

THE MAP LEGEND

GIS Models Could Strengthen Democracy

The word *modeling* conjures ideas of advanced, often esoteric, but mainly academic pursuits having little practical reality. It's an intimidating exercise for many people because it seems to imply basic research and scientific laboratories with specialized equipment. For others, it means developing an application prototype for solving problems. For GIS, modeling is a means for bringing complex and disparate, spatially registered data together for addressing equally complex resource sustainability issues. While it would be incorrect to think of GIS as an electronic atlas, many users perceive the technology only to be a means for merging data sets to produce a new map. In its most useful form, however, GIS is an enabling technology for visualizing *dynamic* and complex landscapes, and for managing data that address multifaceted, and often contentious, issues.

At a recent Renewable Natural Resources Foundation (RNRFF) Congress in Jackson Hole, WY, delegates from 20 professional societies grappled with how GIS can be used for managing sustainable natural resources. Delegates considered a number of GIS issues, including data compatibility, accuracy, standards, accessibility, costs, and the future directions of GIS. At the most basic level, delegates agreed that GIS can analyze data from multiple sources and display them in a single map. But maps are not always the desired output. To fully utilize GIS technology, managers often need to query their systems to develop unique problem solutions, or *what if...* scenarios. Most delegates agreed that by monitoring key environmental indicators, GIS could help track whether sustainable economies and resource uses were being met. Managers might model a variety of scenarios by either using measured rates of change in these indicators, or synthetically altering the rates to produce alternate outcomes. Some GIS developers are already embedding these capabilities in their applications to assist decision making. Moreover, these tools would enable a variety of interest groups to model without being expert GIS technicians. As GIS and telecommunication technologies advance, it is envisioned that people will have access to these modeling tools via online GISs. Perhaps one of the highest uses of GIS in this context is as a means for iterative problem solutions developed by different interest groups using the same data sets to model their desired outcomes, then using these as the basis for conflict resolution. This has the *look and feel* of participatory democracy, which the delegates at the RNRFF seemed to embrace wholeheartedly as one of the principal contributions of GIS.

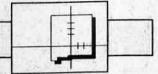
How does remote sensing contribute to modeling scenarios? In a phrase, *by providing time series spectral measurements of large areas*. For environmental studies, key indicators of natural resource conditions are portrayed spectrally. While there is no *user manual* on what constitutes these key indicators or exactly how to employ them, the Environmental Protection Agency, among other agencies and organizations, is now compiling a list for use in environmental protection and regulation. Readers can assist in this process by documenting the kinds of indicators being employed for their different applications. For the RNRFF delegates (only a few of whom were trained GIS or remote sensing specialists), the question became *what can one measure on images that directly relates to sustainable environmental health and natural resource use?* One identified indicator was *miles of road per square mile of land*, especially land in protected areas (wilderness), multiple use areas (forests), and lands in economic transition (urban fringe). Once access has been facilitated, human impacts tend to magnify rapidly and can possibly jeopardize the area's long term sustainability for this use. The rate of improved access is thus a measure for dynamic modeling.

Another complex indicator over large areas, one that is equally well recorded from space, are the abrupt linear spectral edges that occur around grazing allotments, urban fringes, and economic development zones. How can we assess the sustainability of these multiple resources? Time-series trends in reflectance on either side of these edges indicate the rates of change (recovery or deterioration) for each of the delineated resources. Through the auspices of frequent satellite overpasses, spectral trends

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From the President

Geospatial data and related technologies are becoming more and more a part of our everyday existence. These technologies are exploding as GIS and GPS become friendlier, more accessible, and more cost effective to a wide range of users. At the Renewable Natural Resources Foundation Congress in Jackson Hole, WY, Jack Dangermond spoke of the day when GIS will be accessible online so that users needing to analyze data and create maps will not need a GIS resident in their office. They will simply access GIS on the Internet to process data for their specific applications. Users are cautioned to beware of data that may be faulty, not complying with established standards, and therefore not suitable for analysis. Users must heed disclaimers and other information contained in the metadata for these data, and be responsible users in applying these data to specific needs. Misuse of data needs to be the responsibility of the user. At the same time, data producers are responsible for accurately documenting their data....*truth in labeling* is a must. We must not lose site, however, of reality and get caught up in the *virtual* world in cyberspace. This concern was expressed by Mr. Dangermond as he cautioned the audience in responsible use of GIS.

The next generation of users needs to get in on the ground floor when it comes to GIS, its uses, and its development. Education in GIS at the K-12 level is desirable to train future generations of GIS analysts and developers. Several states have been implementing GIS programs in their K-12 curricula. Some schools have "adopted" resources or sites which are being mapped and monitored by school children using GIS. In Arizona, a discussion group has been grappling with how they might integrate GIS in the classroom. It is with these thoughts that Stan Morain has submitted the article on page 7 in this issue of *The Map Legend*. NMGIC would like to solicit its members to determine a level of interest for addressing GIS in the K-12 arena. A subcommittee under our GIS Committee could explore the K-12 possibilities and promote the introduction of GIS to these classrooms by working with the school systems. If the Board gets a positive response to this concept, it will support a K-12 subcommittee. Please give this some thought and submit your ideas and reactions to me by email at abudge@spock.unm.edu or by fax at 505-277-3614. Letters may be sent to me at EDAC, UNM, 2500 Yale Blvd SE, Suite 100, Albuquerque, NM 87131-6031.

