



NORTH ARROW

Mapping into the Millennium

North Carolina Property Mappers Association Newsletter

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President's Corner

The 2001 NCPMA annual conference was very successful. The theme was "MAPPERS ARE PRICELESS". A sentiment I have shared for many years. Keynote speaker, Onslow County Commissioner, Delma Collins gave a very energetic presentation. Individual conference sessions were informative, diverse, and well planned. Considering a lot of counties are operating on a thin budget this year, attendance was very good at the conference.

Words cannot "describe" the special entertainment provided on Wednesday night by the *Supremes Review*.

Congratulations are extended to all those who were presented with special awards of recognition at the Thursday night banquet.

My appreciation and congratulations goes out to Patricia Rouse, Onslow County, and all her program committee on a job very well done.

Any association member who would like to volunteer to serve on or with a committee should do so by all means. You may contact the committee chairperson listed in this edition of the North Arrow or contact me.

I am truly honored and excited about the up coming year as President of your association. The Executive Board has several goals and projects for the up coming year. We have already begun work on some of them. If you have any ideas, suggestions, or comments contact me or a member of the Board. Remember, this is your association.

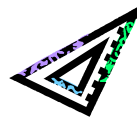
In closing, I urge you to keep in your thoughts and prayers the family and friends of the New York City bombing incident. Also remember American service men and women engaged in combat abroad.

Bobby McMahan

Jackson County

NCPMA President





Job Opportunities

The **County of Surry** is accepting applications for a Geographic Information System's (GIS) Technician to work in the Surry County Tax Department. This position will provide technical support in creating and maintaining Surry County's GIS database. Duties will include cadastral mapping; production of maps and reports; assisting the public in GIS related areas; and documenting projects (metadata). Work is performed using ARC/INFO, ArcView, and other ERSI products. The successful applicant will perform planning, design, and production activities for various mapping projects under the direction of the GIS Coordinator; develop and maintain geographic data; provide technical support and assistance to the GIS Coordinator; and perform related duties as required.

JOB REQUIREMENTS: This position requires completion of two years of college level education in geography, computer science, or a related field; or at least one year of training in computer-aided drafting/mapping or a related field including experience using ARC/INFO or ArcView; or any equivalent combination of education, experience, and training.

The successful applicant will be required to satisfactorily complete IOG Fundamentals of Listing and Appraising and acquire N.C.P.M.A. certification.

Other desired knowledge and skills include a working knowledge of GIS technology and applications; working knowledge of the creation of maps and mapping products; skills in interpreting and translating geographic data; general knowledge of programming; and excellent organizational and communication skills.

SALARY RANGE: Grade 65 \$25,872 - \$42,744

Applications will be taken at the Employment Security Commission, 541 West Pine Street, Mount Airy, NC (phone **336-786-4169**) until filled. A complete list of duties and physical demands will be available for review. In-house applicants should contact Sandra Snow, Human Resources Officer, at **401-8202**.

SURRY COUNTY IS A DRUG FREE WORKPLACE AND AN EEO EMPLOYER

2002

Committee Chairpersons

Education

Marie Monteith
Buncombe County

Membership

Brenda Bowers
Rowan County

Standards Co-Chaired

Rex Minneman
NCLR Mgt. Program
Albert Taylor, Jr.
Carteret County

Legislative

Roscoe Reeves
Orange County

Historical

Gail Forehand
Chowan County

Program

Nita Barton
Henderson County

Publication

Rick Norejko
Buncombe County

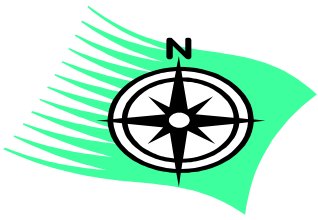
Location

Rick Norejko
Buncombe County

Nominating

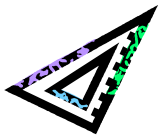
Billy Oakes
New Hanover





UP COMING EVENTS

<u>DATE</u>	<u>EVENT</u>	<u>LOCATION</u>
November 26-30, 2001	IAAO Course 601	Greensboro, NC
February 6-8, 2002	South Carolina Mapping Advisory Council Conference	Greenville, SC
April 7-10, 2002	GIS / CAMA Conference	Reno, NV
August 5 – 9, 2002	NCPMA Mapping School	Newbern, NC
October 2 – 4, 2002	NCPMA Fall Conference	Research Triangle Park, NC
October 13-16, 2002	IAAO Annual Conference	Los Angles, CA



Sheila Harris Honored

President Billy Oakes honored Sheila Harris from Buncombe County at the Annual Conference, October 4, 2001 with an Award of Merit. Sheila was cited for her contribution and accomplishments in publishing the North Arrow. She has turned this into a first-class newsletter worthy of respect and recognition. Billy, on behalf of the Association, thanked her for her time and effort.



