



Wisconsin MAPPING BULLETIN

How will Land Information Program change?

by Bob Gurda

There may be internal adjustments. There may be affects from the outside. But, what exactly does the future hold?

One thing is clear. The Wisconsin Land Information Board's program will see some changes.

What is less clear at this moment is what those changes will be.

As we described in our previous issue, a great deal of effort was invested over the summer in considering how the program might be adjusted. This work has been orchestrated by the staff of the Board. While most of the resulting proposals are quite non-controversial, those having to do with the grant-in-aids portion of the program's funding and with both county and state agency planning process are in conflict with the status quo.

This fall, the Wisconsin Land Information Association (WLIA) considered the summer workgroup recommendations. After several meetings that included participants from 50 of the state's 72 counties, the WLIA fashioned two options for modifying the grant program, and forwarded these to the WLIB.

The Board is faced with making some hard choices over the next several months.

At the same time, the state budget for the next biennium is being formulated. It will be presented by the governor to the legislature in January and considered by that body in the spring and early summer after which the governor has the opportunity to exercise the line-item veto authority. The budget is often used as a vehicle to enact policy.

Come January there will also be a new Secretary of the state's Department of Administration, Mark Bugher, who has been heading the Department of Revenue.

Further, the Lieutenant Governor's report on boards and commissions is due shortly, and sources indicate that no such body will escape at least some recommendations for change.

Finally, language is currently being drafted to put into place at least some of the recommendations contained in the recent report from the Governor's Land Use Council, the chair of which was Bugher. Among the suggested actions was creation of more and better geographically-referenced information that would support a more robust state-wide planning effort.

One of the many possible outcomes of these several actions may be some adjustments in the State's bureaucratic structure. As we reported in our previous issue, the plat review and annexation review functions were recently transferred to the Department of Revenue.

It is simply too early to tell what might transpire before the end of June when the budget is due for approval. We will try to keep you informed through the *Bulletin* and our expanded web site.

Highlights of this issue....

Cultural Map published 4&5

SCO's web site gets make over 7

Raven publishes relief map 13

by Ted Koch

Board Meetings

The Wisconsin Land Information Board held its most recent meeting on August 20-21 in Madison. This was the board's annual strategic planning session. Meetings have been scheduled into the future as follows:

November 4 in Madison—Board approval of local grant funds requested during the July, 1996 application period. Also, presentation and discussion of Wisconsin Land Information Association (WLIA) advice on WLIB Work Group recommendations.

January 14, 1997 in Madison—Adoption of preliminary strategic plan including grant program options and county/state agency land information plan instruction recommendations.

This meeting replaces the meeting originally scheduled for February 11, 1997 in Madison.

Grants

The WLIB Executive Committee has recommended awarding a total of \$2,150,666 for 28 of the 37 grant applications received during the July, 1996 application period. Included in this amount is funding for Clark and Barron Counties, two counties that have not previously received an award.

As reported previously, the board has voted to suspend the January, 1997 grant application period in order to analyze and implement changes to the grant program. A final decision on adopting and implementing a new program will be made sometime in 1997.

Technical Support List Server Expanded

The WLIB has expanded its new technical support Internet-based list server to include more groups. Initially limited to county land information offices, all government agencies, the state's university system, and technical colleges are now allowed access. Private sector access may be considered in the future. The list server is intended as a means way to broadcast technical messages from one list subscriber to all subscribers.

Staff

Georgia Hopf and Susan Ruhde have recently been appointed to permanent positions as part of the board's staff. Both successfully competed for positions that were advertised for competitive recruitment. Georgia and Sue had filled these positions on a temporary basis since the board began operations in 1990.



Strategic Planning

Recommendations of the WLIB Work Groups regarding future directions of the land information program were presented to the board at its August meeting. These recommendations were also presented to the WLIA at its September membership meeting in Cable.

Final proposals for the strategic plan for the future of the program, including a new funding mechanism and new instructions for county and state agency plans, will be developed through the fall and winter, with final adoption planned in spring, 1997.

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State Cartographer's Commentary

Where are we headed with land information modernization?

by Ted Koch

Our state's land information program is at a critical crossroads.

The current problem revolves around how the land information community decides to divvy-up the program's revenue.

Actually, the problem is more restricted than that. The counties already retain two-thirds of the funds they collect; the controversy is really over how to change the distribution of the remaining third which funds grants.

Grants program under fire

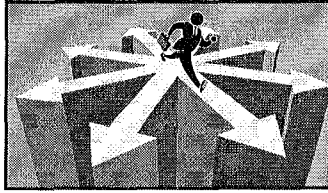
The Land Information Board's current local government Grants-in-Aid Program is not popular with many at the local level. Its detractors say preparing grants is too costly and time consuming, and that the grant scoring requirements and process is flawed. As a result, these people argue that most, if not all, of the one-third of fees collected by the county, which now goes to the board in Madison for grants, should instead stay where it is collected.

This past summer, a WLIB-sponsored Aid to Local Government Work Group recommended the grants program be eliminated, and that 92%, rather than 67%, of the locally collected fees in effect be retained by the county. Under this proposal, the remaining 8% would go to the board for administration, plus some additional financial support for those counties at the bottom of the fee collection ladder which presumably would otherwise lack even the barest minimum level of funding to make progress.

The promise (and burden) of technology

The Wisconsin Land Records Committee's report to Governor Thompson in 1987, which formed the foundation for the state's land information program, laid out a vision of statewide land records modernization with centralized coordination, yet distributed responsibility. The report also spoke promisingly of the availability and affordability of new technologies. The Committee believed that these technologies that would provide a practical means to address many of the land records modernization problems it identified.

For many applications, information technologies have provided at least a partial solution to solving many land records problems. However, these technologies carry a heavy cost and take time to implement well.



Writing last fall in *Geodes*, the newsletter of Minnesota's Land Management Information Center, the Center's director, David Arbeit, commented, "Information technologies, particularly geographic information technology, may be revolutionary, but those who work with them quickly come face to face with the stark reality: they are not free". Following up on that he went on to say, "... fiscal constraints are adding to the burden of technology advocates. (We are) at the confluence of two powerful revolutionary forces - technological and fiscal. Our challenge, if we are to thrive in this new climate, is to substantiate our claims for information technology, showing that it both makes a difference and is cost effective".