Since the last *Map Legend*, our State Mapping Advisory Committee has a new chair. Mike Inglis at EDAC has agreed to take on this responsibility and is planning his first committee meeting on November 15th at EDAC. Please see the article on page 9 in this issue. We are grateful for Mike's willingness to lead this committee.

As of this publication date, I am happy to report that we have 181 regular members and 10 corporate members. NMGIC has enjoyed a healthy existence the past 12 years and looks forward to continued support from its members. I encourage all members to take advantage of NMGIC and participate in the Committees and workshops sponsored by the organization. Dues for 1997 remain the same as for 1996. For your convenience, a membership form is included in this issue on page 14.

Amy Budge, President

should become one of the drivers for dynamic models that assess the overall area's ability to adjust to human economic activities superimposed on natural systems.

At the close of the RNR Congress there was a growing consensus among the delegates that remote sensing and GIS, if practiced with prudence, could add a significant dimension to conflict resolution on issues of sustainable resource development. Modeling these resources from a variety of stakeholder perspectives should reduce *finger pointing* and bring contentious issues to a common table for dialogue. In an earlier age, resource decisions were made in near vacuum, and the public could only learn the consequences through a slowly evolving reality. GIS and modeled data sets could thus change the ways we practice participatory democracy.

Excerpt from GIS World article by Amy Budge and Stan Morain

National States Geographic Information Council Annual Conference

The National States Geographic Information Council (NSGIC) Annual Conference was held September 14-18, 1996 in Tucson, AZ. Bill Baillargeon, NM State GIS Coordinator, represented New Mexico. The conference theme was "Sharing Resources and Solutions." Several sessions were given on coordinating processes for activities at state levels, establishing state and federal data coordination, and implementing statewide data development partnerships. NSGIC plays an increasingly important role and speaks with an increasingly authoritative voice at the federal level, providing a state perspective to such entities as the Federal Geographic Data Committee (FGDC) and the Bureau of the Census. It is an indication of NSGIC's importance that FGDC and other federal agencies are always well represented at the conference and actively seek the participation of NSGIC regarding national geospatial data policy. NSGIC sits on the National Digital Orthophoto Program Steering Committee. A resolution was adopted requesting that NSGIC sit on the FGDC Steering Committee, a proposal likely to be favorably received by FGDC. The membership also adopted resolutions requesting NSGIC have full participation in FGDC standards development processes and that FGDC ensure procedures are established providing for consultation and coordination with state geospatial coordinating organizations.

Bill Baillargeon 505-827-2047,
billb@gsd.state.nm.us

DRG Coverage for New Mexico

Interest is emerging among agencies in the State of New Mexico to acquire Digital Raster Graphics (DRGs) of the entire state. The U.S. Geological Survey is producing DRGs for the Transboundary Resource Inventory Program (TRIP). As a result, GISAC has begun an effort to acquire DRG imagery for the rest of the state and is soliciting the assistance of other agencies in New Mexico to finance the acquisition. In seeking a collaboration of a number of agencies, the cost to each agency is reduced accordingly.

What is a Digital Raster Graphic? A DRG is a digital image of a standard U.S. Geological Survey topographic map produced by high resolution scanning of the paper source map (a 1:24,000, 1:100,000, or 1:250,000 scale map), followed by georeferencing and resampling of the scanned image to a minimum resolution of 250 dots per inch. The DRG includes all map collar information and the image inside the map neatline is georeferenced to Universal Transverse Mercator ground coordinates. The final DRG is published as a packbit-compressed TIFF file, accessible to most geographic information systems and other image processing software. Each DRG is between 5 and 15 megabytes in size, averaging about 8 megabytes. DRGs have a number of valuable uses in a GIS environment: 1) Development of vector GIS data by raster to vector conversion or on-screen digitizing, 2) Validation and correction of existing vector GIS data, 3) Integration with other

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Sandia National Labs Tests ARC/INFO to Intergraph MGE Conversion Software

Sandia National Labs, in a joint project between Sandia's Facilities GIS (an Intergraph MGE shop) and Sandia's Environmental GIS (an ARC/INFO based GIS), is performing a pilot study to evaluate two new conversion software programs. Redlands Software, a small software company and GIS consulting firm in southern California, is offering two software programs, Arc2Mge and Mge2Arc, that may significantly make data movement between ARC/INFO and Intergraph MGE easier. The Sandia pilot project will be taking an ARC/INFO coverage and converting it using Arc2Mge to an MGE readable format. Likewise, a MGE file will be converted using Mge2Arc to the ARC/INFO export format. The two files will be evaluated for data completeness and data quality. If the pilot project is successful, Sandia will begin a larger scale data conversion project of those data layers in both MGE format and ARC/INFO format that are interesting to other Sandia programs. If you are interested in learning more about this project please contact Denise Bleakly at 505-285-2535 or by email at drbleak@envc.sandia.gov.

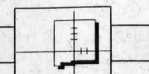


The University of New Mexico



University of New Mexico's Certified Trimble Training Center Now Offering Global Positioning System (GPS) Courses

Because of its universal applicability to provide real world solutions, the Global Positioning System (GPS) has been deemed the *Next Utility*. By meeting the requirements outlined by Trimble Navigation Inc., the University of New Mexico's New Mexico Engineering Research Institute, in conjunction with the UNM Department of Geography, have been designated as a **Trimble Navigation Inc. Certified Training Center**. As a result of this, certified training classes in Trimble Pathfinder mapping products are now being offered. Certified training will be conducted in 3-day short courses for Trimble's GeoExplorer and Pro XL Pathfinder products. The classes will be taught by Trimble Certified Instructors and will include lectures, field planning hints, field exercises, differential correction post processing instruction, and a certificate of completion. Class size will be limited to 12 students per class. If you are interested please call John Peterson at 505-272-7295, or Dr. Louis Scuderi at 505-277-4645 for course outlines, future course dates, and locations. The next class offered is *Using the Pro XL Asset Surveyor System*, October 30- November 1, 1996.



