

# THE MAP LEGEND

Est. 1984

NMGIC, Inc. PO Box 9445 Albuquerque, NM 87119-9445

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## Climate Variability and Water Management Strategies in Southwest Pueblo Cultures

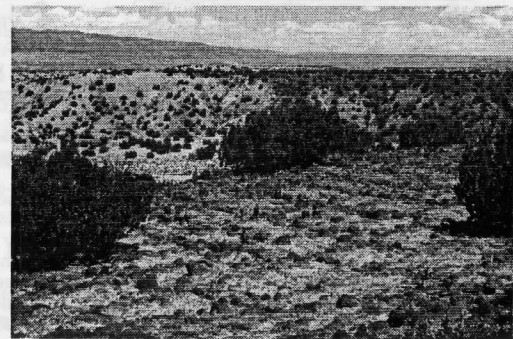
For over 10,000 years, indigenous peoples have adapted to the arid and varied environments of the Southwest. By developing surface water technologies that were compatible with generations of acquired ecological knowledge and other environmental and societal coping strategies uniquely suited to survival in the Southwest, these peoples developed some of the most complex and sophisticated societies in the Western Hemisphere. This research investigates how remote sensing and spatial analysis technologies can be modified and integrated into modern tribal cultures and urban settings to generate sustainable, culturally appropriate life styles in the region. It may be possible to resurrect and/or to reengineer these early strategies to fit projected climate variability and climate change scenarios over the next century.



*Grid garden*

For example, water harvesting and management strategies played a seminal role in developing Southwest indigenous cultures. Among the most important strategies were those designed to capture runoff for distribution to agricultural fields. These strategies are found throughout the region from the Tohono Oodham (Papago) Homelands of southern Arizona to the Anasazi of the San Juan Basin and the Pueblo Homelands of the Rio Grande. They took several forms: (a) canalization (Hopi), (b) impoundments (San Juan Anasazi, Papago), (c) diversions (Chaco Anasazi), and (d) in situ storage such as pebble-mulch fields and grid gardens that conserved rain and snow fall for use during the growing season. Each of these practices is suited to specific environmental situations, and each left distinctive imprints on the landscape.

Remote sensing technologies, coupled with modern GIS, should be able to identify these imprints and environments. The overall objective for the past summer was to identify and assess the role these strategies played in the past in order to begin an appraisal of their potential for the future. The potential for modernizing and reestablishing these technologies may be substantial. The distribution and location of pebble-mulch and other traditional water management systems may play an important role not only in rehabilitating successful technological systems, but also serving as indisputable evidence of previous indigenous use of both land and water resources. The stimulus for the assessment of these practices comes from climate modeling scenarios that project warmer summers, somewhat wetter winters, and consequent shifting patterns of resources over the next century. These changes will not be uniform over the region. Each tribal area will be affected somewhat differently, as will all cultures in the Southwest.



*Pebble-mulch field*

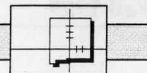


During June and July, 1999 five Native American students – Christopher Toya (Jemez), Mary Lynn Schildt (Zia/Blackfeet), Manesseh Begay (Diné/White Mountain), Ursula Hudson (Diné), Celina Kahn (Diné) worked with a team of researchers from the Earth Data Analysis Center (EDAC) at The University of New Mexico. EDAC is engaged in a 3-year project sponsored by NASA's Earth Science Enterprise, Office of Applications, Commercialization, and Education (ACE) to address the Southwest element of the Native Peoples/Native Homelands sector of the National Assessment for Climate Change and Climate Variability. The University of New Mexico - Preparation for University Research of Stu-

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# THE MAP LEGEND



Editor: Amy Budge

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## From the President

These are exciting times for New Mexico's GIS community. We are an active, vibrant group, who are reaching out to share data, express concerns over data quality and other issues, and are seeking to reduce redundancy and the need for each one of us in our little GIS "sweat shops" to keep reinventing the proverbial wheel. I am speaking of course on the reenactment of the GIS Advisory Committee (GISAC) within state government circles, and on the hopeful retooling of NMGIC's GIS Committee (GISC). By the time you read this, a revitalized GISAC will have held its first organizational meeting on October 13th in Santa Fe. Perhaps you are already in the know and participated. For those of you who are interested but lagging, let me take this opportunity to fill you in.

Many of you will recall, and have participated in, the old GISAC. While this was before my time, I understand that the old GISAC was an excellent forum for sharing ideas, sources of data, and general networking. It gradually fell into inactivity in the mid-1990s and was apparently sorely missed. Earlier this summer Dr. Lisa Warnecke drafted a summary document on GIS in New Mexico for the Western Governor's Association, NASA, and the National Conference of State Legislatures entitled, "State Geographic Information and Related Technology (GI/GIT) Profile: New Mexico." This led Dr. Paul T. Cunningham, the Governor's Science Advisor and Ms. Jennifer Salisbury, NM Energy, Minerals, & Natural Resources Department Secretary to establish a GIS Task Force for the state's Information Technology Commission (ITC) to assess the status of GIS in New Mexico state government. At the first Task Force meeting while reviewing what the overall goals of the Task Force were to be, someone spoke up and said, "you know, what we're proposing here sounds exactly like the old GISAC!" The Task Force met three times over the summer, "to recommend GIS policies, standards, and management of databases; propose legislation, if needed; explore funding mechanisms; present a snapshot of what is currently available; and recommend a structure for coordination that ensures it [will be] ongoing [in nature]." The Task Force made six recommendations to the ITC which basically established a new and expanded GISAC. The new role of GISAC includes, but is not limited to, advisory, coordination, and administrative functions. These functions relate specifically to GIS within state agencies, but will impact other GIS activities in the state. New Mexicans in all branches and units of government (state, local, COGs, tribal, federal) are encouraged to participate in GISAC. So, get involved! For more information, contact Mike Inglis, EDAC at [minglis@spock.unm.edu](mailto:minglis@spock.unm.edu).

