

**TIER-1 APPLICATION TO THE NEW MEXICO INTERSTATE STREAM COMMISSION
FOR NEW MEXICO UNIT OR WATER UTILIZATION ALTERNATIVE
UNDER THE ARIZONA WATER SETTLEMENTS ACT**

APPLICANT INFORMATION (PRINT OR

DATE:

Legal Name: Hugh B. McKeen Jr. Chairman; Catron County Commission	2. Organization: CATRON COUNTY			
3. Address (street, city, county, state, and zip code): Catron County Commission P. O. Box 507 Reserve, New Mexico 87830	4. Name, email, and phone number of contract person: Hugh B. McKeen Jr. hmckeenjr@gmail.com 575-539-2733			
5. TYPE OF APPLICATION (check one): <input checked="" type="checkbox"/> Final <input type="checkbox"/> Preliminary for review <input type="checkbox"/> Revised	6. TYPE OF APPLICANT (CHECK BOX): <input checked="" type="checkbox"/> local governments or municipalities <input checked="" type="checkbox"/> soil and water conservation districts, irrigation districts or commissions, acequias, or other political subdivision of the State of New Mexico <input type="checkbox"/> institutions of higher education or a consortium of such institutions Cooperative Extension at NMSU <input type="checkbox"/> non-profit organizations or associations <input checked="" type="checkbox"/> private individual/s <input checked="" type="checkbox"/> federal agency (ies) Forest Service <input checked="" type="checkbox"/> Other (specify) New Mexico Environmental Dept.			
7. BRIEF PROJECT DESCRIPTION: Restoring the complete overgrown watershed on three adjacent tributaries to the San Francisco River. Devils, Deep, & Mineral Creeks.				
8. AREAS AFFECTED (describe by county, municipality, township, etc. as applicable): Catron County, town of Glenwood, All users on the streams and all downstream water users. Increased infiltration and live water will be available for domestic use, wildlife, agriculture, recreation, towns & industry. Reduce flooding downstream.				
9. TOTAL FUNDING REQUESTED (in \$1,000): 12,094				
2012: 1,031	2013: 5,531	2014: 5,531	2015:	2016:
2017:	2018:	2019:	2020:	2021:
10a. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION ARE TRUE AND CORRECT, THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED REQUIREMENTS AND ASSURANCES IF THE PROPOSAL IS ACCEPTED.				
10b. TYPED OR PRINTED NAME OF AUTHORIZED REPRESENTATIVE: Hugh B. McKeen Jr.	11. TITLE: Chairman Catron County Comm.	12. PHONE NUMBER: 575-539-2733		
13. SIGNATURE: /S/ Hugh B. McKeen			DATE: 12/14/2011	

SAN FRANCISCO WATERSHED RESTORATION PROPOSAL
Submitted by: Catron County Commission

TIER-2 CRITERIA FOR A NM UNIT OR A WATER UTILIZATION ALTERNATIVE
[1010 total points possible]

1. [570] If the proposal would extend the water supply through conservation, or increase the supply through development of new water,

a. Describe the location and verify the ownership of and legal access to lands related to the proposal. [0 to 30 points]

Project location is the San Francisco River Watershed (HUC 1504004); 100% of the project is on US Forest Service managed lands within the Gila National Forest Glenwood District. The project area encompasses 144,301 acres ranging from 4,620 to 10,880 feet in elevation and composed of desert grasslands to subalpine forest. Private property within the project area (7,844 acres; approximately 5% of the total project area) is currently excluded from the analysis and proposed treatments. All watersheds to be treated are within the red line of the attached maps (*Appendix Maps A, B, C*), as follows in order of treatment priority:

Deep Creek Watershed (HUC: 150400040405)

Devils Creek Watershed (HUC: 150400040404 and portion of 150400040406)

Mineral Creek Watershed (HUC: 150400040605 and portion of 150400040606)

Whitewater Creek Watershed* (HUC: 150400040607 and portion of 150400040608)

**Since much of the Whitewater Creek watershed is either designated wilderness or inventoried roadless area, this watershed will be used as a control, receiving no restoration treatments in a paired watershed experimental design.*

All activities for this project occur on National Forest System lands. Glenwood Ranger District supports the project (see support letter) and will provide necessary access to projects consistent with other laws and regulations.

No construction or reconstruction of roads or timber harvest in Inventoried Roadless Areas will occur without approval of the Secretary of Agriculture.

b. Identify the source of the water to be put to use. [0 to 10 points]

The source of water is water that falls as precipitation on the above targeted watersheds, as well as natural springs. Approximately 144,301 acres of project area multiplied by 21 inches average precipitation equals 252,527 acre feet of source water. While some source water is lost to evapotranspiration through the hydrologic cycle, even altering a small fraction of the total water source to more beneficial forms represents thousands of acre feet. Conservation of water will thus effectively increase availability of water from the watershed.

c. Describe and quantify whether and how the proposal would extend the water supply through conservation, or increase the supply through development of new water in the Southwest Planning Region. [4 points for each 10 AF up to 500 points]

Over a large portion of the project watershed area, tree canopy is increasing with more than 1,000 trees per acre in many areas. Because of competition for light and water, woody vegetation has proliferated at the expense of herbaceous ground cover. It is the herbaceous plants that slow water flowing over the soil surface, reduce sheet erosion, and provide a mechanism for water to infiltrate the soil, to reach deeper roots and eventually the water table. Due to the proliferation of the woody species that has occurred within the last 100 years, sheet erosion has occurred in the uplands causing much sedimentation and turbidity in downstream water bodies. Main stream channels and tributaries that were formerly highly productive bottom lands today are deeply incised channels and the valley bottoms are dry with limited productivity and water storage or capture functionality. Livestock grazing has been greatly reduced for many years, yet the vegetative communities within these watersheds have not returned to their historical composition of woody and herbaceous species.

Large amounts of bare ground and limited undergrowth are factors indicative of high runoff, sediment production and loss of soil nutrients. An inverse correlation between basal area or canopy cover and understory herbaceous vegetative cover is well documented, and when intercanopy precipitation falls on bare ground unimpeded it is a primary source of runoff during high intensity thunderstorms. Therefore, treatments that increase ground cover should reduce runoff and sediment production, while increasing infiltration. (Ashcroft, N.K. 2009. The ecological effects of reducing piñon and juniper basal areas in northwestern New Mexico. PhD Dissertation, New Mexico State University, Las Cruces, NM).

The goal of the project is to extend water supply and quality through improvement of watershed condition over a significant portion of the San Francisco watershed including improved herbaceous ground cover, watershed storage and capture functioning. Water delivered to streams and rivers from the water table vs. surface runoff slows and extends downstream delivery while improving water quality.

Watershed restoration objectives are to:

- Extend ground water and surface water delivery time
- Capture water runoff within watershed and decrease water loss
- Reduce soil loss and delivery to live water courses
- Increase herbaceous ground cover
- Improve water quality in streams
- Increase biological diversity and wildlife habitat
- Decrease the risk of catastrophic wildfire
- Maintain or improve multiple uses
- Establish baseline and post-implementation monitoring protocols

d. Demonstrate how the proposal would meet AWSA and CUFA requirements. [up to 30 points]
(see www.AWSAplanning.com for AWSA and CUFA documents)

The San Francisco Watershed Restoration Project proposal meets AWSA and Consumptive Use and Forbearance Agreement requirements as well as other applicable federal, state and local laws. It includes treatments to restore or improve watershed function, improve ecological conditions, and to capture, store and conserve water for local consumption.

Local monitoring instruments will be installed prior to restoration treatments to establish a hydrological baseline (e.g. groundwater levels, soil moisture content in the vadose zone, surface water discharge, runoff ratio, etc.) for the treated watersheds (Deep Creek, Devils Creek, and Mineral Creek). Using this baseline and correcting for precipitation variations will help differentiate the flows from the project from other flow sources. Also, the Whitewater Creek watershed will be left untreated to serve as a control in a paired watershed experimental design.