Western States Geographic Names Conference

There now exists a densely populated universe of geographical name information on—you guessed it—THE INTERNET!

Obtaining geographical name information online was a recurring topic at the 1996 Western States Geographic Names Conference (WSGNC) held September in Salt Lake City.

Roger Payne, executive secretary of the U.S. Board on Geographic Names, both domestic and foreign, estimated that at least 250 Internet sites exist (as of September) offering geographic name information. These range from the voluminous country-by-country files of the U.S. Defense Mapping Agency, to the home page of the American Name Society, to a site dealing with Antarctic names, and to an interesting site developed as a high school project. The addresses for the most significant of these sites are to be found on Page 12 of this issue of *The Map Legend*.

For most NMGIC members, probably the most useful site is that of the USGS Geographic Information System (GNIS): <http://www-nmd.usgs.gov/www/gnis/>. This site allows access to the GNIS database, which contains information about almost 2 million physical and cultural geographic features in the U.S. Within this database, online users can perform interactive searches on the following fields: state, county, name, feature, elevation, and population. Furthermore, a graphic interface has been added displaying the feature's location.

The entire GNIS database is on compact disc, available for \$60.50 by calling 1-800-USA-MAPS. Version 3 of the GNIS disc was released in May 1996; each new version has from 150,000 to 200,000 new names, in addition to corrections and variants. The CD, which comes bundled with software (very easy to use), allows searches on many more fields than does Internet access.

Because of this burgeoning electronic access, USGS has ceased publication of conventional state gazetteers in paper format.

The same kind of online access is available for other countries as well. The Canadian Permanent Committee on Geographic Names offers Internet access to its database, and the Ordnance Survey of the United Kingdom also has a website. Enjoy!

NMGIC Wins One for New Mexico

Robert R. White, charter member of the NMGIC Geographic Names Committee, for years has objected to the practice of USGS mapmakers omitting the term *Grant* from 1:24K maps in New Mexico. Thus the Carnuel Grant would appear on the map just as Carnuel, though "Grant Boundary" would appear, in very small type, next to the boundary line. Robert argued that omitting *Grant* amounts to dropping the generic from the name, such as Rio from Rio Grande, and thus not only distorts New Mexico history and geography but also the name itself.

At the 1991 WSGNC in Santa Fe, we raised this issue with USGS and received a verbal promise to add the term, in New Mexico at least. But Robert, cynical of verbal promises, asked that the issue be raised again this year. When this was done in Salt Lake City, Lisa Kok of the USGS Rocky Mountain Mapping Center in Denver reported that the latest USGS maps for New Mexico recently have been issued with *Grant* as part of the name! Furthermore, Lisa said this resulted directly from the promise made five years ago in Santa Fe.

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RGIS News

RGIS Demonstration Project

The RGIS Program, in cooperation with Greg White, Socorro County Planner, is evaluating GIS needs for the county and helping develop an implementation plan. Socorro was selected to demonstrate GIS in local government and show how the RGIS Program can support local government's geographic needs.

Base information and data for the county were collected, including socioeconomic and natural resource data from the Clearinghouse, a false color Landsat TM satellite image, and parcel maps, which were digitized and coded. The data will be installed on a PC provided by the county and ArcView training will be provided. Development of the Socorro County Demonstration project will be presented to other New Mexico counties considering GIS or in the early stages of GIS implementation.

RGIS Updates

Check the RGIS home page at <http://rgis.unm.edu:8080>. It has been updated recently and contains more information and announcements, including links to other home pages. If you would like your home page included, call Amy Budge at 505-277-3622 ext. 231 or email to edac@spock.unm.edu.

Two new CDs, volumes 2 and 3, containing RGIS Clearinghouse data are now available. Contact the Clearinghouse for more information.

Mike Inglis
RGIS Program

Sensitive Toponymy

Devils Tower National Monument (as featured in the movie *Close Encounters of the Third Kind*) is the focus of an intense dust-up involving a whole passel of issues.

On most 19th-century maps of the area, including the earliest, the volcanic plug is labelled *Bears Lodge*, translating the feature's name in local Indian languages. This name was derived from Indian mythology in which a group of children sought refuge from a giant bear atop a huge tree stump; the bear, trying to climb the stump, left clawmarks that are preserved in the butte's columns. The name *Devils Tower* appeared sporadically in the 19th century but became official when the monument was created in 1906.

In Salt Lake City, representatives of the Oglalla Lakota (Sioux) and the Northern Cheyenne tribes stated that the name Devils Tower amounts to a desecration of what for them is a religious site.

Opposing views came from the mayor of a nearby community and the local head of the Wyoming Multiple Use Committee, who stated that the butte is not the exclusive property of the Indians and that they want to see non-Indian local usage preserved.

As of this writing, no formal proposal to change the name to Bears Lodge has been received by the USBGN, but one assuredly will be made, though the issue could become moot if Congress adopts a proposal by a Wyoming Representative establishing Devils Tower as the official name.

