

**Comprehensive Wetland Restoration and Protection in  
Santa Fe County  
CWA Section 104(b)(3) Wetlands Grant  
Assistance Agreement No. CD-966558-01-0-C (FY2007)  
Final Report**

(This project is Part C of a larger 2007 grant award to NMED Wetlands Program entitled “2007 New Mexico Wetlands Awards Project.”)



## **Problem Addressed By Project**

This project was designed to engage a diversity of partnerships and strategies to improve wetland protection, increase the information available for Santa Fe County wetlands for partners, and demonstrate wetland restoration in Santa Fe County.

Santa Fe County straddles a transition zone on the west flanks of the Sangre de Cristo Mountains, the southernmost mountain ecosystem of the Rocky Mountains bioregion, and the desert ecosystems of the Sky Islands bioregion. The complex geology of the area has generated a scattering of springs, seeps, and wetlands in a relatively dense, dendritic pattern of mostly ephemeral streams in a high-desert ecosystem. Landscape types include short-grass prairie, woodland savannah and riparian corridors. The Santa Fe River watershed and Galisteo Creek watershed, both draining to the Rio Grande, constitute the most important drainage basins in the central part of Santa Fe County where many of the springs and wetlands occur. The area offers a variety of wetlands and wetland opportunities with a wide range of ecological functions. The area is semi-arid, which means that wetlands are especially valuable to wildlife.

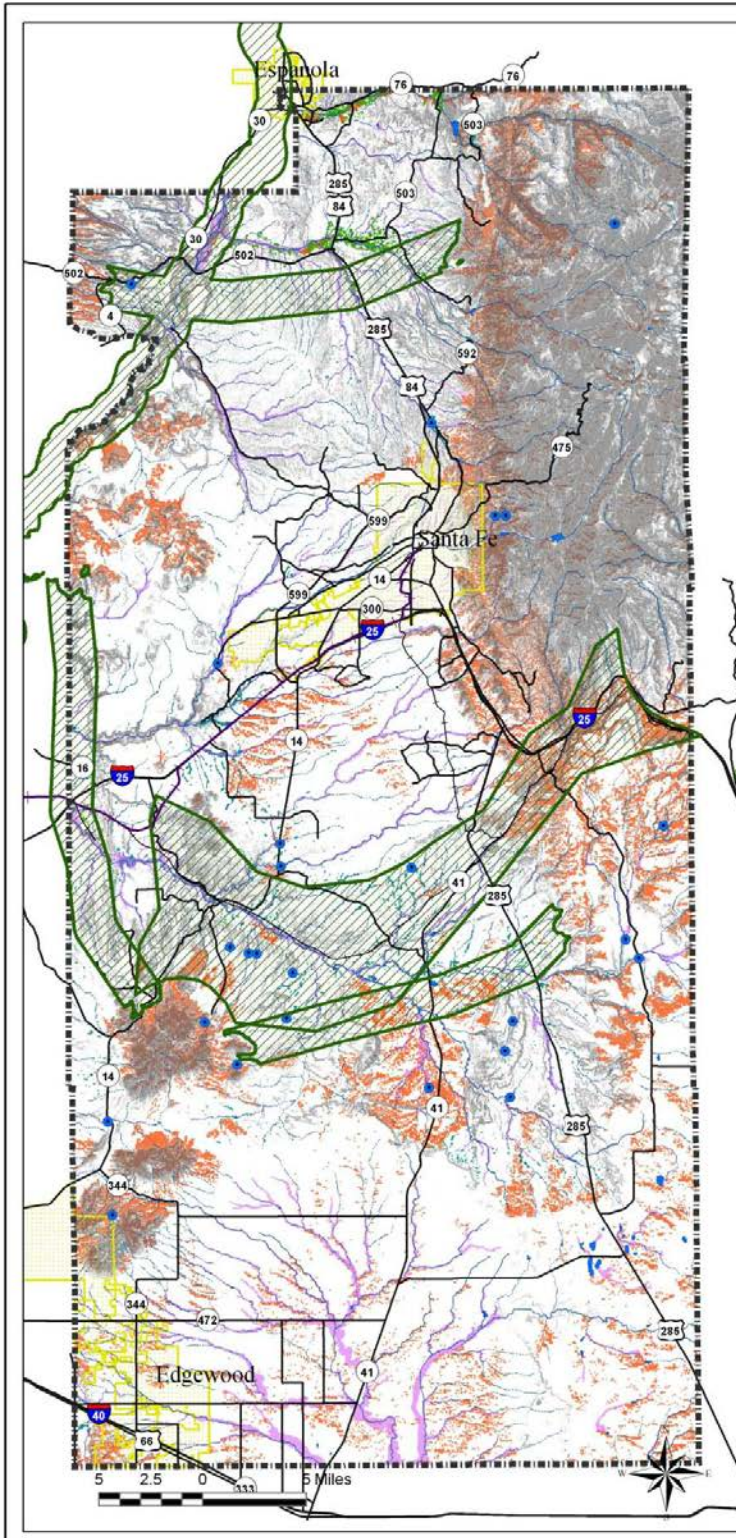
In the southern Santa Fe Watershed, the Arroyo Hondo and Arroyo de los Chamisos sub-watersheds support a complex of springs and wetlands from the mountain zone down to the Rio Grande confluence, with an exceptional area of springs and wetlands in La Cienega, to the southwest of the City of Santa Fe. The middle reach of the Santa Fe River and La Cienega represent an Area of Critical Environmental Concern (ACEC), as identified by the Bureau of Land Management. The Santa Fe River, the La Cienega Creek, and the central reaches of the Galisteo Creek are three of the few permanent rivers in the County and contain important riparian habitat.