Extension of delivery time of water from the watershed will be differentiated from other flow source via stream flow measurements used to monitor this project. The project will use flow measurement of gage station No. USGS 09444000 located on the San Francisco Near Glenwood, New Mexico, and other US Geological Survey or approved designated entity's flow measurement in compliance with CUFA (CUFA 12.1: *For purposes of the measurement of stream flows, real-time readings by the U.S. Geological Survey, or such other entity as designated by the technical committee for such purpose, shall be used for purposes of determining compliance with Exhibit 2.47 (Terms of New Mexico Diversions)*). Other hydrology monitoring data will be acquired from rain gauges with data loggers, barologgers, SNOTEL station with project area (Silver Creek Divide <http://www.wcc.nrcs.usda.gov/nwcc/site?sitenum=757&state=nm>), piezometers with logging pressure transducers, soil moisture content and weirs.

Furthermore, all work of this proposal will comply with NEPA (AWSA SEC. 212. (h) (1) ENVIRONMENTAL COMPLIANCE.-Upon execution of the New Mexico Consumptive Use and Forbearance Agreement and the New Mexico Unit Agreement, the Secretary shall promptly comply with all aspects of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), and all other applicable environmental Acts and regulations.)

2. [40] Describe the proposal and its technical viability.

Possible management actions considered in this proposal are commonly utilized methods and techniques in use in the local area. Specifications and guidelines for these management practices can be found in the NRCS technical specification, US Forest Service Best Management Practices, Wildlife and Livestock improvement manuals, and scientific literature on watershed restoration practices.

Possible management practices include but not limited to:

- Vegetation manipulation (thinning, patch clear cuts, overstory and/or understory removal, prescribed burning, wildfire management, planting, seeding, herbicide treatments, fencing, fuelbreaks, wetland creation)

Monitoring plan to include but not limited to:

- Water runoff quantity over time (measurement weirs on primary drainages, water level monitoring on impoundments, utilizing data logging crest gauges)
- Ground water level (well monitoring, pizometers, spring discharge)
- Water quality monitoring on primary drainages and San Francisco River for turbidity, temperature, , dissolved oxygen, conductivity, pH, metals, and nutrients.
- GIS analysis of forest density, topography, fire risk, erosion prone areas, and accessible and appropriate forest treatment areas.
- Project implementation (ensure that projects are implemented as planned)
- Project effectiveness monitoring (before and after measurements of ground cover, forage, crown cover, tree/brush density, etc.)
- Data will be collected and analyzed for monitoring of hydrological and biological functions and used for adaptive management and documentation of benefits.

a. Include any (or reference publically available) technical and engineering studies completed and demonstrate how these studies support the proposal. [up to 20 points]

As no earth moving, construction or reconstruction involved in this project, technical studies and engineering would not be required that addressed those issues. The Baker study (below, part 2b) supports the vegetation types and techniques that are being considered in this proposal.

b. Include any (or reference publicly-available) hydrologic, ecologic, or geotechnical studies completed and demonstrate how information included in these studies specifically supports or detracts from the proposal. [up to 20 points]

Anderson, H.W., M.D. Hoover, and K.G. Reinhart. 1976. Forests and water: Effects of forest management on floods, sedimentation, and water supply. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, General Technical Report PSW-18/1976. Berkeley, Calif., 115 pp.
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Baker, Jr., Malchus B. Compiler. 1999. History of Watershed Research in the Central Arizona Highlands. Gen. Tech. Rep. RMRS-GTR-29. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 56 p.
http://www.fs.fed.us/rm/pubs/rmrs_gtr029.pdf

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Goodloe, S. 2001. Four Decades of Understanding Watershed Degradation and Our Rehabilitation of the Carrizo Valley Ranch. New Mexico Watershed Management: Restoration, Utilization, and Protection. New Mexico Water Resources Research Institute.
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Keane, Robert E.; Mincemoyer, Scott A.; Schmidt, Kirsten M.; Long, Donald G.; Garner, Janice L. 2000. Mapping vegetation and fuels for fire management on the Gila National Forest Complex, New Mexico, [CD-ROM]. Gen. Tech. Rep. RMRS-GTR-46-CD. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, 126 p.

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http://www.nps.gov/fire/utility/related_items/1924b.pdf

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McCammon, B., Rector, J., and K. Gebhardt. 1998. A framework for analyzing the hydrologic condition of watersheds. Bureau of Land Management Technical Note 405.
<http://www.stream.fs.fed.us/publications/PDFs/Hydcond.pdf>

Miller, Mark E., 1999. Use of historic aerial photography to study vegetation change in the Negrito Creek Watershed, Southwestern New Mexico. *The Southwestern Naturalist* 44(2):121-137. http://sbsc.wr.usgs.gov/products/pdfs/Miller_1999.pdf

National Research Council. 2008. Hydrologic Effects of a Changing Forest Landscape. National Academies Press. 180 pages.
http://www.nap.edu/catalog.php?record_id=12223#description

New Mexico Environment Department. 2009. Gila River Watershed Improvement Plan and Strategies.
<http://www.nmenv.state.nm.us/swqb/Gila/index.html>

New Mexico Office of the State Engineer. 1962-1966. Gila River Hydrographic Survey.
http://www.ose.state.nm.us/legal_ose_hydro_survey_reports_maps.html

Rollins, M, Swetnam, T, and P. Morgan. 2000. Twentieth-Century Fire Patterns in the Selway-Bitterroot Wilderness Area, Idaho/Montana, and the Gila/Aldo Leopold Wilderness Complex, New Mexico In: Cole, David N.; McCool, Stephen F.; Borrie, William T.; O'Loughlin, Jennifer, comps. 2000. Wilderness science in a time of change conference-Volume 5: Wilderness

ecosystems, threats, and management; 1999 May 23-27; Missoula, MT. Proceedings RMRS-P-15-VOL-5. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Savage, M., Derr, T., Evans, A., Krasilovsky, E., Smith, K., and H. Carey. 2007. Short Guide for Developing CFRP Restoration Prescriptions. New Mexico Forest Restoration Series Working Paper. New Mexico Forest and Watershed Restoration Institute http://www.nmfwri.org/images/stories/pdfs/forestry_Restoration_Papers/PrescriptionGuide.pdf

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Tennesen, M. 2008. When Juniper and Woody Plants Invade, Water May Retreat. Science 322:1631-1632. http://www.nmfwri.org/images/stories/pdfs/For_Land_Managers/juniper_water_use.pdf

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3. [40] Quantify estimated costs.

a. Quantify the proposal's estimated costs including planning design and/or construction and administration or oversight. [up to 10 points]

Total estimated costs for the San Francisco Watershed Restoration Project are \$12,094,404.

Total Project Costs Over Life of Project

Activity	Costs	Notes
Vegetation Treatments	8,983,415	Table 3
Wetland Restoration	927,500	Table 6
Noxious Weed Control	155,000	Table 7
NEPA	1,601,054	Table 8
Monitoring	132,450	Table 5 (Note: Not including weir - cost highly variable depending on type and location)
Administration	294,985	Catron County project management: Oversight, reporting, contract preparation and administration, and inspections.
Total	\$12,094,404	

Tables in Appendix B provide detailed vegetation treatment costs for the project for the following: The entire project area post-NEPA (Table 3); wetlands restoration (Table 6); noxious weed treatment (Table 7); and monitoring (Table 5).

b. If applicable, quantify the proposed project’s on-going administrative, operational, and maintenance costs. [up to 10 points]

Administration Catron County	\$ 294,985	Project management: Oversight, reporting, contract preparation and administration, and inspections.
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c. Describe environmental compliance activities, and quantify the costs for environmental mitigation and restoration related to the proposal. [up to 10 points]

Table 8. Environmental (NEPA) Costs

Activity	Cost/Unit	Covered Acres	Total
Archeology Clearance (100% coverage mechanical treatment areas)	\$21/ac	33,499	\$703,479
Archeology Clearance (25% coverage - prescribed burn areas)	\$21/ac	11,825	\$248,335
Mexican Spot Owl Survey (100% coverage of MC treated areas, 50% of Pine treated areas)	\$20/ac	28,962	\$579,240
Conduct EA Process			\$70,000
Total			\$1,601,054

d. Quantify the AWSA funding sought for the proposal and for the pendency(time) of the proposed activity’s or project’s duration. [up to 10 points]

AWSA funding sought is \$ 12,094,404; however the total may be reduced if funding could be supplemented by other sources, including timber sales.

