ditch course crosses mostly private property of PEDCo members (85%), with minor reaches through non-member private properties (5%) and federal (USFS) holdings (10%). The 50 year-old concrete lining of the ditch has degraded to the point that delivery to end-of-ditch users is often compromised due to conveyance loss from seepage & leakage.

Conveyance loss is estimated to be on the order of 1850 acre feet a year and PEDCo proposes to reduce this 80-90% by re-lining or inserting closed pipe into the ditch. Returning this conserved water to the river extends the water supply and the capacity of the basin to support natural ecosystems and/or other downstream human uses. Additionally, this project will help to secure continued use of critical senior water rights for agriculture in Catron County. Preliminary environmental scoping has been conducted. Impacts from re-lining the ditch are expected to be minimal and would be mitigated by the benefits of returned flows to the river.

Water Conservation Projects

PROJECT NAME: DEMING CONSERVATION FUND
Project submitted by: Lawrence Brookey, Public Works Director, City of Deming
Project budget: $1,400
County/counties affected: All four counties
Water Utilization Alternative Project

Project Description:

This project proposes capitalizing a fund to implement municipal conservation projects in the four-county area of the Southwest New Mexico Water Planning Region. The regional water plan identifies many different municipal conservation strategies that water suppliers could implement. Conservation programs extend the water supply in two ways: 1) by reducing the amount of water that must be pumped, treated, and delivered to meet a particular need, and 2) by reducing consumptive uses (depletions) associated with a particular use. However, the funds for implementing water conservation measures are generally lacking.

PROJECT NAME: GILA CONSERVATION FUND
Project submitted by: Allyson Siwik, Executive Director, Gila Conservation Fund
Project budget: $10.9 million
County/counties affected: All four Counties
Water Utilization Alternative Project

Project Description:

This project proposes to reduce municipal and industrial water use and extend the life of groundwater supplies. The project would provide funding for implementation of municipal water conservation programs for incorporated and unincorporated public water supply systems in the following groundwater basins: Mimbres Basin, Lordsburg Valley, Animas Basin, San Simon Basin and Gila-San Francisco Basin. This funding would extend the life of publically provided water supplies for the incorporated municipalities of Deming, Columbus, Silver City, Santa Clara, Bayard, Hurley, Lordsburg, Virden, Rodeo, Playas and Reserve, as well as unincorporated areas in the four counties.

Water conservation measures reduce the demand for water and therefore reduce the need to develop new water supplies. Many of these measures also save energy costs, reduce wastewater treatment costs, and reduce the overall environmental impacts associated with water use. According to the New Mexico Office of the State Engineer, "Because the costs of water development and treatment continue to rise, many communities are faced with expensive water and wastewater treatment facility expansions to meet growing water demands. Fortunately, water conservation can delay, and in some cases actually eliminate, the need for these costly infrastructure expansions. The simple fact is this: conservation is almost always the least costly water supply alternative." Implementation of water conservation programs could extend the water supply by approximately 3,679 - 4,269 acre feet of water annually throughout the four-county area at a total estimated cost of $10.9 million.

PROJECT NAME: STREAM DYNAMICS WATER HARVESTING
Project submitted by: Van Clothier
Project budget: $15,755,000
County/counties affected: All four Counties
Water Utilization Alternative Project

Project Description:

This proposal will meet a water supply demand for thousands of homes and businesses in the four county area by building thousands of appropriately scaled local rainwater catchments and greywater landscape irrigation systems. Each participating property owner will receive water harvesting infrastructure paid for by AWSA funds. Water harvesting will capture roof runoff in cisterns and earth basins. Greywater from washing machines will go into a tree basin. The runoff bypassing the landscaping in the street gutter and causing a puddle or dangerous icy patch at the intersection will be redirected to basins to grow trees along our public rights of way.

The water harvesting features will fill up with water every time it rains, every time the snow melts. No one will have to pay for this extra water, and it will not have to be pumped. As a community, we will have access to reliable sources of clean water in an emergency.

These practices are elegant in their simplicity, well tested regionally, entirely legal in New Mexico, and supported by the office of the State Engineer. Causing the water to soak into the ground on your property is legal, moral, ethical, and a very good idea! It benefits you and your neighbors, and harms nobody.

