NMgIC
1984 - 2010

NEW MEXICO GEOGRAPHIC INFORMATION COUNCIL

The Map Legend

NMGIC Fall 2010 Meeting

The New Mexico Geographic Information Council, Inc. (NMGIC) Fall 2010 Meeting will be held on October 15th, 2010 in Albuquerque, New Mexico. The meeting's theme is "**GIS in the Current Economy**": topics include geo-spatial programs at various NM educational institutions, workforce building, and GIS use in tax reporting, archaeology and resource management.

The meeting will be held at the Rotunda of the Science & Technology Park (a map, as well as meeting details can be found at the NMGIC website http://nmgic.com). A brief summary of the Meeting's agenda can be found inside this issue.

NMGIC Fall Workshop, .
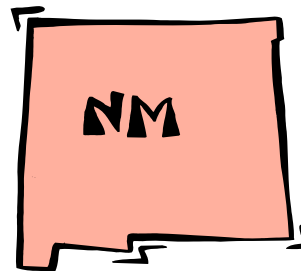
New Mexico Broadband Mapping Program

by Gar Clark

The New Mexico Department of Information Technology (DoIT) is authorized by Governor Bill Richardson as the lead agency and applicant to the National Telecommunications and Information Agency (NTIA) State Broadband Data and Development Grant Program (SBDDG). These funds are provided to New Mexico as part of the American Recovery and Revitalization Act (ARRA). The NM DoIT budget for data collection, analysis, updating, verification and other specified **Broadband Mapping and Planning** efforts is: **$1,885,382**. This grant award requires DoIT to provide matching funds of 20%.

The project has a five year commitment that will provide a map of broadband availability for New Mexico and contribute to the development of a National Broadband Map. Other states were granted similar funds. In addition, an integrated and collaborative planning component is rolled into this grant that will provide for expansion of broadband availability and adoption into un-served and under-served areas of the State

Inside this issue:

The Map Legend

NMgIC

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NMGIC, Inc. Board of Directors

	Agenda for NMGIC Fall 2010 Meeting
8:00am	Sign-in, Coffee
8:30am	Announcements and Election results.
9:00am	• Keynote Speaker: **Karen Siderelis** (GIO US Dept of the Interior) "A Perspective of Geospatial Trends: From the Nations Capitol to the Land of Enchantment
"9:45am	**Renzo Sanchez-Silva** (EDAC) The technology behind the new RGIS
10:15am	Coffee Break / Networking
11:40am	**Kevin Troutman (AMAFCA)** Developing AMAFCA GIS website**.**
11:10am	**Lightning Session:** Short presentations on hot topics
12:10pm	Lunch (provided)
1:10pm	**Anna Patterson,** recipient of 2010 Jessie Rossbach Memorial Scholarship
1:30pm	**Panel** - *Where is the GIT job market heading?*
3:00pm	Wrap-up and door prize drawings. Some of the Door prizes and their sponsors are: • One (1) Place Names of New Mexico book (Bob Julyan) • One (1) Albuquerque, Then and Now (Bill Stone) • One (1) Apple iPod Nano (NMGIC) • ESRI products and prizes

Message From The NMGIC President—David Jordan

Total (Geographic) Recall

I love my new iPhone. I especially love the Maps application that allows me to put a real-time point on the map showing where I am and where I am going. Admittedly I am a bit late to the smartphone game so forgive me if I seem to be over-excited about this. Another feature of the Maps application that I love is the search feature. If I need the phone number for local Supercuts near my house, I pull up the map, type "Supercuts" into the search dialog box, and up it comes. I hit the icon, it brings the phone number up, I tap the number, and next thing you know I am connected. I hardly feel like I even deserve this amazing technology at my fingertips.

But what I really like about it is that it seems to recall information the way the human brain does – by association. It pulls information from a database based on the fact that is related to or similar to some cue (in this case, my location). This seems really similar to the way that my brain works and how it retrieves stored information – by association. I hear a song that I haven't heard in a while and it reminds me of a particular period or event in my life, I try to remember someone's name and first access a number of that person's characteristics before I can recall the name (you know, it's that guy that...). For all the computing power that we seem to have at our fingertips and on our desktops, it seems that we have yet to solve a very basic problem – how to organize information logically so that we can access it quickly. If you're like me your e-mail is organized into endless folders and subfolders, as are your GIS data. Even worse, multiple copies of your GIS data probably reside in different places and are accessed by different people and may even be in different states of completion. How many times have you struggled to find that shapefile, and then once you've found it tried to figure out the provenance of the data (admit it, almost no one does metadata, even though they're supposed to), or tried to figure out if you've got the most up-to-date version? Desktop search seems to work OK for finding e-mails based on a few keywords, but I don't think I can let it loose to wander over our entire server – it would be out there all day. Why can't the computer work more like the human brain, and access information quickly by association? It seems as though no matter how much time we spend organizing data logically into folders and subfolders, we still spend an inordinate amount of time searching through directory trees for that one file we need.