Project sequence/timeframe	
Complete the process of defining desired conditions	Completed
Evaluate the Watershed	Completed
Define Scope of Watershed Planning Effort	Completed
Gather Existing Data and Create an Inventory	Completed
Identify data gaps and collect additional data if needed	Ongoing
Analyze data to characterize the watershed condition	Completed

Estimate thresholds for watershed restoration and resource improvement	Ongoing
Set goals and identify solutions	Completed
Identify possible management strategies	Completed
Evaluate options and select final management strategies	Begin 6 months after funding decision
Establish baseline monitoring	Begin 6 months after funding decision
Conduct appropriate environmental analysis and decision process	Begin 6-9 months after funding decision
Design implementation program and assemble watershed plan	Begin 6-9 months after funding decision
Conduct implementation	Begin 1 year after funding
Adapt treatment management accordingly	Ongoing
Perform post-implementation monitoring	Begin 2 years after funding, continue 5-10 years

4. [40] If proposal impacts, beneficially or adversely, the environment of the Southwest Planning Region, the Gila River, its tributaries or associated riparian corridors, use the best available science to:

a. Describe and quantify how the proposal might impact the project site and environment, particularly state and federally-listed species. [up to 10 points]

Disturbance of areas undergoing restoration may occur for weeks at a time in discrete areas while the project work is occurring, however such disturbance will be a one-time occurrence for each area. Soil surfaces may be temporarily disturbed; noise levels will be higher during project work; and the presence of vehicles and humans will be higher during restoration implementation.

Mexican spotted owl (*Strix occidentalis lucida*) Protected Activity Centers (PACs) will be indentified during the biological assessment portion of the NEPA process and avoided during project implementation as per US Fish & Wildlife Mexican spotted owl management recommendations. All proposed work occurs on federal public land, and therefore is subject to thorough assessment under the NEPA process.

In summary, there will be some short term impacts, but long term habitat benefits.

Minimum impact on listed species is anticipated, as the project will follow all recommended practices for each species, as referenced below.

b. Describe and quantify the proposal's efforts to mitigate possible adverse impacts on the environment, particularly riparian areas and state and federally-listed species in the Gila Basin and at the specific location of the proposal. [up to 10 points]

The watershed restoration practices will mitigate possible adverse impacts through following the US Fish & Wildlife Service and other species' management recommendations described in various agency directives, technical manuals and scientific literature. Appropriate environmental analysis processes will be conducted for project implementation.

Wounding of bark on trees that will remain in the forest will be avoided. Use of low impact logging techniques will minimize erosion, disruption of surface runoff, re-establishment of understory plants, and other detrimental ecosystem effects.

Per prescription, higher density of native trees along streambanks may be left as a buffer to protect soil and water resources. Vegetation left along waterways can provide habitat for wildlife and a corridor that allows wildlife to travel through the landscape, and acts as a filter for sediment and other nonpoint pollutants to protect water quality. Much of the restoration implementation will occur in terrestrial uplands.

Timing of treatments will reduce potential for high surface water flow which contributes to erosion and sediment load in San Francisco River. Timing of treatments will also mitigate impact on Mexican spotted owls and other species.

Note that in order to resolve conflicts with other resources within the project area, chiefly threatened and endangered species, archeological sites, and some soil erosion concerns, post-NEPA analysis indicates that this project will treat fewer acres than initially estimated (80,801 acres) as areas of concern are identified and excluded from implementation during the environmental compliance process. Acreage and costs are based on post-NEPA data (Table 3).

c. Describe and quantify how the proposal may benefit the environment, particularly riparian areas and state and federally-listed species in the Gila Basin and at the specific location of the proposal. [up to 10 pts]

Where no listed species actually exist at this time, treatments will maintain potential habitat through following species guidelines, per paragraph 4.b. above. The objective of the proposal, to improve watershed conditions to create additional availability and reliability of water in the local area, may concurrently improve wildlife habitat through creating favorable conditions for water runoff, water quality and water storage capacity, improving herbaceous ground cover, and reducing the risk of catastrophic wildfire. Additionally, watershed restoration will attenuate peak flows leading to more infiltration and recharge in the upper watersheds, which will reduce flood impacts and improve riparian, fish, and wildlife habitat. For more detailed information, see Table 10.

d. List any environmental statutes, rules, or regulations that may apply to the proposal, and demonstrate how the proposal implementation will comply with such laws, rules or regulations. [up to 10 points]

Environmental statutes, rules and regulations that may apply:

Clean Water Act - Any in-stream disturbance below the Ordinary High Water Mark will require a 404 permit and 401 certification

New Mexico State Water Quality Standards available at:
http://oaspub.epa.gov/wqsdatabase/wqsi_waterbody.rep_parameter

NEPA requirements

ESA regulations for management of specific federally listed species (see below)

USFS regulations

Catron County Natural Resource Ordinances and Policies

Agencies involved with this project include:

- US Forest Service
- NM Environment Department

Known federal and state listed species include the following:

- Yellow-billed cuckoo (known to occur in SF River)
- SW Willow Flycatcher (2 known nest sites near Glenwood)
- Mexican Gray Wolf (within recovery area, history of denning at one location)
- Chiracahua leopard frog (historical and possibly occupied habitat)
- Mexican spotted owl (critical habitat, occupied habitat)
- Loach minnow and spike dace only for offsite effects to SF River (known in and have critical habitat in SF River)

Other species may include:

- Baird's sparrow
- Peregrine falcon
- Common Blackhawk
- Northern goshawk
- Suckers (one or more)
- Bats (possibly)
- Gila grouse
- Goodding's onion
- Narrow headed garter snake

5. [70] Describe any economic or cost analysis information and data for the proposal:

a. Quantify estimated economic benefits including environmental, recreation, value of water itself, value of the water to the regional economy, increased economic growth, protection against loss of jobs, agriculture, ranching, local economic sustainability or growth, or other. [up to 10 points]

Economic viability: It is the vision of this proposal that watershed management and treatments provide proper functioning ecosystems and biodiversity and indirectly achieve sustainable economic, ecological and social benefits to current and future generations of New Mexico. This will result in the utilization and management of renewable resources that will provide economic, social and ecological benefits, directly and indirectly through products harvested, increasing water quality and quantity, and the numerous ecological services that benefit the general public. The project will also provide security or reduced economic expenditure in reducing risks of flooding and wildfire that could be expensive or damaging human settlements and the ecosystem. Finally, the watershed restoration is proposal provides criteria and indicators for monitoring and assessing the economic, social and ecological sustainability of rangelands that are quantifiable and recognizes the intangible ecosystem service that cannot be measured.

Environmental economic benefits: Healthy forested watersheds are healthy forests, and healthy forests are more resistant to disease and drought, and therefore wildfire. Local, state and federal expenditure on catastrophic wildfire will be reduced for the treated watershed. The estimated cost of the 2011 Wallow Fire in Arizona and New Mexico was nearly \$109 million, or \$208 per acre. The approximate cost of wildfires in the Gila National Forest in the last five years appears to range between \$165 and over \$400 per acre. Catastrophic wildfires can cause extreme damage to the ecology and physical structure of watersheds and the streams and rivers they feed through loss of habitat, soil sterilization, erosion, and flooding. Fire suppression funds could better be spent on forest restoration and habitat protection.

Value of water itself: Open market sales of water rights on the real estate market currently value 1 acre foot between \$10,000 and \$15,000. If water demands increase due to continuing drought conditions, population increase, new agricultural uses, or simply inflation, then water value will necessarily increase.

Value of water to regional economy: According to the National Priorities Project (<http://data.nationalpriorities.org> accessed 10/11/11) New Mexico had the second highest percentage of poverty in the nation (20.4% in 2010), and according to US Census figures (2009), Catron County is even worse with 22% of its population below poverty level (average annual per capita income under \$21,000). Catron County's tax base is agricultural based. Climate forecasts predict the continuation of drought that has already impacted the county through loss of forage for livestock and loss of forest resources through increased forest disease, insect infestation and wildfire. Given these facts and figures, and given that the San Francisco watershed area of Catron County is an adjudicated water basin with no additional water rights and severe restrictions on water use, without additional AWSA waters, agricultural, commercial, industrial and recreational economic development in Catron County is basically relegated to today's levels, with no chance of future improvement. In other words, the value of water to the

economy of Catron County is greater than the simple cost of purchasing a water right (the difference in value of real estate for deeded land in the San Francisco watershed area can be well over \$100,000 more for property with less than a full acre foot of water right compared to property without water rights).