While I have your attention, I would like to raise one other issue; namely federal GPS funding budget cuts. While Congress has been busy posturing back and forth this summer on how many billions (3 to 9, if I recall correctly) to give back to Americans in the form of tax breaks, they cancelled funding increase to expand the civilian service capacity of GPS. What we're talking about is the \$17 million required in FY00 for GPS Modernization which was zeroed by both the Senate and House Appropriations Committees, and the \$10.4 million request for Nationwide Differential GPS (NDGPS) that was zeroed by the House and reduced to \$5 million in the Senate. The benefits these two programs bring to all New Mexicans are profound. GPS Modernization would provide more robust and accurate positioning, signal strengths six times greater than the current civil signals, and expanded ranges of differential GPS sub-meter accuracies from 6 to 12 miles to up to 100 miles. NDGPS would bring 1-2 meter real-time accuracy resolution that has been established along the Nation's coasts and navigable rivers by the U.S. Coast Guard into the interior and into New Mexico. Just imagine the benefits this would have for NM emergency services and enhanced E911!

Since one of NMGIC's goals is to make informed recommendations to the Governor and to the Legislature, I felt that it was critical that we expand our role in this case to include the U.S. Congress. On behalf of the NMGIC Board, I sent email, faxes, and snail mail to all five members of our New Mexican constituency, urging them to consider the implications that these funding cuts would have on the NM GPS community and to New Mexicans at large. I have to tell you, the results of my efforts, at the time of this writing, are pretty abysmal. I received one personal response from an aide of Tom Udall's assuring me that the Congressman would be informed of our organization and of its position in this matter; one canned response immediately bounced back after my email to Heather Wilson; and nothing, *nada*, from the rest of the sorry lot! I guess you could say I'm a little jaded, but this just smacks of Washington business-as-usual to me. Oh well, just wanted to let you all know that we, your elected constituents of NMGIC, will continue to fight the good fight and keep your interest forefront.

*Dave McCraw, President*

## The Map Legend 2000 Publication Schedule and Deadlines

Winter Issue	Deadline for articles: January 15, 2000 Publication date: February 15, 2000
Spring/Summer	Deadline for articles: May 15, 2000 Publication date: June 15, 2000
Fall Issue	Deadline for articles: September 15, 2000 Publication date: October 15, 2000

Editors of *The Map Legend* are looking for articles describing ongoing, recently completed, or recently awarded projects. "Newsy" items on your organizations, accomplishments of your personnel, event/meeting announcements....are all welcome. Your contributions should be sent to Amy Budge either by fax (505-277-3614) or by email to [abudge@spock.unm.edu](mailto:abudge@spock.unm.edu) by the deadlines.

**Do you have information about a project, new techniques, GIS and related issues, announcements, news, etc. that you would like published in the Map Legend?**



(Continued from page 1)

dents in Undergraduate Education (PURSUE) program provided an important opportunity for five Native American Students to participate in unique and important research that is directly related to their cultural heritage. The Native Peoples/Native Homelands Initiative includes a 3-year task to assess ancestral and traditional water conservation and management technologies employed by indigenous peoples as a means for evaluating climate change impacts on modern regional cultures. The aim is to understand past environmental coping strategies to understand better how to plan future sustainable economic development in the arid Southwest over the next century.

Research conducted during the summer field season included: field reconnaissance, mapping, and photodocumentation of pebble-mulch fields at the ancestral sites of San Marcos and Poshungue Pueblos; grid gardens on Picuris and Zia Pueblos; and a large dam and canal system on Navajo Nation lands near Newcomb, New Mexico. In addition, the student researchers conducted literature research on environmental and historical backgrounds of the investigated sites, received hands-on introduction to GIS, GPS, and remote sensing technologies as research tools, and conducted ethnographic interviews of tribal members from their own communities.

An important part of the assessment phase of the Native Peoples/Native Homelands project

is the assessment of spatial technologies as they apply to the investigation of impacts of climate change on ancestral Puebloans. Hyperspectral imagery and terrestrial characterization were applied in concert with Dr. Barry Rock from the University of New Hampshire. The terrestrial characterization was conducted to provide field verification for hyperspectral airborne MODIS imagery of the San Marcos Pueblo region. Hyperspectral characterization at Poshungue and Zia Pueblos was also undertaken.

Climate variability and climate change scenarios over the next 30-100 years project warmer summers and slightly wetter winters in the Southwest, but the trends are not uniform throughout the region. Because Federal law fixes boundaries of Native American Reservations, strategies for long-term economic development must account for the possibility of changing environmental regimes on lands within those boundaries. The Reservations cannot move. Some environmental conditions will improve, but others will deteriorate. Some of the identified impacts of these changes are of sufficient magnitude that they will require significant changes in current life styles for Native and transplanted cultures alike. The present project attempts to identify traditional strategies that may well serve the descendants of the ancestral Pueblo within these circumscribed environments.

*Submitted by Rick Watson*

## ISC and WRRI Join Together to Provide GIS Mapping Support for State Water Planning

The New Mexico Interstate Stream Commission (ISC), which oversees the regional water planning program in New Mexico and provides grants to local groups to undertake water planning in their region, contracted with the New Mexico Water Resources Research Institute (WRRI) to provide GIS mapping products to complement water planning efforts around the state. The ISC and WRRI are collaborating on setting standards and basic map requirements. Regional water planning groups can develop their own maps using established basic requirements and standards, or elect to use this new service. This program will make heavy use of the Resource Geographic Information System (RGIS) clearinghouse data and requires any new GIS coverages developed to follow FGDC-compliant metadata standards. The ISC will benefit from this program by having regional water plan map information compatible among the various regions. This in turn facilitates assimilation of regional mapping information and products into a state water plan.

*Submitted by Bobby Creel, WRRI*



## RGIS Affiliate Program A Distributed Network of Spatial Data and Information

RGIS has initiated an Affiliate Program as part of an on-going effort to promote understanding and use of spatial data throughout New Mexico. This family of Affiliates will consist of a wide range of organizations, which are diverse in expertise, and which are actively using GIS and creating spatial data or serving as information resources. The Affiliate network will include research institutes, libraries, and other organizations developing and serving spatial data. One of the primary goals for establishing the Affiliate network is to make RGIS data and information more accessible to the GIS community and the general public. The affiliates not only will serve as a conduit for access to RGIS data, metadata, technical support, education, and training, but they will also make the pool of data and metadata in the State richer by providing access to data, information, and services offered by their respective organizations.