Huge electricity bills will be lowered as we learn to let gravity do the work of delivering free rainwater to where it is needed. Harvesting rainwater and greywater on a large scale will dramatically increase the effective supply of water available while decreasing the demand on our precious groundwater resources. This will transform water waste and the fear of scarcity into water abundance for everyone.

Diversion and Storage

PROJECT NAME: DEMING DIVERSION PROJECT
Project submitted by: Lawrence Brookey, Public Works Director, City of Deming
Project budget: $250 million
County/counties affected: All four Counties
New Mexico Unit Project

Project Description:

This project proposes the development of a regional water diversion and pipeline system. This system would divert Gila River water available to New Mexico under the AWSA for municipal, industrial, agricultural, and other uses. Diverted water would be stored in a surface reservoir. Stored water would be gravity released to supplement the Gila River flows, provided under pressure (pumped) for use up to the elevation divide, and provided to users between the elevation divide and Luna County from gravity flow. This relies on both direct use of surface and groundwater, and aquifer storage of surface water to meet long-term demand.

PROJECT NAME: GILA BASIN IRRIGATION COMMISSION (GBIC)
Project submitted by: Topper Thorpe, Chairman, Gila Basin Irrigation Commission
Project budget: $7,700,000
County/counties affected: All four Counties
New Mexico Unit Project

Project Description:

This is a project to divert, store and distribute some or all of the water available under the ASWA, through an upgraded infrastructure. Final decisions on exactly what materials will be used and where the water will be stored depend on studies and analyses yet to be conducted. The ultimate goal is to assure a dependable and adequate supply of water in the river throughout the year to meet agricultural, environmental, recreational, and other needs, while also providing flood control to minimize damage to land adjacent to the river. This would primarily impact areas adjacent to the Gila River, beginning in the upper Gila Basin, and extending to the Arizona border. Grant and Hidalgo counties would be primarily affected with less impact on Luna and Catron.

PROJECT NAME: HIDALGO COUNTY OFF-STREAM STORAGE
Project submitted by: Vance Lee, Chairman, Gila/San Francisco Water Commission
Project budget: $115,000
County/counties affected: Grant, Hidalgo, and Luna Counties
New Mexico Unit Project

Project Description:

The Hidalgo County off-stream project is designed to divert up to an annual average of 10,000 acre feet of water from the Gila River near the confluence of the Gila River and Mogollon Creek. This water will be conveyed by gravity flow via pipeline or open canal approximately 15.5 miles to a location at the mouth of Schoolhouse Canyon, where it will be impounded behind a dam in Schoolhouse Canyon.

The water will be available for use by entities that contract for it as per the AWSA and CAP exchange. Any water user within Grant, Hidalgo and Luna counties can contract for this water with the Secretary of the Interior, provided they are willing to pay the exchange costs. It will be possible for agricultural users and fire-fighting personnel in the Gila Valley to utilize the water as it travels to the impoundment. And this water will also be metered to ensure that these users pay the exchange cost as well.

The location of the impoundment will allow for the availability of water to be let back into the river for downstream agricultural use. As the water travels in the river to downstream users it will provide an added benefit of keeping the river "alive" at times when the river normally dries up in the lower reaches. The impounded water will also be available for use in the Silver City, Deming, or Lordsburg areas if future decisions were made to contract for it and pipe it to those areas.

Since the AWSA water can only be diverted during high flows in large quantities and will be dirty, pumping it would be difficult. Even with continual maintenance the pumps would get clogged by the dirty water. This makes a gravity flow diversion the best option, and it would not require energy to make it run.

PROJECT NAME: GRANT COUNTY (AND PARTLY OVERLAPPED WITH BAYARD) DIVERSION AND STORAGE
Project submitted by: Jon Saari, Grant County Manager
Project budget: $9,150,000
County/counties affected: Grant County
Water Utilization Alternative Project

Project Description:

This project proposes the creation of storage facility(s) in the vicinity of Ft. Bayard. The source of the water to be stored includes: effluent discharges from the Bayard Regional Wastewater Treatment Plant, as well as some normal runoff into the storage facility.

