

Rio Grande Basin Initiative

OUTCOMES

Joint conference set for April 12-14

Experiment Station, Extension team with other Rio Grande initiatives

The Texas and New Mexico Agricultural Experiment Stations and Cooperative Extension together with the Texas State University System and the University of Texas will host a joint project conference for the three Rio Grande Basin initiatives April 12-14, at Sul Ross State University in Alpine, Texas.

The Texas and New Mexico Experiment Stations and Cooperative Extension will represent the *Efficient Irrigation for Water Conservation in the Rio Grande Basin* initiative. The University of Texas will represent the *Physical Assessment Project*, and the Texas State University System will represent the *Sustainable Agricultural Water Conservation in the Rio Grande Basin* initiative.

B.L. Harris, project director for the Rio Grande Basin Initiative of the Texas and New Mexico Agricultural Experiment Stations and Cooperative Extension, said the agencies and universities joined together this year for a conference that truly promotes interaction of project personnel and facilitates collaboration for water conservation efforts in the Rio Grande Basin.

Each group will highlight accomplishments to date for their respective projects and provide interactive discussions for future plans. Agency representatives, and state and federal legislators will also address the conference and participate in collaborative discussions.

The early registration fee is \$100. Registration forms, driving directions



April 12-14
Sul Ross State University
Alpine, Texas

Early Registration: March 11
<http://riogrande.tamu.edu>

and lodging information are online at <http://riogrande.tamu.edu>. The early registration deadline as well as the deadline for reserving hotel rooms with the group rate is March 11. Those planning to participate in the poster session should also reserve their space by March 11.

A field tour of the O2 Ranch is being offered on Thursday, April 14. The fee of \$20 includes a box lunch during the tour of the 256,000-acre ranch located in southern Brewster and Presidio counties.

For more information, go to <http://riogrande.tamu.edu>.

Data for RG counties a click away

Interactive, Web-based maps and analysis services created

by Jenna Smith

Data for Texas counties along the Rio Grande are now available at your fingertips.

Interactive Internet-based mapping and analysis services have been developed for several counties, ranging from El Paso County at the northern tip of the river to Cameron County where the river empties into the Gulf.

Raghavan "Srini" Srinivasan, professor and director of the Spatial Sciences Laboratory (SSL) at Texas A&M University, Jennifer Jacobs, research associate with the SSL, and a team of investigators used ArcIMS software to gener-

ate the interactive maps.

"ArcIMS is an Internet mapping service that provides a means of disseminating interactive maps via the Internet," said Jacobs. "These maps provide increased stakeholder access to data."

"The maps serve as a repository for all natural resource information for anyone interested in the county. It allows county residents to learn more about where they live."

To date, 16 Texas counties have been analyzed and mapped. Stakeholders can access and identify environmental, natural resource, socio-economic and health-related information for each individual county.

B.L. Harris, project director for the Rio Grande Basin Initiative, said the maps provide stakeholders with the latest resource and census-based information on a common scale, allowing them to make decisions on program needs for a specific area.

"The maps serve as a repository for all natural resource information for anyone interested in the county," said Harris. "It allows county residents to learn more about where they live."

Outside industries and companies will also use the information to assess opportunities for products or potential locations within the counties. By using demographic data, companies can target programs to specific economic or ethnic groups.