Striking a balance

The Wisconsin Land Information Program squarely faces this challenge. Ultimately, the program will have to show that it both makes a difference and is effective.

As a community of professionals, we ultimately will have to demonstrate that all of this land data is indeed useful for such things as property tax assessment, land use management, natural resource management, and managing transportation and utility infrastructures.

While doing this, however, we have to work within the reality of our fiscal limitations. Sure, the land information program doesn't generate enough money to do all that should be done. However, the program does have funding resources to accomplish much, and it has over the past six years.

In debating and selecting a new path for local government funding it is crucial that those advocating and selecting the new route are headed in a direction that remembers the vision under which this program was created. It wasn't built with self-serving outlooks, but rather with a vision that by sharing some resources, this program could meet the dual challenge of both making a difference as well as being cost effective, statewide.

On the path to creating a state cultural map

For this issue, we talked with Professor David Woodward about the progress of the Wisconsin Cultural Map Project.*

I understand that a printing date in early November has been set for the Cultural Map. For a cartographer, this is always an exciting time, when the physical product of months of preparation emerges. How long a process has it been?

David—

If we go back to the initial idea that really got this project rolling, it would be six years. The Wisconsin Center for the Book, which is affiliated with the Library of Congress, was instrumental setting the stage. Then, we applied for and received a grant from the Wisconsin Humanities Council to support a graduate student to do the initial concept and collect data statewide on cultural features and events that we wished to portray on the map.

A printed map is a significant cultural symbol itself, and people in other states have been inquiring about this entire project because they want to produce similar maps.

It is important to understand that this has been a group effort. I and Professor Robert Ostergren have led the team. We've been aided by graduate students Steve Hoelscher and Josh Hane, and the production work on the map is coordinated by Onno Brouwer of the UW-Madison's Cartographic Laboratory. We have also relied on public input and a 27-member advisory committee to guide our work.

Beyond the initial grant, how has this project been funded?

David—

We have been supported by a variety of sources including several corporations which are underwriting part of the production and printing: American Family, and Kohler. The university's

Graduate School also supported Josh Hane's work on compiling and layout. As your readers know, Josh died early this last summer in a mountaineering accident, but his work lives on in this product.

However, we need to recover our printing costs for the map through sales. The University of Wisconsin Press is the pub-

We were able to depict with point symbols about 1200 of the 1800 features documented in our database.

lisher and, in addition to selling the map directly by mail, will be placing quantities of the map in various retail outlets.

How did you decide to print a paper map, as compared to publishing a GIS database of cultural features or publishing a digital map on the World Wide Web?

David—

This was an evolutionary process, and in fact that process continues. Originally we had some more complex plans, but in the interests of producing something tangible and useful as soon as possible we decided to print a map first. A printed map is a significant cultural symbol itself, and people in other states have been inquiring about this entire project because they want to produce similar maps. This will be the first such map in the country that shows as much detail and broad treatment of culture.

How was the map compiled and designed?

David—

We found we were able to use existing materials from the USGS, at a scale of 1:500,000. This is our publication scale. Our students collected over a thousand brochures and pamphlets from various sources, and we invited public input about what features to include on the map. We were able to depict with point symbols about 1200 of the 1800 features documented in our database.

... we would like this to be simply the first big step.

More significant features have text descriptions.

As backdrop we chose the shaded relief of the state that I created in 1969.

In terms of printing, how many ink colors will you be using?

David—

We will use the standard four "process" colors: cyan, magenta, yellow, and black. Then, we are adding a blue/green for the shaded relief and brick red for the type. It will be a very handsome map measuring 39 X 45 inches (folded, 6 X 9 inches), with accents on the border and a painting on the front panel (of the folded version) by Matt Zumbo, a top Wisconsin illustrator.

By the way, we are running 15,000 copies initially, and the supply should be available for the upcoming holiday season.

You hinted that there might be additional work, or spin-off products. Do you have some specific plans?

David—

Indeed we would like this to be simply the first big step. One idea that's being discussed is using the work we've done as the basis for an educational product with which school classes could make their own local cultural map. There could also be a CD-ROM with the feature locations linked to additional descriptive information. Ultimately, there could be a way to access this enhanced information over the Internet. These are only ideas at the moment and would require additional funding to develop, but we are very interested in pursuing these ideas.

**David Woodward is the Arthur H. Robinson Professor of Geography at the University of Wisconsin-Madison, and an international expert in the history of cartography.*