Increased economic growth and protection against loss of jobs, agriculture, ranching, local economic sustainability or growth: Simply put, there can be little economic growth in the southern part of Catron County without an increase in availability of water. It is not only possible that much, if not all, of the 14,000 acre feet of AWSA may be awarded to projects outside this county, but additionally, even with project water available, there is no guarantee to access to it if no water flows in the streams. Thus economic growth is to a certain extent tied to increase of supply from a project such as that of the San Francisco Watershed Restoration.

Logging and timber industry: Logging and wood product processing are traditional and critical components of the natural resource based economy of Catron County. In an effort to recover from the setbacks of the 1990s when large diameter logging was brought to a halt, the area's timber industry has focused on retooling for smaller diameter logs. A project of the size of the San Francisco Watershed Restoration Recover will support the investment in infrastructure by focusing on watershed treatments where merchantable timber harvesting can benefit watershed health.

Additionally, this project will support development of industries for woody byproducts of logging and milling, such as: biomass energy or fuel, chips, pressed wood, firewood, laminated lumber, etc. Ensured delivery of raw materials is critical for these industries.

Recreation: Data collected by the USFS indicate that over one million people visited the Gila NF from October 2000 to September 2001; while the economic situation in the United States has declined considerably since then, given that most of the use of the Gila National Forest is free, we can assume that use has not lessened, and in fact may have increased. (National Visitor Use Monitoring Results," http://www.fs.fed.us/recreation/programs/nvum/reports/year2/R3_F6_gila_report.htm#_Toc18390772 Accessed December 2011.

With improvement of watershed conditions, wildlife and big game habitat is improved. This could improve the hunter experience, particularly if improved habitat increases game numbers. Additionally, with improved watershed conditions, hiking, photography, wildlife viewing, horseback riding, camping and other recreational opportunities are enhanced.

b. Quantify estimated costs including planning design and/or construction environmental compliance operation maintenance repair and administrative costs or other. [10]

Please see Appendix B, Tables 1-6 for cost estimate details.

c. Identify the source of local contributions and demonstrate the commitment and ability to pay any local cost share for project proposal, including any applicable exchange costs [1 point for every % of project cost to be borne by local sponsor up to 50 points]

Due to the depressed economy in New Mexico and particularly Catron County, as well as minimal industrial infrastructure of the county, no local cost share is readily available for this project other than timber and woody byproduct sales.

6. [120] Describe how the proposal addresses the needs of a particular group or groups or interests on the issues of

a. Historic uses, traditions, cultures, and customs. [up to 10 points]

The County is rich in archaeological sites which indicate Paleo-Indians were probably the first inhabitants of the region, some 10,000 years ago; farming was one of their main subsistence activities.

Irrigated agriculture by non-Indians came into widespread use in the mid-1800's. By 1875 a number of ditch systems had been established on the Gila River. By 1890, most land suitable for irrigation with surface water was under cultivation. Most of the diverted water was used to irrigate small farms, although part of the water was appropriated by owners of large ranches for livestock purposes. Ranching spread throughout the remainder of the area away from the main stem of the rivers, and by the late 1800's some of the larger ranches in New Mexico had been established.

After 1940, irrigation using groundwater began in both New Mexico and Arizona. Farm development in New Mexico picked up substantially in the 1950's, with the realization that soils and climatic conditions enabled successful cash crop production, once water became available. This resulted in the creation of many farming enterprises where only livestock grazing was feasible prior to 1940.

Due to the proliferation of the woody species that has occurred within the last 100 years, sheet erosion has occurred in the uplands causing much sedimentation and turbidity in downstream water bodies. The main stream channels and tributaries were formerly highly productive bottom lands. Today these channels are deeply incised and the valley bottoms are dry with limited productivity and water storage or capture functionality. Livestock grazing has been greatly reduced for many years, yet, the vegetative communities within these watersheds have not returned to their historical composition of woody and herbaceous species.

The traditional uses of the project area lands, ranching, some farming, and logging will benefit from a healthier forest that results from watershed restoration. Additionally, a healthier forest is more resistant to catastrophic wildfire; Catron County's Community Wildfire Protection Plan (CWPP) and WUI specific CWPPs call for hazardous fuels reduction and watershed restoration. This project will contribute to the protection of human life and property as well as to support continued traditional use of the land and natural resources.

b. Current and future demands for water in the Southwest Planning Region. [up to 20 points]

This project would preserve Catron County's traditional, customary and cultural economic sectors, which are agriculture and natural resource based: Livestock, logging, and wood product production. The county currently suffers the effects of prolonged drought conditions, which may continue into the indefinite future; water demands for traditional uses will increase even without increase in the current activity levels.

Catastrophic wildfires such as the 2011 Wallow Fire in eastern Arizona and western New Mexico demonstrate the critical need for protection of our watersheds. This need has been addressed in the Catron County Community Wildfire Protection Plan (CWPP) and associated WUI level CWPPs. In the absence of sufficient precipitation to maintain current levels of water availability for maintenance of a healthy forest, aquatic environments and riparian areas as well as for human use locally and downstream, measures must be taken to protect and conserve water sources that do exist.

While this project may not increase the actual quantity of water in the San Francisco River system and watershed, it will conserve water. The effective availability of water will be increased through minimization of loss through evaporation and flood, and through lengthening the amount of time water flows in the river system. Additionally, through watershed restoration, forage will increase for livestock and wildlife, the logging industry (retooled for small diameter) will be supported, and both the timber and woody byproduct industries will be provided with raw materials (woody biomass for energy/heat is being developed at this time; it is vital that projects which provide the raw materials for this use be carried through).

c. Flood control.[up to 20 points]

Downstream streambed and riparian areas are currently subject to periodic flood damage that increases water turbidity through watershed erosion; destroys stream banks, riparian areas, bridges, dams and roads; and deposits debris in streams and fields and washes away seeds and plantings. Watershed restoration helps to moderate runoff so that more gradual release of water occurs and thus mitigates flood damage: Streams remain clearer; water remains cooler as riparian areas retain plant growth that shades the water; wild and agricultural plant areas are not subject to gravel and rock deposited by floodwaters; bridges and roads and associated structures (culverts, ditches, etc) require less time and funding for repairs.

d. Fire protection, prevention, or suppression. [up to 20 points]

Prolonged county drought conditions increases risk of catastrophic wildfires as well as other emergency conditions that may occur due to insufficient access to immediate water needs. Catron County's Community Wildfire Protection Plan of 2006 (CWPP, currently under revision/updating) identified some of the highest potential for downstream agricultural damage from wildfire to be the areas downstream of the San Francisco watershed. (*see Map C*)

Healthy forests are more resistant to disease, insects and drought conditions, thus making them more able to tolerate wildfire. Thus watershed restoration will help to prevent catastrophic wildfire and the resulting damage to soils, habitat, and water quality. The CWPP recommends a bare minimum of 40,000 to 50,000 acres per year of forest restoration to reduce hazardous fuels and the risk of catastrophic wildfire. This project will help meet CWPP goals.

e. Recreation. [up to 20 points]

The headwater areas of stream systems of the Gila National Forest are difficult to access and do not favor farming or ranching; thus much of these areas remain primitive and undeveloped. Part of the Gila Wilderness is located in the project area and is a popular destination for outdoor recreation for people worldwide. Watershed restoration which protects and preserves the project area and the streams of the watershed from disease, insect infestation and wildfire, also protects and preserves the beauty and viewshed of the area for hunting, hiking, camping, birding, horseback riding, orienteering, photography and other activities.

f. Environmental protection and/or enhancement. [up to 20 points]

This project proposal serves to enhance a landscape scale watershed while identifying and protecting sensitive resources during the NEPA process. Watershed restoration is broadly supported by private individuals, public agencies at local, county, state, and federal levels, and various environmental groups.

The goals of this project are to increase water quantity and quality through improvement of watershed condition over a significant portion of the San Francisco watershed including improved herbaceous ground cover, watershed storage and capture functioning.