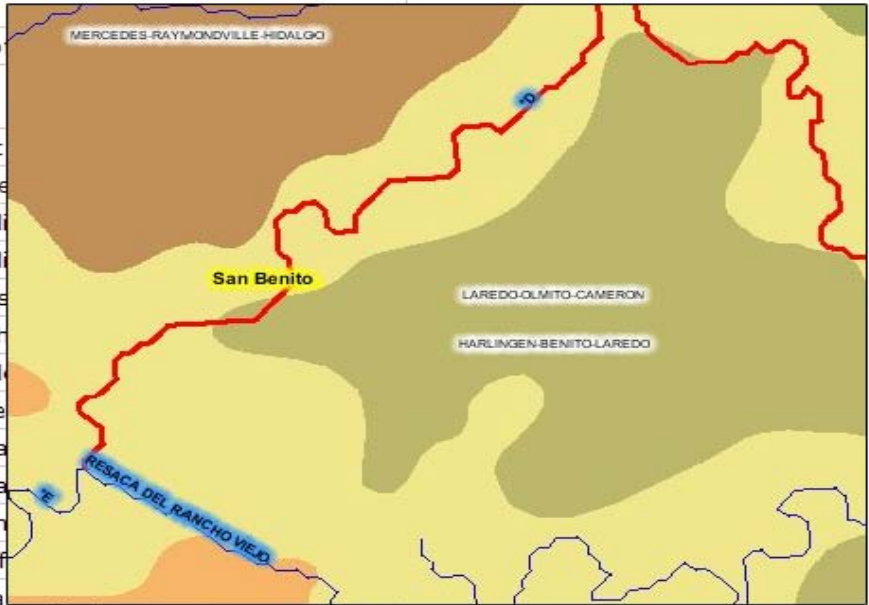
"This project began as an outgrowth

ArcIMS is a powerful GIS application that allows users to manipulate GIS data in several ways. Users can:

- View information about various data layers, such as watershed boundaries, major and minor aquifers, and roads.***
- Find a city, stream, soil type or road.***
- Build unique geographic queries to pinpoint locations.***
- Locate an address, measure distances, and create buffers around specific features.***
- Create and print custom maps, complete with titles and legends.***

Rivers and Streams Metadata

Field Name	Description
Primary Name	Primary name of reach
HUC	Hydrologic Unit area
Segment Number	Reach segment number
Sequence Number	Indicates the reach sequence
Reach Flag	Value of "1" indicates a main stem reach
Start Flag	Value of "1" indicates a headwater reach
Type	Type of reach segment
Segment Length	Length of reach segment
Level Order	Reach level order
Junction Number	Junction number
Path Mile	Path mile of reach segment
Upstream Distance	Mileage upstream from headwater
Upstream Direction	Upstream reach direction
Primary Code	Primary code of reach
Downstream CU	Downstream catchment unit
Downstream Segment	Downstream reach segment number
Mean Flow	Mean flow of reach in cubic feet per second
7/10 Flow	Stream flow of reach at 7/10 low flow
Velocity at MF	Stream velocity in reach at mean flow
Velocity at 7/10	Stream velocity in reach at 7/10 low flow
Reach Number	Number of reach



of the Rio Grande Basin Initiative and a need to have a better description of water resources and related resources," said Harris.

"No additional software or training is needed for viewing these maps. Anyone can have access this data with just a click of a button."

"By developing innovative products such as this, we can see if there is interest in adopting similar technologies across the state."

The SSL has already begun collecting health data in the counties to add to the

maps. "The health information will hopefully help reduce the incidence of diseases because health officials will be better able to plan for them," said Srinivasan.

Currently, map demonstrations have been given to all Extension county executive directors and district administrators in both urban and rural areas of Texas.

"No additional software or training is needed for viewing these maps," said Jacobs. "Anyone can have access to this data with just a click of a button."

Access the mapping service through the Rio Grande Basin Initiative Web site at <http://riogrande.tamu.edu>. Or, go to the Spatial Sciences Laboratory Web site at <http://www-ssl.tamu.edu>.

The screen image above shows a map of Cameron County with the information available for any river or stream.

Sports field gets water makeover

Subsurface irrigation system uses up to 50 percent less water

by Kevin Robinson-Avila

Next spring, the Demons baseball team at Santa Fe High School will play on lush green turf for the first time in four years.

The grass died in 2001 when drought forced the city to restrict water use. But in September, Demons coach John Morrison installed a water-saving subsurface irrigation system recommended by New Mexico State University (NMSU).

"The students are really excited about playing on grass fields again," Morrison said.