Using 144 terrabytes of RAM, IBM's Blue Gene supercomputer was recently used to simulate a cat's brain (this is absolutely true, but it runs 100 times slower than the real thing). The cat brain is based on 1 billion neurons and 10 trillion synapses. So you can see how far we've got to go to in terms of hardware advances before we can even get the computing and data recall power of my little cat Leo out of something other than a room-sized supercomputer. They say it will be another 10 years before they can simulate the human brain, and I'm sure that's being overly optimistic. In a way it harkens back to the old days of ENIAC, the gigantic tube computer first used in the 1940s for calculations in support of development of nuclear weapons. You can see how far we've come since the ENIAC days, so perhaps there's hope we can get past this cat-brain thing, but it could be a while.

So this is my call to action for all who will listen – data management, data access, and data mining – there seems to be an awful lot of work that needs to be done. It seems that the next great frontier will be one of developing new ways to organize, sift through, and access the plethora of data that we all find ourselves working and struggling with. So come on people – I want one of those displays like Tom Cruise had in the Minority Report – *and I want it now.* I just hope it won't be prone to fits of moodiness or Alzheimer's...

ENIAC circa 1946

Simulated feline brain, circa 2009

CNM Offers a New Open Source GIS Class

by Kurt Menke

This summer CNM offered a new course: **GIS 2096 - Introduction to Open Source GIS and Web Mapping,** taught by Kurt Menke. The course was offered as a 2 credit experimental course. It will now be offered each summer at CNM as a 3 credit course, after a successful run this summer.

The course has three sections: free and open source software (FOSS), FOSS for desktop GIS, and FOSS for web GIS. During the desktop section, students are introduced to Quantum GIS (QGIS), GRASS GIS, using the two in combination via the QGIS GRASS plugin, and the GDAL/OGR spatial data libraries. The web section starts with the basics of web mapping and Google maps. The students then learn how to use the Apache webserver, MapServer and Cartoweb to stand up a web mapping application. No knowledge of programming is assumed. This course will be offered again during the summer 2011 session.

New Mexico Broadband Mapping Program continued

The mapping of "availability" entails securing Non Disclosure Agreements (NDA) with Telecommunications Providers who deliver Broadband Services using DSL, Cable, Satellite, Wireless, Mobile, and/or Fiber technologies. These data are assessed in a secured environment, transferred in a variety of media and formats, evaluated, processed, normalized, aggregated into generalized geographies, and uploaded to the NTIA per specifications.

DoIT is committed to a New Mexico Broadband Program (NMBBP) that is sustainable. As such, local resources are being engaged to support the Program. Earth Data Analysis Center (EDAC/UNM) has been secured to provide the mapping services and has been highly successful in meeting the tight deadlines required by the NTIA. Within the year the NMBBP will launch a website where users can enter an address and see what broadband service providers and technologies are available to them. In addition a broadband speed testing utility will be available to validate network performance. In addition to the mapping task, the NMBBP will be analyzing socio-economic factors towards broadband "adoption". In line with this a robust dataset of "anchor institutions" will be compiled to support adoption through not only points of departure for infrastructure, yet serve as Public Computing and/or Training Centers.

DoIT looks forward to a collaborative and integrated Program that serves the needs of New Mexico. A program that will eventually provide "broadband for all" and move New Mexico from one of the lowest adoption states to one of the highest.

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CNM Sweeps SkillsUSA Geospatial Competition

by Amy Ballard

Dan Levrier, Kenneth Newman and Chaz Jetty, students in the Geographic Information Technology program at Central New Mexico Community College, took the gold, silver and bronze medals respectively this June in the SkillsUSA National Competition in Kansas City, Missouri. The competition starts with an in-house software-based exam to identify the top 3 CNM students. These students advance to the national level where they compete against students from other colleges by taking a software based and written exam. The winning students received scholarship awards of $1000 (gold), $500 (silver) and $250 (bronze), in addition to ESRI software products.