Cultural Map of Wisconsin published

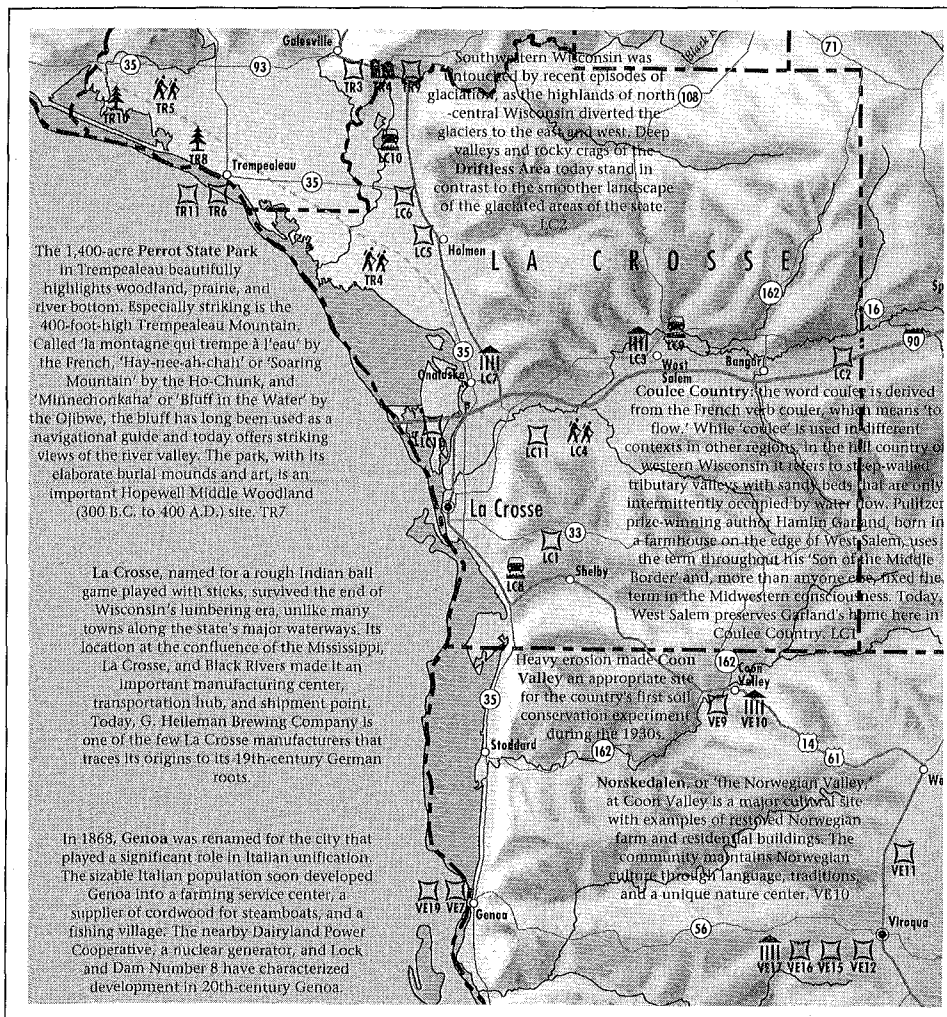
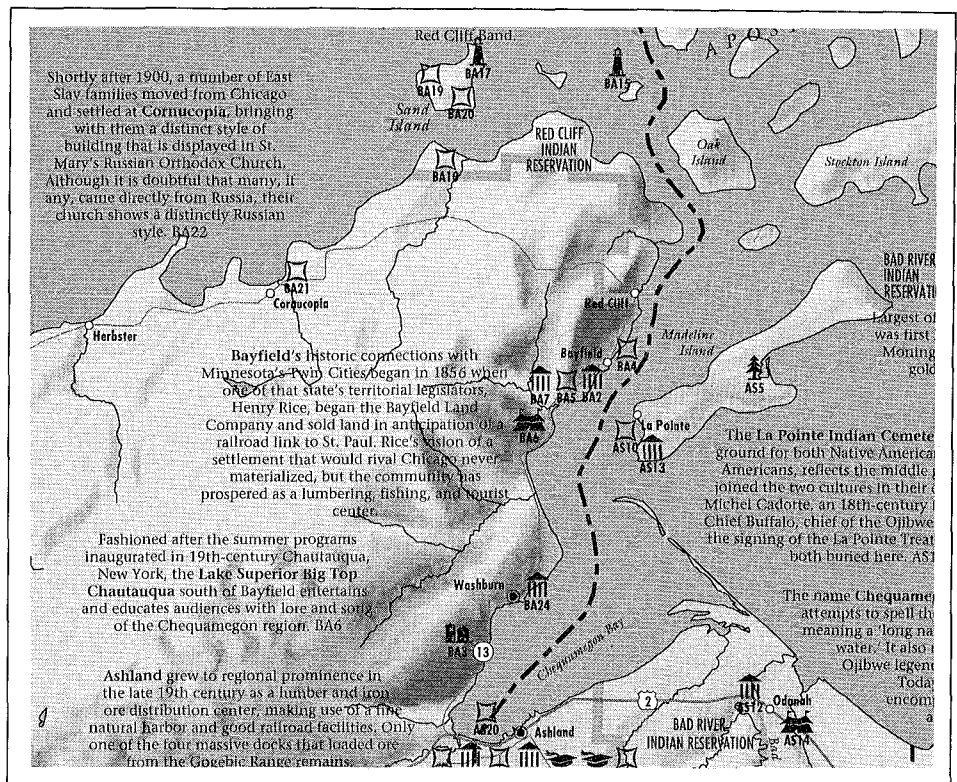
First of its kind in the country

by Bob Gurda

A brand new type of state map will be available very soon, covering cultural aspects of Wisconsin. This large map (over 12 square feet) is the result of several years of development at the University of Wisconsin-Madison.

The *Cultural Map of Wisconsin* is scheduled for printing during the first week of November, and will be available soon thereafter, either folded or unfolded. Either version will sell for \$9.95 plus shipping.

One side of the map is a full state view at a scale of 1:500,000 (approximately 1 inch = 8 miles), showing 1200 points of cultural interest with point symbols. Text descriptions explain the more notable features or events. The reverse side of the map contains an arrangement of smaller maps focusing on selected urban areas at larger scale, plus



Monochrome renditions of two portions of the Cultural Map of Wisconsin, at publication scale

several small thematic maps of the entire state illustrating factors such as ethnic settlement patterns, early vegetation, predominant economic activity, and population trends.

The map's overall size is 39 x 45 inches. When folded it measures 6 x 9 inches.

UW-Madison Professor David Woodward will discuss the new map on November 19 at the State Historical Museum on the Capitol Square in Madison. His talk is part of the State Historical Society's "History Sandwiched In" series which is held bi-weekly on Tuesdays from 12:15 - 1:00 pm.

For information on ordering the Cultural Map of Wisconsin, contact: U.W. Press, 114 N. Murray St., Madison, WI 53715-1199, toll-free orders: 800/829-9559 (Madison: 608/262-8782), toll-free fax: 800/473-8310 (Madison: 608/262-7560) uwiscpress@macc.wisc.edu, \$9.95 plus shipping, available rolled or folded.

Questions & Answers



How can I get a listing of all the cities in a county?

The answer to your question depends on how the term "city" is defined. State law defines several classes of cities, essentially grouped by size of population. Smaller incorporated municipalities are "villages", and even smaller unincorporated settlements exist within a "town" which is usually primarily rural.

The *Wisconsin Blue Book* contains listings, by county, of cities and villages. The Wisconsin League of Municipalities also would have this kind of information.

However, from a mapping point of view, there is another way to answer your question. The U.S. Geological Survey has collected the names of various types of features that appear on its maps, and organized these names into the Geographic Names Information System (GNIS) which is available on CD-ROM and on the World Wide Web.