Pipeline will be laid to transport the water to the storage area in the Santa Clara/Ft. Bayard area. The transported, treated effluent will then be used to irrigate ball fields, parks, and the landscape. The water stored would also allow the community to release a steady flow of water downstream of the storage facility(s) to recharge groundwater source locations for Bayard. Improvements to the Ft. Bayard Medical Center Water System will be needed. The proposal includes conveyance systems (pipeline), a storage facility, and treatment plant improvements.

Municipal Water Infrastructure and System Improvements

PROJECT NAME: BAYARD EFFLUENT REUSE
Project submitted by: Charles Kelly, Mayor of City of Bayard
Project budget: $3,909,405
County/counties affected: Grant County
Water Utilization Alternative Project

Project Description:

The project intent is to utilize treated wastewater for non-potable irrigation, conserving existing potable water resources. The system begins at the City's new wastewater treatment plant. The system components are listed below in the order of flow from the wastewater treatment plant:

1. New effluent reuse filter / pump building at the wastewater treatment plant site.
2. Plant site yard piping.
3. New reuse storage tank at the plant site.
4. Transmission line of 5,600 feet of PVC piping – various diameters.

Plant effluent will be directed to the new filter/pump building by gravity flow. Filtered effluent will then be pumped to a new 200,000 gallon storage tank. Filtered effluent in the storage tank is then pumped to the distribution system.

The application area includes the new cemetery site for the City of Bayard. The size of this area is forty acres. Also included are the ball fields at Snell Middle School, Rominger Field and Ernie Christian Field – a total of 7.25 acres.

The plant site reuse facilities are located on the 9.93 acre plant site south of Snell Middle School. The remainder of the project area consists of the effluent application areas described above and the easements provided, or to be acquired, for the transmission lines.

The proposed project will affect 5 acres of land at the existing wastewater facility in Bayard and about 5,600 feet by approximately 50 feet of mostly developed land for the transmission and distribution pipelines.

PROJECT NAME: DEMING WATER REUSE
Project submitted by: Lawrence Brookey, Public Works Director, City of Deming
Project budget: $3 million
County/counties affected: City of Deming, Luna County
Water Utilization Alternative Project

Project description:

This project will reduce demand on the municipal potable water distribution system, on Deming's municipal wells, and on the Mimbres aquifer by expanding Deming's reclaimed wastewater effluent reuse irrigation system. The expansion will add parks and recreational facilities currently served by potable water, and will supplement supplies with storm water from storm water retention ponds. This project will require the addition of 20,000 feet of pipe to the existing reclaimed water reuse system along with a chemical feed station and ancillary facilities for disinfection.

PROJECT NAME: GRANT COUNTY WATER COMMISSION REGIONAL SUPPLY
Project submitted by: Alex C. Brown, Chair, Grant County Water Commission
Project budget: $30,123,297, half of which ($15,061,648) is sought from AWSA funding
County/counties affected: Grant County
Water Utilization Alternative Project

Project Description:

This project would improve public water supplies that serve 26,000 people in central Grant County. The project proposal has two principal elements:

1. A new wellfield near Grant County Airport.

Construction of this well field would make 193 acre feet of water from existing water rights immediately available to Hurley, which does not have its own water supply. The well field would include three wells, a treatment facility, other necessary infrastructure, and a pipeline to Hurley.

This well field would also provide a means of diverting an additional 750 acre feet of water per year of new water rights based on clean water returned to the regional aquifer by the Silver City wastewater plant. This makes the total anticipated amount of water available 943 acre feet per year. An application to the State Engineer for return-flow credits is in development.

2. An intercommunity pipeline.

This pipeline would also link the new well field with Bayard, Santa Clara, Silver City, and adjacent unincorporated areas. It would deliver water as needed by all these communities to supplement their own supplies. In every case, each community would continue to manage its own established supply and system.

Substantial hydrological work has been performed to confirm the feasibility of the project. The improvements of this project are more than sufficient to meet the needs of public water supplies in central Grant County for the next 40 years, the standard planning horizon for water use in New Mexico.

The project can be staged in four phases.

