



# Wisconsin MAPPING BULLETIN

## Board commits funds for soil mapping

by Ted Koch

In a precedent—setting action at its January 20 meeting in Madison, the Wisconsin Land Information Board (WLIB) voted to commit funding for the statewide completion of digital soil mapping by 2004. The funds will be used in a cost-share mapping effort with the Natural Resources Conservation Service (NRCS), a federal agency having the responsibility for coordinating soil mapping nationwide.

The board has never before in its nine-year history voted to commit program funds to the strategic statewide completion of a foundational element. Soil mapping is one of five original data-related *foundational elements* of the Wisconsin Land Information Program. The NRCS will contribute almost two-thirds of the total costs, and additional contributions beyond the WLIB's will be needed.

### The situation at present

Today, twenty of Wisconsin's 72 counties have digital soil surveys that meet current NRCS standards. Another 14 counties have secured funding to complete digitization and certification of their surveys by 2004. Cost-share funding for these mapping and digitizing projects has come from many sources, including WLIB grants. For the remaining 38 counties, a cost-share program with the State of Wisconsin and the NRCS will complete soil survey mapping, conversion of the existing maps to digital form and NRCS certification.

Commenting on the benefits of completing soil mapping statewide, NRCS State Soil Scientist Ken Lubich said to the Board, "This project is an excellent opportunity for you to complete one of your foundational elements by 2004. The WLIB has already adopted NRCS's soil mapping and digitization standards. Our agency's willingness to cover 2/3 of the total cost of this project, while asking the state for the other 1/3, provides the opportunity to capture additional federal funds. Plus, an added bonus is that new and revised soil mapping requires a digital orthophoto base, which will get us

much closer to having statewide orthophoto coverage—another foundational element of the State's Land Information Program."

At the current levels of funding, the NRCS has estimated completion of digital soil mapping statewide would take until the year 2014. With anticipation that money available for this work after 2004 will decline significantly, the NRCS presented the WLIB with an itemized cooperative funding plan to complete the mapping by 2004.

### Details of the package

In response to the NRCS' proposal, the WLIB, in its January 20 action, agreed to commit a total of \$1.6 million over six years toward the digitization and certification of the 38 uncompleted, uncertified county soil surveys. The funding for this particular activity will be on a 50-50 basis, with the NRCS also committing \$1.6 million.

To complete the field work and initial mapping in nine northwest counties (Ashland, Bayfield, Burnett, Douglas, Iron, Price, Rusk, Sawyer and Washburn), the NRCS estimates a cost of \$7.15 million. Of this, the NRCS requested a state cost-share of \$2.6 million or approximately 35%. In consideration of this, the Board voted to commit \$870,000 (1/3 of the \$2.6 million requested) over six years, contingent on finding other sources of funding to cover the remainder of \$1.73 million.

Overall, the NRCS places this project price tag at slightly over \$12 million, asking the state for a total of \$4.2 million, with the NRCS agreeing to pick-up the other \$7.9 million.

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## WLIB News

by Ted Koch

Since our previous issue, the Wisconsin Land Information Board has met twice both in Madison. Future meeting dates set in 1999 are March 10 in Appleton (as part of the Wisconsin Land Information Annual Conference), May 19, July 21, September 15, and November 17, all in Madison.

### Officers Elected

The board elected new officers in January. With 12 of its 15 members present and voting, the board elected Ted Koch, State Cartographer, as chair. Koch replaces Les Van Horn, Brown County Surveyor and Real Property Lister, who voluntarily stepped down after serving a one-year term as chair. Koch, who moves up following two one-year terms as Vice-Chair, has been a board member since 1991.

Fred Halfen was selected as the board's Vice-Chair. Halfen, who was appointed to the board last year, is Vice President of Ayres Associates' Photogrammetry Division in Madison. Frank Fennessy, representative to the board from the WI Department of Natural Resources, was elected to a second term as board secretary.

### Administrative Support Staff

The Office of Land Information Services (OLIS), the administrative office for both the WLIB and Wisconsin Land Council, has recently added two more staff members. Sarah Kemp has been hired as a Community Services Specialist, and Jerry Sullivan as an Information Specialist. Kemp previously worked as a cartographer for the Waukesha County Department of Parks and Land Use. Sullivan moves over from the WI Department of Natural Resources' Geographic Services Section.

### Foundational Element Custodians

The WI Dept. of Transportation has volunteered to develop a custodial model for Wisconsin Land Information Program's data-related foundational elements. The DOT model includes the concept of data custodianship, scope of custodial authority, list of stakeholders, and custodial dimensions. Within this framework, the DOT will define and detail its custodial responsibilities for Wisconsin Geodetic Networks. A draft will be presented on March 10 in Appleton.

### WLC News

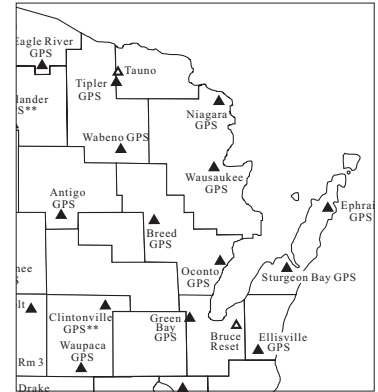
The Wisconsin Land Council last met on October 27 in Madison. As of our printing deadline the next council meeting had not yet been scheduled. The other bodies chartered by the council have been meeting. The State Agency Resource Working Group is looking at policies amongst state agencies. The Technical Working Group is studying the development of a state land information system (see story, page 3).

## Enhancing the geodetic reference framework

### Wis. HARN gets an (interim) update

by Diann Danielsen, Wis Dept. of Transportation

As reported here previously, the Wisconsin High Accuracy Reference Network (HARN) was re-observed in 1997. The goals of this project are several: to upgrade Wisconsin's HARN (one of the first nationally); to add additional stations to support a Federal Aviation Administration (FAA) airport network; to tie together our existing Continuously Operating Reference Stations (CORS) and benchmarks; and to harmonize our HARN with others now completed in the neighboring states of Illinois, Iowa, Michigan and Minnesota.



Wisconsin's field work was completed late in 1997. Since that time, the National Geodetic Survey (NGS) has been reviewing, analyzing, processing, and adjusting the observed data. No major shifts in horizontal position are expected. Greater differences will be seen in vertical positions, however, since vertical observations can be made more accurately today using GPS than in the early 1990's when Wisconsin's initial HARN survey was completed.

### Dealing with minor differences

NGS is still resolving final publication and distribution policies with regard to these data. The agency is seeking to develop an interim solution that will provide updated values where needed, but not cause too much change or confusion for users prior to the next major national adjustment. For example, it is likely that for the short term, NGS will publish coordinate values only for stations that recently have been added to the network and those existing stations whose positions have changed by more than 5 cm or some other pre-defined threshold. All other changes would be reserved for use in the national readjustment, scheduled for 2002.

What does this mean for Wisconsin? For the next few years it means you will have to watch your coordinate values very carefully - and you may need more metadata! You may find one station in the local area with a NAD83(1991) adjusted value, while its immediate neighbor has a NAD83(1997) - the official name is not yet known) adjusted value. Thus you will need to be able to work and move data between these recent adjustments until the national readjustment reconciles all stations into one network.

*continued on page next page...*

*Gore announces federal budget items*

**\$40M community grant program proposed**

by Ted Koch

As reported in our previous issue of the Mapping Bulletin (October, 1998), Vice President Al Gore proposed, in an early September speech, an initiative to build community-federal information partnerships. In that speech, Gore said the President's Year 2000 budget would propose grants to help communities develop and use geographic data, and to assist federal agencies to make their data available and useful for communities.