The wetlands in the area are degraded and threatened by groundwater diversion in wells throughout the City of Santa Fe and the County, sheet and gully erosion resulting from past and current land use, and the impacts from non-native plant species encroachment. Despite the uniqueness and inclusion of wetlands in designated open space areas or planned open space corridors, the hydro-geological mechanics of water sources that support the springs, seeps, and wetlands are poorly understood. More research was needed to inform decision makers and encourage them to take regional measures in groundwater extraction for the long-term protection of the springs and wetlands in the County.

The available information indicates that ongoing urbanization coupled with the impacts of climate change and cumulative historical land use impacts continue to stress wetland ecosystems. Additionally, the present enabling environment for wetland protection consisting of local regulations, local institutional capacity, available funding sources, public involvement and water quality standards for wetlands appears to be inadequate to counter the threats and stressors on wetlands



Santa Fe County  
Sustainable Growth Management Plan  
Preliminary Official Map -  
Environmental Features



**Legend**

- Santa Fe County
- Incorporated Areas
- Springs
- Major Streams and Arroyos
- Minor Streams and Arroyos
- Lakes, Reservoirs, and Ponds
- FEMA 100-Year Flood Zones
  - A Zone
  - AE Zone
- General Location, Wetland & Riparian Areas**
  - North American Arid West Emergent Marsh
  - Rocky Mountain Alpine-Montane Wet Meadow
  - Rocky Mtn. Lower Montane Riparian Woodland/Shrubland
  - Western Great Plains Riparian Woodland/Shrubland
- Steep Slope Areas**
  - Medium (15 - 30 Percent)
  - Severe (30+ Percent)
- High Wildfire Hazard Areas
- Conceptual Location of Major Wildlife Corridors  
(New Mexico Game & Fish Dept.)

This information is for reference only.  
Santa Fe County assumes no liability for  
errors associated with the use of these data.  
Users are solely responsible for confirming  
data accuracy when necessary.



Santa Fe County  
Growth Management  
Department  
Planning Division

March 25, 2010  
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## Project Goals and Objectives

The principal goal of this project was to integrate wetland restoration and protection into the policies and programs of Santa Fe County and to provide tools and information for policy makers and the public to protect wetlands. This goal was achieved through a number of initiatives, strategies and products including:

- Development of wetland restoration designs for four priority areas (San Marcos Springs, Escalante Springs, Arroyo Hondo and Canada de los Alamos) and the demonstration of wetland restoration with the help of Santa Fe County, NM State Parks and private partnerships at three locations (San Marcos, Escalante Springs and Arroyo Hondo).
- Completing a study on the geo-hydrological relationships of groundwater and surface water flows that sustain springs and wetlands in the La Cienega Area. The study **“Exploring Springs and Wetlands and Their Relationship with Surface Flows, Geology, and Groundwater in the La Cienega Area, Santa Fe County New Mexico,”** is available in hard copy from the NMED Wetlands Program and at <http://www.nmenv.state.nm.us/swqb/Wetlands/projects/LaCienega/index.html>.
- Completing a Wetlands Action Plan with stakeholder input for Santa Fe County, and also distributing the plan to the City, County Commissioners, and County Planning, County Hydrologists and Open Space. The Plan **“Keeping Santa Fe County Wetlands Viable and Functioning”** is available in hard copy from NMED Wetlands Program or at <http://www.nmenv.state.nm.us/swqb/Wetlands/>.
- Completing **“New Mexico Wetlands Technical Guide #1 Wetland Functions.”** This technical guide is part of an ongoing series of wetlands technical papers and brochures to inform practitioners and the public about New Mexico wetland resources. The Technical Guide is available at <http://www.nmenv.state.nm.us/swqb/Wetlands/>.
- Conducting public education, community outreach, and public discourse events with local government decision makers regarding the importance of regulating Santa Fe County land and water use to benefit the restoration, enhancement and protection of springs, seeps, wetlands and riparian habitats (see report Appendix A).
- Monitoring and reporting project outputs and outcomes in order to grow the capacity of project partners, the New Mexico Wetlands program, and EPA Region 6 (See Report Appendix B).

Project products include the Wetlands Action Plan for Santa Fe County. The Wetlands Action Plan brings together available information about the wetlands and riparian resources of Santa Fe County, and also identifies significant data gaps and data needs. The Wetlands Action Plan for Santa Fe County was timely because it coincides with the development of the Santa Fe County Sustainable Land Development Code and other supporting initiatives under way in the City of Santa Fe and in state and federal agencies. Santa Fe County wetlands play an essential role in wildlife habitat and linkages between different ecoregions that converge in the County. In addition, traditional agriculture is

supported by the county's springs and streams. The Wetlands Action Plan provides guidance to land managers, decision makers, landowners and the public about future action initiatives for the protection and restoration of wetland resources in the County.

### **Original Timeframe**

A timeline was created for this project that began in November 2007 and was to be completed by December of 2011. The project was amended for a no cost extension, due to a reduction in SWQB staff and a hiring freeze. The Wetlands Program Coordinator took over as project lead in 2008. The Project was again amended so that Santa Fe County could complete wetland restoration at Arroyo Hondo and for completion of other restoration and outreach activities. The project Tasks were completed in May 2013.

### **Partners Involved**

The project established meaningful partnerships with Santa Fe County, state government, city government, research institutions, local groups, contractors and landowners for the planning and coordination of the project, the continued integration of wetland restoration and protection in County policies and programs, and the support of public education, outreach to decision makers, and project monitoring.

#### **Principal Partners completing the project:**

- Santa Fe County (MOU for \$100,000 non-federal match for wetland restoration and other activities).
- Earth Works Institute (a local non-profit environmental stewardship organization; main project contactor until December 31, 2011)
- Ecotone (contractor after the dissolution of Earth Works Institute, since January 2012)
- NM State Parks (responsible for timely implementation of restoration activities at Escalante Springs).

#### **Contributing entities:**

- City of Santa Fe (Sangre de Cristo Water Division)
- New Mexico Office of the State Engineer
- New Mexico Bureau of Geology and Mineral Resources
- New Mexico Energy, Mineral & Natural Resources Department (Parks Division)
- U.S. Fish & Wildlife Service

#### **Additional civic and community partners, cooperators, and contractors:**

- La Cienega Valley Association
- Galisteo Watershed Partnership
- San Marcos Association
- Cerrillos Water Association
- Landowners and residents of Cañada de los Alamos, Arroyo Hondo, La Cienega, La Cieneguilla, San Marcos District, and Cerrillos
- Santo Domingo Tribal Utilities Department/Ecology Division
- University of New Mexico – Community & Regional Planning Program
- Keystone Restoration Ecology
- Rangeland Hands, Inc.
- Riverbend Engineering
- River Source
- WildEarth Guardians
- Santa Fe County Commissioner Kathy Holian

## **Funding**

The original Federal amount was **\$256,670** which was spent and **\$209,260 (45%)** match. The **final match amount** was **\$378,298.91(68%) (\$169,038.91 overmatched)**. Santa Fe County contributed \$189,941.03 of this match amount. See semi-annual reports for details.