(Following this discussion, I breathed an immense sigh of relief that the common name for the dramatic volcanic plug in the Rio Puerco Valley, *Cabezon*, means approximately the same thing as a common Navajo name.)

Another example of the difficulties of naming in the age of sensitivity came from Texas, where a local judge proposed that an unnamed stream be named *Cripple Creek*, "in honor of all of us who are bound to wheelchairs." The proposal had local support and also that of the Texas geographic names authority, but it was rejected by the USBGN after the Texas Governor's Committee on Disabilities and other groups felt it would be offensive to people with disabilities.

And in Minnesota, the Board continued to change the names of features labelled *Squaw* after the state legislature banned such names, because in the languages of several Minnesota tribes, *squaw* is a pejorative term connoting "vagina." Thus Squaw Lake now is Equay Lake, from an Ojibway word meaning "woman," and another Squaw Lake became Ozawindib Lake, honoring the Ojibway scout who led an expedition to the headwaters of the Mississippi.

Meanwhile for Arizona, the Board deferred a decision on a proposal from a climber who had made the first ascent of an unnamed peak in the Grand Canyon. He proposed naming it *Anasazi Peak*, to honor the early inhabitants of the area. But three Arizona tribes objected, saying the term *Anasazi* was from a Navajo term that could be translated to mean "ancient enemies" and thus was insulting to their ancestors. It was unclear whether two of the objecting tribes, the Hualapai and the Havasupai, are, in fact, descended from the Anasazi, and it was pointed out that the term has become the widely accepted term for the prehistoric inhabitants of the Colorado Plateau, who had departed from the region before the arrival of the

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MapGuide Viewer

The MapGuide Viewer is the first dynamic interactive map interface available on the Web. The MapGuide Viewer delivers real mapping and GIS functionality using the world wide web as a distributed network, allowing you to connect to, view, interact with, select, and retrieve information through richly detailed maps.

This version of the viewer is designed as a Netscape compatible plug-in. This means that you must have Netscape version 2.0 or later. Each item on the map is a dynamic object which is selectable. Information on selected objects can be viewed in reports or by double clicking on an object with an embedded URL link.

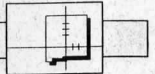
You may download the viewer now at <http://www.mapguide.com>

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spatial data including digital elevation models, digital line graphs, and digital orthophotoquads, and 4) A visual backdrop for mapping.

For more information about the DRG Acquisition Project, please contact Bill Baillargeon at 505-827-2047. A complete information packet may also be obtained via the World Wide Web at <http://www.state.nm.us/gisac/drgproj.html>.





Navajos in the 13th century, and who thus could not have been actual enemies of the Navajos who settled there.

Historical Accuracy Versus Present Local Usage

The USBGN reaffirmed its stance that while historical accuracy in a name is an important factor in considering name proposals, the primary criterion remains present local usage. This has implications for New Mexico, where a proposal has been made to change the name of *Steins Peak* in Hidalgo County to *Steens Peak*. Steens is more accurate historically, but Steins has been in local usage for more than a hundred years.

Next WSGNC

The 1997 conference will be in Flagstaff, just a few hours away on I-40, next fall. Contact Bob Julyan for details.

Current New Mexico Names Issues

Steins Peak/Steens Peak. Response to a request for input into changing Steins Peak to Steens Peak has been sparse. Only one writer, aside from the proponent, supported the change, and the Hidalgo County Commission is opposed.

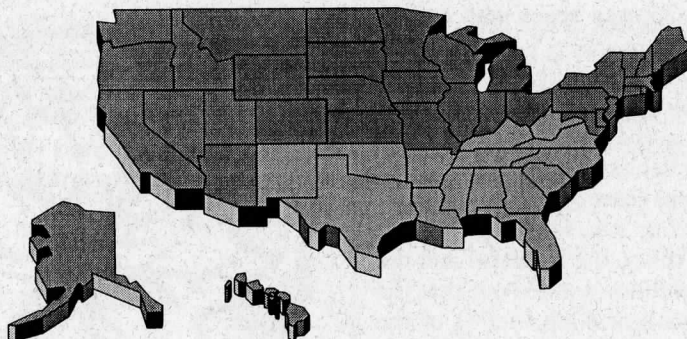
Cheever Peak. The couple who proposed naming an 11,765-foot peak in the Taos Range for their dog, Cheever, who accompanied them on hikes on the peak, have amended their proposal, given recent USBGN decisions disallowing commemorative pet names. They now are proposing the name *Perra Peak*, "dog peak," a name they say is in keeping with other peak names in the area, such as *Gallina Peak* and *Lobo Peak*.

El Malpais National Monument has submitted four name proposals to make official, names already on some maps or in local use. *Encerrito* would be applied to a low sandstone ridge, while *El Calderon*, *Lost Woman Crater*, and *Cerro Candelaria* would be applied to volcanic cinder cones.

Also, a Grants man has proposed changing the name *Oak Hollow* in Cibola County to *Burnt Mill Canyon*.

And finally, a man has contacted the NMGIC Geographic Names Committee on behalf of a woman in Sierra County who says residents in the community of *Chise* say the name should be spelled *Chiz*.

Bob Julyan, Chair
Geographic Names Committee



Glossary of GPS Terms

Bandwidth- The range of frequencies in a signal.

Carrier Phase GPS- The GPS measurements based on the L1 or L2 carrier signal (as compared to Code Phase GPS).

Code Phase GPS- The GPS measurements are based on the C/A code (as compared to Carrier Phase GPS).