With either source, GNIS has a computerized searching mechanism that allows you to perform extractions such as an alphabetical listing of all the "populated places" in a particular county (or state). However, these settlements are not categorized by size of population nor by their official status (e.g., 2nd class city, 4th class city, or village), and some settlements listed may not even be incorporated villages. Each such listed "populated place" has a latitude and longitude (typically the center of town or the city hall), and some have approximate elevations.



Where can I get a map of snowmobile trails in Wisconsin?

For a statewide view of major interconnected trails, the Wisconsin Department of Tourism produces a *Snowmobile Trail Map*. Using the standard State Highway Map as a subdued backdrop, this folded map depicts both "corridor trails" which are primary routes as well as some "self-funded trails" and "club trails" that are believed to be open for public access.

Local snowmobile clubs, chambers of commerce, tourism centers, or local governments may produce detailed maps of trails within local areas. The *Snowmobile Trail Map* includes listings of Community Tourist Centers (with telephone numbers) as well as state, federal, and county trail system contacts.

Wisconsin has a program administered by the Department of Natural Resources and cooperating counties, and funded from snowmobile license fees and gas taxes, to mark and maintain thousands of miles of trails. Much of the field work done under the program is handled by local snowmobile clubs.

To receive a copy of the *Snowmobile Trail Map*, contact the Dept. of Tourism at (800) 432-8747.



What aerial photographs can I get that show land I plan to do some hunting on this fall?

Across the entire state there are several choices for photographs that would be helpful in hunting. In certain counties (or other areas) there are additional photography resources.

All of these choices are listed in our newly updated *Wisconsin Catalog of Aerial Photography*, available through our Internet web site. The address is on page 16 of this newsletter.

In selecting one or more aerial photographs to serve a particular need, there are several factors to consider. The time of year that the images were collected (typically, spring vs. summer) will affect your ability to interpret the ground surface vs. tree types, respectively. Film types can vary, too: standard or infrared versions of both black and white as well as color.

The image scale is a major consideration. Essentially, the flying height of the airplane controls how much detail will be captured on the film. A higher flying height means less detail but a larger area covered. The larger area covered translates to a *smaller* scale (intuitively, most people initially think of this as larger scale).

Aerial photographs are about 9 x 9 inches in size, and the least expensive reproduction is to order "contact prints" which are that same size. These can cost as little as \$6 a piece. Contact prints are a handy size to carry in the field, also, and overlapping pairs work well for "stereo" viewing which brings out the three dimensional undulations of the terrain..

Because enlargements require considerably more handling, they are typically much more expensive (\$15-\$100⁺). However, they will reveal more detail than can be seen in contact prints with the unaided eye.

You should also understand that delivery time varies between a provider of prints from one flight, and another. In order to ensure that you have the prints you want in time to use them, get a head start on understanding your choices, pros and cons of the images and their costs and availability.

If you need assistance in searching for or comparing aerial photography alternatives beyond what you can glean from the information we have on the web site, feel free to contact us at the SCO.



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.

News from the SCO

New look, more links, more info

SCO revamps web site

by Bob Gurda

We are pleased to announce our new presence on the Internet's World Wide Web. Point your web browser software to our completely redesigned web site which you can reach at the same address we used for our initial "home page":

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

This address gets you to a computer operated by the Geography Department here in Science Hall on the UW-Madison campus.

Enhances many BBS features

Hundreds of people used our electronic bulletin board system (BBS) since its debut almost three years ago. Most of the information that we originally developed for our BBS has now been moved over to our redesigned web site.

The web provides a number of advantages of the BBS. We can now incorporate graphics and we can link a point in one screen to another screen, something that was very difficult to do in the hierarchical structure of the BBS. We can also link to resources outside the SCO which is a great advantage in reducing duplication of effort and in accessing current information.

An SCO staff product

Our new web site is the result of input from much of the permanent staff, particularly Hugh Phillips and Brenda Hemstead. John Walkey, a Project Assistant working on his master's degree, is the magician of Hyper Text Markup Language (HTML) who has assembled the pieces and organized most of the files.

Aerial photography updates incorporated

When visiting our web site, you might want to peruse the updates to our *Wisconsin Catalog of Aerial Photography*. As we announced in the previous issue, this resource which previously was available only in paper form is now part of our web site.

Recently we have loaded the updates representing 171 new aerial photography projects performed since 1993, and have completely updated the contact information for viewing and purchasing sites. This information has been collected over a period of months by one of our student staff, Jason Laux.

Of the new projects, 95 are of municipalities, 65 cover single counties (some more than once), and 11 are regional (and not following county boundaries).

Calendar takes a new tack

We have decided to maintain an events calendar that concentrates on Wisconsin and the nearby region. This calendar will be changed as we become aware of new listings,

and re-loaded to our web site. This approach will work only to the extent that you keep us informed of events that you would like publicized.

In the past, the *Bulletin* has carried a calendar of selected events ranging from local to international. An even more extensive listing has been available through our BBS. However, many of the types of events we listed are now carried on calendars maintained by national web sites and those of professional organizations. It no longer makes sense to re-list those events on our site; rather, we will provide links to the other sites.

What do you think?

As you have the opportunity to visit our new web site, let us know what you think and check back frequently as we'll be posting news and adding more features over the upcoming months.

This service is intended to serve your needs, so your opinion is important in our continuing development of information available over the World Wide Web.

Our BBS succumbs to the "web"

by Brenda Hemstead

As the saying goes, "all good things must come to an end". We will be "unplugging" our BBS at the end of 1996.

The decision didn't come easily, but the traffic on the BBS has been slowly, but steadily, decreasing each month largely due, we believe, to the lure of Internet. Due to our small office staff, we are unable to maintain both a BBS and an Internet Website.

Currently, we are enhancing our BBS files and will incorporate most of them into our newly redeveloped website which we expect to be operating by November 1st.

Metadata Developments

Metadata News

by Hugh Phillips

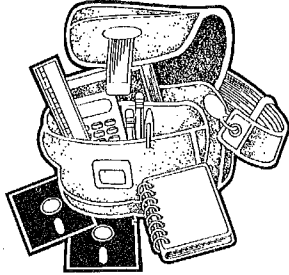
Several projects are underway or completed which will be useful to those learning about metadata or interested in metadata tools.