## **Major Project Highlights and Chronology**

- A contract was completed in April 2008 for Earth Works Institute to help conduct demonstration design, restoration and monitoring, and to support coordination with decision makers and the public.
- The WPC takes over management of the project in May, 2008 due to a reduction in staff and a hiring freeze.
- In August 2008 the first Steering Committee meeting was conducted.
- In October 2008 the Geohydrology Group was established to start the La Cienega Geohydrology Study. Key partners included the New Mexico Bureau of Geology and Mineral Resources, Santa Fe County, EWI, City of Santa Fe, Office of the State Engineer, US Fish and Wildlife Service National Wetlands Inventory and SWQB Wetlands Program.
- In November 2008, Santa Fe County staff, the Wetlands Program Coordinator (WPC, Maryann McGraw) and Earth Works Institute (EWI, Jan-Willem Jensens) staff conduct an informational meeting with the La Cienega Valley Association to inform them of activities in their area associated with the implementation of this project. At that time, included activities were the geohydrology study and also wetland restoration on Santa Fe County Open Space land (Las Carizales).
- November 2008, the WPC and EWI staff meet with Ann Watson (Santo Domingo Tribe Environmental) to tour their unique desert fen wetlands and to obtain support for the geohydrology study to include this unique area.



- A MOU between Santa Fe County and NMED was completed in January 2009 for the contributing activities that would count as match for this project. These activities included: integrating wetlands protection into natural resource planning by the County; participating in geohydrology study, providing labor and support for wetlands mapping in Santa Fe County, providing \$100,000 in matching funds toward the restoration of La Cienega and Arroyo Hondo wetlands.
- In January 2009, Santo Domingo Pueblo met with New Mexico Bureau of Mines hydrologists and determined that they would conduct a geohydrology study separate from the one for this project as they wanted to keep the findings restricted to the tribe.
- The existing PQAPP for the Galisteo Watershed was updated to include the monitoring proposed for the additional Santa Fe County wetland demonstration sites. The PQAPP was approved on March 10, 2009.
- Subcontractor Rich Schrader coached UNM students to conduct baseline assessments at the Las Carizales Open Space site in La Cienega, and at Arroyo Hondo.
- EWI completed site assessments for Arroyo Hondo and Las Carizales County Open Space wetland areas and for San Marcos Arroyo.
- In March 2009, YCC youth crews planted native trees and completed gully work in arroyos that are eroding near the Arroyo Hondo wetland restoration site.
- In April 2009, a proposal for a new community center near the Las Carizales restoration site was proposed that could delay and affect the restoration at that site. It was determined to move the restoration demonstration to Escalante Springs on land owned by the County and managed by NM State Parks. Santa Fe County offered to compensate the project for funds already spent on the Las Carizales site.
- On April 9 2009, volunteers planted native trees at San Marcos Restoration site.
- EWI developed a draft protocol for Community Stewardship Teams for the County restoration sites.