Over the years, tree canopy has increased over a large portion of the project area, with more than 1,000 trees per acre in many areas. Because of competition for light and water, woody vegetation has proliferated at the expense of herbaceous ground cover.

NEPA analysis will be conducted. Consultation with US Fish & Wildlife Service (FWS) will be completed and safeguards for listed species will be implemented as specified by the best available evidence or directed by FWS. There will be no tree harvest or road construction or reconstruction in Inventoried Roadless Areas. Wilderness values are protected by designating Whitewater Creek WS as the control watershed.

g. Any others. [up to 10 points]

7. [40] List those supporting the application, including federal, state, and local government entities; Indian nations, tribes or pueblos; irrigation or conservation districts; non-profit organizations; and other entities. Provide letters or resolutions of support for the application. [up to 40 points]

Letters for the following supporters are attached to this document

US Forest Service
NM Environment Department – Water Quality Bureau
NM Department of Forestry
Catron County Acequias Commission
Catron County Citizens Group

8. [30] Describe whether the proposal would benefit one or more than one of the counties in the Southwest New Mexico Planning Region – Catron, Grant, Hidalgo, and/or Luna Counties. [10 points/county up to 40 points]

While the primary benefits of this project will be to Catron County, the four-county area of Grant, Luna, Hidalgo and Catron would enjoy opportunities for employment and contracting, and would benefit from:

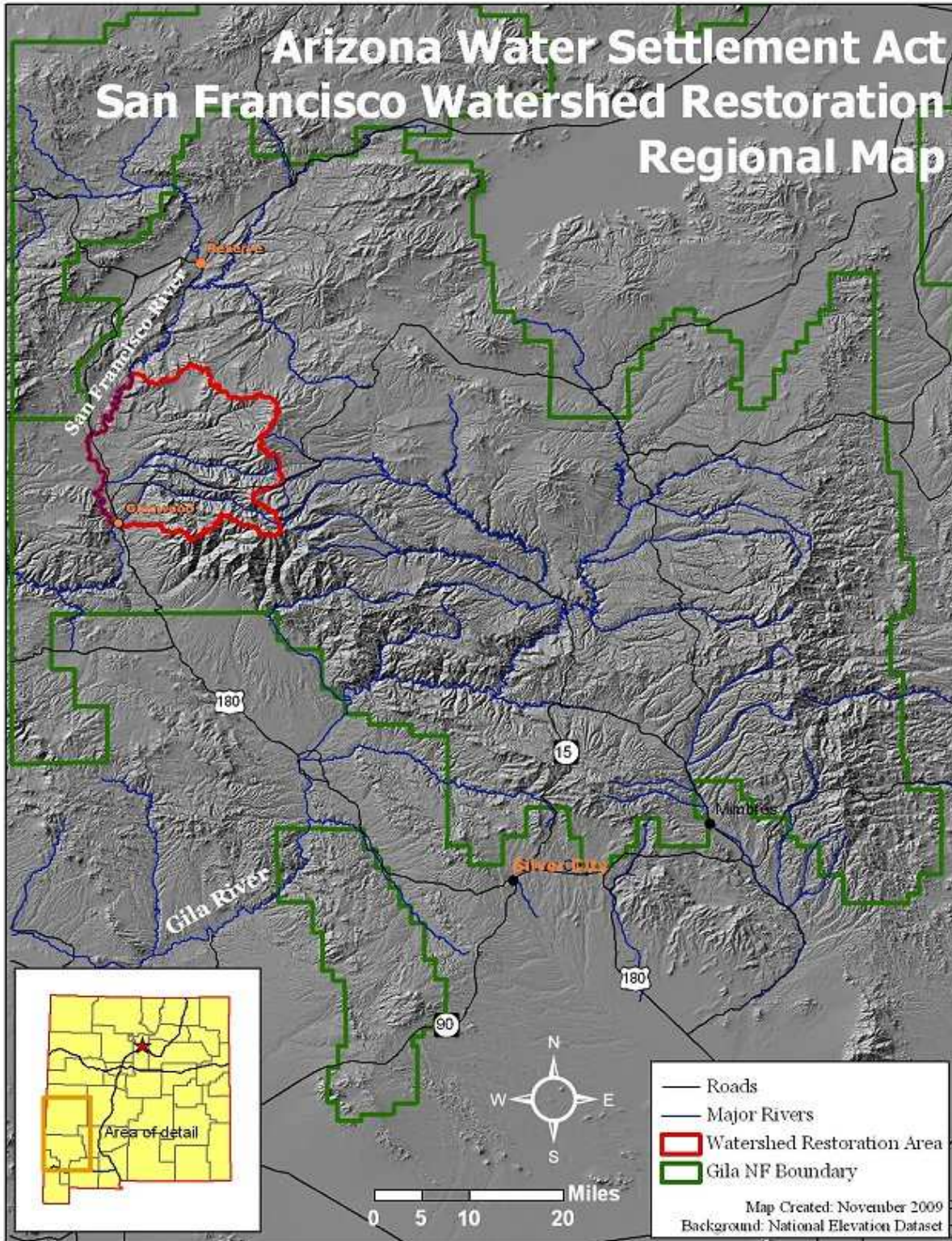
Increased ground water and surface water quantity
Improved water quality in streams due to reduced soil loss and deposit into live water courses
Capture of water runoff within watershed to decrease overall water loss to the Gila River system
Increased biological diversity and wildlife habitat
Decreased risk of catastrophic wildfire
Increased effective access to water for agricultural uses
Maintenance or improvement of multiple uses
Enhanced forest and river recreational opportunities

9. [50] Describe whether the proposal would support economic growth or benefit one or more than one of the following interests in the Southwest New Mexico Planning Region – agricultural, ranching, municipal, recreational, or other (specify). [10 points/interest up to 50 points]

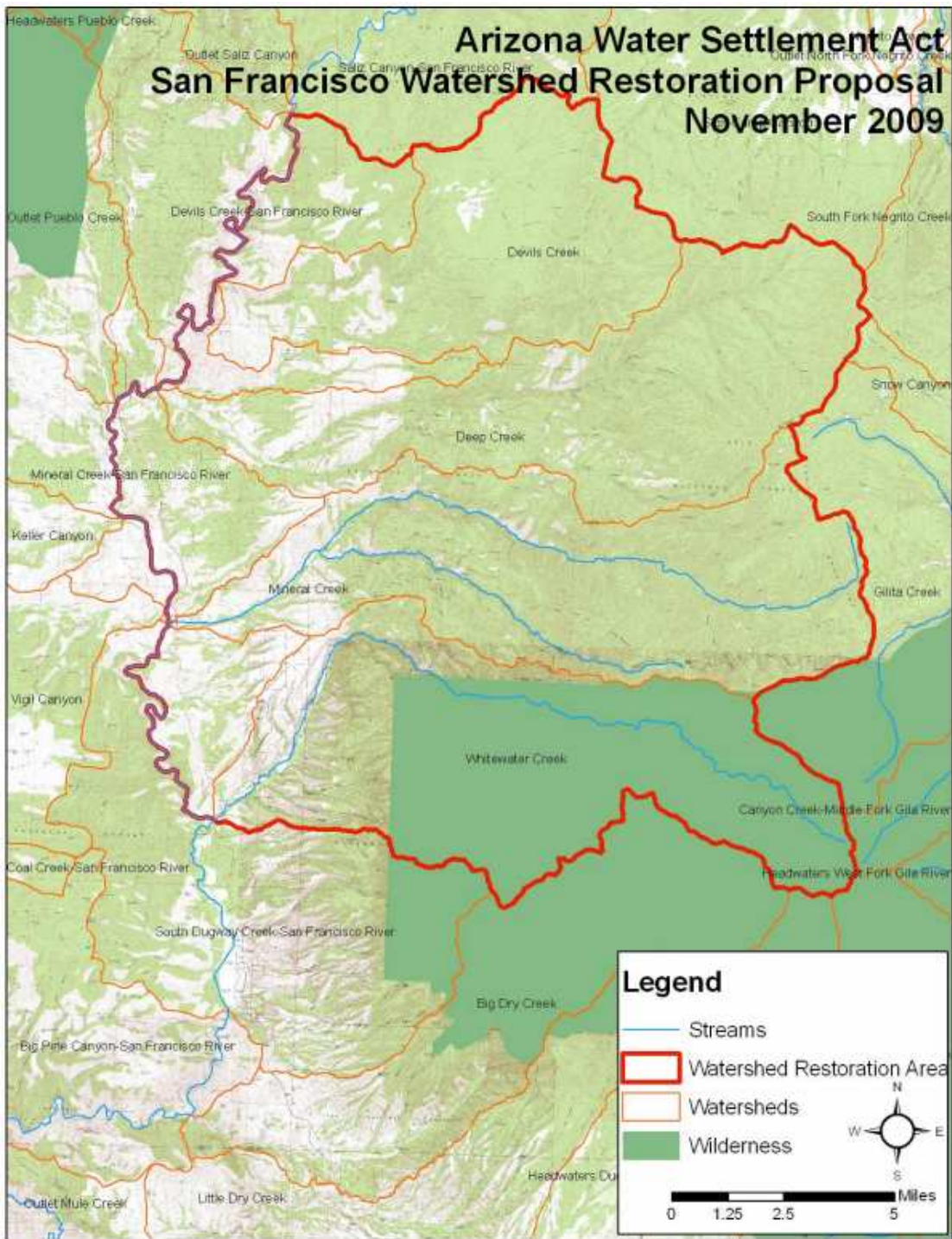
The San Francisco River watershed is one of the major sources of water for the Gila River system. In fact, more river system water is available to downstream users from this watershed than it is to Catron County itself. Thus all uses of waters downstream from this watershed will benefit from this project. Downstream agricultural, ranching and municipal users in particular will receive high benefit from this project.