In a January 11 speech at the American Institute of Architects, Gore followed-up with some specifics, indicating that next year's federal budget will carry a \$40 million proposal for the information partnership program. This specific program is part of a much larger administration proposal to initiate a comprehensive "livability agenda" to help communities grow in ways that better insure a higher quality of life and sustainable economic growth.

Key elements to the administration's strategy include preserving green space, easing traffic congestion, and promoting regional "smart growth" strategies. To achieve these goals the administration is proposing a new financing tool generating \$9.5 billion in bond authority for investments by state, local and tribal governments, and more funding for public transportation, education, and a regional crime-data sharing network.

As these initiatives proceed through the legislative process, we will carry news here in the *Bulletin*. In addition, check our web site for late-breaking news.

*(source: Federal Geographic Data Committee)*

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**Wis. HARN update, continued from page 2**

**March workshops to provide detail**

To provide further assistance and clarification, WLIA will hold two relevant half-day pre-conference workshops on Tuesday, March 9, at its annual conference in Appleton: *Status and Future of the National Spatial Reference System*, and *National Standard for Spatial Data Accuracy*.

All NGS data, including Wisconsin's recent observations, will be collected and reported and published using this new standard.

See page 14 for additional information about the WLIA conference.

For more information about the recent HARN observation, the upcoming national network readjustment, or preliminary information that may be available for use in Wisconsin, contact Glen Schaefer (608/266-8485) or Paul Hartzheim (608/267-2462), both at WisDOT, or D. David Moyer, Wisconsin NGS State Advisor, at 608/266-3919.

**State Land Info System in Planning**

by Bob Gurda

*"...study the development of a computer-based Wisconsin land information system and recommend to the governor legislation to implement such a computer system."*

With those words as its most basic guidance, a diverse group of twenty-four people named to the Wisconsin Land Council's Technical Working Group have begun their work. Chaired by Doug King, formerly the Executive Director of the Wisconsin Land Information Board, the group has met twice already (December and January) and plans at least two more meetings during the balance of the winter.

A series of committees have just been established, each with a full plate of issues to consider. The committees are structured around the framework for a technology budget request: Application, Data, Technology, and Organization.

The work group is on a fast track in order to have an effect on the state budget process. The group's first task, which technically was a bit out of sequence, was to come up with some initial description and budget numbers for a system so that a placeholder could be inserted into the proposed budget which the legislature will begin considering on in February. The intent is to forward a more robust proposal to the Land Council later this spring which would be the basis for reformulating budget language.

**Why? What? Who? How? When? Where?**

The TWG has the large task of drawing up plans for a state land information system: its purpose (audience, business needs), its institutional setting (who is responsible for what, where does that occur, and how is it funded), its mechanisms (data collection and/or connection, hardware, software, and communications), and what it delivers and how (data, standards, interface, analytical and display capabilities). Dozens of issues are embedded within each of those sub-topics.

The work group will draw upon its collective experience and further will study what other states have implemented or planned in terms of state land information systems. Since Wisconsin's work is in context of the Land Council, it is possible that the land information system design will focus primarily on supporting land use planning

**For more information...**

As the work group progresses over the next several months, we will post periodic news items on the SCO web site. Look there for a list of the TWG's members.

The group is staffed by the Department of Administration's Office of Land Information Services (OLIS) which will be maintaining information on its web site as well. You can link to that site through the SCO web site.



Stevens Point, WI

The year 2000, by contrast, is shaping up to be very busy. The three Regional Planning Commissions along the eastern part of the state are all preparing to coordinate flights over their entire service areas. These photographs would be appropriate materials from which to produce digital orthophotos with 2-foot pixel resolution. Dane County is heading in a similar direction.

**Smaller area projects**

Several townships and small watersheds also saw fresh aerial photography this last spring. These are in the counties of Ozaukee, Waukesha, Racine, Jefferson, Green Lake, and Fond du Lac.

**DNR Forestry has a new web presence**

It's now easier to find information about and ordering materials from the Wis. Dept. of Natural Resources' forestry photography. This statewide project continues on a schedule of acquiring summer photographs over one quadrant of the state every other year (making for an 8-year cycle). For 1999, the northwestern part of the state is scheduled.

DNR has built web pages that explain and demonstrate the photography, illustrate the acquisition cycle, list field offices where copies can be viewed, and provide the opportunity to download copies of their order form. You can link to their new web site through the SCO site.

1998 results, and plans for the future

**Aerial photography project news**

by Bob Gurda

Relative to some years, 1998 was a fairly light year for aerial photography projects in Wisconsin. The next couple of years look to be busier, particularly the year 2000.

As usual, we have surveyed the firms and programs active during the most recent flying season, and details on the project results can be found in our Wisconsin Catalog of Aerial Photography which is part of our Internet web site (see URL on page 16 of this newsletter). The catalog includes major projects, and for each reports month/season, film type, scale, area covered, viewing contact, and purchasing contact.

If you have questions about aerial photography in general, or specifically about any project, give us a call.

**What's up with NAPP?**

As we have reported in our last several issues, our state was scheduled for complete coverage under the National Aerial Photography Program (NAPP) in the spring of 1998. However, contractor delays and few periods of clear skies before spring leaf out conspired to limit our coverage of this moderately high-altitude imagery.

Overall, about 60% of Wisconsin's NAPP was acquired, and virtually all of that has passed inspection. The great majority is in the northern regions, with a few counties gaining full coverage. The remainder of the state is scheduled for flights this coming spring.

**Wetlands coverage**

Four far northeastern counties also had fresh photography acquired under the Wisconsin Wetland Inventory. The counties flown in the spring of 1998 are Florence, Forest, Oneida, and Vilas.

**County orthophoto photography**

Only one county, Sawyer, contracted for spring 1998 photographs for the purpose of converting them to digital orthophotos.

**What's with the white paper?**

by Bob Gurda

Maybe you've already noticed that this issue of the Bulletin comes on different paper than we have been using. There are a few other design changes, too.

The previous light gray paper had been our mainstay for almost ten years. Recently we switched from camera-ready copy to digital creation of negatives, which has boosted our capacity to print gray-scale images and cleaner text. The white paper (which is also smoother) will further enhance these effects.

In another change, we have converted to a seasonal publication cycle rather than specific months of January, April, July, and October. We intend to continue publishing four issues each year.



# Clearinghouse Connection



## Wyoming: A Glimpse of the Future?

by AJ Wortley

Imagine firing up your web browser and loading up your state's Internet map server. From here, you can toggle theme layers on/off, zoom, pan, and query on a state image map.

However, you then discover that the information you need isn't listed. You click the *Select Databases* button to add more data layers to your interactive map display.

Once you have a map displaying the information you want, you realize a 3-D view would more effectively communicate the information. One click picks a region and voila, a 3-D view appears that can pan, zoom, rotate, etc.

It looks good, so you decide to print the map. But first you can preview a full-size JPEG image.

It is much easier to imagine this scenario now than it was even a few years ago. In fact, these are the kinds of activities that are currently on the horizon for statewide clearinghouses and land information systems. And, they are available today through the Wyoming Internet Map Server (WIMS).



### Looking to other states' progress

Several other state clearinghouse sites appear to be at a similar level of progress to Wyoming. From the Wyoming WIMS site, you can visit these other sites.