**Planting native shrubs at Arroyo Hondo by YCC member April 2009.**



**San Marcos UNM Stream Team collecting data in April 2009 at San Marcos Wetland.**



**Wild Earth Guardians planting at San Marcos April 2009.**



- Baseline assessment and a preliminary design were completed at Escalante Springs.
- A site plan for Arroyo Hondo was completed by Steve Vrooman subcontractor for EWI. This plan was submitted to the County for implementation.
- On June 6, 2009 EWI and the WPC conducted outreach (booth) at the Santa Fe River Festival.
- EWI initiates outreach to establish wildlife corridors throughout the County utilizing wetlands and streams as key components of pathways.
- In July through October 2009, the Geohydrology Group refined its goals for the project and determined what each of the collaborators would provide to the study. A reference list and supporting research findings were shared with the group. The scope of work included wetland/spring mapping, chemistry and age dating of groundwater, water level decline assessment, measurement of contributions of surface water to springs and streams flow, reasons for water level declines and future recommendations.
- In November 2009, a Community Education Walk was conducted by EWI at Escalante Springs to initiate the development of an Escalante Springs Community Stewardship Team.
- A design for restoration structures that improve wetland function and increase wetland area was completed for San Marcos demonstration restoration. Wetlands delineations, archaeology and ESA clearances and 404/401 permits were completed in 2010.
- On April 5, 2010, the WPC and EWI gave a presentation of the proposed geohydrology study to the La Cienega Valley Association. Some members were willing to let their wells be sampled for the study. The OSE also presented where they would be monitoring flows for the study.
- A draft outline for the Technical Guide was completed in May 2010.
- Work has begun on the Santa Fe County Wetlands Action Plan.
- On June 3, another presentation about the geohydrology study and the project was given at the La Cienega Community Center for the public.
- Piezometers are installed at Arroyo Hondo to monitor water tables that would sustain wetlands by project implementation.
- Santa Fe County completes coordination for Archaeological Clearance, Endangered Species Act Clearance, and 404/401 permitting for Arroyo Hondo. Floodplain ordinances will have to be met by developing an engineering design for the project which holds up progress.
- EWI staff, YCC crews and Wild Earth Guardians help clear non-native plants and trees at Escalante Springs.
- EWI commented on the Sustainable Land Development Plan for Santa Fe County and submitted proposed language for the protection of Wetlands.
- Originally, EWI was to conduct the wetland restoration at Arroyo Hondo. Because of the additional costs for hiring an Engineer to design the project, the County agreed to take on the construction at Arroyo Hondo and EWI selected another site to develop a restoration design at Canada de los Alamos.
- In 2010 the SF County Flood Damage Ordinance of 2008 was enforced with great persistence on our proposed wetland restoration projects. This started a dialogue

to change the ordinance in favor of projects that restore streams and wetlands. In the meantime, the ordinance slowed down progress on our projects.

- No rise permits were submitted for San Marcos and Arroyo Hondo. The structure construction planned for Escalate Springs, an isolated wetland, was removed from the project since the permit was more costly than the project and the springs were small and situated within a State Park far from any potential for flood damage.
- The first project outcomes and outputs tracking table was submitted to EPA as a deliverable in May 2010.
- The WPC and EWI meet with private landowners at Canada de los Alamos. Three private properties are involved as owners of the restoration area. The property has been partly restored (invasive removal and planting) under a USFWS Partners for Fish and Wildlife Grant. We propose stream restoration work to restore floodplain connectivity as part of this project. Landowner agreements have been started. ESA clearance was completed as part of the Partners Project.
- Restoration construction at San Marcos is completed in November 2010.



**Construction of drop-down structures (Zuni-Bowl) in eroding headcut at San Marcos wetlands**



**A rock apron is buried below the spring water as part of the Zuni Bowl structure.**

- EWI meets with and leads the Community Stewardship Team and Arroyo Hondo in the fall 2010.
- A draft restoration design is developed by Chris Phillips, P.E. for Canada de los Alamos in August 2010.
- EWI continues to work with the County and County Commissioners on regulations for terrain management and land-use in connection with international wildlife pathways effort that will include a stream corridors and wetlands focus. Much conservation and restoration efforts will focus on private landowners and must be integrated with County land use planning.
- Photopoint data at Escalante Springs shows the successful removal of impenetrable thickets of Russian Olive from the Escalante Springs site. The photopoint data was taken in December 2010.
- The WPC completed and IGA with the Office of the State Engineer to complete an “Investigation to Characterize areas of Groundwater discharge in La Cienega Valley and the Lower Santa Fe River, Santa Fe County, NM” in February 2011.
- The Geohydrology Group conducted a field trip with Community members to visit spring sites and potential sampling and monitoring sites for the geohydrology study on March 25, 2011. Jim Dick ground-truthed wetlands mapping for the area during this field trip.



**Peggy Johnson and Stacy Timmons (NMBGMR) GPS locating well sites and springs at a La Cienega area wetland site, March 2011.**



- EWI led a walk at the San Marcos restoration site on April 8, 2011. This walk was open to community members and the public. EWI also cleaned up the site and augured holes for additional plantings that were installed on April 9, 2011.