"Last season they played on weeds that masqueraded as grass. The outfield was a mess, with lumps here and clumps there. If we hadn't installed this new watering system, we'd be better off playing on dirt."

percent less water on average than sprinklers," Leinauer said. "During the hot summer months, the system uses up to 50 percent less water, and the turf still looks great."

"The subsurface system uses about 40 percent less water on average than sprinklers. During the hot summer months, the system uses up to 50 percent less water, and the turf still looks great."

The system is similar to subsurface drip tape, used to soak plant roots. But instead of tape, the new system relies on a network of pipes with small spouts that irrigate underground, Leinauer said.

"We waste so much water by irrigating with sprinklers," Leinauer said. "With New Mexico's gusty winds, using a sprinkler is like throwing water into the air and hoping it hits the ground. Most of the time we're watering sidewalks, houses and walls, not the grass."

The system has been installed at two other locations in New Mexico—a high school in Dexter and parts of the county fairgrounds in Las Cruces, Leinauer said.

"We want to show that New Mexico can maintain natural turfgrass without using obscene amounts of water," Leinauer said. "The Demons baseball field could be an excellent example for other schools and institutions."

City and school administrators originally suggested that Morrison put

From left, NMSU turfgrass specialist Bernhard Leinauer, research assistant Ty Barrick and graduate student Casey Johnson install a subsurface irrigation system on a test plot at Santa Ana Pueblo's Twin Warriors Golf Course.



The new porous pipe system is a subsurface irrigation method that turfgrass specialist Bernhard Leinauer is testing at NMSU's Fabian Garcia Science Center in Las Cruces as part of the Rio Grande Basin Initiative.

"The subsurface system uses about 40



From left, agricultural agent Patrick Torres, NMSU turfgrass specialist Bernhard Leinauer, Demons coach John Morrison and assistant coach Kyle Sager squat on the baseball infield at Santa Fe High School.

Following NMSU recommendations, Morrison installed a new subsurface irrigation system that uses up to 50 percent less water than sprinklers and low-water-use grass to help keep the field green, even in a drought.

Photos Courtesy of Kevin Robinson-Avila

down artificial turf after the grass died, but the coach objected.

"I'm a baseball purist who believes the game should be played on grass, not plastic," Morrison said.

Besides, artificial turf costs upwards of \$500,000 to install, compared with about \$23,000 for the subsurface system and reseeding the baseball field, Morrison said.

"We waste so much water by irrigating with sprinklers," Leinauer said. "With New Mexico's gusty winds, using a sprinkler is like throwing water into the air and hoping it hits the ground. Most of the time we're watering sidewalks, houses and walls, not the grass."

In addition, artificial turf lasts 10 to 15 years, and even though it's synthetic, the turf often must be irrigated in

summer to cool it because the plastic gets too hot to play on, Leinauer said.

To assure a steady supply of water, Morrison installed three underground storage tanks that capture rainwater from school rooftops and parking lots. The water harvesting system, which holds up to 60,000 gallons, costs \$215,000 to install, paid for with a grant from the New Mexico state legislature.

"One-quarter inch of rainwater will fill all three storage tanks," said assistant coach Kyle Sager, who helped install the irrigation and storage system. "We'll only use city water when the tanks are bone dry."

To cut water use even more, Morrison plans to seed the outfield with Riviera grass, a low-water use Bermuda grass recommended by Leinauer.

"Riviera needs 30 to 50 percent less water to stay green than cool-season

See **Baseball** on page 7

Households get water-smart

LRGV families install water-saving equipment as part of study

by Jenna Smith

Families in the Lower Rio Grande Valley have an opportunity to have water-saving equipment installed in their homes at no charge. This incentive is part of a study aimed at identifying the most effective way to teach people how to reduce the amount of water they use inside their home.

Janie Harris, housing specialist with Texas Cooperative Extension (TCE), and Extension agents in Hidalgo, Starr, Webb, Pecos and Val Verde counties are leading the Water Conservation Study. Fifteen families will participate in the study, three from each of the aforementioned Texas counties.