At first glance, Wyoming's GIS community appears similar to ours here in Wisconsin. They have a Spatial Data and Visualization Center (SDVC) housed at their own UW whose role has its similarities to our own Land Information and Computer Graphics Facility (LICGF) at Madison. They have an Office of GIS in their DOA-equivalent agency which might be characterized as a hybrid of our State Cartographer's Office and DOA's GIS Service Center. They also have two statewide NSDI clearinghouse nodes, one run by the state Office of GIS and another administered by the SDVC at the university.

### Similar Face, Similar Function

What is important about these likenesses is that similarities in community structure yield similarities in functional development and decision-making for such issues as statewide metadata clearinghouses and data access. At the state level, Wyoming has two NSDI Clearinghouse nodes, developed and administered separately by the state and the university. The nodes differ in their focus with the state's emphasis on administrative data layers and information while the SDVC-run Clearinghouse aims to document natural resource information.

The two clearinghouses do, however, overlap in their data and metadata collections. Interconnectivity is provided

through participation in the federal network of clearinghouses so all nodes from the state are searched simultaneously as well as through cross links between their websites. Other parallel efforts developing in Wyoming include collecting survey results from the land information community (administered and compiled through the SDVC at the university), an orthophoto browser, and on-line DRG availability.

### A Lasting Impression

Beyond the similarities, Wyoming has pursued interconnectivity and unity for their system. For starters, there is a Wyoming GIS resources page to which each agency or organization is linked, providing a reference hub for the websites of the agencies and user groups whose unifying interest is GIS.

Another focal point is the Wyoming GIS Directory where people, agencies, and organizations who fill-out an on-line survey are grouped and listed according to their affiliation. This survey, run by their state Office of GIS, allows GIS users to find others with similar interests in their area. The directory also encourages participants to reveal what data sets they maintain prior to metadata creation and public data availability. This is yet another way to reduce duplication of effort in data creation through statewide networking.

Finally, the development of Wyoming's Internet Map Server allows geospatial users to envision what might be possible as data creation and interoperability standards progress. To be able to interact with geospatial data on-line enables a wider audience than ever before to literally see the possibilities of GIS technology and geospatial databases. This wider audience can only help in creating the momentum necessary to finish some continuing groundwork tasks like data development. Accessibility, availability, and integratability are just some of the long-standing goals for the land information community that appear to draw closer through utilizing new technology in outreach activities like these.

### Where does Wisconsin go?

Comparing Wyoming's progress to our own gives a glimpse of some possible outcomes of decisions currently being made in our own state. As Wisconsin stands on the brink of new development in its land information community, perhaps we'll be the next state to serve as a progressive/advanced model for comparison by other states on the same path.

To take your own tour of the Wyoming site, visit the SCO web site and follow the links in the "News" section that covers recent issues of the *Mapping Bulletin*.

# Institutionalizing the Program means it has arrived

*Diann Danielsen, who is finishing up her term as President of the Wisconsin Land Information Association, serves in a GIS coordinating role for the Wisconsin Department of Transportation at its main office in Madison. We talked with her about trends in Wisconsin.*

## **What impressions would you like to share with our readers, from your experience leading the WLIA?**

This role has brought me closer to more issues than I ever expected! It's been at the same time, both fascinating and draining, to be near the center of so much activity. While there have been many daily details, I have also been trying to watch for emerging trends and changes. It's impossible to focus at both levels all the time, yet it's important to keep perspective.

**Our state continues to make steady and laudable progress in land records modernization.**

## **What specific trends have you seen in how our state handles its land information challenges?**

First, and most importantly, our state continues to make steady and laudable progress in land records modernization. There are many great examples and documented stories of how the Wisconsin Land Information Program has provided a structure and strong foundation for the future. That's not a new trend, but it is one that persists and will continue.

I think an important aspect of this modernization goes beyond the data and computers that so often get our attention. In fact, it even goes beyond the increasing number of business applications being developed. I'm talking about how the very concept of modernized land information is becoming institutionalized at various levels of Wisconsin government. I see both pluses and minuses.

## **Can you give us some examples?**

The most obvious example of institutionalizing the Wisconsin Land Information Program would be the sheer number of positions and public agencies that are devoted to building

and using GIS systems. The few that existed ten years ago, most were experimental.

Many of the pioneer systems now are parts of much larger organizations. For example, at WisDOT, what was once an esoteric and little understood technology used by a handful of HDTDs<sup>1</sup> is now on the desktop of over 200 staff and is an increasingly favored application development environment.

**The people who make up our land information community today constitute a broader group with vastly more collective expertise.**

Another case is the number of people who have embraced GIS skills to make their work more productive—some have grown into new jobs altogether. The people who make up our land information community today constitute a broader group with vastly more collective expertise.

## **That all sounds quite positive. What might be the down side?**

Many of these same people now work in more complex institutional settings than they did earlier. GIS can serve so many different needs that once it's viewed broadly within an organization as a resource rather than an experiment, the demands on GIS can mushroom quite quickly. Furthermore, meeting those demands requires competing with other Information Technology (IT) projects and needs. It becomes important to recognize the foothold GIS technology gains in the organization, and to formalize it and integrate it with other IT or business programs.

## **Does the recent change in how the State of Wisconsin administers its Land Information Program represent a similar trend?**

In some ways, yes. I think the good news is that the WLIP has been enough of a success that the State of Wisconsin is attempting to "institutionalize" the Program. However, that's a complicated issue because of the many players and issues involved. I am concerned about how conflicting goals, duties or roles will be reconciled and harmonized.

For example, as you have reported in previous issues of your newsletter, the Department of Administration recently brought together several program areas that deal with land information in a regulatory sense, a unit that provides GIS Services to DOA, and the administrative support functions for both the Wisconsin Land Information Board and the Wisconsin Land Council. The very act of merger that created the Office Land Information Services (OLIS) is a great example of the State recognizing an opportunity to better coordinate certain functions.

Many of us have looked forward to OLIS. By its very presence, it signifies that Wisconsin has evolved to a new level in how it approaches land information. OLIS has the potential to better coordinate State policy and budget matters related to land information. That's a leadership role that we can benefit from, across the state, far outside the realm of state agencies. In fact, leadership is probably the single most important feature of OLIS in the long run.

## **You mentioned concerns. What might conflict with the leadership role that you pegged as most important?**

I have been wondering whether it is really possible for a single institution such as OLIS simultaneously to embrace regulation, coordination, and services. This may require a super-human balancing act. I would be a bit more comfortable if we more thoughtfully separated the coordination activities and "coordinators", from the "do'ers" who will administer the policy.

**Leadership is probably the single most important feature of OLIS in the long run.**

For instance, is it reasonable to ask OLIS staff to coordinate the design of a computer-based Wisconsin Land Information

*continued on next page...*

<sup>1</sup>Heavy Duty Technical Dude—See WLIP glossary, Glenn Meyer, 1993.

*State Cartographer's Commentary*

**Parcel Mapping Standard can bear fruit**

by Ted Koch

Standards are a common necessity. Without them, many daily activities would be difficult, time-consuming and unproductive. We rely on standards to make familiar areas of our lives more convenient and safer. Road signs provide a common navigation language in all 50 states, light bulbs and sockets match up, and bank cards can be used to obtain cash around the world.

In the mapping arena, GIS standards can guide the production of accurate, well-documented data, and assure compatible computing systems that allow the transfer of information to be used for common applications.

Through the second week of March, the membership of the Wisconsin Land Information Association (WLIA) will have the opportunity to comment on, and vote to approve or reject, three proposed standards. Each standard would affect the state's Land Information Program. The three standards cover parcel mapping, PLSS database definitions, and document indexing.