**Volunteers are given direction by Steve Vrooman, subcontractor for EWI for planting at San Marcos on April 9, 2011.**

- The final design for Arroyo Hondo Wetlands Restoration was completed by Chris Phillips, P.E., by May 2011.
- An updated design for Canada de los Alamos was developed by Chris Phillips, P.E. Landowner agreements have been reviewed by landowners. The agreements include match to be provided by landowners. EWI met with SF County Staff to get feedback on the design and the Floodplain Ordinance requirements for Canada de los Alamos site.
- A walk at Arroyo Hondo was led by Santa Fe County Staff on May 14, 2011..
- The WPC completed MOA with the New Mexico Bureau of Geology and Mineral Resources to complete analysis of ground water samples for the Geohydrology Study on August 25, 2011.
- The PQAPP was updated to include the groundwater radiocarbon dating and sampling in the La Cienega Area and was approved on October 19, 2011.
- Landowner agreements for the Canada de los Alamos restoration are being reviewed by NMED legal.
- Quotes for the age dating of La Cienega groundwater samples are being obtained by the WPC. A work order for NMOSE flow data collection at La Cienega is being completed in November 2011.
- EWI completed the report “The Galisteo Watershed conservation Initiative – Quality of Life at a Cross Roads” in cooperation with the Santa Fe Conservation Trust and Earth Analytic, Inc. Information from this report will be included in the Wetlands Action Plan for Santa Fe County.

- A Wildlife Tracking workshop was conducted in the Village of Galisteo which included outreach for the Wetlands Action Plan for Santa Fe County.
- EWI participated in meetings for the new Santa Fe County Land Management Code asserting the importance of protecting wetlands and open space.
- Local restoration contractors and EWI met with County Commissioner Kathy Holian about the restrictions in the SF County Floodplain Ordinance. The County Legal Department will review the code for short-term and long-term changes that accommodate wetland protection and restoration. NMED staff meets with County staff about the consequences of the restrictive floodplain ordinance.
- The WPC search for other county codes that protect wetlands through ordinances. Rio Arriba County is the only other NM county with floodplain restrictions that protect wetlands. WPC and EWI continue to determine improvements to the floodplain code and open space code. This information will be included in the Wetlands Action Plan for Santa Fe County.
- A no cost extension for the 2007 Wetlands Award Grant through December 2012 was approved by EPA in September 13, 2011. Subsequently MOUs, and contracts were extended through this period.
- The Board of Earth Works Institute decided that it would no longer stay in business. The final invoice for Earth Works was submitted in December 2011.
- A new contract was completed with Ecotone to finish the work of Earth Works Institute. Jan-Willem Jensens, the former director of Earth Works is the principle of Ecotone so the project was delayed for some tasks about 5 months while a new contract was put in place.
- Apple Construction is selected to complete the restoration construction at Arroyo Hondo. The completion date will be December 2012.
- Legal review of the landowner agreements to until May 2012. The landowner agreements have been forwarded to the landowners for signature. Archeology permitting for la Canada de los Alamos restoration is completed.
- The WPC is in negotiations with State Parks to complete further follow-up work at this site.
- Data and figures are being analyzed and compiled for the geohydrology study. Information under the draft outline is being assembled by May 2012. Information includes water level contours, groundwater flow conditions, geology, wetland mapping, historical photos, and information about which aquifers and their ages are contributing to the flows of spring-fed wetlands.
- Michelle Barnes (new Wetlands Program P.O.) is assigned to the Technical Guide.
- An ordinance that is part of the Santa Fe County Land Development Code provides for the use of water resources and open space for the protection of wetlands and riparian areas in the communities of La Cienega and La Cieneguilla. The ordinance will be referenced in the Wetlands Action Plan for Santa Fe County.
- A draft of the Santa Fe County Wetland Action Plan is completed in May 2012. The WAP will be revised and submitted monthly to the WPC until completion by December 2012. The draft was circulated to stakeholders for comment.