"Each county has already received an in-home water conservation education kit," said Harris.

"It includes the equipment, materials and resources necessary to help reduce

water usage within the home."

As study participants, the families will attend two water conservation educational programs put on by their county extension agent. They will also release their water bills for the months of January through April 2005 and allow TCE representatives to read their water meters. Five families will have water-conserving toilets, showerheads and aerators installed in their homes.

"Our goal from this study is to show how much a family of four can reduce their water consumption for a three-month period by installing water-saving equipment," said Harris. "In addition, we hope to determine which method of intervention results in the greatest reduction of water usage."

The study is expected to take six months to complete. Extension special-

A timer is one of the items included in the in-home water conservation kit being used by extension agents. Participants in the study are encouraged to take 4-minute showers.



ists in New Mexico have also requested in-home water conservation education kits for use in a duplicate study involving New Mexican homeowners. Specialists hope that by targeting homeowners across two states, more families will become involved with conservation efforts.

“Families participating in our study will not only learn to conserve water, but their water bill and sewer bill may decrease substantially. In addition, their house can have water-saving equipment installed at no extra charge. It’s a win-win situation.”

Participating homeowners not having water-saving equipment mounted in their homes will have the opportunity to do so once the study is completed.

Baseball

Continued from page 5

varieties like Kentucky bluegrass,” Leinauer said. “Riviera is cold tolerant, so it will withstand Santa Fe winters, and it’s a tough turf that will hold up under foot traffic. That’s essential for an athletic field.”

Leinauer has been testing dozens of grasses at locations around the state to identify varieties that use little water and that are salt tolerant and cold hardy enough to survive New Mexico’s winters and alkaline soils.

In September, Morrison temporarily seeded the outfield with a fast-growing perennial ryegrass. Riviera must be planted in June to get estab-



Water-saving showerheads are also included in the water conservation kits.

Photos Courtesy of Janie Harris

“Families participating in our study will not only learn to conserve water, but their water bill and sewer bill may decrease substantially,” said Harris. “In addition, their house can have water-saving equipment installed at no extra charge. It’s a win-win situation.”

lished, so Morrison will replant the outfield next year. The infield, however, is covered with a mixed sod that includes fescues, rye and bluegrass, Morrison said.

With the field’s water-saving makeover, Morrison expects the Demons to play on natural turf for years to come.

“The combination of low-water-use turf, subsurface irrigation and rain-water storage tanks will make our baseball field close to self-sufficient,” Morrison said. “I think with all this we’ll be able to ride out a drought. Come what may, we’ll have grass.”

Increasing Irrigation Efficiency in the Rio Grande Basin through Research and Education

Through Extension and research efforts, the Texas A&M University System Agriculture Program and the New Mexico State University College of Agriculture and Home Economics are implementing strategies for meeting present and future water demand in the Rio Grande Basin. These strategies expand the efficient use of available water and create new water supplies. This federally funded initiative is administered by the Texas Water Resources Institute and the New Mexico State University Water Task Force with funds from the Cooperative State Research, Education, and Extension Service.

Rio Grande Basin Initiative Outcomes
February 2005, Vol 4. No. 1

B.L. Harris, Project Director,
Associate Director,
Texas Water Resources Institute

Craig Runyan, Project Director,
Water Quality Coordinator,
New Mexico State University Plant Sciences

Send comments or subscription requests to
Outcomes Editor, Texas Water Resources Institute,
2118 TAMU, College Station, Texas, 77843-2118.
Call (979) 845-1851 or e-mail
riogrande@tamu.edu.

<http://riogrande.tamu.edu>

This material is based upon work supported by the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture under Agreement No. 2003-34461-13278 and Agreement No. 2001-45049-01149.



Texas Water Resources Institute
1500 Research Parkway, Suite 240
2118 TAMU
College Station, Texas 77843-2118

Nonprofit Org.
U.S. Postage
PAID
College Station
Texas 77843
Permit No. 215