Levrier, Newman and Jetty will be finishing their GIT A.A.S degrees this fall at CNM. Daniel Levrier is currently employed in a student position with the Forest Service in Albuquerque.

Unfortunately the Skills USA Geospatial competition has been discontinued, however, the GeoTech Center, an NSF sponsored organization, is planning to launch a similar event this year. For information contact Amy Ballard at Central New Mexico College (aballard1@cnm.edu).

Chaz Jetty, Amy Ballard, Daniel Levrier and Kenneth Newman at the SkillsUSA National Competition
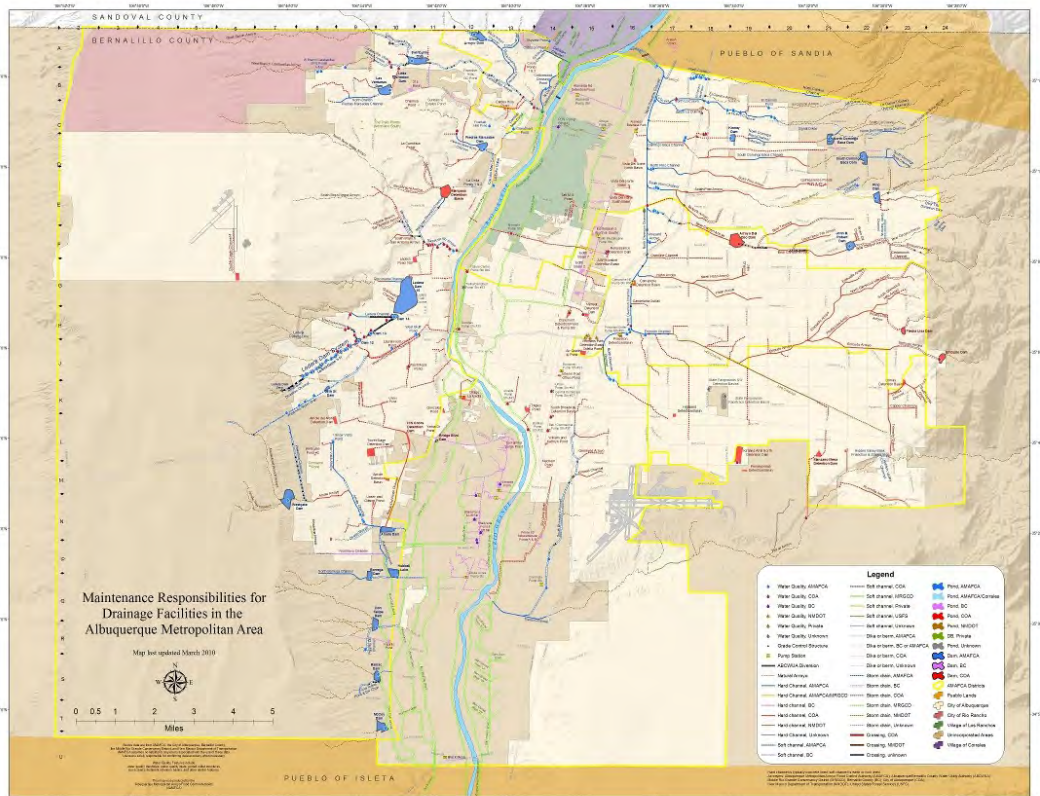
Using ArcGIS Server for Flood Control

by Kevin Troutman

The Albuquerque Metropolitan Arroyo Flood Control Authority was created in 1963 by the New Mexico State Legislature with the responsibility for reducing the impact of storm water in the Albuquerque area. It is governed by a nonpartisan five member Board of Directors serving in six year staggered terms. The Authority covers an area of approximately 350 square miles of Bernalillo County, including the entire City of Albuquerque, the Village of Los Ranchos de Albuquerque, portions of the City of Rio Rancho, and some of the unincorporated areas of the County between the Sandia Mountains and the Rio Puerco escarpment. AMAFCA has a small staff including an eleven member maintenance crew, ten engineers and other staff, all overseen by the Executive Engineer. AMAFCA has constructed over 50 miles of improved channels, 14 miles of underground conduit, taken maintenance for 70 miles of natural arroyos, and constructed 36 flood control dams with over 16 miles of dam embankment.