Negotiations are underway with the New Mexico Water Resources Research Institute and the New Mexico State Library to establish the first Affiliates. Watch the RGIS web site at <http://rgis.unm.edu> for developments on this program.

*Submitted by Mike Inglis  
RGIS Program Manager*





## U.S. Names Board Sometimes Has Difficulty Deciding

Sometimes the U.S. Board on Geographic Names (USBGN) decides not to decide. That occurred with two cases on the USBGN's agenda at the Council of Geographic Names Authorities (COGNA, formerly the Western States Geographic Names Conference) meeting recently in Spokane, WA. One of those cases was from New Mexico.

Ben Montoya of Belen wanted to recall his family's history by having two features in the Gila Wilderness—Montoya Homestead and Montoya Pasture—formally recognized. The names have been used in the Gila Country since 1901 when Montoya's grandfather, Donaciano Montoya, homesteaded there. The USBGN had earlier approved Montoya Homestead, but Montoya Pasture....

The NMGIC Geographic Names Committee (GNC) researched the names and concluded the names were indeed in local usage and at its meeting August 20 listened to a convincing presentation by Ben Montoya, followed by a unanimous vote to recommend approval of Montoya Pasture. The GNC had earlier sought the opinion of the Catron County Commission, which also recommended approval.

The Gila National Forest, however, had reservations, and while they formally recommended approval of Montoya Pasture, their support was not unanimous. When it came down to a vote in Spokane, it was 2 to 2, and the USBGN chairman chose to put the issue off until the full board was present.

The Montoya Pasture case, however, was simple compared to the case of Hangman Creek versus Latah Creek, southeast of Spokane. The name Hangman recalls an incident during the Indian wars of 1850 in which an

Army colonel hanged several Indian leaders—not exactly the Army's finest moment. The name Latah is the Nez Perce word for the creek and means "pine and pestle place." But after agreement as to those meanings, consensus ceases.

The Washington names board, the city of Spokane, and the Washington legislature want the name changed to Latah, as do the local Coeur de Alene Indians, who say some of their people were hanged. But the Idaho names board and the Yakima Indians, whose primary leader was among those hanged, want Hangman retained, saying a change would erase history and dishonor a now-sacred site. After hours of discussion and impassioned presentations, the USBGN decided not to decide—for now.

### *The "S" Word....*

Although the Arizona names board, after intense controversy, voted to retain the name Squaw Peak on a feature in Phoenix, the days of the word Squaw in geographic names appear numbered. In Spokane, a Coeur de Alene tribal representative spoke passionately about the negative connotation the word has among Indians and asked if the non-Indians present would like their wives or daughters called squaws.

State legislatures, such as that in Minnesota, have mandated elimination of the word in geographic names, and the attrition likely will continue nationwide. Fortunately, New Mexico has but 16 Squaw names, and none on major features.

### *GNIS and GIS....*

The Geographic Names Information System (GNIS) database, the searchable repository for the nation's names and variants, along with coordinates, map names, and other information, now is downloaded about 100 times per day!

Undoubtedly, most of these are by GIS users, and some discussion occurred in the conference halls at Spokane about establishing links to the GIS community. Richard Witmer, USBGN vice chairman representing the Interior Department, also is active in the National States Geographic Information Council and sees that group as possibly becoming a bridge.

To make GNIS more useful to GIS users, GNIS soon will have decimal degrees for



feature locations, as well as the traditional degrees-minutes-seconds lat-long locations.

But don't go to GNIS to look for caves. USGS is firm in its policy that cave names and locations will not appear in GNIS or USGS quads. No exceptions. If you search in GNIS on Carlsbad Caverns, you'll get Carlsbad Caverns National Park—but not the caverns themselves.

### *Names in Wilderness Areas...*

Roger Payne, USBGN executive secretary, reminded everyone that while the policy discouraging names in formally designated wilderness areas remains controversial, it applies only to new names and does not apply to names that appeared on maps or in texts before the area was designated a wilderness. Nor, he added, does the policy apply to changes of existing names.

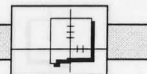
### *Weirdness....*

It just wouldn't be a names conference without a taste of the outrageous and bizarre. For example, the USBGN recently approved the name John Paul Ridge for a feature in Utah. The name recalls John Paul Jones, a Utah native active in the mountain activities who was killed in WWII. One reason for formalizing the name was that people ignorant of the name's history have been recalling another John Paul—and calling it Pope Ridge.

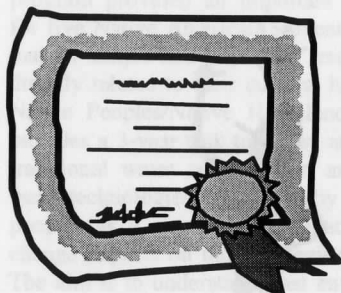
And the USBGN is seeking advice as to whether acronyms should be allowed in geographic names. If you have an opinion about this, please contact me. But do not propose calling a mountain NMGIC Peak—and especially not in a wilderness area!

*Bob Julyan, Chair  
Geographic Names Committee*





## City of Santa Fe's GIS Section Receives Distinct Honor



The City of Santa Fe, Geographic Information System (GIS) Section has been selected from over 100,000 organizations worldwide to receive a Special Achievement in GIS award at the 19th Annual Environmental Systems Research Institute (ESRI) User Conference, July 29, 1999, in San Diego, California.

The ESRI Special Achievement in GIS award is given to organizations in recognition of their outstanding work in the field of GIS. The ESRI award represents a seven year quest of the city's GIS to build a computerized mapping and analysis data system that is available to City staff and the public.

According to Gar Clarke, Director, City of Santa Fe GIS Section, "we've created a type of *smart map*. This computerized mapping technology helps us analyze and develop solutions relating to city land use issues," Clarke said.

The city's GIS Section develops more than quality maps. GIS supports systematic land use analyses that was used extensively to develop the city's General Plan; justify the need for a south side fire station; redistrict trash pick-up routes; and create accurate data for city utility rehabilitation efforts.

In 1992 Santa Fe was the first municipality in New Mexico to acquire computerized aerial photography and will be acquiring digital airborne imagery of the City and surrounding planning areas in 2000. Development of this technology will coincide with the city's effort to provide these data on the Internet.