**Drafting the standard**

I have been involved in developing the standard on parcel mapping, having served as the chair of the WLIA's Parcel Mapping Task Force which developed the standards document now ready for review and approval. I can tell you first hand, as many of you are already aware, writing standards is not an easy process.

Our task force of nearly 20 members met at many WLIA quarterly meetings, initially simply discussing parcel mapping. We attempted to distill, from many ideas, what exactly the task force should do. Some advocated developing educational materials to provide the most benefit, particularly for those around the state with the responsibility of building digital parcel maps for their local government. Others felt maximum benefit would be gained by creating a mapping standard where none now existed.

**Dual, complementary products**

In the end, we tried to do both, producing a dozen pages of educational material on parcel mapping and parcel mapping techniques, plus another dozen or so pages documenting digital parcel mapping data content standards.

The goal of the standard is to provide a basic level of consistency for automated parcel data in Wisconsin. This consistency will provide some commonness of parcel representation across systems, and facilitate data sharing and integration.

The educational material and the standard will be produced as two separate documents. I believe the task force did excellent work on both. Fortunately, near the end of our work we received some very helpful input from the Wisconsin Society of Land Surveyors, which is reflected in the draft standard.

Now it is up to the GIS community in the state to give us their reaction to the Task Force's work. We certainly hope that our efforts have produced will have measurable impact on the value of the state's land information program.

**Guest Interview, continued from page 6**

System that represents all of our interests, when that same staff has a vested interest in the system's development and operation? Is it practical to expect a single office to administer land regulation functions and at the same time take a leadership role in formulating both state land information and land use policy (policy that may be directly related to regulation)?

I certainly don't know the answers to these questions, but I do believe that the balancing act can be accomplished. The key to success will be to put the leadership role first.

**Most of the focus today is at the state level, with the early activities of the WLC and OLIS. At first blush, how do things look for local governments?**

As far as the "institutionalization" issue we've been discussing, it's a good news/bad

news situation. The good news is that the WLIP is enough of a success that Wisconsin is institutionalizing the Program. The bad news is that that activity appears to be happening only at the state level. For example, while we have established an office and a small number of staff at the state level, we

**I believe that in the end we will have a statewide - not state, not county, but statewide - program which represents all of us.**

have not permanently secured the local government funding that has been the basis of the Program. The grant program is still scheduled to disappear with the sunset of the WLIP and the WLC in 2003. I am concerned too that local government does not appear to be

part of the decision-making for how those remaining dollars will be spent.

**So is this "institutionalization" good news or bad news?**

I have to remain an optimist. I am hopeful that some of the concerns just mentioned will disappear as OLIS staff settle in and the office runs more smoothly. And, hopefully, the WLC will meet soon to learn about the WLIP and the Land Information Program, and enter into a Memorandum of Understanding describing how these two programs will work together. And we know Wisconsin local government - they'll be watch-dogging the Program and its dollars! I believe that in the end we will have a statewide—not state, not county, but statewide - program which represents all of us.

**Q:** *I want to use the DRG files along with other digital data that is referenced to my county coordinate system. What are my options?*

**A:** The DRG (short for “Digital Raster Graphic”) files are in a grid data format, specifically a common graphics file format called TIFF. As such they can be viewed with a variety of software.

A DRG is a scanned version of a USGS topographic quadrangle map, but what you are wanting to do requires a similar solution regardless of the source of your gridded file. What is important to know is if the grid image is registered to a mapping coordinate system.

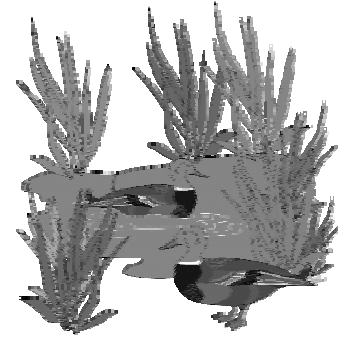
DRGs, as produced by the USGS, are registered to the UTM coordinate system. As a result, the grid cells are aligned with the UTM grid, and not with your county coordinate system grid. So, you won’t be able to simply overlay your local data on top of the DRG.

That is, the two differently referenced set of information won’t fit together unless one is changed to fit the other. This kind of adjustment is called a transformation, and a number of software tools exist that can do the job.

Transforming the DRG grid into your county coordinate system may be your best choice since you only need to do that once and thereafter all you local data will fit it. To transform a grid, each cell (or “pixel”) in the grid needs to be resampled into a newly oriented grid that is based on your local coordinate system. That’s a job for specialized software and a robust computer, and you would only want to have that done once.

You also could transform your local digital data to fit the DRG. However, presuming that you’ll be updating those files regularly in your local coordinate system, you would have to convert them over and over to the UTM coordinate system that the DRG is referenced to. The advantage in this approach is that converting vector files is much easier than converting gridded files.

By the way, if you acquire the derivative DRGs from the Wis. DNR, you would be dealing with the WTM rather than UTM coordinate system for the image grid. Otherwise, the issues are the same.



**Q:** *Where do I get National Wetland Inventory maps for Wisconsin?*

**A:** The short answer is that there aren’t any! While all other states have these maps, produced by the U.S. Fish & Wildlife Service’s National Wetland Inventory (NWI) program, Wisconsin doesn’t.

The longer answer is that Wisconsin has its own program called the Wisconsin Wetland Inventory which began at about the same time as the NWI, and the products resulting from the two programs are similar.

The Wisconsin Wetland Inventory (WWI) is operated by the Wisconsin Department of Natural Resources. Products include hard copy maps which are published over an aerial photographic backdrop, and digital files derived from the hard copy maps.

Because the original maps were drafted to match a non-orthophoto backdrop, the derived digital files are not as accurate as they might be if constructed today. Their absolute spatial accuracy has been improved to some degree by registering against more accurate base maps.

Hard copy maps at a scale of 1:24,000 cost \$5.00 per PLSS township, plus shipping and tax. Digital files cost \$15.00 per PLSS township plus shipping and tax. To find out more about WWI maps, or for an order form, contact the DNR at 608/266-8852 (hard copy maps) or 608/266-0756 (digital files).

The DNR performs map updates in several counties each year, using new aerial photography as source material.

*Editor’s Note: If you have a question, or had a question for which you found an answer that might be of interest to others, please let us know.*



Commercializing breeds choices

**A brave new world for satellite imaging**

by Brian Van Pay

We are entering an era of tremendous growth in the development and application of geospatial technologies in general, and satellite remote sensing in particular. Over the next five years, more than 25 earth observation satellites are planned for launch. These satellites have a number of advanced capabilities including resolutions as fine as 1-meter, which translates into a variety of new uses.

**A brief history**

Modern multispectral satellite remote sensing began with the launch of Landsat 1 in 1972. The field then widened to include four additional Landsat satellites, and a number of other foreign-owned and operated systems. All of these systems were owned or funded by a government organization and none of them had a resolution better than 10 meters.

This 40-year government monopoly ended in 1994, when President Clinton issued a decision allowing private firms to develop, launch, and sell high-resolution satellite imaging services with a resolution of less than 30 meters. Since then at least four US companies or consortia are either operating, or planning to operate advanced high resolution satellite systems. At the same time, international competition and cooperation from traditional providers (French, Japanese, and Russian) and non-traditional providers (Government of India, and a Chinese-Brazilian cooperative effort) is also growing.