AMAFCA committed to in-house GIS in 2002 with the purchase of its first ArcGIS Desktop license. In the following years, most of the maintained drainage features, as well as the future projects were converted into a series of shapefiles. Information for the public was provided by a series of increasingly detailed maintenance maps. These maps were static PDF files which were available from the AMAFCA website. Starting in 2008, AMAFCA contracted a study to plan the next course of GIS development. This GIS needs assessment was performed during the spring of that year. The final report outlined several possible plans with varying timelines and financial considerations. One common theme in the plan was the development of a web based GIS application. The selected plan involved a 3-year development cycle, but deviated from the needs assessment plan by creating a staff position at the start of the development rather than at the end.

In late 2008, AMAFCA issued a Request for Proposals for GIS professional services. The intent was to develop a web application combining GIS and document management with additional data development. The application would have to be developed off site while hardware was updated at AMAFCA. At the time, there was only one tower server in the garage with a portable air conditioner for climate control. The application was to provide an interface for showing AMAFCA properly by digitizing the plats and link features to scanned construction as-builts. The developers were required to use


Maintenance Responsibilities for Drainage Facilities in the Albuquerque Metropolitan Area

ArcGIS Server and support multiple browsers. At the conclusion of the development phase, the application would be physically hosted by AMAFCA.

In January 2009, AMAFCA entered into a contract with the Albuquerque office of AMEC Earth & Environmental for development. By summer of that year, the first application was completed, showing the maintenance responsibilities, similar to the PDF maintenance map, and linking to a sample document set. At that time, the discussion turned towards enhancement of the site. The first change was to incorporate rich internet applications, specifically Adobe Flex API. Flex was selected over Microsoft Silverlight at the time for several reasons. First, Adobe Flash Player had a larger distribution at that time, which meant that most users would already have the programs required to view the site. Second, there were more tools already constructed for ArcGIS, which would reduce development time and cost. Third, Flash had been around for a longer period of time and, as a result, had a larger support community. AMAFCA also realized that the application could be use in place of the static PDF map. Since controlling access to the construction plans for dams and channels was considered important, the site was split into a public web application and a password protected private application. Both applications had the same tools with the exception of the document management tool found in the private site. The site used the standard Flex API header and toolset, but did use a cached imagery tile set to boost performance. At that point, AMAFCA linked the public site to the main website. At the end of 2009, AMAFCA decided to enhance the site with additional customization. There were changes to the interface, replacing the default Flex interface with a completely custom interface, including animation for the toolsets. A number of custom tools were created, such as annotation, printing, and bookmarking tools as well as a maintenance request tool. In addition, the user was provided with a choice of a streets mode, which mimicked the background on the maintenance map PDF, and an imagery mode, using the 2008 regional orthophotography. This is the current iteration of the application.

