

'How can we capture this landscape?'

Acequías

The lifeblood of New Mexico



Story by Will Keener • Photos courtesy of Denise Bleakly

It's a landscape of acequias and mayordomos, parcientes, traditional agriculture, heirloom fruit species tracing from Mexico to Iberia, historic buildings, herbal remedies, invasive species, and much, much more. For the past few years, Sandia's Denise Bleakly (6453) has devoted a significant part of her life away from the Labs trying to capture it.

Not with artist's colors, although she is a painter. Not with photographs, although she does wield a digital camera. Instead, Denise works through the technology of Geographic Information Systems data and multilayered maps that help nontechnical viewers understand the rich heritage of northern New Mexico.

Her enthusiasm for a project she first thought about after reading an article about a heritage apple orchard in the Sunday newspaper has begun to spread to others in some of the communities where she has spent time mapping, photographing, and speaking.

"This project is really about water, economic, and agricultural sustainability," she says, noting that her focus quickly switched from the orchard to the broader system of delivering water through hand-built canals, or acequias. "The acequia has a key role in a culture that is tied to the land. Sharing water is the oldest form of democracy in the US." The acequia approach of proportionate use, based on the water available in a given year, is very different from the water system imposed by later settlers in the West, where first claimants got priority water rights they were not required to share, she explains.

Labor of love

Describing it variously as her "midlife crisis project" and a "labor of love," Denise has found herself working with members of local acequias (parcientes), university professors, students, agricultural experts, and a cross section of interested community members.

One of the first of those acquaintances was Estevan Arellano, mayordomo (caretaker) of the Acequia Junta y Ciénaga, writer, translator, and community activist. Arellano still lives on part of the Embudo Land Grant, deeded to his ancestors in 1725. Another was Ron Walser, fruit specialist with New Mexico State University's Cooperative Extension Service. Walser and Arellano were trying to organize volunteers to start a "heritage orchard" with 22 varieties of historic fruit trees in a field behind the Embudo Public Library.

When Denise read of the work, she approached the two about her idea. "I realized this was an inherently geographic problem," she says.

Supporters of the orchard hadn't considered mapping until Denise suggested it. Arellano invited her to a conference where she discussed her idea. "It was a new concept for acequia documentation. It allows you to document physical setting, cultural aspects, geography, agriculture, invasive and native species, and historic sites," says Denise. She recognized that the project could encompass the Rio Grande Valley and the Camino Real from Mexico City, as well.

Showing potential

Arellano liked Denise's idea from the start. "I thought it had a lot of potential," he says. "Denise has been an invaluable resource for our acequia; she opened our eyes to the importance of mapping our environment." One of the successes for Denise was interesting two professors and their students from Woodbury University in California in the acequia system. Arellano says. Landscape architects Peter and Hadley Arnold from Woodbury designed a mini-course and brought 10

students to map, measure, and photograph the acequia, learn about it, and record their observations.

"It all started from Denise's efforts as a geographer," he says. "She has been a great inspiration and she is always willing to come up here and participate in our activities."

After several trips to gather data and work with student volunteers, Denise has pulled together a working multimedia map. Denise demonstrates the prototype on a laptop computer at her kitchen table. She begins with a base map using information from conventional maps, aerial and historical photos, and GPS data gathered in the field. The idea is to add multimedia layers, with photos, sound recordings, and video. She points to dots along the acequia, which link to photos and further information including names, locations, and dates of the photos.

"Our approach is to try to make the information easy to share. We're asking how can we organize and share the information with a wide audience?" The multimedia map uses a web browser interface to allow many people to use the information. She clicks on another spot on the map and a photo of wild asparagus along the ditch appears. Then, an irrigation gate under repair, and next a heritage apple tree near the acequia.

"It's a trial-and-error process at this point," Denise says. "We're trying to answer the question 'Can we make it usable for nontechnical people?'" The idea has continued to grow, and this summer two workshops in northern New Mexico will address acequia documentation and community-based mapping techniques.

World Heritage sites

"The project is significant because it will serve as a pilot to a larger documentation project sponsored by the New Mexico Acequia Association in preparation for the nomination of the acequias of the upper Rio Grande as UNESCO World Heritage sites and other similar designations as historic and cultural resources," says José Rivera, a professor at UNM and member of the Acequia Documentation Working Group. Several UNM professors are serving on a working group with the New Mexico Acequia Association, Denise, and New Mexico Highlands University. This group has agreed to adopt Denise's Embudo multimedia map as the template to conduct other projects throughout the acequia landscapes of northern New Mexico.

"All of this came about due to the efforts of the Embudo team headed by Estevan Arellano as the project coordinator and Denise as the volunteer mapping specialist," says Rivera. "With the advance work they have already accomplished, and the model developed, the working group has been able to get a jump start on the more comprehensive documentation project at other sites."

So far Denise's work has been totally on a volunteer basis, although there are some possible avenues for Sandia support through community or small business programs. Denise came to Sandia in 1991 as a GIS specialist for the Environmental Restoration project. Later she migrated to security, where she works in support of the DOE's Office of Secure Transportation. She has applied GIS technology to a range of Sandia projects, is an informal point of contact for geospatial work at the Labs, serves as a member of a GIS steering committee for DOE, and is one of 1,250 certified Geographic Information Systems professionals in the US.

"It's good to see others becoming involved, so my relationship can evolve into more of a consultant role," she says. "For me, it's my way of giving back to the community. My job is done when other people start being involved in documenting the acequias."



SCENES FROM ACEQUIAS (clockwise from upper right): A water-filled acequia; flume for directing water; apple tree; shrine; heritage apple orchard; Denise Bleakly (right) with University of New Mexico students from the Acequia Field Study class. The long-term goal of the Acequia Junta y Ciénaga Mapping Project is to capture the photos, maps, video, sound, GPS data, and information on the biological, physical, and cultural characteristics of the area in a multimedia presentation.