The merit for this award goes towards continuous support from successive city administrations, the GIS Technical Team and committed staff members representing every department within city government who have met monthly for seven years.

For more information contact Gar Clarke, Manager, City of Santa Fe GIS Section at 505-984-6603.

## Congratulations!

## NRCS Updates Hydrologic Unit Maps

A nation-wide effort by the Natural Resources Conservation Service (NRCS) will update all existing Hydrologic Unit (HU) maps. New Mexico is divided into eighty-two hydrologic areas known as Cataloging Units. NRCS further subdivided the Cataloging Units into smaller drainages referred to as 11-digit map units. The current HU mapping project will define the 14-digit map units. Fourteen-digit drainages include hydrologic areas between 15 and 62 square miles. The 11-digit map units congregate the 14-digit units into areas ranging in size from 62 to 390 square miles. In turn, the 11-digit units are grouped to form the eighty-two Cataloging Units and so on, until the five 2-digit Regional Boundaries are formed for the Upper Colorado, Lower Colorado, Rio Grande, Arkansas-White-Red, and

the Texas-Gulf drainages.

Delineations for the revised map will be made at 1:24,000 scale, making this the most accurate state hydrologic unit map compiled so far. Attributes will include the HU numeric coding, a name, and size of each polygon. NRCS is working with several other federal agencies on the mapping project. The final product will be a seamless hydrologic unit map for the United States at 1:24,000 scale. The digital map layer will provide an excellent tool for watershed planning, evaluations, and resource assessments.

*Submitted by Dan Murray, USDA-NRCS*

## Help Promote GIS!

### Hold a GIS Day Event!!

GIS Day is November 19, 1999. The following short article about GIS Day was used by permission of the GIS Day Coordinator Ms. Contessa Serna:

GIS users and vendors are invited to join the National Geographic Society, the Association of American Geographers, and ESRI in opening their doors for GIS Day 1999. GIS Day will be held November 19, the last day of Geography Awareness Week. Since 1987, the National Geographic Society has sponsored Geography Awareness Week to promote geographic literacy in schools, communities, and organizations, with a focus on education of children. Geography Awareness Week will be held November 15-19, 1999.

GIS Day is a grassroots event that formalizes the practice of geographic information systems (GIS) users and vendors of opening their doors to schools, businesses, and the general public to showcase real-world applications of this important technology. The event is sponsored by the National Geographic Society, the Association of American Geographers, the University Consortium for Geographic Information Science, and ESRI.

If setting up an event seems daunting, the GIS Day web site can provide you all the materials needed to promote GIS Day: handouts, banners, examples of exercises to do with children, examples of events to be held. The point of this day is to try and raise awareness about GIS and its use in our lives.

To find out more about GIS Day, and how to sponsor an event, go to the GIS Day web site at <http://www.gisday.com/gisday/> or contact the GIS Day Coordinator, Contessa Serna at 909-793-2853, ext. 2533, 909-307-3051 (fax), or by email at [cserna@gisday.com](mailto:cserna@gisday.com).





## News from FGDC

(From the Summer 1999 FGDC Newsletter)

### 1999 National GeoData Forum

The 1999 National GeoData Forum, *Making Livable Communities a Reality*, was a great success. More than 460 participants made the forum a dynamic and forward-looking opportunity to explore critical issues in achieving more effective use of geographic information in our nation's communities. The forum, conducted in Washington, DC, June 7-9, began with keynote presentations by Secretary of the Interior, Bruce Babbitt; Morley Winograd, Director of the National Partnership for Reinventing Government; Congressman Paul Kanjorski; and Dee Hock, founder and CEO Emeritus of VISA International. The afternoon session included presentations ranging from a video envisioning a digital Earth to community leaders describing place and livability issues from their local perspectives. On the second day, seven concurrent breakout sessions, or *threads*, provided venues for discussing specific issues. The results of these thread discussions were woven into an executive summary report that was provided to all forum participants on the third morning. The forum concluded with a policy round-table, chaired by Congressman Kanjorski, where government, industry, tribal, and academic leaders expressed their perspectives and visions regarding the value and use of geographic information in communities.

During the forum, several other events supported the themes of livable communities and working together to ensure ready access to relevant geographic information. Demonstrations of GIS applications addressing community issues were conducted at the House Rayburn Building; the University Consortium for Geographic Information Science (UCGIS) showcased university GIScience research, education, and policy programs at the National Geographic Society; and the House Subcommittee on Government Management, Information, and Technology held a hearing on "Geographical Information Systems Policies and Programs." This hearing was one of the first congressional hearings to focus on GIS and spatial data, and it provided an excellent finish to the forum's whirlwind three days.

All forum participants contributed to making the meeting a stimulating, thought provoking, and future-focused event. Participants' responses to the meeting were uniformly positive, and there was great enthusiasm for carry-

ing forward the ideas and actions identified there. The forum summary graphic, presented and discussed on the final day of the meeting, captures the forum's flow and content. You are encouraged to use this graphic to help spread awareness and understanding of the forum and of the value of geographic information in addressing community issues. Although there are many more thoughts to consider, some of the major elements that emerged from the forum and the congressional hearing are listed here.

#### Bold Steps Identified in Forum Summary

- Demonstrate interoperability and integration in testbeds.
- Develop open geoprocessing interfaces.
- Increase data discovery and sharing through metadata and data standards.
- Catalogue case studies.
- Increase investment in decision support systems.
- Add educational experiences about geodata at all school/grade levels.
- Increase commitment for GIScience training.
- Publish funding mechanisms and options.
- Review economic dynamics of federal and private sector interaction.
- Update and revise the NSDI strategic direction.
- Establish a data requirements registry.
- Pursue "Chaordic™" organization discussed by Dee Hock.

#### Ideas that Emerged from Congressional Hearing

- Establish the NSDI as a national objective through legislation.
- Consider the need for a broader coalition of organizations that can guide the implementation of the NSDI.
- Establish a means for sharing best practices in geographic information and technology as a component of the NSDI.
- Promote locally-independent, region-

ally-coordinated geographic information processes as means of achieving national consistency.