While the document management aspect of the application was the primary reason for its inception, the main use has turned out to be an information distribution tool. All planned projects, including long range plans outside of the published project schedule, are available to the public. The **application** is also used by outside agencies to determine the maintenance responsibilities of the drainage features in the region. The maintenance tool has not attracted as much attention
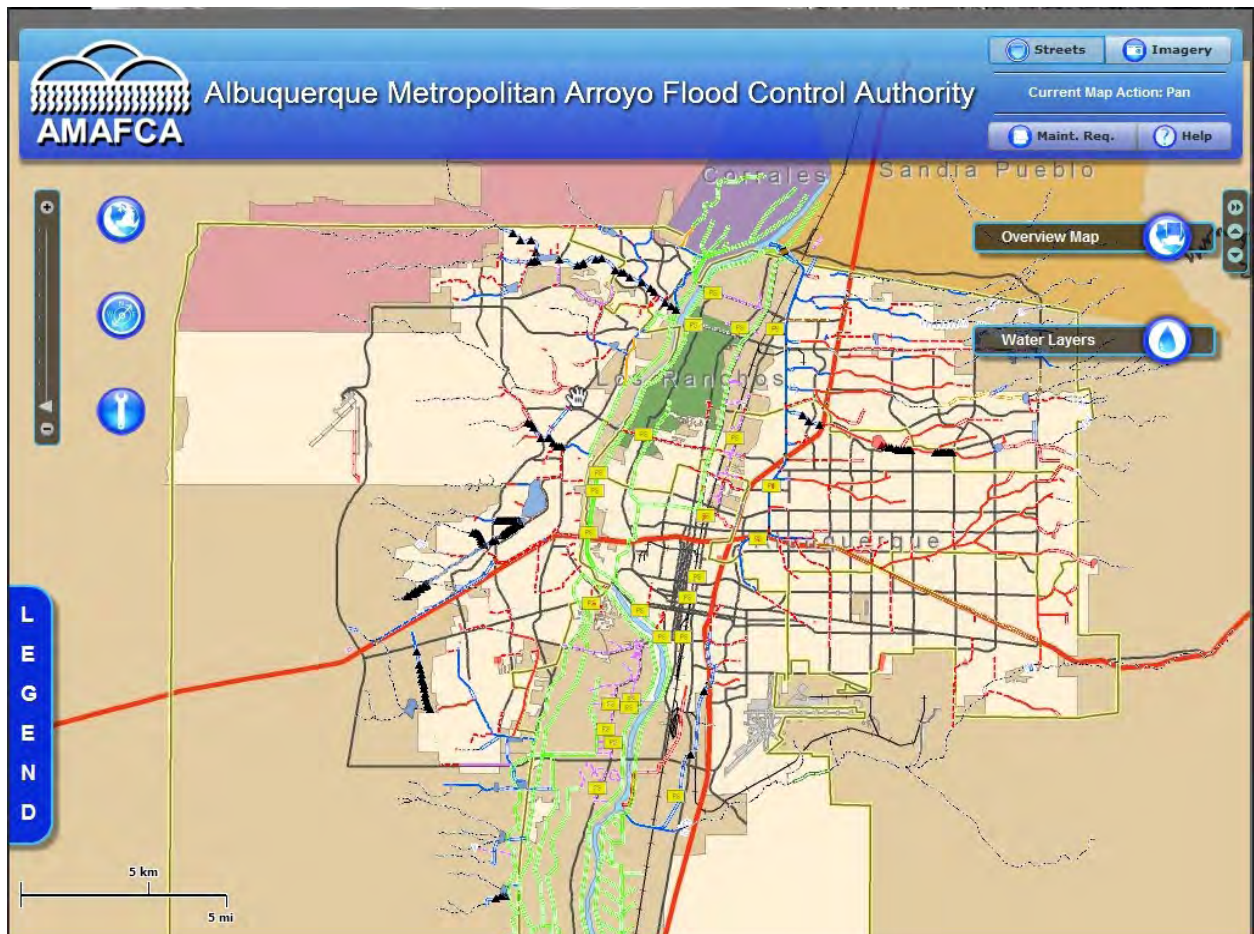
Using ArcGIS Server for Flood Control - continued

as previously thought, but the administrative staff still uses the site when responding to phone call inquiries. The document management tool is still part of the application. It has been designed with an architecture that will support more than just the scanned PDF documents that are currently available. The more significant use of the application occurs during the AMAFCA Board of Directors meetings. A large interactive touch screen is available during these meetings. As a result, the application is used more often than the large format maps that were used in the past. Before the meeting, staff will use the bookmark tool to select the extent on the map for each agenda item. During the meeting, the ability to zoom in and out, as well as annotate the map on the screen, makes this application a more effective decision support tool for the Board as well as staff during these meetings.

Looking toward future development, AMAFCA is looking to further enhance the application based on the feedback that has been received as well as the staff experiences and requests. There are planned upgrades to the newer software releases to leverage the additional functionality that are inherent to the programs. The goal is to maximize the workspace available for the user. There is a plan to incorporate printing templates into the print tool to allow for multiple page sizes. The documents management tool will also receive some modification, splitting the documents into construction plans, easement documents, and land ownership/right-of-way documents. Much farther down the road, AMAFCA hopes to have real-time flow data available throughout the drainage network, and possible video, once the sensors are deployed.