Watershed Restoration

PROJECT NAME: SAN FRANCISCO WATERSHED TREATMENT: MINERAL CREEK, DRY CREEK, AND DEVILS CREEK
Project submitted by: Hugh B. McKeen, Chairman, Catron County Commission
Project budget: $8 million (note: total cost unknown, analysis will determine true cost)
County/counties affected: Catron County
Water Utilization Alternative Project

Project Description:

The hope of this project is to restore the three watersheds to create a healthy forest much like it was 100+ years ago. We will remove woody growth; pines and firs in the upper watersheds and pinon and juniper in the lower watersheds. Our present unhealthy forest has 500 to 1000 trees per acre; a healthy forest in this rainfall area should have 40 to 80 trees per acre.

Forests this thick have a monoculture, creating a sterile environment, void of wildlife, dried up springs, more erosive flooding and creates the advent of catastrophic fires. Reducing this woody growth will create more forbs and grasslands to allow the percolation of water into the underground aquifer and increase stream flow. A healthy forest environment will not have endangered species; will have less severe flooding and less chance for catastrophic fires.

The forest growth will be reduced using fire management as well as mechanical and hand thinning. Wherever possible, wood products such as firewood or lumber will be harvested prior to burning. Having a saleable product helps the economy and jobs and will offset the cost of thinning the forest.

Past watershed projects have been small and scattered throughout the forest. Treating an entire watershed will be a first and prove conclusively that our stream flow can be increased. Years ago Mineral Creek and Deep Creek had year round stream flow all the way to the San Francisco River. Trout fishing was a common thing in Mineral Creek, presently you might find fishing 10 miles upstream.

Presently there are two watershed projects ongoing in this area sponsored by Catron County, Forest Service, San Francisco Soil & Water Conservation, New Mexico Environment Department and area citizens.

PROJECT NAME: GRANT SOIL AND WATER CONSERVATION DISTRICT RESTORATION
Project submitted by: Rebecca Benavidez, Project Manager, Soil and Water Conservation District
Project budget: $1,210,500 AWSA funding, $181,000 match
County/counties affected: Grant County, Mangas Watershed tributary of the Gila River. Sierra County/East Fork Gila River
Water Utilization Alternative Project

Project Description:

The Grant Soil and Water Conservation District (GSWCD) and the New Mexico Forest Industry Association (NMFIA) are proposing two complementary projects under AWSA to improve forest and watershed health and enhance water yield. The projects will therefore mitigate potential impacts from actual water development that may occur under the AWSA. The GSWCD and NMFIA projects reduce the potential for catastrophic wildfire, improve forest diversity, and support the communities that depend on the economic benefits and clean water supplied by resilient, healthy forests. The two proposed projects incorporate three paired watershed studies to quantify watershed hydrology before and after prescribed burning and mechanical thinning, in ecotypes ranging from relatively low elevation pinyon/juniper stands to mid-elevation mixed Ponderosa and high elevation Ponderosa/mixed conifer. The GSWCD project includes two paired watershed studies on current projects, one in high-elevation mixed-conifer in the East Fork (Gila River) headwaters, and the second in pinyon/juniper woodland in the Burro Mountains region of the Gila watershed. A paired watershed study design analyzes pre- and post-treatment hydrologic and climate data to evaluate short- and longer term (10-year) responses in soil moisture and in ground- and surface water. Site climate and hydrology are monitored with an instrumentation network of recording soil moisture sensors, water level transducers, and weather stations. The work is supported by the Gila National Forest, NM State Forestry, NMSU's Climate Center, and landowners and grazing permittees. Continued input on land management and economic development potential will be sought from resident stakeholders as well as agency and forest industry staff.