**An expanding market**

Today the aerial imaging market alone is between \$1.5 billion and \$3 billion per year. Additionally, the yet immature market for geographic data and services is expected to increase to several billion dollars annually within the next decade. This market ranges from utility companies and environmental firms, to risk management concerns, commercial archaeological firms, farm cooperatives, foreign militaries, real estate companies, marketing agencies, to news, travel, and navigation industries, and all levels of government.

Satellite images already have a wide variety of uses, and with the increased spectral and spatial resolution, the new images will have even more uses. Traditionally satellite images have been used in large part to classify ground cover. A fresh example is the WISCLAND land cover, derived from Landsat images.

Other current and future uses include: change detection, heads up digitizing, property conveyance, wetland detection, infrastructure design and facilities management, utilities and telecommunications development, environmental assessment, land use planning, managing a forest, implementing "precision farming", oil, gas, and mineral detection, soil surveys, map making and revision, water resources planning and monitoring, urban planning, natural disaster assessment, and assessing a market for manufactured goods.

Professor Tom Lillesand of the UW-Madison's Environmental Remote Sensing Center has identified three major factors driving this expanding market and "the next era" of land-oriented satellite remote sensing systems. They include:

- Continued transition toward an information-based society.
- Recognition of the interdependence between environmental quality and sustainable economic development.

- Continued maturation and application of geospatial technologies such as geographic information systems (GIS) and the Global Positioning System (GPS).

**What's on the horizon?**

The new observation satellites (Table 1) will provide greater choice, higher resolution, more frequent coverage, and intense competition. These systems (Table 1) group naturally into two major sensor types, optical and radar.

Within the optical systems, there are also two major sub-groups: those following in the footsteps of the Landsat systems, incorporating wide swath widths, intermediate to low resolution, and relatively broad spectral coverage; and those commercial systems characterized by high resolutions, narrow swath widths, and a relatively narrow spectral range. A derivation of group two are the hyperspectral scanners that contain numerous narrow bandwidths.

The second major group is the radar sensor systems, which actively record land surface characteristics. The most notable advantage of radar systems is their ability to penetrate cloud cover.

**Spatial resolution**

Some of the more important characteristics in these new satellites are: spatial resolution, swath width, spectral resolution, temporal considerations, data delivery considerations, and finally their ultimate usefulness.

Satellite resolutions will be as fine as 1 meter, which is in large contrast to traditional standbys such as Landsat's 30-meter and SPOT's panchromatic 10-meter resolution. Ten future satellites will have resolutions finer than 5 meters. In fact, scanned aerial photography from moderate altitudes has the equivalent resolution of a 1-meter resolution satellite.

Some of these satellites will have the ability to replace moderate-to high-altitude aerial photography

A problem with high resolution images is data volume. For example, at 1-meter resolution, a 40-acre field will encompass approximately 162,000 picture elements (pixels); a single acre comprises approximately 4050 pixels! This data volume will necessitate 10's of gigabytes of storage capacity and tremendous processing power for even a medium-sized farm operation.

**Spectral resolution**

The spectral resolution of a satellite is defined by the areas or bands of the electromagnetic spectrum that the satellite records. For instance, the Landsat Thematic Mapper sensor records (for each pixel) 3 bands in the visible part of the spectrum, 1 in the near-infrared, 2 in the mid-infrared, and 1 in the thermal band. Most of the new broad-swath satellites will record the same or nearly the same bands as the Thematic Mapper.

The hyperspectral sensors are of particular interest, because they will record hundreds of bands rather than just 6 or 7. The United State's URST system and the EO-1 system will have 210 bands and 542 bands respectively. Orbimage's Orbview-4 will record 280 bands.

These sensors offer a new array of challenges and opportunities for scientists and users. For instance, combinations of these narrow bands may be used to pinpoint spectral response differences with much greater precision than at present, and may allow detection of

*continued on next page...*

very early stages of plant stress or pest infestation. The trade-off here again will be data volume. In the case of Orbview-4 there will be 280 data observations per 8-meter pixel!

**Swath width**

With the notable exception of the Resource 21 sensor, the swath width of the high resolution systems are relatively narrow (Figure 1). In other words, the area the satellite will image (or its footprint) is much smaller than previous sensors. Many wide-scale operations across multiple townships or counties may consider the extent of coverage a more important consideration than even the spatial resolution for some applications.

**Temporal considerations**

Many of the new satellite systems will have a revisit time of less than a week. This improvement is due to the fact that the optics on these new satellites are no longer stationary, but are able to be pointed off to their sides. In addition, the substantial number of new satellites will allow for any given site on the earth's surface to be imaged several times in any given day.

**Data delivery considerations**

A number of satellite data providers stress their commitment to deliver their "products" or "information," and not "raw data." Raw data is often minimally corrected for geometric and atmospheric distortions, and needs a certain level of processing to be useful to the end user. Data processing has a price, however, both in terms of final cost and the time period between the collection of the data by the satellite and its delivery to the customer. Most often the data products will be disseminated electronically.

**New Uses**

Many satellite companies are marketing their product as a replacement of the traditional and costly production of aerial photography and orthophotography. As noted earlier, the resolutions of the scanned photography will be quite comparable to the high resolution satellites. Another major advantage is the fact that satellite images do not contain most of the inherent distortion that is in all aerial photography. This is because the satellites are much higher above the land surface as compared to aircraft that acquire photographs. Satellite images can be used as a map or a GIS backdrop with minimal pre-processing. As such, these new platforms have the potential to replace the costly and time-consuming process of orthophoto creation. Similarly, several satellite companies are planning to use pairs

of their satellites in tandem or multiple passes by a single satellite to produce stereo images and elevation data at a fraction of the price.

**Crashes and failures**

Many had hoped to have entered the remote sensing revolution by now, however, several platforms have crashed or failed to respond. Among the casualties are: Landsat-6, NOAA-13, Lewis, and EarlyBird 1. In addition, the launch of many new satellites are constantly being delayed. A recent example is Space Imaging's 1-meter resolution IKONOS 1 satellite which was pushed back from December 1998 to June 1999.

**Current high resolution satellites**

Some of the high resolution satellites are already up and running. The Indian IRS-1C and the IRS-1D systems both include a 5.8-meter panchromatic band as well as three 23-meter resolution multispectral bands. The Russian Spin-2 satellite has both a 2-meter and a 10-meter panchromatic band. Finally, the Spotimage Corporation is now operating SPOT-4, which has a 10-meter monochromatic resolution like its three predecessors, as well as an additional mid-infrared band.

**Other data sources**

One of the more interesting data sets will come from the Shuttle Radar Topography Mission (SRTM). The SRTM in a radar instrument that operates from within the payload bay of the space shuttle and will obtain high-resolution DEMs of over 80% of the earth. The shuttle launch date is September 16, 1999, but the data will not be available until 18 months after the mission. This mission will be particularly valuable for obtaining elevation data in places with very limited mapping resources, such as the Congo or Brazil.

The new satellite platforms have also prompted the declassification and release of thousands of spy satellite photos from both the American and Russian governments. For instance, the American 'Corona' program operated throughout the 1960s through the early seventies and obtained over 800,000 images with resolutions as high as 2 meters (6 feet). Many more images are expected to be declassified in the near future.

**An exciting future**

Costs for data and processing services are not known yet, and cloudy weather will still interfere with image capture (except radar) just like aerial photography. However, there is no doubt that the new suite of satellites will prove to be an invaluable resource to a number of public and private organizations. They will substantially change the way we look at our environment and how we make decisions based on a regional scale.