While most of the hardware will be in place by October 2010 for on-site hosting of the application, AMAFCA is currently deciding if internal migration is the best option. At this time, the current bandwidth available at AMAFCA would not leverage the response time currently seen with an off-site solution without a possibly expensive upgrade. The decreasing cost of cloud computing and ESRI's announcement of a partnership with Amazon Web Services for hosted ArcGIS Server may make the internal migration a more problematic solution. AMAFCA has deferred this decision until fiscal year 2011-12 while development still continues.
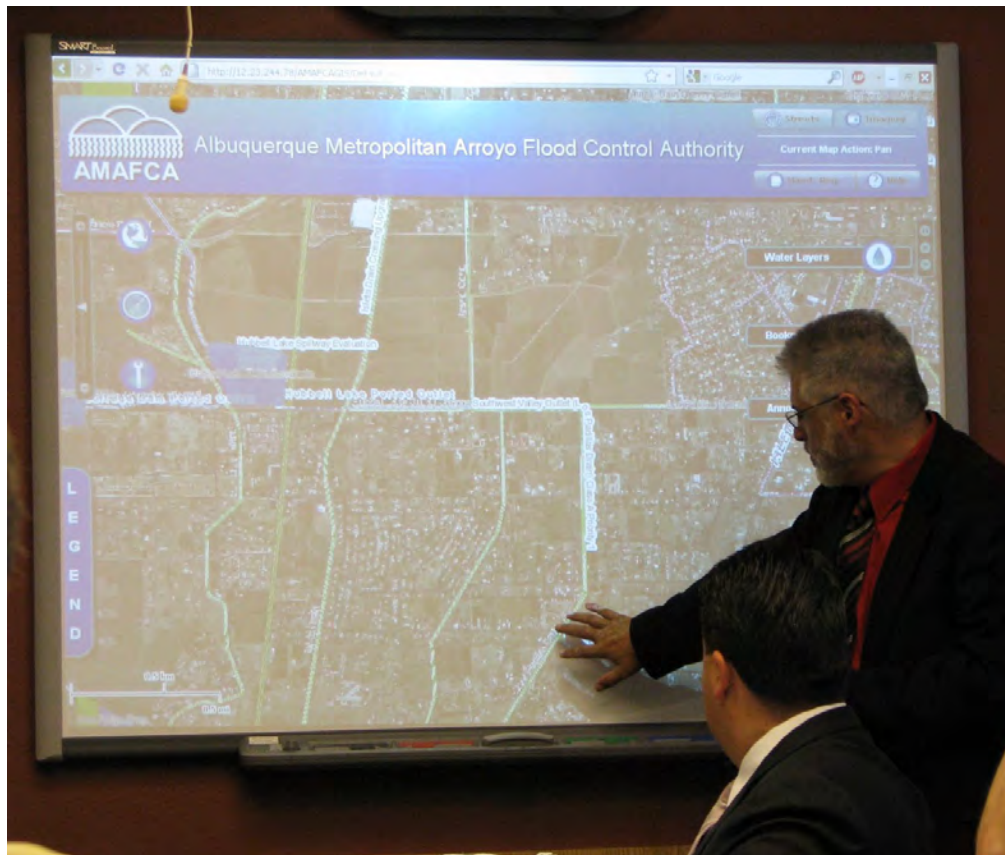
The website can be accessed from the main AMAFCA home page at www.amafca.org. It is the interactive maintenance map found under the Maps tab or at the bottom of the page under Report a Problem.
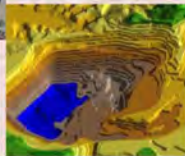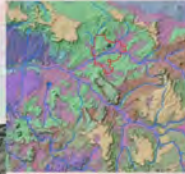
NSGIC Update *by Leland J. S. Pierce, NM Representative to NSGIC*

National States Geographic Information Council (NSGIC)

Gar Clarke (Department of Information Technology) has taken over as representative for New Mexico to NSGIC, while Leland Pierce (NMGIC vice-president) continues to be an active member. Both attended this year's annual meeting, in Minneapolis, MN in mid-September. The theme of the conference was "Collaborating at the Headwaters", as Minneapolis is at the headwaters of the Mississippi River. Will Craig (MN) is the out-going president, Jon Gottegen (CO) is the incoming president, and Tim De Troye (SC) was voted in as president-elect. States continue to press ahead with the mapping requirement of broadband grants; a major theme was the use of "crowd sourcing" as a means to acquire low-cost basemap information, and how this will change the GIT profession in the future; Imagery For The Nation is becalmed, waiting for the federal government to take action on it; Transportation For The Nation is moving by way of US DOT developing a strategy for a national transportation base layer; and, Addressing For The Nation might be a project in the coming years, given the extensive interest in the issue at the conference. NSGIC is close to pushing out a beta version of the "Geospatial Maturity Assessment", which is an advance in how states and the federal government can assess how mature the state spatial data infrastructure is for each state and for states to toot their horns nationally on their accomplishments; Leland Pierce is a member of this committee. Leland has also accepted the position of being co-chair of the NSGIC membership committee, serving with Phil Worrall of Indiana.