The Federal Geographic Data Committee (FGDC) has commissioned Applied Geographics, Inc. of Boston, MA, to compile metadata from existing Clearinghouses and solicit metadata from the general NSDI user community for the production of a CD of metadata. The CD will be searchable and is meant to provide examples of metadata as well as provide a catalog to available data to users who do not currently have Internet access.

The FGDC has also contracted with PlanGraphics, Inc. of Frankfort, KY to produce a CD of FGDC, metadata, and NSDI related miscellany. It will contain the hypertext version of the Content Standards for Digital Geospatial Metadata (CSDGM) embellished with expanded element definitions and examples, tutorials on accuracy assessment and map projections/coordinate systems, the graphical and the colorized versions of the standard, available metadata tools, and other metadata educational materials developed by the FGDC and Competitive Cooperative Agreements Program (CCAP) participants as the result of their projects.

Part of the 1995 NSGIC CCAP project, "An Educational and Research Program in Support of the Content Standards for Digital Geospatial Metadata" is the production of a 'Metadata Primer,' a Web based tutorial on the why and how for producing metadata. The Primer will incorporate the results of case studies from nine states which describe their experiences in trying to implement the CSDGM in a production environment. The Primer is expected to be completed by December and may also be included on the PlanGraphics CD mentioned above. A portion of the primer is a review of metadata tools; a link to that review of metadata tools will be available from the WISCLINC home page soon!

The MITRE Corporation reviewed eight metadata tools for the FGDC using an extensive set of evaluation criteria. The SCO forwarded comments on tools it tested during the Wisconsin NSDI Clearinghouse Initiative to MITRE Corporation to aid them in their review. The URL for the MITRE metadata tool review is:
<http://www.fgdc.gov:80/Metadata/Mitre/task2/index.html>



Builds program to train librarians

UW-Madison Library targets GIS training

by Hugh Phillips

The UW-Madison General Library System was awarded funding for a project under the 1996 FGDC Competitive Cooperative Agreements Program (CCAP). This is the same program which funded the 1994 Wisconsin NSDI Clearinghouse Initiative.

The library project, entitled "The Personal Interface in GIS: Training the Trainers," is a training program for librarians in the fundamentals of GIS, ArcView, metadata, and the National Spatial Data Infrastructure (NSDI). The cooperators include the State Cartographer's Office, the UW-Madison Spatial Information and Analysis Consortium, and the Council of Wisconsin Libraries (COWL), a statewide association of UW System, public, private, and school libraries.

The training program will be two-tiered. At the first level, a group of twenty UW-Madison campus librarians will receive half day training in each of the four training areas. Later, the librarians trained in the first round will train a larger group of librarians (75) from the COWL group in these areas during a one-day workshop.

The training materials for this project will be made available as Web pages to benefit a larger audience than those who participate directly in the program. The metadata and NSDI portions of this material will be applicable to Wisconsin NSDI Clearinghouse education activities.

Provides quick access to status and metadata

DNR moves GIS User's Guide to the "web"

The Wisconsin Department of Natural Resources (DNR) is taking advantage of the capabilities of the Internet's World Wide Web to publish the 2nd edition of their *GIS Database User's Guide*. The web approach allows a number of enhancements to the guide, and will make possible a continual updating process.

Some key components of Edition , another product of DNR's Geographic Service Section, include:

- updated layer descriptions, browse graphics, usage notes, metadata consistent with the FGDC standard;
- appendix covering DNR holdings of digital orthophotos, digital raster graphics, digital elevation models;
- an updated DNR GIS Datasharing Policy statement;
- a DNR Geo Services "home page" describing the Section and including links to other related web sites and access to recent issues of *WALWRIS Notes*.

To access this information, set your web browser to <http://www.dnr.state.wi.us/geo>

(source: DNR's *WALWRIS Notes*)

DRG Update

Popularity slows deliveries

DRG products emerging statewide

by Bob Gurda

Statewide coverage of Digital Raster Graphics* (DRGs) is a certainty, but not as soon as we had hoped earlier. Because this product from the U.S. Geological Survey has become so popular, deliveries from the contractor have become backed up.

Plans for an enhanced set of products developed under WISCLAND are moving forward. These may be organized as sets of DRG files designed to be used on a county-by-county basis.

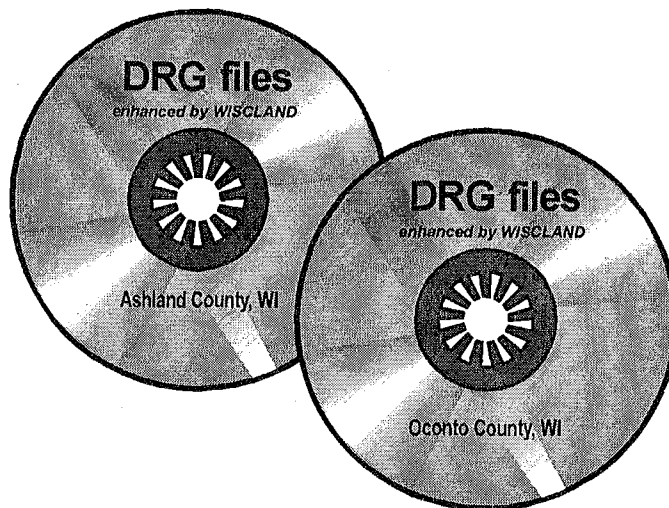
Delivery schedule from USGS

We are now expecting completion of all files for the state by next summer. However, almost all of the northern one-third of the state is already available, and the eastern edge is scheduled for delivery in November.

The first area is north of the 45-degree parallel, an east-west line which passes just north of Hudson, Chippewa Falls, Wausau, and Oconto (and is also shown on the state highway map). The second area is east of the 88-degree meridian which runs north-south through the cities of Green Bay and Milwaukee.

The USGS is predicting March through summer for delivery of the remaining areas. Check future issues as well as the SCO web site for updates on this schedule.