Cycle Slip- A discontinuity in the measured carrier beat phase resulting from a temporary loss-of-lock in the carrier tracking loop of a GPS receiver.

Doppler Shift- The change in frequency of a received signal due to the rate of change between the transmitter and the receiver.

Positional Dilution of Precision (PDOP)- The multiplicative factor that modifies ranging error. It is caused solely by the geometry between the user and the current set of SV's.

Epoch- The measurement interval or data frequency.

Ephemeris- The predictions of current satellite positions that are transmitted to the user in the data message (either broadcast or precise).

Multipath Error- Errors caused by the interference of a signal that has reached the receiver antenna by two or more different paths caused by deflection or reflection.

Pseudorange- A distance measurement based on the correlation of a satellite's transmitted code and the user's GPS receiver code.

RINEX- Receiver Independent Exchange Format- The standard character data set used to exchange GPS information between manufacturers.

RTCM SC104- Radio Technical Commission for Maritime Services- The special committee that issued the paper #104 to set a standard for signal format and data exchange protocols for code phase correctional data between receivers.

Provided by Tom Eckert Holman's, Inc.

K-12 INITIATIVE

One of the biggest fears among GIS developers is that modeling electronic solutions for spatial applications will lure the next generation into cybersolutions based only on the **illusion** of reality. This fear stems from a **real** reality that historical and archival data sets have almost no priority for conversion into useable, digital formats. The very idea that these data are called legacy data by the industry suggests their perceived marginal utility and status as legendary. The big questions are... how do we get quality legacy data converted for GIS when no one wants to pay for their conversion, and how do we ensure that data-poor cybersolutions never prevail over those based on recorded observations? Future spatial applications might be modeled by anyone who can query the distributed ether, but, the most robust and meaningful solutions will be created by those who know the value of the retrieved and integrated data sets. It does not strike me as true that data collected before the advent of GIS technology are inherently flawed or unusable. It *does* strike me as wrong not to capitalize on earlier data collection investments, whenever the relevancy and quality of those data can be assured.

Several initiatives around the nation are approaching these questions through K-12 programs, some elements of which include student projects for converting legacy data. Inserting GIS education into Career Enrichment, or similar programs, seems to be an idea whose time has come. Educating the next generation that spatial data have structure and content, that they carry qualifiers and constraints, or that bad data invalidate spatially modeled solutions, is not only a rational response to the problem but also a recipe for success. Students in all grades should be introduced to spatial data analysis as part of their K-12 experience, not just because they will develop systems of the future, but because all sectors of tomorrow's society will be encouraged to travel the Information Highway for geospatial frameworks attributed with their topic-specific data.

NMGIC could play a role in this educational process. Through a K-12 Committee, the Council could initiate the dialogue, assemble the cadre of interested members and other individuals, and possibly impact future elements of K-12 science and technology curricula in New Mexico. There is a current gap between those of us who understand GIS technology, and school administrators and teachers who might adopt a spatial data module in their curricula. A NMGIC K-12 Committee might narrow that gap. I am seeking indications of interest from the membership to determine whether there is enough to seek Board approval to form a committee.

I realize we are all interested in quality education for our children. I also realize that few of us have professional duties that embrace this interest. Being a volunteer

organization, it would be prudent for the NMGIC Board to consider whether any potential committee members had day-to-day responsibilities touching upon K-12 issues. As with most of our current technical committees, a K-12 initiative would need at least one member whose duties included this kind of outreach, and who would be encouraged by their employer to include NMGIC K-12 in their stable of activities. If you are one of these people, your participation is critical to keep the committee functioning, but *anyone* interested in participating should let me know by phone, fax, or email before the next Board meeting, tentatively scheduled for early January.

Stan Morain, Public Relations Coordinator
505-277-3622 ext 228 (v); 505-277-3614 (f)
smorain@spock.unm.edu

AutoDesk Releases AutoCAD Map

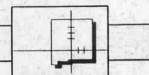
AutoDesk has announced the new standard for mapping and GIS in AutoCAD. AutoCAD Map is an AutoCAD-based professional automated mapping product built with the object-oriented power of AutoCAD release 13; it adds robust new data management features, advanced mapping tools, and essential GIS analysis functionality.

AutoCAD Map is the premier solution for creating, maintaining, analyzing, exchanging, and presenting mapping information in a CAD environment. Some of the features are:

- Network digitizing makes AutoCAD even better for map digitizing and maintenance.
- Import and export of map data to and from other mapping products as MIF/MID (MapInfo), Shape (ESRI), DXF, and DGN.
- Supports over 600 coordinate systems.
- Works with multiple map sheets (drawings) in a single worksession.
- Easy map editing: cleanup tools, rubber sheeting, and edge matching.
- Easy to add intelligence to maps through external databases and object data.
- Ability to create and analyze topology: overlay, dissolve, buffer, and network tracing.
- Easy to attach data to AutoCAD maps, and make them more intelligent.
- Thematic mapping with legends.
- Simple and flexible map plotting, including clip/cut tools, title blocks, legends, north arrows, scale bars, etc.
- Ability to plot map books.