For more information on NSGIC, visit: http://www.nsgic.org

NMGIC Member submitted Websites

NMGIC Twitter Feed : http://twitter.com/NMGIC_Inc

Compare Internet Maps Tool: http://tools.geofabrik.de/mc

Historic maps of New Mexico: http://alabamamaps.ua.edu/historicalmaps/us_states/newmexico/index.html

Portable GIS (aka: GIS on a Stick): http://www.archaeogeek.com/blog/portable-gis/

Ten ArcGIS Server Help Topics: http://geo.geek.nz/esri/top-ten-most-helpful-arcgis-server-help-topics/

Geospatial Revolution Project has launched: http://www.geospatialrevolution.psu.edu

Mapping evapotranspiration with Landsat: http://www.idwr.idaho.gov/GeographicInfo/METRIC/et.htm

OA Digital (Oxford Archaeology) version of gvSIG - powerful Java based Open Source GIS:

http://oadigital.net/software/gvsigoade

Mapshark, a comprehensive application for ESRI ArcGIS users to create dynamic, customizable web maps:
http://mapshark.cloverpoint.com/
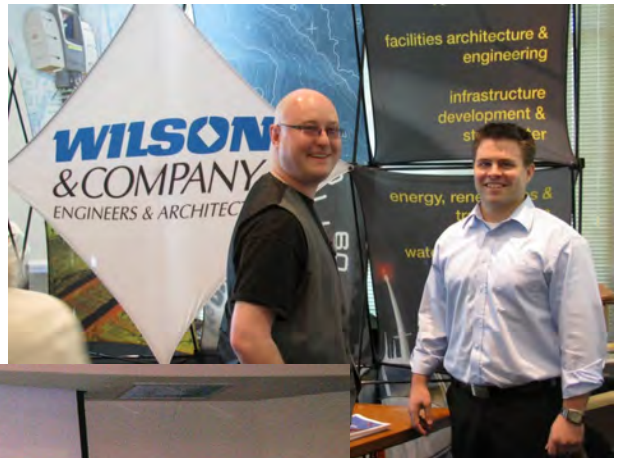
2010 Fall Mystery Photo

This Mystery Photo was taken somewhere here in New Mexico.   Can you identify the location?
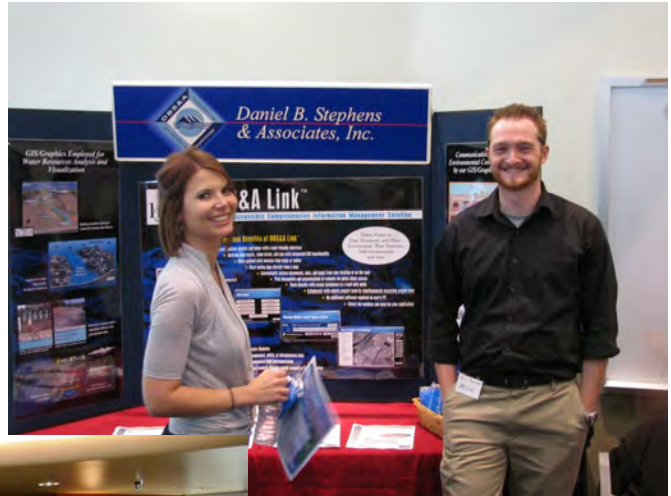
Hint: those are clouds around that rocky reak.

Contact Rick Koehler with your answer.

NMGIC Spring Meeting May 2010:

NMGIC Spring Meeting 2010:

Book Review by Geoff Raffie

Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time
by Dava Sobel, (Hardcover: 1995, Walker & Company; ISBN: 0140258795, ISBN-13: 9780140258790) (Softcover: Penguin Books, 1996), 184 pages.

Longitude tells the true story of a self-taught "country bumpkin" who graced the world with his ingenious designs and masterful craftsmanship: John Harrison, who solved the sea-faring navigator's problem of determining longitude accurately. This relatively compact work by author Dava Sobel is a *New York Times Bestseller* and won the 1997 *British Book of the Year Award*.

John Harrison ("… a man of simple birth and high intelligence") was the son of carpenter, and learned that craft by his father's side. It is said that in his childhood he was stricken with smallpox, and bedridden for a long time. He was given a watch, and like many an inquisitive child, took it apart and learned something of the intricacies of watch-making. Later, as an adult, his knowledge and skill were such that even his first clock movement survives to this day in working order. His second clock was the 1722 tower clock at Brocklesby Park: like his other early clocks, the movement is made mainly of wood. Harrison's knowledge of different woods, learned from carpentry, helped him to devise mechanisms which took advantage of the range of material properties inherent in wood. The Brocklesby Park tower clock still works to this day, nearly three hundred years later.