Course 601- Advance Mapping

The NCPMA will sponsor IAAO Course 601- Advance Mapping, **November 26 – 30, 2001**. The site for the class is the Holiday Inn Express (where we had Mapping School in 2000). The Hotel is located at Exit 128 off of I-85 / I-40, 3114 Cedar Park Rd, Greensboro, NC. A conference room rate of \$65.00 per night plus tax is available by calling **336-697-4000**. **The cut off date for reduced room rates is October 25, 2001**. A registration form is attached. The tuition for this class is \$375 for NCPMA members and \$400 for the non-members.



IAAO's Member of the Year is . . .

Richard J. Norejko, Director of the Buncombe County Land Records was awarded the International Association of Assessing Officer's (IAAO) *Member of the Year Award* on September 10, 2001 at the Conference in Miami, Florida.

IAAO has 9,000 members, and Richard was chosen from 12 finalist for this prestigious award.

Rick has authored all the mapping courses for the IAAO, along with writing articles for their Mapping / GIS Section Newsletter. He currently holds the position of Super Chair for the Section and Councils Committee of IAAO.

His hard work and dedication earned Rick this award.

Tuition Increase

One would have to think very hard to remember the last time the NCPMA raised the tuition rate at it's annual school. The last increase was before the creation of the two mapping cirriculums and student reference manuals.

Due to increase cost associated with hosting the week long school (i.e. associated hotel cost, printing and supplies) the Executive Board agreed to increase the tuition charge to \$200 per student beginning with the 2002 school.

This rate is still a bargain when you consider the tuition for an IAAO Course or any other mapping or software training.

Please take note of the increase and budget accordingly.



Happy Halloween!



International Association of Assessing Officers



Course 601 Registration
November 26-30, 2001
Holiday Inn Express, Greensboro, NC

Name:	
County:	
Address:	

Make checks payable to:
North Carolina Property Mappers Association (NCPMA)

Registration fee for NCPMA Members: \$375.00
Non-Members \$400.00

Please return to:
NCPMA
C/O Richard Norejko, CMS
Buncombe County Land Records
20 S. Spruce St. Room 205
Asheville, NC 28801

If you have any questions, please feel free to call.
Rick 828-250-4976



The future of GIS

Many disciplines can benefit from GIS techniques. An active GIS market has resulted in lower costs and continual improvements in the hardware and software components of GIS. These developments will result in a much wider application of the technology throughout government, business and industry.

Global Change

Maps have traditionally been used to explore the Earth and to exploit its resources. GIS technology, as an expansion of cartographic science, has enhanced the efficiency and analytic power of traditional mapping. Now, as the scientific community recognizes the environmental consequences of human activity, GIS technology is becoming an essential tool in the effort to understand the process of global change. Various map and satellite information sources can be combined in modes that simulate the interactions of complex natural systems.

Through a function known as visualization, a GIS can be used to produce images - not just maps, but drawings, animations, and other cartographic products. These images allow researchers to view their subjects in ways that literally never have been seen before. The images often are equally helpful in conveying the technical concepts of GIS study subjects to non-scientists.

Adding the element of time

The condition of the Earth's surface, atmosphere, and subsurface can be examined by feeding satellite data into a GIS. GIS technology gives researchers the ability to examine the variations in Earth processes over days, months, and years. As an example, the changes in vegetation vigor through a growing season can be animated to determine when drought was most extensive in a particular region. The resulting graphic, known as a normalized vegetation index, represents a rough measure of plant health.

Working with two variables over time will allow researchers to detect regional differences in the lag between a decline in rainfall and its effect on vegetation.

These analyses are made possible both by GIS technology and by the availability of digital data on regional and global scales. The satellite sensor output used to generate the vegetation graphic is produced by the Advanced Very High Resolution Radiometer or AVHRR. This sensor system detects the amounts of energy reflected from the Earth's surface across various bands of the spectrum for surface areas of about 1 square kilometer. The satellite sensor produces images of a particular location on the Earth twice a day. AVHRR is only one of many sensor systems used for Earth surface analysis. More sensors will follow, generating ever greater amounts of data.

GIS and related technology will help greatly in the management and analysis of these large volumes of data, allowing for better understanding of terrestrial processes and better management of human activities to maintain world economic vitality and environmental quality.

From:

U.S. Geological Survey

Happy Thanksgiving



The NCPMA just concluded its 22nd **Annual Mapping Conference** in Research Triangle Park. This year attendance peaked at 138 and for those who were unable to attend you missed a GREAT one.

The Keynote speaker **Delma Collins** from Onslow County kicked us off by talking about making adjustments to your life when we encounter unexpected events; Thursday morning we were privileged to be addressed by North Carolina's Secretary of State **Elaine Marshall**. Thursday's other speakers included **Jim Loncella** from L. Robert Kimball and Associates; **Roger Barnes and Gary Thompson** from NC Geodetic Survey, **James Soto** with Sanborn Corporation. Friday's session included **Rex Minneman** from the NC Land Records Division and Susan Marlow from SDS. The Conference ended with a panel discussion moderated by **Roscoe Reeve** on Plat recordation.