*For background on DRGs, TIFF format raster computer files made by scanning USGS topographic maps, see previous issues of this Bulletin, or visit a USGS web site at <http://www-nmd.usgs.gov/products/dgeosp1.html>.



USGS suspends sales of published CD-ROMs

Due to a minor error in some reference information encoded on the CD-ROMs already issued (limited to northern Wisconsin), the USGS has suspended sales of this product. For stand-alone use (i.e., not in conjunction with other data that is georeferenced), the files already distributed are perfectly fine to use.

It is possible that the CDs in question will not be re-published in mass form, but may become products available on demand from USGS. However, they would likely continue to be available only as sets of files covering an entire 1-degree X 1-degree block.

Enhanced WISCLAND product taking form

As we have mentioned here previously, the standard DRG produced by the USGS can be enhanced to provide additional utility. The map collar can be adapted so that it can be made transparent (facilitating joining adjacent map

sheets), and entire files can be transformed from the standard UTM to other coordinate systems.

Discussions have begun with the aim of assembling resources to create sets of DRGs by county, in two coordinate systems (most likely WTM 27 and the new county coordinate systems), and to package these on one CD-ROM per county. At this point there is no predicted timetable for development and delivery of these packages.

This enhancement work is being organized under WISCLAND, with resources at this point contributed by at least one federal agency and several state agencies. Conceptually, the county CD products, once mastered, would be available at nominal cost to cover copying expenses.

Stay informed

For updates on DRG delivery and plans for the enhanced products, contact Bob Gurda at the SCO (*refer to page 16 for phone numbers*).

People & Organizations

UW is one of only four such centers in the U.S.

ERSC lands NASA commercialization grant

The Environmental Remote Sensing Center (ERSC) at the University of Wisconsin-Madison has been awarded a three-year, \$375,000 grant from the National Aeronautics and Space Administration (NASA) to investigate the commercial applications of remote sensing technology. ERSC is one of only four centers nationwide chosen to participate in NASA's new Visiting Investigators Program (VIP).

The program permits commercial firms in a wide range of fields to explore ways of incorporating spatial information technologies into their business. These technologies combine data gathered from satellites and aircraft with sophisticated analysis techniques to produce information that is typically more difficult, time-consuming, or expensive to obtain by other means. Potential applications range from business/facility siting, forest management, agribusiness, insurance, telecommunications, infrastructure design, and facilities management to environmental assessment and land use planning. Often, remote sensing is used in combination with geographic information system (GIS) and Global Positioning System (GPS) technology.

"Using these technologies may help businesses create operational efficiencies and new product lines that enable them to out-compete others nationally and internationally," says ERSC director Dr. Thomas M. Lillesand.

Under the NASA grant, university scientists team with commercial partners on projects suggested by the firms. To take part in the program, a business submits a short technical proposal outlining a potential commercial application for a specific technology that can be evaluated in three to six months. Each accepted project is undertaken as a "proof-of-concept" pilot project with the help of NASA financing and the facilities and technical know-how of ERSC at minimal cost to the commercial firm. Four such projects are expected to be completed annually under the three-year ERSC grant. One aim of the program is to provide "real world" experience to graduate students working on the various projects.

This government-university-business arrangement may be a prototype of how public and private sector entities can work together in the future, according to Lillesand. "The university's role is not to compete with business, but to help create more business for business in areas of rapidly changing technology. This can only be done when we, government, and business are all on the same page."

ERSC is part of the Institute for Environmental Studies. The VIP program is also supported by the Graduate School, the University-Industry Relations Program, and the Colleges of Agriculture and Life Sciences, Engineering, and Letters and Science at UW-Madison. Lillesand says one key to landing the grant was assembling a multidisciplinary team of faculty co-investigators. They in-

clude atmospheric scientists, geographers, civil engineers, soil scientists, landscape architects, foresters, economists, and specialists from the School of Business.

Businesses interested in obtaining more information about the program should contact Dr. Thomas M. Lillesand (Principal Investigator) at (608) 263-3251.

(source: ERSC)

Biological Resources formed from NBS

Fenn named to lead new USGS division

The U.S. Geological Survey has a new division for Biological Resources, formed by reassigning the National Biological Survey (NBS) to be administered as a unit of the USGS.

Ron Fenn has been named to head this division. He was involved in recent years in the formation of the NBS, and previously had an extensive career with the National Park Service. His academic training is focused on soil science.

(source: USGS)

Will continue working at DNR headquarters

Hanson begins Ice Age Trail GIS position

by Bob Gurda

For the first time, efforts to complete and maintain Wisconsin's Ice Age Trail will benefit from the support of a full time GIS staffer. Andrew Hanson was recently chose for this position which is funded by the Ice Age Park and Trail Foundation, a non-profit organization with headquarters in Pewaukee

Hanson was a member of DNR's GIS team, and in his new role will continue to work out of DNR headquarters in Madison where the trail position is housed. His final project for DNR prior to shifting to his new duties was completion of the statewide 1:24,000-scale Landnet database.

Providing GIS support for trail planning, development, and operation involves the integration of a large number and wide variety of geospatial data. Drew will be seeking to access and incorporate data from many sources.

The Ice Age National Scenic Trail, when completed, will follow the approximate location of the terminal moraine left the most recent glaciation of the state roughly 10,000 years ago. Of the planned 1000-mile trail, which is also a unit of the National Park Service, over 500 miles are currently open to public use.

Hanson can be reached by telephone as 608/264-8915.

WISCLAND UPDATE

More partners; products begin to emerge

WISCLAND expands and extends its role

by Bob Gurda

Cooperative statewide landscape mapping is moving forward in our state. Under the Wisconsin Initiative for Statewide Cooperation on Landscape Analysis and Data (WISCLAND), over two dozen organizations are now working together on a variety of fronts.



Articles revised and signed

There are now twenty-five organizations as official signatories to WISCLAND's *Articles of Participation, second edition*. This document provides the general underpinnings to specific cooperative agreements amongs various of the partners in advancing WISCLAND goals. The new signatures were collected over the previous several months.

The second edition differs from its predecessor in one fundamental aspect. It specifies 7 additional landscape themes beyond the initial focus on statewide land cover mapping.