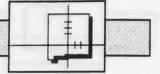
- Support local and state initiatives and provide incentives through activities such as the Community/Federal Information Partnership.

#### Further Steps

Detailed information on the forum will be provided through the FGDC web site at <http://www.fgdc.gov> and other mechanisms. The challenge in front of us now is to continue to move forward in addressing and implementing the many ideas and steps identified in the forum. To further communities' access to geoprocessing tools and geographic information, we will begin the following efforts:

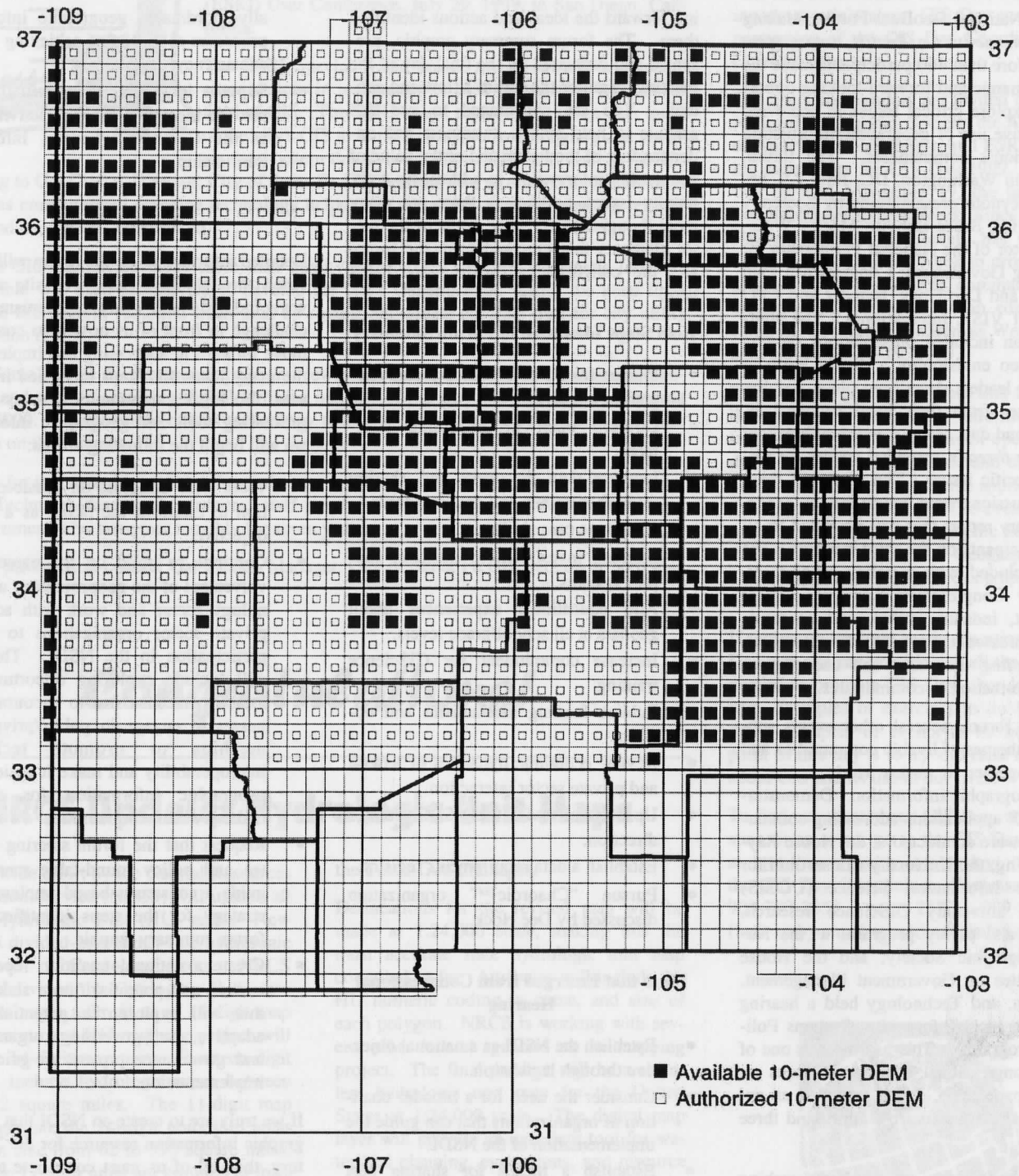
- Work with Congress on possible legislation to establish the NSDI as a national objective.
- Continue to build on the extensive involvement of the geoprocessing and technology sector and work with additional private sector organizations to broaden participation in the NSDI. This effort will include exploring opportunities to establish mechanisms to encourage businesses to engage in public/private partnerships to promote technology interoperability and make it easier to use geographic information for decision-making within communities.
- Request that the forum steering committee and policy round-table membership guide a consensus-based implementation strategy for the steps identified in the forum summary graphic.
- Create a national coalition representing current and potential future stakeholders that will explore the potential for an adaptive, self-governing organizational and governance process to guide NSDI implementation.

If we truly are to create an NSDI that is a geographic information resource for the 21st century, then all of us must contribute to its implementation so that all communities can benefit from its results.



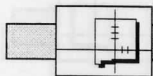
# Digital Elevation Model (DEM) Availability 7.5-Minute Series, 10-Meter Posting