Brenda Bowers, Membership Chair reported 58 new members to The Association and Trudy Ashby reported 85 students at this year's mapping school in Asheville. That is a very positive sign that our association continues to grow.

Our Annual Conference continues to be the correct measure of laughter, information and networking. Ingredients that lead to a successful meeting and association.

Rick

BACK TO BASICS: GPS

Global Positioning System

Continuing in this series of GIS / Mapping articles, I thought that I would write about Global Positioning Systems and how they operate. The Global Positioning System (GPS) was initiated by the Department of Defense in 1973. The system uses satellites orbiting the earth at an altitude of between 12,000 miles and 12,500 miles. They were launched from The Cape Canaveral Space Center from Delta II rockets. In order to get into the correct orbit, the rocket must be fired straight up, and then levels off at the predetermined altitude. It then orients itself downrange at an angle of 55° to the equator, and uses a booster rocket to “throw” the GPS Satellite forward at a speed that will put it into a near circular orbit.

“How does the satellite stay in orbit? Picture this. If you were to gently throw a baseball, the ball would move forward a short distance then immediately begin to drop toward the ground, before hitting it. Now, if you throw harder, it will still fall to the ground, however, this time the ball lands further away. In both scenarios, the ball takes the same amount of time to actually “fall” to the ground. Gravity is the reason for the similar “fall” time. The gravity field of the earth pulls objects downward. The downward pull is independent of how fast or slow you throw the baseball in a horizontal direction.

Suppose now that you can throw the baseball hard enough so that in the time gravity pulls the ball one foot closer to the ground, the earth curves downward by one foot. If this happened, the ball would never hit the ground. The ball would be in a trajectory (the path a satellite follows through space). So, nothing keeps the satellite up. Gravity holds the satellite down by deflecting the forward motion to follow the curvature of the earth.

When the GPS Satellite is in orbit 12,000 above the earth, it is affected by gravitation, not gravity. Gravitation is the force documented by Sir Isaac Newton that causes all objects to be attracted to each other. Gravity is the resultant force of gravitation and the centrifugal force caused by the rotation of the earth. Therefore, while a satellite is “falling” in its orbit, the earth is rotating underneath it, or curving away; the orbit does not rotate with the earth. So how fast does the booster throw the satellite? At 17,000 miles per hour. Now let’s suppose that you throw the ball slightly faster than required to maintain circular orbit velocity. In the time that gravity would normally pull the ball downward a foot, the ball would travel forward enough for the earth to curve downward more than one foot. This allows the baseball to actually gain altitude even though it was not thrown upward. As the ball falls around the earth gaining altitude, gravity gradually slows the upward progress to the point where the ball reaches a maximum altitude halfway around the earth from the point where the ball was thrown. The baseball then begins to descend around the other half of the earth, losing altitude as it moves. Eventually the ball returns to its original launch position with its original velocity and the process is then repeated. This orbit is now an ellipse, not a circle.

Currently there are 27 GPS Satellites orbiting the earth. As previously mentioned these satellites are tilted toward the earth’s equator by 55 degrees to ensure coverage of the earth, including the polar regions. Powered by solar cells they continuously orient themselves to point their solar panels toward the sun and their antennas toward the earth. The entire constellation is controlled from the master control station at Falcon Air Force Base in Colorado Springs, Colorado and monitoring stations at Hawaii, Ascension Island in the Atlantic Ocean, Diego Garcia atoll in the Indian Ocean and Kwajalein Island in the Pacific Ocean. The master control station controls the atomic clocks in each satellite which provide extremely accurate time.

Back on the ground, a GPS receiver is used to determine its position on the earth’s surface by computing the difference between the time that a signal is sent from one of the satellites and the time it reaches the receiver. This time information is placed within codes broadcasted by the satellite so that the receiver can continuously determine the time the signal was broadcast and received. The receiver then computes the distance, or range, from the receiver to the satellite by multiplying the time it took the signal to travel from the satellite to the receiver by 186,000 miles per second (the speed of light). With information from at least four satellites and knowing the location of the satellite when the signals were sent, the receiver can compute its own unique three-dimensional position relative to the entire earth and the entire satellite constellation.

That, fellow members, is how GPS determines your position on the earth’s surface

Richard J. Norejko, CMS

Can you honestly say.....

That since the conference, if you have heard a SUPREMES song on the radio, that this imagine didn't pop into your head?



The NCPMA is taking another step forward to serve our members better. The board has approved the organization having its own website. Richard Elkins from Edgecombe County has volunteered to set everything up for the site and host it. He is in the process of doing that now. This opens a whole new world of possibilities for the association. If you have any input on what you would like to see on the website pass it along to me. The board will have the final decision on what can be put on the site. If you have any experience with setting up or hosting websites and would like to volunteer to be Richard's backup please contact him. We would like to have another person in line in case Richard left his job or because of other reasons couldn't continue to host the site. We are all excited about this website. Look for more information in the next North Arrow as the project progresses.

**Bobby McMahan
NCPMA President**