To find a list of sources and web sites from which this article was developed, visit the SCO web site's "News" section.

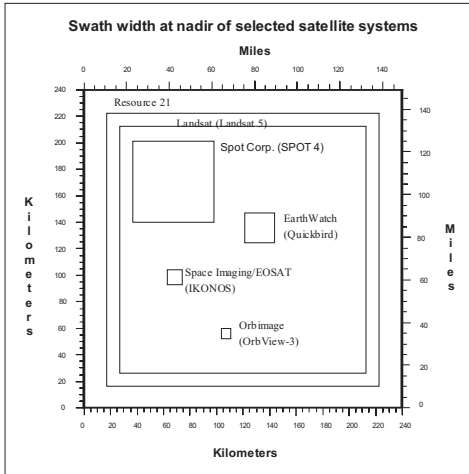


Figure 1: Lillesand, T.M., J.D. Gage, and M. Dudka)

(source: Lillesand, T.M. "Testimony of Dr. Thomas M. Lillesand Professor of Remote Sensing, University of Wisconsin-Madison before the Subcommittee on Basic Science House Committee on Science." September 28, 1998, and Lillesand, T. M., J. D. Gage, and M. Dudka. "The Next Era of Land Remote Sensing from Space: Implications for Agriculture")

### Table 1: Future Earth Observation Satellites

The following table includes those satellites which are proposed for future launch. It is limited to sensors which are primarily intended for remote sensing of the Earth's surface.

Satellite Name	Source	Expected Launch	Sensors	Types	No. of Channels	Resolution (meters)	
IKONOS	Space Imaging / EOSAT	1999	SpaceImaging	Multispectral	4	4	
				Panchromatic	1	1	
CBERS	China/Brazil	1999	CCD	Multispectral	5	20	
				Multispectral	3	80	
			IRMSS	Multispectral	1	160	
EOS AM-1	US	1999		ASTER	Multispectral	14	15,30,90
				MISR	Multispectral	4	275
				MODIS	Multispectral	36	250,500,1000
Landsat-7	US	1999	ETM+	Multispectral	6	30	
				Panchromatic	1	60	
QuickBird	EarthWatch	1999		Multispectral	4	3.2	
				Panchromatic	1	0.82	
EROS-A	West Indian Space, Ltd.	1999		Panchromatic	1	1.5	
EROS-B1	West Indian Space, Ltd.	1999		Panchromatic	1	0.82	
IKONOS 2	Space Imaging	1999	Space Imaging	Multispectral	4	4	
				Panchromatic	1	1	
Resource21-A,B,C, & D	Resource21	1999/2000		Multispectral	5	10, 20	
				Cirrus	Multispectral	1	100+
NOAA-L	US	1999	AVHRR	Multispectral	5	1100	
OrbView-3	Orbimage	1999	OrbView	Multispectral	4	4	
				Panchromatic	2	1-2	
ADEOS-II	Japan	1999	GLI	Multispectral	34	250-1000	
EO-1	US	1999	ALI	Panchromatic	1	10	
				Multispectral	6	30	
				Hyperspectral	542	30	
				LAC	Multispectral	1	250
Envisat-1	ESA	1999		ASAR	Radar	1	30, 150
				MERIS	Multispectral	15	300,1200
IRS-P5	India/US	1999	Pan	Panchromatic	1	2.5	
EOS PM-1	US	2000	MODIS	Multispectral	36	250-1000	
OrbView-4	Orbimage	2000	OrbView-4	Hyperspectral	280	8	
				Panchromatic	1	12	
ARIES	Australia	2000	ARIES-1	Multispectral	96	12, 30	
				Panchromatic	1	12	
HRST	US	2000	HRST/COIS	Multispectral	210	30	
				PIC	Panchromatic	1	5
IRS-P6	India/US	2000		LISS IV	Multispectral	7	6, 23.5
				AWiFS	Multispectral	3	80
NOAA-M	US	2001	AVHRR	Multispectral	5	1100	
XSTAR	France/Great Britain	2001	XSTAR	Multispectral	10+	20	
SPOT-5	France	2001	HRV	Multispectral	3	10	
				Multispectral	1	20	
				Panchromatic	1	5	
			VI	Multispectral	4	1150	
LightSAR	US	2002	SAR	Radar	4	3-100	
ALOS	Japan	2003	VSAR	Radar	1	10	
				AVNIR-2	Multispectral	4	10
					Panchromatic	1	2.5
EOS AM-2	US	2004		LATI	Multispectral	?	?
				AMISR	Multispectral	?	?
				AMODIS	Multispectral	?	?

(source: ERSC website: [www.ersc.wisc.edu/ersc/](http://www.ersc.wisc.edu/ersc/))

A victim of widespread technology adoption

**GIS/LIS Conferences come to an end**

by Bob Gurda

After a thirteen year run, there won't be any more annual national GIS/LIS conferences. The event, co-sponsored by five of the major professional associations involved in the GIS arena, was designed to be a meeting grounds for people in diverse disciplines but who all were interested in GIS.

Since the first conference in 1986, much has changed in how GIS is viewed in fields such as surveying, geography, government information systems, and utility infrastructure mapping. Each of these disciplines (and others) now feature GIS in their individual conferences.

In addition, specialized conferences organized to address specific application areas have proliferated. As a result, the need for the annual GIS/LIS conference became diminished and the co-sponsors decided to end the series following the 1998 meeting in Fort Worth, TX.

(source: *Photogrammetric Engineering & Remote Sensing*, v. 65, no. 1)



USGS completes merger in La Crosse

**UMESC formed from EMTC & UMSC**

by Bob Gurda

Two federal government facilities in the La Crosse area that study the Upper Mississippi River basin and region more broadly have been merged. The new organization, the Upper Midwest Environmental Sciences Center (UMESC), brings together the former Environmental Management Technical Center and the Upper Mississippi Science Center.

The merger is a result of the government-wide transfer of several functions formerly within the U.S. Fish & Wildlife Service and several other agencies that created the Biological Resources Division of the U.S. Geological Survey. One function affected is the Gap Analysis Program (GAP) which has helped fund statewide land cover mapping in Wisconsin and nearby states.

Center research focuses on aquatic ecology, migratory birds, fishery drug research and development, declining and endangered species, and environmental contaminants. Findings are used by resource managers and decision makers in the Department of the Interior, other federal agencies, states, and the private sector.

We will provide quick access to UMESC's Internet web resources through our Directory of Organizations on the SCO web site.

(source: *USGS*)

**SCO staff news**

by Bob Gurda

We have made one switch in our student staff lately. Chin-Chun Tang graduated in December with a Bachelor's degree in Geography, and hopes to continue her studies at one of several graduate schools, focusing on urban planning and GIS. While working for us over the last 18 months, she worked on a variety of projects, particularly several parts of our web site which she redesigned and updated.

Eric Brey joined our staff in mid-January. He is a sophomore, majoring in cartography and with background in surveying and property mapping.



TeSelle involved in numerous federal efforts

**GIS leader retires from NRCS**

by Bob Gurda

Gale TeSelle, National GIS Program Manager at the USDA Natural Resources Conservation Service's (NRCS) national headquarters, has retired after 31 years. Gale began his career as a cartographer with the Soil Conservation Service (SCS), in the Midwest Regional Cartographic Office in 1968.

His career path brought him to Washington in the position of Director of the Cartography and Geographic Information Systems Division in 1983. Shortly thereafter, he participated in a ground-breaking seminar at UW-Madison on the modernization of land information systems. In 1996 Gale was named the NRCS National GIS Program Manager.