- The Activity Outcomes/Outputs report is updated and submitted to EPA in August 2012.
- Flow monitoring by NMOSE is completed and a draft report is submitted to the Geohydrology Group
- Wetlands mapping is completed and a report is submitted to the Geohydrology Group.
- Geological mapping of the La Cienega area is completed by Dan Koning of NMBGMR and submitted to the Geohydrology Group.
- The WPC and Ecotone have completed the introductory Chapters of the Geohydrology Report.
- Matt Schultz (SWQB P.O. Silver City) attended a two day training “Wetland Restoration and Construction Workshop” in Portal, Arizona on September 25-26, 2012. The workshop provided information on constructing wetlands that are similar to natural wetlands for wildlife habitat. The training is applicable to the national wildlife corridor planning that runs through Santa Fe County.
- Stacy Timmons of NMBGMR presents the findings of the groundwater age-dating study at La Cienega at the NM Wetlands Roundtable on October 30, 2012.
- The Draft Report “Exploring Springs and Wetlands and Their Relationship with Surface Flows, Geology, and Groundwater in the La Cienega Area, Santa Fe County, New Mexico” is circulated for Comments and edits in October 2012.
- Post implementation monitoring was completed at San Marcos in October 2012.
- The landowner agreements at Canada de los Alamos have been stalled due to the deportation of the principal landowner. Although he owns the land, he is no longer available to complete his portion of the agreement and the match work on the property.
- Construction at Arroyo Hondo Wetland Restoration is completed in December 2012.
- The WPC takes over completion of the Wetland Technical Guide focused on wetland types and functions.



**Beaver dammed riverine wetlands along the Rio Pueblo de Taos – photo from the Wetlands Technical Guide #1.**



- The 2007 Wetlands Award is approved for extension to June 2013.
- An MOU with State Parks for the completion of wetland restoration at Escalante Springs is completed in March 2013. The completion includes the removal of Russian olive re-sprouts at the spring.
- Ecotone and the WPC complete the Santa Fe County Wetlands Action Plan, including professional printing of 100 copies. They meet with Santa Fe County Planners and the Santa Fe Watershed Association.
- Jan-Willem Jensens presents “Keeping Santa Fe County Wetlands Viable and Functioning” the Wetlands Action Plan for Santa Fe County, to the NM Wetlands Roundtable in April 2013.
- Restoration at Escalante Springs is completed in April 2013 with the help of an inmate program.
- The members of the Geohydrology Group present “Exploring Springs and Wetland and Their Relationship with Surface Flows, Geology, and Groundwater in the La Cienega Area, Santa Fe County, New Mexico”, at the Espanola Basin Technical Advisory Group annual meeting on May 20-21, 2013. Jan-Willem Jensens also presents the Wetlands Action Plan for Santa Fe County there. After words, Peggy Johnson (NMBGMR) met with the local landowners in the community of La Cienega to present the results of the groundwater study. The meeting also included a field trip to the wetlands.
- A dedication and ribbon cutting for the Arroyo Hondo Wetlands Restoration on March 15, 2013 is well attended.
- The WPC and Ecotone met with Santa Fe County Planning staff to talk about implementing some of the activities in the Wetlands Action Plan-in particular, developing local ordinances to protect wetlands and buffer and including wetland corridors in Open Space Planning initiatives. Santa Fe County suggested organization of a committee to help implement the recommendations. Future meetings with the County will be planned to follow up on these ideas.
- The WPC wrote an article for “Clearing the Waters” (SWQB) newsletter about “Exploring Springs and Wetlands” report to be included in the summer edition.
- The Technical Guide on Wetland types and functions is completed by the WPC.

## **Project Products**

- Wetland restoration designs for four priority areas (San Marcos Springs, Escalante Springs, Arroyo Hondo and Canada de los Alamos)
- Planning, permitting for four priority areas (San Marcos Springs, Escalante Springs, Arroyo Hondo and Canada de los Alamos)
- Demonstration wetland restoration for San Marcos Springs (4.9 acres), Escalante Springs (0.5 acres), and Arroyo Hondo (7 acres) restored.
- Monitoring at Escalante Springs and San Marcos Springs
- Completion of a Geohydrology Study at La Cienega and outreach to the community and local planners about the results.
- Completion of a Wetlands Action Plan for Santa Fe County and outreach to local planners, agencies and NGOs throughout the State, and implementation of some portions of the plan.

- Completion of a Wetlands Technical Guide about wetland types and functions.
- Inclusion of wetlands and buffer protection in the Santa Fe County Land Development Code.
- Progress in changing the Santa Fe County Floodplain Ordinance to favor stream, wetland and riparian restoration, and minimize unnecessary costs.
- Progress working with Santa Fe County and City of Santa Fe about groundwater usage and its effects on local water resources, especially in the La Cienega area.
- Project Outputs and Outcomes Reports.