PROJECT NAME: NEW MEXICO FOREST INDUSTRY ASSOCIATION
Project submitted by: Jose Varela Lopez, Executive Director, New Mexico Forest Industry Association
Project budget: $2,270,000 AWSA funding, $422,000 match
County/counties affected: Catron County, San Francisco River Basin
Water Utilization Alternative Project

Project Description :

The New Mexico Forest Industry Association (NMFIA) and the Grant Soil and Water Conservation District (GSWCD) are proposing two complementary projects under AWSA to improve forest and watershed health and enhance water yield. The projects will therefore mitigate potential impacts from actual water development that may occur under the AWSA. The NMFIA and GSWCD projects reduce the potential for catastrophic wildfire, improve forest diversity, and support the communities that depend on the economic benefits and clean water supplied by resilient, healthy forests. The two proposed projects incorporate three paired watershed studies to

quantify watershed hydrology before and after prescribed burning and mechanical thinning, in ecotypes ranging from relatively low elevation pinyon/juniper stands to mid-elevation mixed Ponderosa and high elevation Ponderosa/mixed conifer. The NMFIA project, in mid-elevation mixed Ponderosa forest, initiates forest thinning and restoration work on the San Francisco River watershed near Reserve, NM. A paired watershed study design will analyze pre- and post-treatment hydrologic and climate data to evaluate short- and longer term (10-year) responses in soil moisture and ground- and surface water. Site climate and hydrology will be monitored with an instrumentation network of recording soil moisture sensors, water level transducers, and weather stations. The work expands ongoing restoration and research at other sites, described in the GSWCD project proposal, supported by the Gila National Forest, NM State Forestry, NMSU's Climate Center, and landowners and grazing permittees. Continued input on land management and economic development potential will be sought from resident stakeholders as well as agency and forest industry staff.

PROJECT NAME: WATERSHED RESTORATION AND MONITORING – NEW MEXICO STATE UNIVERSITY
Project submitted by: Drs. Douglas Cram & Carolos Ochoa, New Mexico State University
Project budget: $2.2 million over 10 years
County/counties affected: All four Counties
Water Utilization Alternative Project

Project Description:

We propose a watershed restoration project that will potentially increase the water supply and contribute to meeting existing and future water demands in the region. This project will also generate new and critical knowledge and understanding of the hydrologic response following thinning treatments in the Gila Basin. Increasing the water supply to meet an ever growing demand will be beneficial and useful for New Mexico stakeholders in the region. Increasing knowledge and understanding of watershed processes following thinning treatments will be useful for state and local managers, as well as policy makers. Monitoring data and analysis will provide accountability for this and other similar watershed restoration projects.
Watershed management using forestry practices such as thinning has been identified as an appropriate tool to increase water supply, protect and improve water quality, and generally improve the overall condition of the watershed. Tree densities in forests and woodlands are currently outside the historic range of natural variability. As a result, water losses due to tree uptake (transpiration) and evaporative losses from tree canopy interception are elevated. Our proposal calls for a thinning prescription designed to reduce tree densities to historic levels in forests and woodlands. This will augment the water supply through the reduction of evapotranspiration losses as well as reduce the risk of crown fire. Watersheds will be instrumented to monitor changes in the water budget following restoration treatments. Along with these benefits, forest restoration work will assist the local economy by providing employment opportunities for local labor.

PROJECT NAME: GILA NATIONAL FOREST WATERSHED RESTORATION
Project submitted by: Carolyn Koury, Watershed Program Manager, Gila National Forest
Project budget: $8,405,940
County/counties affected: All four Counties
Water Utilization Alternative Project

Project Description :

This proposal is for watershed restoration projects within U.S. National Forest System (NFS) lands administered by the Gila National Forest. Projects 1 (Snow Lake - $1,005,940) and 2 (Burro Unit $7,400,000) will extend the water supply through conservation. The Snow Lake project is designed to achieve a functional watershed, one that can retain greater amounts of water in the soil, stream banks, and main stream channels. A functional watershed, by providing increased storage, will also slow the rate of flow through the watershed, thus making more water available during low flow periods, and somewhat less water contributing to flood peaks. Whether a functioning watershed will produce an increase in total water yield cannot be predicted. The prescribed fires and thinning on the Burro Unit (Project 2) is a restorative measure that will also mitigate the effects of a catastrophic wildfire on the debris and sediment load, and on flood peaks in the Gila River. The overall water yield may not increase as a result of this work, however, as the project brings the various watersheds in the Burro Unit into the functioning watershed classification, the same water retention and release mechanisms are expected to occur, thus showing significant water conservation. The proposal also includes provision for Forest Service compensation (cost unknown) for other non-forest proposals located on forest lands. The Forest Service will require that they be reviewed and administered, and have Forest Service oversight.

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