Throughout his career, TeSelle was instrumental in advancing GIS technology and expertise within the NRCS. He also provided GIS coordination leadership within the USDA and among other federal and state government agencies. He was one of the organizers and founding members of the National Aerial Photography Program (NAPP) and participated in its management for over 15 years. He was a founding member of the Federal Interagency Coordinating Committee on Digital Cartography in 1982, and chaired its Standards Working Group for seven years. While serving on this committee, he authored the National Geo-Data System plan, which served as the concept and vision for the National Spatial Data Infrastructure (NSDI). Gale helped form the Federal Geographic Data Committee (FGDC) and served as the agency representative on the FGDC Coordination Committee.

In 1990, Gale advanced a vision for a federal/state cooperative National Digital Orthophotoquad Program (NDOP). He organized federal funding, a program steering committee, and served as its first chair in 1993. Gale was active in the development of the current USDA Service Center GIS Strategy which provides a course of action to implement GIS technology in all of the Service Center offices by 2005.

(source: *NRCS*)



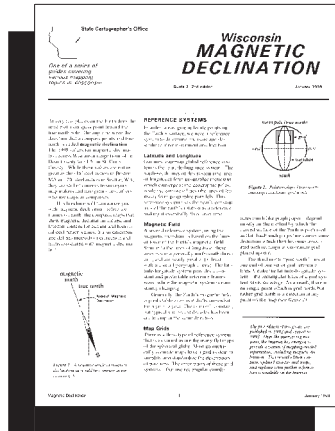
*Revision to the 1993 edition*

**Magnetic Declination guide overhauled**

by Bob Gurda

We have updated our 4-page guide *Wisconsin Magnetic Declination*. It is available free upon request. Shortly we will be distributing copies to a number of offices across the state including all county land information offices.

This second edition provides a new map showing the recent pattern of declination across our state, and highlights Internet-based resources that have become available over the last several years. It also retains most of the original explanation of concepts relating to the magnetic field's affect on mapping.



*Now provided on CD-ROM*

**SCO issues annual update to statewide geodetic data from the NGS**

by Bob Gurda

Once again we have created a customized set of geodetic control data and software for Wisconsin, based on the annual release of updated products from the National Geodetic Survey (NGS). In addition, we have packaged several products specific to Wisconsin that enhance the offerings from the NGS.

We have both the new 1998 CD-ROM from NGS, carrying data from 13 states in the north-central part of the U.S., as well as our own CD which contains the Wisconsin components of the NGS CD along with maps and tables for Wisconsin's HARN (see story on page 2) as well as a software tool for quickly finding latitude and longitude for any PLSS section in the state.

**Either product sells for \$50**

The selling price for the NGS CD or for the SCO's Wisconsin customization are the same: \$50. You can order these products from the SCO. Ask for an order form or print one from our web site.

**Benefits of the CD-ROM**

We have converted the delivery of our Wisconsin product from floppy disk to CD-ROM. This provides a more permanent medium and allows us to provide all files in their native format, not compressed as was necessary in prior years in order to minimize the number of floppy disks required.

*Ozaukee-Washington & Burnett counties*

**WGNHS releases geologic maps**

by Bob Gurda

Two new maps have been produced by the Wisconsin Geological and Natural History Survey (WGNHS). They cover county areas, although one covers two adjacent counties on a single sheet.

The first map, of Ozaukee and Washington counties, is another in the WGNHS series of maps which focus on surface materials resulting from the most recent glaciation. This map is at a scale of 1:100,000 and measures 23 x 33 inches. It is available along with a 56-page illustrated report and a second color plate showing seven east-west cross sections (\$12 for the package, *Bulletin 91*).

The second map depicts generalized water-table elevations for Burnett County. Its scale is 1:100,000 and it measures 26 x 36 inches. This map sells for \$ 3.00.

Prices listed above do not include sales tax or shipping. Contact WGNHS at 608/263-7389 or link to the WGNHS web site through the SCO web site's Address Book.

*Helps interpret soil maps and data*

**NRCS develops GIS viewing tool**

by Bob Gurda

Soils Explorer is a software program for viewing and query of a digital soil map and its associated attributes. This product is being developed by the Natural Resources Conservation Service (NRCS), a unit of the U.S. Dept. of Agriculture.

This product represents a likely future for the publication of soil survey maps. It incorporates a digital soil survey and its associated attribute tables with an orthophoto backdrop. A series of prepared interpretive maps can be displayed to depict a wide variety of features of the soils.

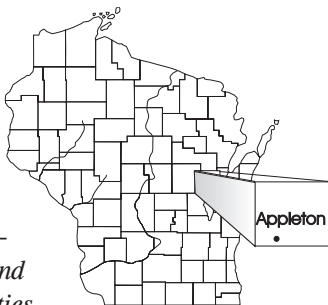
For a preview of Soils Explorer, visit the following web site: [http://www.itc.nrcs.usda.gov/soils\\_explorer/index.html](http://www.itc.nrcs.usda.gov/soils_explorer/index.html)

*in Appleton, March 9-12*

## WLIA plans 12<sup>th</sup> Annual Conference

by Brenda Hemstead

The Paper Valley Hotel in Appleton will be the site of the 12th annual conference of the Wisconsin Land Information Association (WLIA). Scheduled to run from March 9-12, this gathering's theme is "Wisconsin Land Information: Many Communities, One Vision". WLIA expects more than 500 participants and over 30 exhibitors.



Non-members are welcome to attend this event as well as WLIA's quarterly meetings.

### Choose from eight workshops

Following the previous year's format, a series of eight workshops will be held on Tuesday, March 9th.

Two of the workshops will be day-long. *Legal Issues in GIS/LIS* has two objectives, the first being to provide a basic understanding of the law so that attendees can become better consumers/participants in the legal process, and the second to provide an overview of legal issues affecting public & private GIS/LIS practitioners. In *Hands-on Land Use Planning Using ArcView* the participants will use laptop computers to get involved in the process of land use planning using a variety of approaches and techniques to input, analysis, and display land use maps.

The other six workshops will be a half-day in length:

- GIS for the Beginner: An Introduction to ArcView
- An Introduction to Object-Oriented GIS
- Learning to Use the Soil Geospatial Database
- Digital Image Processing for the Regional Planner
- National Standard for Spatial Data Accuracy
- Status and Future of the National Spatial Reference System

### Variety in plenary, break-outs & exhibits

The conference proper will open on Wednesday morning, March 10th with an invitation to have breakfast with the Wisconsin Land Information Board followed with a warm welcome and a choice of four tracks running consecutively throughout the conference. The track titles are:

- **Policy, Concept & Vision**, designed for novice conference attendees, elected officials, and policy makers.
- **Applications, Friends & Neighbors**, a "What's Happening" track by in- and out-of-state land informants.

- **Techniques**, the "How to" guide that's used in the field of land information.
- **Vendor Track**, where you can attend scheduled demos by various vendors.

Wednesday's luncheon keynote speakers will feature: folklorist Dr. Ruth Olson, and storyteller Mark Wagler.

Technical sessions are organized into three tracks: digital orthophotos and mapping; applications and local experiences; and program management and technology. A total of 40 different presentations are scheduled for Tuesday and Wednesday. Wednesday evening will feature the conference's opening reception and Thursday evening will feature "Public Night" that is free and open to anyone.

The Friday morning session includes the Federal Geographic Data Committee, the National States Geographic Information Council, the year 2000 federal budget plan, a member forum discussing current issues, and the annual member business meeting.