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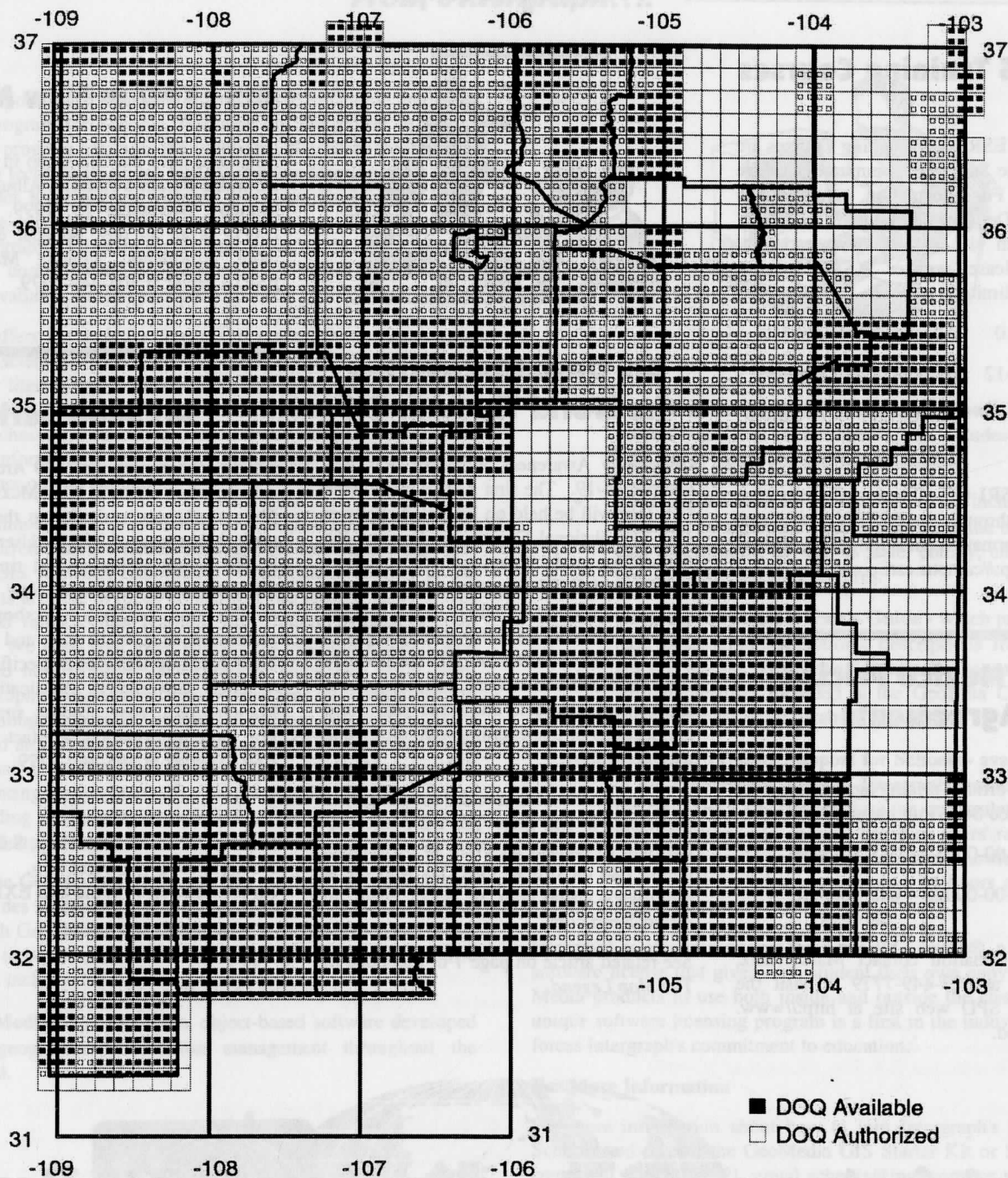
Prepared by USGS, National Mapping Division 09/13/1999  
Authorized data current As of 08/02/1999  
Available data current As of 09/02/1999



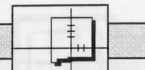


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### Digital Orthophoto Quadrangle (DOQ) Availability 1:12,000-scale



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## News and Announcements From Our Corporate Sponsors

### From ESRI....

#### ESRI GIS Training Courses

Instructor-led ESRI GIS Training Courses are available at the Santa Fe Community College in Santa Fe. For information, contact Paige Hayes, ESRI-Denver at 303-449-7779 or visit the ESRI web site at <http://www.esri.com/training>. Please register ASAP...training course size is limited.

November 8-10    Advanced ArcView GIS  
November 11-12    Introduction to Avenue  
December 14-17    What's New in ArcInfo 8

Web-based ESRI GIS Training Courses also are available through the ESRI Virtual Campus. For information visit the ESRI Virtual Campus at <http://campus.esri.com>.

#### New Mexico Pricing Agreements

ESRI has two official pricing agreements with the New Mexico State Purchasing Division.

SPD #00-000-00-00032 – GIS Software

SPD #92-000-00-00022 – GIS Support Services

For more information contact Mark Taetz, ESRI-Denver at 303-449-7779 or visit the New Mexico SPD web site at <http://www.state.nm.us/spd>.



#### GIS Day...Discovering the World Through GIS

Geography Awareness Week 1999 is November 14-19. The first annual worldwide GIS Day will be held on Friday, November 19. The National Geographic Society, the Association of American Geographers (AAG), and ESRI are sponsoring, promoting, and supporting this new, unique, worldwide event. GIS Day will be a global event in which users of GIS technology open their doors to schools, businesses, and the general public to showcase real-world applications of this exciting technology that uses geography.

GIS users in New Mexico are encouraged to participate in GIS Day. For more information and to register an event to participate, please visit the official GIS Day web site at <http://www.gisday.com> or send email to [gisday@esri.com](mailto:gisday@esri.com).

See related article on page 7 of this issue of *The Map Legend*.

#### GIS EXPO in New Mexico

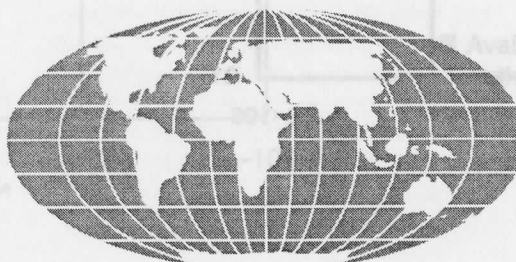
ESRI will have the GIS Expo in New Mexico at the Pyramid Hotel in Albuquerque on Monday, November 15, 1999. The GIS EXPO is an all day, no cost event. For more information, contact Mark Taetz, ESRI-Denver at 303-449-7779.

#### ArcShop Series

ESRI is conducting the 1999 ArcShop technical workshop series in New Mexico. An ArcShop workshop is similar to the ESRI Doctor's Office held at ESRI's User Conference. It will be scheduled several times a year at different locations around New Mexico. So far this year, ArcShop workshops have been conducted in Las Cruces and Farmington. Each ArcShop includes a specific focus, such as Local Government Applications, Internet Mapping/GIS, new product summaries, etc. For more information, contact Mark Taetz, ESRI-Denver at 303-449-7779.