Sobel's account begins by setting the stage: why and what a navigator needs to determine positions, the difficulties sea-farers encountered over the ages, and the typical "situation at the time" when Harrison became interested in unraveling the riddle of longitude. The book soon turns to descriptions of Harrison's benefactors and adversaries, and while he was fortunate to have some assistance from prominent horological figures of the day, he was also unfortunate in having potential competitors being placed in a position to throw up official obstacles in his path.

[*A geographic aside: determining where one's ship was while traversing the oceans, far from land and subject to the whims of weather, was a major problem prior to the late 1780s. Latitude could be determined from measuring the noontime sun's altitude (adjusted by declination tables). But longitude forced sea-faring navigators to use an assortment of tricks and techniques (dead reckoning, and/or astronomical measurements and lunar distances), none of which were sufficiently dependable. If one wanted to calculate longitude by comparing local time (derived from the noontime sun) with that of the time at a set land location, one could do so, but systematic errors would creep into the calculations. Plus the sea clock would suffer all the indignities of being aboard ship ... a ship that rolls and pitches and yaws and might be battered by stormy seas for days. Cumulative small errors often resulted in very large naval errors, such as shipwrecks.*

In 1714 the English Parliament enacted the Longitude Act, which offered the Longitude Prize (actually, several prizes of increasing amount based upon increasing levels of longitude accuracy). The Board of Longitude would convene when necessary to as-

sess whether someone had come up with a solution to the longitude problem, and potentially award one of the prizes, or, at least provide some financial support for worthy continuing efforts.]

Harrison has already created several clocks noted for outstanding accuracy when he began work on his first marine timekeeper in 1730 (H1, Harrison Number One). He spent five years on it. It passed a sea trial, and although the testing conditions weren't as rigorous as those required by the Board of Longitude, Harrison gained some limited funding to continue his work on subsequent models. Over a period of roughly forty years, he labored on six iterations of clocks, completing H4 (Harrison Number Four) by 1761, and H5 soon afterward. His efforts were recognized with some monetary awards, but typically only after tremendous trial and tribulation caused by his detractors ... demands for additional tests, additional working models, etc. ... and lengthy debates in Parliament with all the intrigues and political maneuvering typical of endeavors which should kept strictly scientific but are often not.

So, the question is, did Harrison finally prevail? Did the Board of Longitude grant him the honor of the Longitude Prize? Did Harrison die forgotten and penniless in spite of his contributions (contributions not only to the world of clockmaking, but inventions like the caged roller bearing - an anti-friction device, and the bimetallic strip - used by Harrison to negate the effects of temperature variations on a clock's pendulum)? The answer lies within the book.

Longitude is an excellent book, a must-read for those of a geographic bent, as well as anyone who enjoys the triumph of intellect and perseverance over a particularly knotty problem (or even the triumph of a tradesman over those who would deny his genius). You might not come away from reading it with the ability to chart your course with a sextant and timepiece, but you'll have a new-found respect for those who faced the uncertainties of the sea-faring life, and for the person who made their life and livelihood much safer.

Geoff Raffie, Sep. 2010

Geospatial Companies, Vendors, Businesses and Consulting Firms:

Your Ad Could Be Here !

Join NMGIC as a Corporate Member, advertise in the MapLegend and on the NMGIC website..

Reach out to the New Mexico geospatial community !

Please contact the NMGIC Board for details.

2010-2011 GIS Calendar of Events

GIS Day

GIS Day 2008, November 17th, 2010, "everywhere"

NSGIC

2011 Midyear Conference, Feb 27nd– March 2th, 2011, in Annapolis, Maryland

ASPRS

2010 Annual Conference November 15th-19th, 2010, in Orlando , Fl

GITA

3rd International Conference on GIT4NDM, in Chiang Mai, Thailand

NMGIC

Spring 2011 Workshop/Meeting, Date and Location to be determined

ESRI

International User Conference, July 11th-15th, 2011, in San Diego, California

2010 Membership Dues

New Mexico Geographic Information Council, Inc.

Name: _____

Organization/School _____

Address Line 1 _____

Address Line 2 _____

City _____ State _____ Zip _____-____

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Enclosed is my: Check ☐   Money Order ☐   Make Check or Money Order payable to: NMGIC, Inc.