APPENDIX A

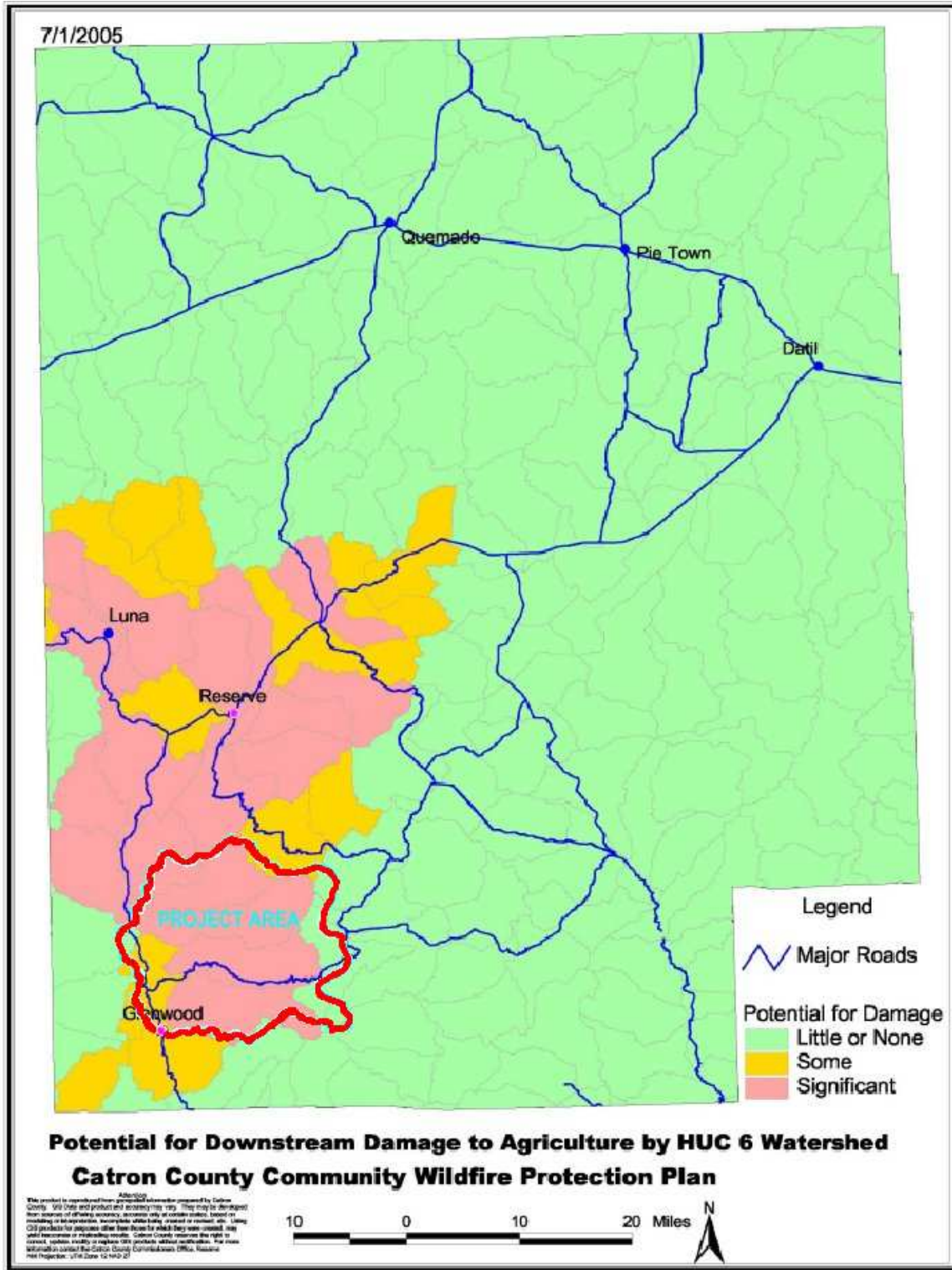
Attachment A – San Francisco Watershed Restoration Proposal regional map



Attachment B – San Francisco Watershed Restoration Proposal map



Attachment C – Downstream Damage Potential map



Appendix B

Total Project Costs Over Life of Project

Activity	Costs	Notes
Vegetation Treatments	8,983,415	Table 3
Wetland Restoration	927,500	Table 6
Noxious Weed Control	155,000	Table 7
NEPA	1,601,054	Table 8
Monitoring	132,450	Table 5 (Note: Not including weir - cost highly variable depending on type and location)
Administration	294,985	Catron County project management: Oversight, reporting, contract preparation and administration, and inspections.
Total	\$12,094,404	

Table 2. Vegetation Treatments Across Three Treatment Watersheds (Whitewater Creek used as Control)

Vegetation	Slope	Within Roadless / Wilderness Areas	Acres	Treatment	Treatment cost per acre	Treatment Costs
Grassland	0-10%	Yes	419	Untreated if open grassland; Hand thinning if invaded by juniper. Determine extent of juniper encroachment by aerial photos.	\$150	Depends on the # of acres requiring treatment
		No	7,964		\$150	
	10-30%	Yes	595		\$150	
		No	3,408		\$150	
	30-140%	Yes	297		\$150	
		No	668		\$150	
Totals			13,350	??? acres treated*		

Vegetation	Slope	Within Roadless / Wilderness Areas	Acres	Treatment	Treatment cost per acre	Treatment Costs
Pinyon-Juniper	0-10%	Yes	4,343	Prescribed Burn	\$100	\$434,344
		No	13,528	Push	\$500	\$6,763,978
	10-30%	Yes	8,099	Prescribed Burn	\$100	\$809,894
		No	7,091	Fuelwood cutting/ thinning	\$0	\$0
	30-140%	Yes	3,189	Prescribed Burn	\$100	\$318,940
		No	1,806	Prescribed Burn	\$100	\$180,569
Totals			38,057	38,057 acres treated*		\$8,507,725

Vegetation	Slope	Within Roadless / Wilderness Areas	Acres	Treatment	Treatment cost per acre	Treatment Costs
Oak Woodland	0-10%	Yes	408	Prescribed Burn	\$100	\$40,753
		No	161	Fuelwood cutting/Rx Burn	\$0	\$0
	10-30%	Yes	1,239	Prescribed Burn	\$100	\$123,913
		No	306	Fuelwood cutting/Rx Burn	\$0	\$0
	30-	Yes	1,627	Prescribed Burn	\$100	\$162,736

	140%	No	175	Prescribed Burn	\$100	\$17,500
Totals			3,916	3,916 acres treated*		\$344,902