October 1999    ArcShop, Santa Fe  
Nov. 15, 1999    ArcShop, Albuquerque  
(in conjunction with the GIS EXPO)

**Celebrate**



**GIS Day!**



## News and Announcements From Our Corporate Sponsors

### From Intergraph....

Intergraph Corporation announces an innovative education initiative, Intergraph's Program for Schools. Focusing on "The Power to Learn," the worldwide program enhances the traditional classroom environment by introducing technology-driven tools that make learning more interesting for grades K-12 and universities. Based on GeoMedia®, Intergraph's leading-edge geographic information system (GIS) family of products, Intergraph's Program for Schools gives teachers and students the power to communicate geographically. A free GeoMedia GIS Starter Kit is available for program participants.

The program offers the tools for students to explore the physical, natural, and social sciences; investigate characteristics and locations related to historical or literary topics; or represent mathematical and engineering problems visually with tables and charts. With Intergraph's revolutionary GIS technology, education professionals can bring geographic data, content information, multimedia, and popular office automation products together on one computer.

"GeoMedia technology has proven itself to be a great tool for the classroom," said Farrell Jones, Systems Manager for Louisiana State University's CADGIS Research Laboratory. "GeoMedia is so easy to use that our students are able to focus on learning the subject matter versus having to spend valuable time learning which button to push or command to enter. We have seen great enthusiasm from our students who now understand how to apply technology to solve real world problems." "Intergraph's Program for Schools broadens our commitment to education, enabling teachers and students to explore, discover and learn about the world around them through the use of GIS technology," said Preetha Pulusani, Executive Vice-president, Intergraph's Mapping/GIS Division. "By bringing this innovative program to the classroom, Intergraph is providing a hands-on introduction to the power of GIS in an educational and fun environment."

Intergraph's free GeoMedia GIS Starter Kit, available to program participants, provides students the opportunity to explore new frontiers in technology with GeoMedia. The GIS Starter Kit combines smart tools, allowing users to begin using GIS technology right out of the box. The GIS Starter Kit includes the following components:

- **GeoMedia** - the first open, object-based software developed for geographic information management throughout the world.



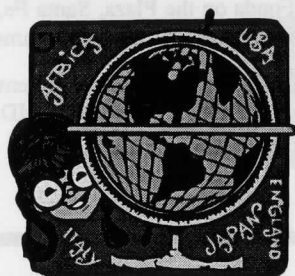
- **Learning GeoMedia Workbook for Schools** - which provides a quick start for all schools, and includes the GeoMedia Course Guide and self-paced tutorial.
- **GeoData for Schools CD-ROM** - which includes national and state cartographic feature layers and the on-line meta-data descriptions, as well as state, county, city, and location statistical attribute features.
- **GeoData for Schools User's Guide** - which provides database installation instructions; descriptions for the cartographic feature layer, index feature layers, and statistical attribute features included in the GeoData CD(s); and a data dictionary of all database features.
- **Technical Product Support for Schools** - available as part of the Program for Schools. Intergraph provides access to the GeoMedia Knowledge Base, an accumulation of technical questions and answers based on users' requests from around the world on the Internet. The Knowledge Base is free for all participating schools - 24 hours a day, seven days a week.

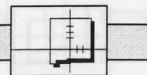
Intergraph is also introducing the Semester License®, a new type of software license that gives each student their own copy of the GeoMedia products to use both inside and outside the classroom. This unique software licensing program is a first in the industry and reinforces Intergraph's commitment to education.

#### For More Information

For more information about how to join Intergraph's Program for Schools and receive the GeoMedia GIS Starter Kit or Semester License call 256-730-7191, email [schools@ingr.com](mailto:schools@ingr.com), or visit the web at <http://www.intergraph.com/schools>. For information about Intergraph's mapping and GIS solutions, visit the company's website at <http://www.intergraph.com/gis>.

*Submitted by Shanthi Lindsey, Intergraph*





## Corporate Profile:



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Daniel B. Stephens & Associates is a full-service environmental consulting and engineering firm offering services to a variety of clients in both the private and public sector. We are an ESRI Authorized Consultant. Our specialty GIS services for environmental applications include:

- Development and management of environmental databases,
- Visualization and analysis of complex environmental data sets using 3D Analyst and, in particular, data sets used for environmental litigation,
- Development of custom analysis tools for environmental analyses using Avenue for ArcView GIS,
- Development of courtroom displays in support of environmental litigation using historical aerial photo overlays with contaminant distribution data to associate past process areas with present-day observed contamination,
- A variety of terrain analysis services using custom applications developed in Avenue for 3D Analyst and Spatial Analyst for ArcView GIS, offered primarily to the mining industry in support of reclamation activities, and
- Surface-water and watershed analyses using 3D Analyst and Spatial Analyst for ArcView GIS.



# Calendar



**Driven by Data: An Advanced Symposium on the Use and Potential of Geospatial Data**, Regal Biltmore Hotel, Los Angeles, CA, November 10-12, 1999. Contact: Consortium for Geographic Information, 1460 Renaissance Drive, Suite 305, Park Ridge, IL 60068. Phone: 847-724-6300. Fax: 847-824-6363. Email: [info@urisa.org](mailto:info@urisa.org) Website: <http://www.drivenbydata.org>.

**Geography Awareness Week**, November 14-19, 1999.

**GIS EXPO in New Mexico**, Pyramid Hotel, Albuquerque, NM, November 15, 1999. Contact: Mark Taetz, ESRI-Denver. Phone: 303-449-7779.

**An Exchange of Ideas: Addressing the Environmental Issues of the U.S.-Mexican Border**, The 1999 SCERP Technical Conference, Corbett Conference Center, New Mexico State University, Las Cruces, NM, November 17-19, 1999. Contact: SCERP Office. Phone: 505-646-7685 or 505-646-5255. Fax: 505-646-7943. Email: [border@nmsu.edu](mailto:border@nmsu.edu).

**First Annual Worldwide GIS Day**, November 19, 1999.

**The Rio Grande Compact: It's the Law!**, 44th Annual New Mexico Water Conference, La Fonda on the Plaza, Santa Fe, NM, December 2-3, 1999. Contact: Water Resources Research Institute, MSC 3167, Box 30001, Las Cruces, NM 88003. Website: <http://wrri.nmsu.edu>.