AutoDesk's first priority is to help their customers seize and use their data in new and creative ways -- "*Bringing Information Down to Earth.*"

A demo disk and literature are available through Tom Eckert, GPS/GIS sales at Holman's Inc., by calling (505) 343-3540, fax at (505) 343-3509, or email to teckert@holmans.com



Mapping and GIS Professionals GPS Product Demonstration

A free, hands-on GPS product demonstration, sponsored by Holman's and Sokkia, will be held in Gallup, NM on Tuesday, November 12, 1996 from 9:00 am to 3:30 pm at the Best Western Hotel. The briefing is designed for mapping and GIS specialists who do any of the following:

- Coordinate map team projects
- Environmental engineering
- Utility engineering
- Produce, review, or maintain maps
- Resource Management
- Water rights or resource management

The product demonstration is free, but space is limited. You must register to attend. For more information, or to register, please contact Tom Eckert, Holman's, at 505-343-3549 (v), 505-343-3509 (f), teckert@holmans.com (email).



Workshops! Workshops! Workshops!

The NMGIC Board will be trying to sponsor the following workshops if the membership shows interest. Please contact Denise Bleakly, NMGIC Workshop Coordinator, at 505-284-2535, or email to drbleak@envc.sandia.gov if you are interested in any of the workshops listed below, or if you have questions.

- **USGS/FGDC workshop on the National Spatial Data Infrastructure (NSDI).** Tentative time frame is January/February 1997. This will be a one-day workshop on NSDI and the Federal initiatives such as the Metadata Standard, National Geospatial Data Clearinghouse, Framework Data, and the Spatial Data Transfer Standard.
- **Introduction to GPS.** Tentative time frame is April/May 1997. This one-day workshop will cover the basics of GPS, and will be a combination of a vendor presentation and data presented by GPS users.
- **Object-oriented GIS.** Sometime in 1997. The NMGIC Board is exploring the possibility of having an expert on object-oriented technology present a workshop on the technology and how it will relate to GIS.

JOB BOARD

Positions Available:

Computer Data Systems, Inc. in Lakewood, Colorado has three permanent, full time image processing specialist positions for people conversant in the ER-DAS/SUN SPARC-10 environment. Contact Dennis Marenger at 303-985-1657.

Nextwave in Hawthorne, NY has a GIS Analyst/Geographic Database Librarian position available. This position is primarily responsible for collecting and maintaining geographic data, and engineering support. Contact Betsy Nordquist at 1-800-836-1676 ext 216, 813-249-2360 (fax), or by email at betsy_nordquist@systemone.com Nextwave has a home page at www.nextwavetel.com

Position Wanted:

I am seeking a GIS position that requires hands-on use of GIS (preferably ARC/INFO or ArcView software) for all aspects such as data capture, database management, spatial analysis, and cartographic presentation. I have over 5 years of GIS experience (primarily using ARC/INFO) in support of water resources-related projects. Emphasis is on building and maintaining georeferenced databases (GPS derived state planes or latitude/longitude coordinates) and subsequent cartographic presentation. I have experience in training and assisting introductory level ARC/INFO and ArcView users.

I also have 6 years of computer thematic mapping experience using AutoCAD and Computer Vision to support land use and water resource management projects. I am proficient in UNIX and DOS operating systems, and ARC/INFO, ArcView, AutoCAD, and WordPerfect softwares.

Joan Stockum, #3 Lucerno Road, Eldorado, NM 87505, 505-820-6991



1996 ESRI Southwest Users Group Conference

The 1996 ESRI Southwest User Group Conference will be in Flagstaff, AZ November 6-8. Four workshops are offered on Wednesday, November 6th (*What's New in ArcView Version 3.0; Introduction to Avenue; Advanced Avenue - Tips and Techniques; Managing Large Databases*). Technical program topics include GIS Fundamentals; Desktop GIS; GIS Management Issues; Legal Issues; GIS Implementation; and GPS Technology.

Jack Dangermond, President of ESRI, will be the featured keynote speaker. ESRI's vision and future GIS products will be presented by Clint Brown, ARC/INFO Product Manager. Vendor and poster sessions will also be held. For more information on the conference, visit the home page at www.bslnet.com/accounts/raven/www

State Mapping Advisory Committee

The State Mapping Advisory Committee (SMAC) is alive and looking for members. The SMAC became a NMGIC committee in 1985 with the primary purpose of setting priorities for photography and non-digital mapping needs within the state. We are rapidly moving towards the digital world and the committee has adjusted its objectives to include digital and non-digital mapping needs. There are several programs, such as the Middle Rio Grande Basin Study and the A-16 process, which benefit from SMAC input. The SMAC also addresses the need to bring interested parties for sharing data and information. The first meeting of the committee is scheduled for Friday November 15, 1996 at 10 am in the EDAC conference room (2500 Yale SE in Albuquerque).

If you are interested in the committee send me your name, address, phone and fax numbers, and email address. The November 15th meeting will redefine the SMAC goals and objectives.

Mike Inglis, Chair
Earth Data Analysis Center
University of New Mexico
2500 Yale SE, Suite 100
Albuquerque, NM 87131-6031

phone 277-3622, ext 235
fax 277-3614
minglis@spock.unm.edu

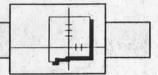
ESRI Corporate Profile

Environmental Systems Research Institute, Inc. (ESRI)
4875 Pearl East Circle, Suite 200
Boulder, CO 80301-6103
303-449-7779 (v); 303-449-8830 (f)
Contact: Mark Taetz (mtaetz@esri.com)

ESRI has been providing GIS software technology and related implementation services to organizations for over 25 years. Since our pioneering efforts in 1969, ESRI has become the world leader in GIS. We strongly believe that geography connects our world; it fundamentally influences and connects our many cultures, societies, and ways of life. We are fully dedicated to GIS and the numerous applications of GIS technology to help improve quality of life through analytical decision making and problem solving based on geographically referenced information.