Vegetation	Slope	Within Roadless / Wilderness Areas	Acres	Treatment	Treatment cost per acre	Treatment Costs
Ponderosa Pine	0-30%	Yes	8,192	Prescribed Burn	\$50	\$409,615
		No	7,723	Logging/thinning	\$0	\$0
	30-140%	Yes	2,947	Prescribed Burn	\$50	\$147,363
		No	869	Prescribed Burn	\$50	\$43,443
Totals			19,731	19,731 acres treated*		\$600,421

Vegetation	Slope	Within Roadless / Wilderness Areas	Acres	Treatment	Treatment cost per acre	Treatment Costs
Mixed Conifer	0-10%	Yes	2,308	Prescribed Burn	\$100	\$230,782
		No	1,444	Logging/thinning	\$0	\$0
	10-30%	Yes	6,147	Prescribed Burn	\$100	\$614,655
		No	3,246	Logging/thinning	\$0	\$0
	30-140%	Yes	4,756	Prescribed Burn	\$100	\$475,646
		No	1,196	Prescribed Burn	\$100	\$119,608
Totals			19,096	19,096 acres treated*		\$1,440,692
Total Watershed Area Treated:			80,801			\$10,893,740

* Preliminary estimate; treatable acres may be reduced due to NEPA decision

Table 3. Vegetation Treatments Across Three Treatment Watersheds (Whitewater Creek used as Control)

Post-NEPA Treatment Acres Estimate

Vegetation	Slope	Within Roadless / Wilderness Areas	Acres	Treatment	Treatment cost per acre	Treatment Costs
Grassland	0-10%	Yes	419	Untreated if open grassland; Hand thinning if invaded by juniper. 30% estimated to be intact open grassland. Determine final extent of juniper encroachment by aerial photos.	\$150	\$43,971
		No	7,964		\$150	\$836,252
	10-30%	Yes	595		\$150	\$62,428
		No	3,408		\$150	\$357,789
	30-140%	Yes	297		\$150	\$31,198
		No	668		\$150	\$70,146
Totals			13,350	9,345 acres treated		\$1,401,784

Vegetation	Slope	Within Roadless / Wilderness Areas	Acres	Treatment	Treatment cost per acre	Treatment Costs
Pinyon-Juniper	0-10%	Yes	4,343	Prescribed Burn	\$100	\$325,758
		No	13,528	Push	\$500	\$5,072,984
	10-30%	Yes	8,099	Prescribed Burn	\$100	\$607,420
		No	7,091	Fuelwood cutting/ thinning	\$0	\$0
	30-140%	Yes	3,189	Prescribed Burn	\$100	\$239,205
		No	1,806	Prescribed Burn	\$100	\$135,427
Totals			38,057	28,543 acres treated*		\$6,380,794

Vegetation	Slope	Within Roadless / Wilderness Areas	Acres	Treatment	Treatment cost per acre	Treatment Costs
Oak Woodland	0-10%	Yes	408	Prescribed Burn	\$100	\$32,602
		No	161	Fuelwood cutting/Rx Burn	\$0	\$0
	10-30%	Yes	1,239	Prescribed Burn	\$100	\$99,131
		No	306	Fuelwood cutting/Rx Burn	\$0	\$0

	30-140%	Yes	1,627	Prescribed Burn	\$100	\$130,189
		No	175	Prescribed Burn	\$100	\$14,000
		Totals	3,916	3,133 acres treated*		\$275,922

Vegetation	Slope	Within Roadless / Wilderness Areas	Acres outside MSO PACs	Treatment	Treatment cost per acre	Treatment Costs
Ponderosa Pine	0-30%	Yes	5,721	Prescribed Burn	\$50	\$214,529
		No	6,137	Logging/thinning	\$0	\$0
	30-140%	Yes	1,789	Prescribed Burn	\$50	\$67,069
		No	758	Prescribed Burn	\$50	\$28,410
		Totals	14,404	10,803 acres treated*		\$310,007

Vegetation	Slope	Within Roadless / Wilderness Areas	Acres outside MSO PACs	Treatment	Treatment cost per acre	Treatment Costs
Mixed Conifer	0-10%	Yes	1,175	Prescribed Burn	\$100	\$88,141
		No	918	Logging/thinning	\$0	\$0
	10-30%	Yes	3,223	Prescribed Burn	\$100	\$241,693
		No	1,901	Logging/thinning	\$0	\$0
	30-140%	Yes	2,965	Prescribed Burn	\$100	\$222,378
		No	836	Prescribed Burn	\$100	\$62,697
		Totals	11,018	8,264 acres treated*		\$614,908

Total Estimated post-NEPA Watershed Area Treated:	60,088			\$8,983,415
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* excludes 25% for probable NEPA concerns

Table 4. Vegetation Treatments within Whitewater Creek Watershed

Vegetation	Slope	Within Roadless / Wilderness Areas	Acres	Treatment
Grassland	0-10%	Yes	227	Control
		No	759	Control
	10-30%	Yes	555	Control
		No	450	Control
	30-140%	Yes	111	Control
		No	93	Control
Totals			2,196	0 acres treated

0 % treated

Vegetation	Slope	Within Roadless / Wilderness Areas	Acres	Treatment
Pinyon-Juniper	0-10%	Yes	428	Control
		No	331	Control
	10-30%	Yes	2,347	Control
		No	418	Control
	30-140%	Yes	1,721	Control
		No	241	Control
Totals			5,485	0 acres treated

0 % treated

Vegetation	Slope	Within Roadless / Wilderness Areas	Acres	Treatment
Oak Woodland	0-10%	Yes	146	Control
		No	7	Control
	10-30%	Yes	841	Control
		No	0	Control
	30-140%	Yes	3,051	Control
		No	0	Control

Totals	4,045	0 acres treated
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0 % treated

Vegetation	Slope	Within Roadless / Wilderness Areas	Acres	Treatment
Ponderosa Pine	0-30%	Yes	637	Control
		No	113	Control
	30-140%	Yes	1,231	Control
		No	30	Control
Totals			2,011	0 acres treated

0 % treated

Vegetation	Slope	Within Roadless / Wilderness Areas	Acres	Treatment
Mixed Conifer	0-10%	Yes	831	Control
		No	25	Control
	10-30%	Yes	5,292	Control
		No	41	Control
	30-140%	Yes	9,504	Control
		No	117	Control
Totals			15,811	0 acres treated

0 % treated

Total Watershed Area: 29,547

Table 5. Monitoring Budget for full project

Item	Number	Cost/ea	Total
Piezometer (w/ recording pressure transducer)	30	\$800	\$24,000
Soil Moisture	30	\$360	\$10,800
Rain Gauge (recording-tipping)	8	\$450	\$3,600
Crest Stage Gauge (w/ recording pressure transducer)	16	\$800	\$12,800
Weir	4?	highly variable depending on type and location	
Hydrologist-installation/downloading/report (@\$65/hr)	1250	\$65	\$81,250
Total			\$132,450

Table 6. Wetland Restoration

Item	Number	Cost Ea.	Total
Restoration Contractor @\$85/hr	2500	\$85	\$212,500
Equipment Operator @\$40/hr	2000	\$45	\$90,000
Supplies (rock, etc.)			\$100,000
Grade Stabilization Structures	1000	\$300	\$300,000
Equipment @\$50/hour	4000	\$50	\$200,000
Mobilization/Demobilization			\$25,000
Total			\$927,500

Table 7. Noxious Weed Control

Activity	Cost per acre	Acres	Total Cost
Mapping	\$10	500	\$5,000
Spot Treatment	\$300	500	\$150,000
Total			\$155,000

Table 8. Environmental (NEPA) Costs

Activity	Cost/Unit	Covered Acres	Total
Archeology Clearance (100% coverage mechanical treatment areas)	\$21/ac	33,499	\$703,479
Archeology Clearance (25% coverage - prescribed burn areas)	\$21/ac	11,825	\$248,335
Mexican Spot Owl Survey (100% coverage of MC treated areas, 50% of Pine treated areas)	\$20/ac	28,962	\$579,240
Conduct EA Process			\$70,000
Total			\$1,601,054

Table 10. Treatment effects by vegetative type

Veg Type	Treatment	Up to a maximum of Acres	Notes	Effects
Grassland	Hand cut	9436	Estimate 75% of grasslands on < 30% slopes outside of roadless area would require hand cutting.	Small trees would be removed. Temporary increase in slash on the ground. Cover for big game would be reduced, grass/forb ground cover would be stimulated. Adverse effect on species requiring woody plant cover, beneficial effect on grassland dependent species. May cause drying of the site due to increased evaporation.