**Pecora 14/Land Satellite Information III: Demonstrating the Value of Satellite Imagery**, Doubletree Hotel Denver, Denver, CO, December 6-10, 1999. Contact: ASPRS: The Imaging & Geospatial Information Society, 5410 Grosvenor Lane, Suite 210, Bethesda, MD 20814-2160. Email: [asprs@asprs.org](mailto:asprs@asprs.org). Website: <http://www.asprs.org>.

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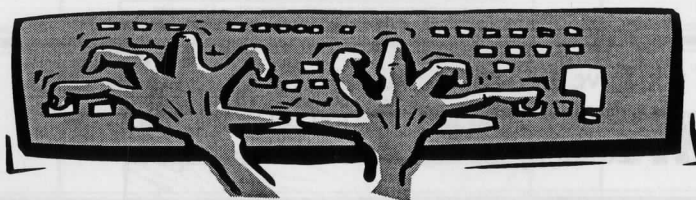
Back Forward Stop Refresh Home Search Favorites History Channels Fullscreen Mail Print Edit

Address cool internet web sites Links

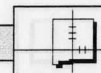
## Cool Internet Web Sites

For this issue of *The Map Legend*, the "Cool Internet Web Sites" focuses on conservation GIS. One might think that because of the history of GIS and its early focus on resource management, that GIS use in conservation activities is fully developed. Not so. Many people who are working to understand ecosystems and develop policies for conservation are too poorly funded to afford GIS. Over the last 10 years a small group of dedicated researchers have formed the Society for Conservation GIS. This group, and other non-profits, are working to provide GIS tools and data for free, or at low cost, to the many researchers studying our planet and ecosystems. These web sites are just a sampling of Denise's research for information on GIS and conservation. As always, if you find a site you think is useful to the membership, please contact Denise Bleakly at 505-284-2535 or email [drbleak@sandia.gov](mailto:drbleak@sandia.gov) to add it to our list. Denise will be compiling a list of NMGC corporate sponsors for a future issue of *The Map Legend*.....please contact her.

- The mission of the SCGIS is to serve, represent, and connect individuals using GIS for conservation work worldwide. <http://www.scgis.org/>
- ESRI's Conservation home page. ESRI is a partner in the Society for Conservation GIS, providing many grants of hardware and software, as well as a forum for discussion. <http://www.esri.com/conservation/index.html>
- Information Center for the Environment: Environmental Hotlinks. This site provides many links to GIS, but also to other conservation groups and individuals. <http://ice.ucdavis.edu/echo/>
- Conservation Technology Support Program (CTSP). CTSP empowers conservation and environmental non-profits to make clear geographic and other dimensions of their issues, goals, and strategies by providing the computers, software, training, and support needed to effectively use GIS and other technology needs. <http://www.ctsp.org>
- GreenInfo Network. "We're here to help non-profits and public service organizations take advantage of the power of Geographic Information Systems...computer based mapping. Established in 1996, our primary focus is California, although we also do limited work in other parts of the U.S. We work by creating contracts with groups who want our services. We help establish GIS in these groups' offices, or develop special projects for them, and sometimes we create special projects that lead to establishing an in-house GIS. We are looking to work with non-profits, foundations, governmental organizations, or other public service groups involved in public health, land conservation, environmental protection, or social services." <http://www.greeninfo.org/>







# Job Board

## Postdoctoral Position in GIS (PD995138)

The Geoanalysis Group (EES-5) of the Environmental Sciences Division at Los Alamos National Laboratory invites applications for postdoctoral research positions in Geographic Information Systems (GIS) and related topics. Topics of interest include, but are not limited to:

- Three- and four-dimensional GIS
- Remote sensing, image analysis and GIS
- Coupled geophysical and socio-technical simulations
- Assessment and representation of errors and data quality within GIS systems
- Data mining of spatial data bases
- Advanced statistical analysis of spatial/spatio-temporal data
- WEB-based and distributed GIS, decision, and simulation support systems
- Spatial data integration and creation of data sets for numerical simulation
- Enhancement of collective intelligence of stakeholder groups on the WEB
- Coupled environmental models and simulations
- Urban systems and dynamics - vulnerability and sustainability

There is a potential for extensive interaction with geophysical, biophysical, geological, and environmental specialists, as well as computational and numerical simulation experts throughout the Laboratory and external to the Laboratory. In addition, this research has a high potential for significant advances in new knowledge and technologies, and cross-cutting importance in many Laboratory and DOE programs. Successful applicants must have a demonstrated background in the development and/or application of advanced GIS or spatial analysis techniques for data analysis and modeling and/or the development of coupled geo-social models and simulations. Extraordinary candidates from other areas of complex systems with a deep desire to enter these areas will also be considered. A strong track record of timely publication in reputable peer reviewed journals is required. A Ph.D. in Geography, Earth-System Science, Computer Science (with an emphasis on GIS), Spatial Statistics (with a computational emphasis) completed within the last three years or soon to be completed is required. Candidates may compete for a Director's Fellowship and outstanding candidates may be considered for the prestigious J. Robert Oppenheimer, Richard P. Feynman or Frederick Reines Fellowships. Further details about the Postdoctoral Program may be found at: <http://www.hr.lanl.gov/postdoc/> For consideration, submit a resume and publications list along with a cover letter outlining current research interests to [postdoc-jobs@lanl.gov](mailto:postdoc-jobs@lanl.gov) (no attachments, please!)

OR SUBMIT TWO COPIES to:  
Postdoc Program Office, PD995138  
MS P290  
Los Alamos National Laboratory  
Los Alamos, NM 87545

NOTE: Advertisement #PD995138 must be referenced in the email Subject line (or the address) and cover letter. Affirmative Action/Equal Opportunity Employer. Individuals with disabilities needing reasonable accommodation should call 505- 667-8622. A Teletype Device for the Deaf (TDD) is available by calling 505- 665-5357. Los Alamos National Laboratory is operated by the University of California for the US Department of Energy.

If you have a position available, or if you are seeking employment, send information to *The Map Legend* editor by the deadlines listed on page 2.

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