Landnet and wetlands data done

The first statewide product produced under WISCLAND, the "24K Landnet", is now available. (See article on page 13). This work was the result of contributions from a variety of organizations under WISCLAND.

Digital representations of the Wisconsin Wetlands Inventory is also available for almost all counties. We are expecting completion statewide by January. This work was partly funded through WISCLAND as an important input to the land cover mapping process.

Meetings and workgroups

The WISCLAND Steering Committee meets quarterly, the next time being in Madison on December 5. Work groups which focus on specific thematic areas meet periodically as needed. Any partner organization can help steer and support work to achieve specific goals in any thematic area.

At the moment, most attention is focused on completion of land cover mapping, developing the final concept and funding for an integrated hydrography database, and determining and funding the optimal way to distribute an enhanced set of Digital Raster Graphics files by county.

Find out more...

- Would your organization like to consider joining WISCLAND?
- Would you like to better understand a the particular work slated for a data theme?
- Would you like an update on expected data availability for a section of the state?

To find out more, contact Bob Gurda at the SCO at 608/262-6850.



WISCLAND Partners

- Wis. Land Information Board
- Wis. Geological and Natural History Survey
- Wis. Dept. of Agriculture, Trade, and Consumer Protection
- Wis. Board of Commissioners of Public Lands
- Wis. Dept. of Administration
- Wis. Dept. of Natural Resources
- Wis. Dept. of Transportation
- Wis. Dept. of Health and Social Service
- Wis. Dept. of Revenue
- National Biological Survey
- U.S. Geological Survey
- National Park Service
- U.S. Forest Service
- USDA Natural Resources Conservation Service
- Wisconsin Power & Light Company
- UW-Madison Institute for Environmental Studies
- UW-Madison Environmental Remote Sensing Center
- UW-Madison Land Information & Computer Graphic Facility
- State Cartographer's Office
- North Central Wis. Regional Planning Commission
- East Central Wis. Regional Planning Commission
- West Central Wis. Regional Planning Commission
- Oconto County
- St. Croix County
- Marinette County

Publications and Products

Simplifies distribution of popular data

DNR makes first datasharing CD

The Wisconsin Department of Natural Resources (DNR) recently produced its first CD-ROM of commonly requested GIS datasets. Dubbed by some as "DNR's Greatest Hits", this disc includes 16 vector data sets in two different formats, and carries a price of \$100. It is produced by DNR's Geo Services Section.

For those familiar with ARC/INFO terminology, the two formats are workstation coverage in NAD 27 latitude/longitude, and export format in WTM 27.

The data sets included on this CD are as follows:

- 1:100,000-scale hydrography (network)
- 1:100,000-scale hydrography (points)
- 1:2,000,000-scale hydrography
- 1:100,000-scale Landnet (PLSS sections)
- 1:100,000-scale townships (Landnet subset)
- 1:250,000-scale land use and land cover
- 1:24,000-scale watershed boundaries
- 1:100,000-scale Minor Civil Divisions
- 1:100,000-scale county boundaries
- Wis. DNR administrative regions
- 1:100,000-scale public lands
- 1:24,000-scale USGS quadrangle map index
- 1:100,000-scale Wis. DNR managed lands
- Wis. DNR geographic management units
- Wis. DOT State Trunk Highways
- Recreational trails

In addition, the CD includes two versions of the USGS 1-degree digital elevation models, in ARC/INFO Grid Format, referenced to WTM, NAD 27; one version is a 75-meter sampling grid, the other more generalized at 500-meters.

For additional detail on this collection of datasets, visit the Geo Services Internet web site at <http://www.dnr.state.wi.us/geo>, or call Brad Duncan at 608/267-5182.

(source: *Wis DNR's WALWRIS Notes*)



First revision in 32 years

SEWRPC publishes new mapping guide

The Southeastern Wisconsin Regional Planning Commission (SEWRPC) has revised and republished its Planning Guide No. 2, *Official Mapping Guide*. First published in 1964, this document describes recommended methodology for developing the "official map" which is recognized under state statutes for particular planning purposes.

A number of factors led to the decision to revise the guide. One factor was the implementation of the federal government's Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). Another factor was the growth of computerized base mapping and parcel mapping within the region.

The revised guide covers definitions, functions, and benefits of official mapping and expounds upon legal, administrative, and engineering considerations entailed in official mapping.

Copies of this publication are available from SEWRPC for \$10.00 (or \$5.00 for parties within the region).

(source: *SEWRPC Newsletter*, July-Aug. 1996)

SCO version to be available soon after

NGS to release new geodetic data on CD

by Bob Gurda

Very shortly we expect to receive delivery of the latest annual release of statewide geodetic information extracted by the National Geodetic Survey (NGS) from its computerized database. As with the previous two years, this information will be available from NGS on a single CD-ROM along with extraction software.

Once we have this 1996 release, we will construct a new version of our 6-diskette set of statewide data and enhanced searching tools. This updated product will replace the current version, and will be priced the same (\$50 for statewide coverage). Contact us for information on availability and ordering.

We will begin carrying the NGS CD-ROM as soon as it is available. Discussion of the differences between the this CD version of the data and software, as compared to our enhanced version on diskette, is on the SCO web site.

New county plat books

The following 1996 Wisconsin County Land Atlas and Plat Books are now available for \$25 plus tax and shipping: Columbia, Dodge, Door, Florence, Iowa, Jefferson, Oneida, Polk, Rock, Sauk, Vernon, Vilas, Walworth, and Wood Counties. In addition Bayfield County is available for \$50 and Marathon is available for \$35. Also, the 1997 Adams County Plat Book for \$25. For ordering details, contact: Rockford Map Publishers, Inc., P.O. Box 6126, Rockford, IL 61125, phone (orders only) 800/321-1MAP; for customer service information, call 815/399-4614.

Publications and Products

First new large format map of Wis. in decades

Raven offers shaded relief map of state

by Bob Gurda

A new and striking map of Wisconsin is available from a west coast company with a Wisconsin connection. Raven Maps of Medford, Oregon has recently produced the Wisconsin sheet in their continuing series of state maps, this one at a scale of 1:500,000.