Grassland	Prescribe burn	15,546	All acres, treated or not, would be potentially subject to prescribed fire.	Reduction of downed woody fuels on 9436 acres, reduction of green small trees on up to 15,546 acres. Increase in fire dependent and fire tolerant species and decrease in fire sensitive species. Adverse effect on species requiring woody plant cover, beneficial effect on grassland dependent species. May cause drying of the site due to increased evaporation.
Pinyon-Juniper	Prescribe burn	43,542	22,174 would be burned only, up to 21,368 would be treated and may be followed by a prescribed fire	Reduction of fuel levels, green and dead. Increase in fire dependent and fire tolerant species and decrease in fire sensitive species. Adverse effect on species requiring woody plant cover, beneficial effect on grassland dependent species. May cause drying of the site due to increased evaporation. Slight chance of adverse effect on gray vireo.
Pinyon-Juniper	Push	13859	Trees removed would be scattered or piled, followed by burning when appropriate. Some material would be removed as firewood.	Soil would be disturbed, may result in temporary increase in loss of sediment. Increase in downed woody material, decrease in standing green trees. Existing tree cover would be reduced from 30-75%. Cover for big game would be reduced, grass/forb ground cover would be stimulated. Adverse effect on species requiring tree cover, beneficial effect on grassland dependent species. May cause drying of the site due to increased evaporation. Possible adverse effect on gray vireo due to reduction of density in tree stands.

Pinyon-Juniper	Hand cut	7509	Larger material would be removed for firewood, remaining slash would be lopped, scattered, and burned as appropriate.	Some soil disturbance would occur from vehicle cross country use. There would be some short term damage to herbaceous ground cover from vehicle tracks. Long term benefit as herbaceous understory would be stimulated to occupy more of the site. Slight potential for increase in off side sedimentation. Increase in downed woody material, decrease in standing green trees. Existing tree cover would be reduced from 30-75%. Cover for big game would be reduced, grass/forb ground cover would be stimulated. Adverse effect on species requiring tree cover, beneficial effect on grassland dependent species. May cause drying of the site due to increased evaporation. Possible adverse effect on gray vireo due to reduction of density in tree stands.
Oak Woodland	Hand cut	474	Larger material would be removed for firewood, remaining slash would be lopped, scattered, and burned as appropriate.	Reduction in tree density. Reduction in short and long term availability of mast for food for wildlife. Adverse effect on tree dependent and cover dependent species, beneficial effect on open savannah and grassland dependent species. Potential adverse effect on gray vireo.
Oak Woodland	Prescribe burn	7961	Burn all acres, hand cut or not.	Reduction in tree density. Reduction in short and long term availability of mast for food for wildlife. Stimulation of re-sprouting in oak and other fire tolerant or dependent species. Reduction in density of fire sensitive species. Stimulation of herbaceous understory growth. Adverse effect on tree dependent and cover dependent species, beneficial effect on open savannah and grassland dependent species. Potential adverse effect on gray vireo.

Ponderosa Pine Log/thin

7836 Removal of merchantable timber, roads would be constructed/reconstructed to facilitate removal of timber. Cull piles and slash would be treated as appropriate (lopped/scattered, chipped, or piled) Some salvage of sub-merchantable timber for firewood use would occur.

Logging -reduced density of trees 12"DBH and greater. Thinning - reduced density of trees less than 12DBH. . Maximum reduction would be to 40 BA from estimated maximum current stocking of 120 BA. Some acres already below 40 BA due to past fires, no removal of large trees would occur in these sites, patches of regeneration may be thinned to stimulate growth. Increase in downed woody material until final treatment by prescribed fire. Road construction/reconstruction, skid trails and landings would increase loss of sediment from site. Road use may cause dust, lowering air quality in the local area. Residual stand trees would be stimulated by removal of larger trees. Vertical stand diversity would be reduced, horizontal diversity may be increased. Large pine dependent and density dependent species would be adversely affected (goshawk, Abert's squirrel), Open pine and mid-seral dependent species would benefit (elk, turkey, deer). potential adverse effects on Mexican spotted owl would be mitigated by following recovery plan guidelines incorporated into design criteris (maintaining critical elements in critical habitat, no treatment of occupied PACs during nesting seasin, treatment within PACs consistent with maintaining nest habitat factors). Meeting these design criteria would reduce the acres available for commercial timber logging. Herbaceous understory would be stimulated, forage would increase until stand overstory regained former density. Ground cover for erosion control would be temporarily reduced but long term should not change markedly. Potential effects on MSO can be addressed in design criteria

to achieve May effect, Not Likely to Adversely Affect. Potential effects to Mexican gray wolf can be addressed by avoiding denning sites and altering timing of treatments if necessary during the denning season. Goshawk, Aberts squirrel and some bats may be adversely affected.

Ponderosa Pine	Prescribe burn	21742 Prescribe burn for final treatment of up to 7836 acres of logged/thinned sites. Prescribed burn only on remaining acres.	<p>Logged areas, reduction in ground fuels and standing dead fuels. Stimulation of herbaceous growth. Fire dependent and tolerant species would benefit, fire sensitive species would be adversely affected. Large piles of slash may result in local hydrophobic soils due to high temperatures. Can mitigate through limiting slash pile size and burning on snow. Unlogged areas, fire would "thin from below" with reduction in ground fuels and lower ladder fuels. Some spot crowning with creation of openings and loss of mature trees would occur. Ladder fuels would be reduced. There would be a reduction in vertical diversity and an increase in horizontal diversity. Fire dependent and tolerant species would be beneficially affected, fire sensitive species would be adversely affected. Potential effects on MSO can be addressed in design criteria to achieve May effect, Not Likely to Adversely Affect. Potential effects to Mexican gray wolf can be addressed by avoiding</p>
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denning sites and altering timing of treatments if necessary during the denning season. Goshawk, red squirrel and some bats may be adversely affected.

Mixed conifer	Log/thin	4756	Removal of merchantable timber, roads would be constructed/reconstructed to facilitate removal of timber. Cull piles and slash would be treated as appropriate (lopped/scattered, chipped, or piled) Some salvage of sub-merchantable timber for firewood use would occur.	Logging -reduced density of trees 12"DBH and greater. Thinning - reduced density of trees less than 12DBH. . Maximum reduction would be to 40 BA from estimated maximum current stocking of 120 BA. Some acres already below 40 BA due to past fires, no removal of large trees would occur in these sites, patches of regeneration may be thinned to stimulate growth. Increase in downed woody material until final treatment by prescribed fire. Road construction/reconstruction, skid trails and landings would increase loss of sediment from site. Road use may cause dust, lowering air quality in the local area. Residual stand trees would be stimulated by removal of larger trees. Vertical stand diversity would be reduced, horizontal diversity may be increased. Large pine dependent and density dependent species would be adversely affected (goshawk, Abert's squirrel), Open pine and mid-seral dependent species would benefit (elk, turkey, deer).
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Mixed conifer	Prescribe burn	144301	Prescribe burn for final treatment of up to 4756 acres of logged/thinned sites. Prescribed burn only on remaining acres.	<p>Logged areas, reduction in ground fuels and standing dead fuels. Stimulation of herbaceous growth. Fire dependent and tolerant species would benefit, fire sensitive species would be adversely affected. Large piles of slash may result in local hydrophobic soils due to high temperatures. Can mitigate through limiting slash pile size and burning on snow. Unlogged areas, fire would "thin from below" with reduction in ground fuels and lower ladder fuels. Some spot crowning with creation of openings and loss of mature trees would occur. Ladder fuels would be reduced. There would be a reduction in vertical diversity and an increase in horizontal diversity. Fire dependent and tolerant species would be beneficially affected, fire sensitive species would be adversely affected. Potential effects on MSO can be addressed in design criteria to achieve May effect, Not Likely to Adversely Affect. Potential effects to Mexican gray wolf can be addressed by avoiding denning sites and altering timing of treatments if necessary during the denning season. Goshawk, Aberts squirrel and some bats may be adversely affected.</p>
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Letters of support attached separately:

US Forest Service

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Catron County Acequias Commission

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