## **Obstacles and Lessons Learned**

### **Obstacles**

- A major obstacle at the beginning of the project was turnover in Santa Fe County staff and SWQB staff including a hiring freeze. The project was delayed until new staff was hired at the County and they were familiarized with the project. We were fortunate that the County continued to support the project and complete their match obligations.
- Another obstacle was moving the restoration from Las Carrizales to Escalante Springs. This required starting over on this demonstration task at a new site.
- A final obstacle was the principal private landowner at La Canada de los Alamos departed to England and not being able complete that project on the ground. We expect when he returns that the restoration will be completed but with another funding source.

### **What made the project successful?**

- Santa Fe County was provided input for wetlands and buffer protection including the request for more wetlands protection in the Sustainable Land Use Code. This request was backed by wildlife corridor needs and evidence in the Santa Fe County Wetlands Action Plan and the geohydrology study.
- The project successfully demonstrated wetlands restoration at two public sites (Arroyo Hondo and Escalante Springs), and one private but important wetland at San Marcos Springs. Both these sites have visitors who will learn the benefits of these wetlands.
- The project also demonstrated the importance of citizen stewardship teams to take pride and ownership by improving wetland resources.
- The Project produced important documents that increases the capacity of the Wetlands Program including the geohydrology study, The Wetland Functions Technical Guide and the Wetlands Action Plan for Santa Fe County.
- This project provides a model of activities that other local governments can use to improve wetlands protection.

### **What would you do differently in terms of effectiveness?**

More meetings with County and City Planners would likely have increased the effectiveness of the project. In addition, outreach to other local governments to demonstrate what we achieved with Santa Fe County would help them be interested on doing the same.

## **Technical transfer**

The future status and condition of wetlands and riparian areas in Santa Fe County are dependent on (1) better and more publicly accessible information for planning and decision making on wetland management, (2) improvements in local regulations and their implementation and enforcement, (3) continued and increased restoration and protection initiatives, (4) improved institutional and public support, buy-in, and collective stewardship behavior, and (5) development of water quality standards for optimal natural functioning conditions of wetlands in Santa Fe County.

## **Proposed Interventions –**

- Fulfill baseline data needs with condition assessment, mapping and classification, and identification of stressors and threats. These data should be made accessible to the public. Such relevant information will direct what wetland restoration and protection strategies need to be employed as well as where, in what order, and how these strategies need to be implemented.
- Continue to explore groundwater supported wetlands to ensure sustainability and prevent decline due to pollution and groundwater withdrawal.
- Regulations must be improved, especially Santa Fe County's Sustainable Land Development Code and terrain management guidelines, in order to direct positive land and resource use and stewardship action in the community and to eliminate harmful human-caused stressors. Current regulatory conditions offer many opportunities for Santa Fe County to be a pilot area and leader in developing regulations that counter the projected negative effects of urban development and climate change on wetlands in the future.



- The growing expertise and practice of wetland restoration and protection in Santa Fe County must be further developed. A primary target would be to continue identifying funding and resource sources and pursuing innovative and collaborative models that are linked to the values of ecosystem services that are being protected. Additionally, it will be important to broker more voluntary land protection agreements, i.e., conservation easements, especially for establishing wetland buffer areas, grow multi-party collaboration on projects, and build local institutional capacity among private and public partners.
- Public education is essential to achieve these improvements for wetlands over time. Public involvement will help generate funding for wetlands, create buy-in for public investments, and educate people about the natural benefits provided by wetlands. As a result, people will be more likely to offer stewardship and change land use behavior that causes stresses on wetlands.
- In order to set parameters and monitor progress toward desired conditions, it will be important to establish appropriate and targeted water quality standards for wetlands.

**What other projects that are currently in progress or on the drawing board could benefit from this information?**

There are many other WAPs in progress in New Mexico and the groups that are developing those WAPs can benefit from the experiences of developing this Wetlands Action Plan. The geohydrology study is timely because groundwater dependent wetlands are declining throughout the Southwest due to ground water pollution and withdrawal and the current drought.