ESRI has the largest and most diverse GIS user base in New Mexico and worldwide. ESRI offers a family of advanced GIS software products including ARC/INFO, Spatial Database Engine (SDE), ArcView, PC ARC/INFO, Data Automation Kit (DAK), ArcCAD, ArcPress, and MapObjects. We also offer comprehensive GIS implementation services including training, consulting, and on-going support services. The ESRI Denver Regional Office (in Boulder, CO) provides GIS sales and implementation services to local clients in New Mexico, Arizona, Utah, Colorado, and Wyoming. Mark Taetz is the ESRI marketing representative for New Mexico.

ESRI is honored to be the only GIS vendor on New Mexico state contract. We look forward to the continued opportunity to serve the needs of the GIS user community in New Mexico. For more information about ESRI and our GIS products and services, please call Mark Taetz, access our home page (www.esri.com), and/or subscribe to ARC News, our free quarterly newspaper.



The Sandia National Laboratories World Wide Web (WWW) Site for GIS

Sandia National Laboratories (Albuquerque, New Mexico, USA) has established a single World Wide Web (WWW) page that serves as a gateway to its GIS projects. The visitor can quickly link to information on a variety of GIS research and development activities. These include cradle-to-grave chemical management, emergency operations, environmental analysis and decision support, transportation modeling, transportation risk assessment, transit applications, and Intelligent Transportation Systems (ITS). A special feature is the WWW site for the Intermodal Surface Transportation Efficiency Act [ISTEA] Pooled Fund Project, a cooperative transportation planning study that involves 40 states.

A number of Sandia-authored GIS publications can be downloaded in Postscript or Adobe Acrobat formats, or the visitor may request that paper copies be mailed.

For the GIS user and developer, there are several technical resources. A checklist for data acquisitions suggests a number of questions to ask about geodata sources. For those needing computer screen captures, there are tips on getting UNIX and Windows screens into publications, presentations, and Web pages. Also featured:

- a tutorial on ESRI Inter-Application Communication (IAC). Code examples are included for using IAC to establish client/server relationships between ArcView and ARC/INFO, and between Visual Basic and ArcView for Windows;
- a paper on ArcView/Avenue that includes a number of utility scripts; and
- a detailed white paper that compares ArcView and MapObjects.

The Sandia GIS WWW page can be accessed at: <http://www.sandia.gov/gis/gis.html>

John Ganter



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Plea For Articles

To help NMGIC serve its members better, we need your articles for *The Map Legend*. Specifically, we need articles about:

- Current projects. What are you working on? What have you learned? What problems have you encountered?
- Upcoming projects. Are there any aspects of an upcoming project the NMGIC membership might be able to help with?
- New ideas. Ours is a dynamic, rapidly changing field. New applications, and new technologies constantly are emerging. What articles have you read lately, what applications have you seen, what projects have you heard about that have stimulated your thinking?
- Meetings, workshops, training sessions, etc. *The Map Legend* is an excellent vehicle for keeping people informed about how we can keep current in our field.
- Awards, contracts, presentations. False modesty is not a virtue.

Send your articles, via fax, email, or regular mail to:

Stan Morain
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 Fax: 505 277-3614
 Email: smorain@spock.unm.edu

Bob Julyan
 Map Legend Editor

The Map Legend Publication Schedule and Deadlines

Winter Issue	Deadline for articles: January 15, 1997 Publication date: February 15, 1997
Spring/Summer	Deadline for articles: May 15, 1997 Publication date: June 15, 1997
Fall Issue	Deadline for articles: Sept. 15, 1997 Publication date: October 15, 1997



NSDI Framework Demonstration Project Program

The Framework Demonstration Projects Program (FDPP) was established by the Federal Geographic Data Committee (FGDC) to support cooperative projects that test the means by which the geospatial data community can work together to build and maintain the data framework for the National Spatial Data Infrastructure. The framework consists of commonly needed themes of data (geodetic control, digital orthoimagery, elevation and bathymetry, transportation, hydrography, governmental units, and cadastral) needed for national, statewide, regional, and local analyses. Funding is provided for implementations of multi-organization, multi-sector partnerships to coordinate data collection, maintenance, use and access in local and regional areas. Program participants will identify a basic information content for the framework data and will develop technical, operational, and business contexts by which a distributed, collaborative data collection and maintenance effort will operate.

For more information about the program contact the FGDC Secretariat, c/o U.S. Geological Survey, 590 National Center, Reston, VA 20192. Telephone: 703-648-5514; Fax: 703-648-5755; Internet: gdc@usgs.gov. Check the home page at www.fgdc.gov/Fram/framprog.html

1996 FDPP Awards

Seven projects were funded by FGDC under the FDPP. These are:

- *A Statewide Framework of Public Lands Data Using Locally Derived Cadastres*, Center for Geographic Information and Analysis, North Carolina Office of State Planning (principal contact)
- *Creating a Federally Compliant State and Local Delivery System for High Resolution Framework Data*, Earth Data Analysis Center, University of New Mexico (principal contact)
- *Assessing the Framework Model Within a Collaborative Multi-Jurisdictional Local, Regional, and State Setting*, Office of Strategic and Long Range Planning, Minnesota Land Management Information Center (principal contact)
- *Utah Cadastral Integration Project*, Utah Automated Geographic Reference Center (principal contact)
- *Vermont Spatial Data Partnership Project*, Vermont Center for Geographic Information, Inc. (principal contact)
- *The Baltimore-Washington Regional Digital Spatial Data Framework Demonstration Project for the Gwynns Falls Subwatershed*, University of Maryland Baltimore County, Department of Geography and Joint Center for Earth Systems Technology (principal contact)
- *The North Texas GIS Consortium Spatial Data Warehouse*, University of Texas at Dallas, Bruton Center for Development Studies (principal contact)

Changes to USGS Maps

The following is a summary from a recent flyer written by Mr. Don Haney, Chairman, Association of American State Geologists' Subcommittee on Topographic Mapping.