For additional information call WLIA at 800/344-0421 or email: [abarrett@uniontel.net](mailto:abarrett@uniontel.net) or visit their website at [www.wlia.org](http://www.wlia.org)



### *Reno stresses the connection*

#### Law enforcement & mapping

"The success of crime mapping is due to law enforcement at all levels recognizing the value of spatial information as an excellent tool to drive decision-making." Those are the words of U.S. Attorney General Janet Reno speaking at the Second Annual Crime Mapping Research Conference.

At the conference, a survey by the National Institute of Justice was released showing that while 85% of agencies call computerized crime mapping a useful tool, only 13% currently take advantage of this tool. Reno stressed that much work needs to be done to persuade people of the direct link between crime mapping and a reduction in crime.

President Clinton also mentioned in his recent State of the Union Address that he plans on making more money available in the next budget for law enforcement computer mapping.

(source: *civic.com magazine*, January 1999)



March 9-12, 1999, **The Wisconsin Land Information Association** will have their annual conference at Paper Valley Hotel & Conference Center in Appleton, WI. Contact: Roxanne Brown at 715/349-2551, email: rbrown@win.bright.net or Ann Barrett at 800/344-0421, e-mail: abarrett@uniontel.net.

March 9, 1999, **The Wisconsin Land Information Board** will meet at the Paper Valley Hotel & Conference Center in Appleton, WI. Contact: WLIB at 608/267-2707.

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April 7, 1999, **The Map Society of Wisconsin** will meet at the Golda Meir Library, 4<sup>th</sup> Floor Conference Center for the AGSC Holzhiemer "Maps and America" Lecture Series, exhibit in the AGS Collection. Contact: the Collection at 800/558-8993 or 414/229-6282.

April 16, 1999, **The WISCLAND Steering Committee** meeting will be held from 1pm - 4pm at the USGS-Water Resources Division office located at 8505 Research Way in Middleton, WI. Contact: Bob Gurda at 608/262-6850, email: rfgurda@facstaff.wisc.edu

April 17-21, 1999, **American Society for Photogrammetry and Remote Sensing (ASPRS) 1999 Annual Conference and Exhibition** will be held in Portland, OR. Contact: ASPRS at 301/493-0290, web: www.asprs-portland99.com

April 21-22, 1999, **The Illinois GIS Association** will hold three concurrent workshops on April 21 and a full-day conference on April 22 at the Holiday Inn in Urbana, IL. Contact: ILGISA at 815/753-1906.

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May 5, 1999, **The Map Society of Wisconsin** will meet at the Golda Meir Library for "Map Collecting and Selling" in the AGS Collection at 7pm. Contact: the Collection at 800/558-8993 or 414/229-6282.

May 19, 1999, **The Wisconsin Land Information Board** will meet at the Wisconsin Dept. of Agriculture, Trade, and Consumer Protection Building at 10:00 am in Madison, WI. Contact: WLIB at 608/267-2707.

\*\*\*\*\*

June 3-4, 1999, **The Wisconsin Land Information Association Quarterly Meeting** will be held at the Chanticleer in Eagle River, WI. Contact: WLIA at 800/344-0421.

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July 21, 1999, **The Wisconsin Land Information Board** will meet at the Wisconsin Dept. of Agriculture, Trade, and Consumer Protection Building at 10:00 am in Madison, WI. Contact: WLIB at 608/267-2707.

\*\*\*\*\*

August 21-25, 1999, **The Urban and Regional Information Systems Association (URISA)** will hold their 1999 annual conference at Chicago's Navy Pier. Contact: URISA at phone 847/824-6300 or email: or visit URISA's homepage at www.urisa.org

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September 9-10, 1999, **The Wisconsin Land Information Association Quarterly Meeting** will be held at the Best Western Northwoods Lodge in Siren, WI. Contact: WLIA at 800/344-0421.

September 15, 1999, **The Wisconsin Land Information Board** will meet at the Wisconsin Dept. of Agriculture, Trade, and Consumer Protection Building at 10:00 am in Madison, WI. Contact: WLIB at 608/267-2707.

\*\*\*\*\*

November 17, 1999, **The Wisconsin Land Information Board** will meet at the Wisconsin Dept. of Agriculture, Trade, and Consumer Protection Building at 10:00 am in Madison, WI. Contact: WLIB at 608/267-2707.

For Bulletin and web site

**Send us your calendar items**

We focus our calendar listing on events scheduled in Wisconsin and the nearby region. When you keep us informed of your organization's meetings, workshops, classes, etc. we can help spread the word to several thousand people.

Even if you are not seeking additional people to attend an event, announcing it keeps others informed and helps us all coordinate our schedules.

Often, events are scheduled and then occur in a time frame that is too short to get them listed here before they have taken place. To deal with this problem, we also maintain a list of scheduled events on our web site.

To deal with the events outside our region which we formerly included in the Bulletin calendar, we now provide links through our web site to national and international calendars maintained by other organizations. These listings are similar to what has been carried for years in several publications that serve the mapping and GIS fields, but which many people in our state may not have seen regularly.

Between the *Bulletin* and our web site, plus the linked sites, you now have access to much more information about events than previously.

## About the SCO...

The State Cartographer's Office (SCO), established in 1973, is a unit of the University of Wisconsin-Madison. The SCO is located on the 1<sup>st</sup> Floor of Science Hall.

Our permanent staff consists of six people—Ted Koch, State Cartographer (608/262-6852), Bob Gurda, Assistant State Cartographer (608/262-6850), A.J. Wortley, Outreach Specialist (608/265-8106), Brenda Hemstead, Administrative Assistant (608/263-4371), Paul Gunther, Information Systems Manager, and Liz Krug, Program Assistant (608/262-3065), plus several part-time graduate and undergraduate students.

The State Cartographer's position and mission is described in Wis. Statute 32.25 (12m). In addressing this role, the SCO functions in a number of ways.

- publishes the *Wisconsin Mapping Bulletin*, catalogs, guides, brochures, and other documents and maintains a web site to inform the mapping community.
- inventories mapping practices, methods, accomplishments, experience, and expertise, and further acts as a clearinghouse by providing information and advice in support of sound mapping practices and map use.
- participates on committees, task forces, boards, etc. The State Cartographer is one of the 13 voting members of the Wisconsin Land Information Board and one of 16 voting members on the Wisconsin Land Council.
- develops experimental and prototype products.
- serves as the state's affiliate for cartographic information in the U.S. Geological Survey's Earth Science Information Center (ESIC) network.

## About our Internet Web site...

We maintain a "homepage" on the World Wide Web.

Here, you will find links mentioned in *Bulletin* articles, information on a wide range of mapping topics, news items, functions and activities of the SCO, our on-line aerial photography catalog, a calendar of events, and links to related web sites. We encourage those of you with Internet access check out the SCO's homepage at

<http://feature.geography.wisc.edu/sco/sco.html>



## About the WISCLINC Web site...

A second Internet resource is the on-line Wisconsin Land Information Clearinghouse (WISCLINC). Its address is:

<http://badger.state.wi.us/agencies/wlib/sco/pages/wisclinc.html>

At this site you can search metadata files, download certain data files, learn about our continuing work in this area, and link to other state clearinghouses.

## **Wisconsin Mapping Bulletin**

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News is welcome on completed or ongoing projects, published maps or reports, or conferences/workshops. Local and regional information is especially encouraged. The editor makes all decisions on content. Deadline for the next issue is April 5, 1999.

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