USGS is in the process of drastically changing the form and content of 7.5' quad maps. The proposed changes will degrade the quality of these maps and have a negative impact on the majority of individuals who use these maps. Recently the increasing demand for digital map data has prompted the USGS to reevaluate the types of information that will be maintained on topo maps and how this information will be made available to the public. Some of the proposed changes are:

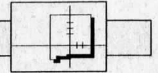
- Topo contours would not be revised, except in cases where specifically requested and funded by individual states. Possible omission of contours has also been discussed.
- Woodland areas would not be revised.
- Buildings would not be classified as to type.
- Urban areas would be indicated by a gray tint, and most individual buildings and landmarks would not be identified.
- The level of content, particularly for features requiring field verification, would be reduced.
- The quality of print produced from digital maps is generally poor, and the maps are difficult to read.

The USGS is proposing that digital data for hydrography (streams and lakes), transportation (roads), boundaries (state and county lines), public land surveys, and elevation (digital elevation models, not contours) be revised and maintained in electronic format. The remaining map information (contours, vegetation, man-made features) would not be maintained.

The USGS evaluated the needs of map users in a questionnaire distributed to approximately 18,500 professional users. However, 60% of the responses used in the evaluation were submitted by individuals primarily from the GIS user community. The needs of the majority of individuals, agencies, and companies who depend on paper copies for map information have not been adequately evaluated. Unfortunately, most of these users are not even aware of the impending changes.

For more information contact: Gordon Eaton, Director, USGS, National Center, Reston, VA 22092.

From David Parrish email



Cool Internet Web Sites

To continue the series of mapping and GPS related web sites, we have found the following sites that may be of interest to the NMGIC membership. As always, if you come across something you think the rest of the membership might find useful, please contact Denise Bleakly at 505-284-2535, or email to drbleak@envc.sandia.gov to let her know and she will add it to the list for the next *Map Legend*. NMGIC Corporate Sponsors, if you have a web site, please contact Denise. She will be compiling a special list of our corporate sponsors for a future edition.

The following sites were compiled from various trade magazines, submissions from members, and sites found by surfing the web. They are listed in no particular order.

- USGS GIS Tutorial <http://info.er.usgs.gov/research/gis/title.html>
- List of GIS Centers <file://gis.queensu.ca/pub/gis/docs/gissites.html>
- GIS Jobs Clearinghouse <http://www.gis.umn.edu/rsgisinfo/jobs.htm>
- Weather Satellite Images <http://web.nexor.co.uk/users/jpo/weather/weather.html>
- Digital Elevation Catalog <http://www.geo.ed.ac.uk/home/ded.html>
- DLG, DTM, TIGER Data <ftp://spectrum.xerox.com/pub/map>
- DCW US Data in ARC/INFO Format <http://waisqvarsa.er.usgs.gov/public/dcwindex.html>
- Open GIS Consortium <http://www.ogis.org/>
- National Geodetic Survey <http://www.ngs.noaa.gov>
- US Coast Guard GPS Information <http://www.navcen.uscg.mil/gps/gps.htm>
- Geographic Names Information System (GNIS) <http://www-nmd.usgs.gov/www/gnis/>
- Defense Mapping Agency - GEOnet Names Server <http://164.214.2.53/gns/html/index.html>
- Geonames-Canadian Geographical Names Server <http://www.wais.ccn.emr.ca/cgndb/geonames.htm>
- American Name Society <http://ssie.binghamton.edu/admin/anshomep.html>

Calendar

ECO INFORMA '96 Global Networks for Environmental Information: Bridging the Gap Between Knowledge and Information, Lake Buena Vista, FL, November 4-7, 1996. Contact: Robert Rogers, ERIM, PO Box 134001, Ann Arbor, MI 48113-4001. Telephone: 313 994-1200 ext. 3453. Fax: 313 994-5123.

ESRI Southwest User Group Conference, Flagstaff, AZ, November 6-8, 1996. Contact: 1996SWUG, PO Box 2071, Prescott, AZ 86302. Fax: 520 771-3257. <http://www.bslnet.com/accounts/raven/www>

Society of American Foresters National Convention, Albuquerque, NM, November 9-13, 1996. Contact: SAF National Office, 5400 Grosvenor Lane, Bethesda, MD 20814-2198. Telephone: 301 897-8720 ext 109. Fax: 301 897-3690. Email: mary@safnet.org

GIS/LIS '96 Annual Conference and Exhibition, Denver, CO, November 19-21, 1996. Contact: GIS/LIS '96, 5410 Grosvenor Lane, Suite 100, Bethesda, MD 20814-2122. Telephone: 310 493-0200. Fax: 301 493-8245.

Conference of Tailings and Mine Waste, Fort Collins, CO, January 9-11, 1997. Contact: Linda Hinshaw, Department of Civil Engineering, Colorado State University, Fort Collins, CO 80523. Telephone: 970 491-6081. Fax: 970 491-3584.




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