With the exception of the well-known state highway map, there have not been any maps of the entire state published at this scale in many years. Coincidentally, the Cultural Map of Wisconsin is also being published this fall, also at 1:500,000-scale.

As a starting point, Raven used materials available from the USGS state map at the same scale, then applied hypsometric tinting (a stepped color scheme keyed to elevation ranges) along with relief shading to accentuate the state's terrain. The result is a very striking map printed on a 43" X 47" piece of paper.

The relief shading used on this map was developed by using a statewide digital elevation model produced originally by the Defense Mapping Agency (DMA), with a horizontal spacing of 3 arc seconds approx. 200-300 feet). Used at the scale of 1:500,000, this data does quite a good job of capturing relief in recently glaciated areas, and does an even better job of depicting relief in unglaciated areas as well as those glaciated during earlier periods of the Ice Ages.

Raven utilized the expertise of Prof. A. Jon Kimerling of Oregon State University, a Wisconsin native and graduate of the University of Wisconsin-Madison, in generating the relief shading from the DMA data set. Raven considers this map their best work to date in depicting a heavily glaciated landscape.

In addition to the relief which is the primary focus of this map, highways and water bodies (as represented on the USGS map at 1:500,000) are depicted in subdued colors. Since these features were mapped by the USGS in fairly generalized form and are somewhat dated, they are primarily useful for reference.

Raven charges \$25 for a flat paper copy or \$45 for a laminated copy. Shipping is additional. A full-color catalog is available that shows the Wisconsin map as well as those for 30 other states and several other regional, national, and world views.

Their state map of Minnesota is also a new offering (at 1:600,000-scale). Michigan was produced a year ago (at 1:700,000-scale). Illinois and Iowa have not been produced to date.

For details, contact Raven at 800/237-0798.

Now available for entire state

24K Landnet coverage completed

by Bob Gurda

A new statewide GIS resource has been released by the Wis. Department of Natural Resources (DNR). This product is called the 1:24,000-scale Landnet, being an enhanced version of the representation of Public Land Survey System corners carried on the USGS topographic map series of that scale.

The USGS topo maps only show the location of corners of land sections, and the positional accuracy of their placement varies from less than 40 feet to several hundred feet. As such, the coordinates associated with these mapped points are not nearly as accurate as those typically acquired from a robust ground survey or from differential GPS measurements.

Nominally, a land section is one mile square although in reality the area can deviate from that ideal substantially for a variety of reasons. The section corners as set by the original surveyors are to be used in perpetuity, and locating them on the ground and then determining their positions accurately is typically accomplished by modern ground survey methods.

Nevertheless, the Landnet database fulfills a number of important needs in the absence of a higher accuracy representation of the PLSS sections and their subdivisions statewide. Indexing and displaying ground survey and monument recovery status is just one such potential use. Two sets of look-up tables are being developed as a spin-off of the work that resulted in the 24K Landnet.

After importing data derived from the USGS maps, DNR further subdivided sections according to the rules that the original land surveyors were directed to follow. In this Landnet GIS data, divisions down to the level of 40 acre areas (one-sixteenth of a section) are provided. Also included are township references, grants of land, and meander corners.

None of the Landnet's geometric features, whether captured directly from the USGS maps or derived analytically from those points, should be considered accurate relative to the actual position of the actual locations.

The 24K Landnet is available from DNR's GIS library under normal datasharing arrangements. For details, visit the DNR GEO web site as profiled on page 8 of this issue.

(source: Wis. DNR)

Events

Tessar elected to board

NSGIC meets in Tucson

by Ted Koch

The National States Geographic Information Council (NSGIC), an organization of representatives from states, federal agencies, and private firms, held its sixth annual meeting in mid-September in Tucson, Arizona.

In the annual selection of officers, Paul Tessar was elected to a two-year term on the NSGIC Board-of-Directors. Paul is head of the Geographic Services Section within the Wisconsin Department of Natural Resources in Madison.

Other Wisconsin representatives at the meeting included Bill Holland of GeoAnalytics in Madison, Dave Hart from the UW-Madison Land Information and Computer Graphics Facility, and myself. Bill ended his role as an officer, completing a one-year term as NSGIC Past-President.

NSGIC provides a forum for its members to discuss geographic information issues, accomplishments, and problems primarily affecting the states. Additionally, the council gives the states an opportunity to present a unified view and voice on the geographic information activities and policy decisions of the federal government.

The Tucson meeting had representatives from 40 states, plus another 50 representatives from seven federal agencies and a variety of private firms.

"Framework" focus

NSGIC announced at the meeting that over the next 18 months it would be conducting, with financial support from the Federal Geographic Data Committee (FGDC), a 3-phase study to assess the progress being made in building "framework" data throughout the country.

Framework data sets are considered to be the best, non-restricted use data available for a given area regardless of who produces or maintains the information. Framework data is viewed as one of the foundations supporting the creation of the National Spatial Data Infrastructure (NSDI).

As defined by the FGDC framework data includes the themes of geodetic control, digital orthoimagery, elevation information such as DEMs or contours, transportation, hydrography, governmental unit boundaries, and cadastral information, such as the layout of the Public Land Survey System.

Through the study, NSGIC hopes to get states increasingly involved in the coordination of framework data activities.

Quarterly event is December 5-6

WLIA returns to Madison

The winter meeting of the Wisconsin Land Information Association will be held at the Concourse Hotel on the Square in downtown Madison on Thursday and Friday, December 5 and 6. The Thursday evening and Friday programs for the meeting had not been set before this issue of the *Bulletin* went to print. For more information, contact the WLIA at 800-344-0421.

November 7-8 in Chicago

NSDI strategy to be revisited

by Ted Koch

A 1996 version of the strategy for the National Spatial Data Infrastructure (NSDI) has recently been drafted by the Federal Geographic Data Committee. The NSDI is envisioned to include the policies, standards, and procedures for organizations to cooperatively produce and share geographic data.

As the lead promoter of the NSDI, the FGDC has recently set forth a new draft strategy of NSDI goals and objectives. To discuss and refine the NSDI draft strategy, the FGDC has scheduled an open meeting in the vicinity of the O'Hare Airport in suburban Chicago on November 7 and 8, 1996. After the goals and objectives are agreed on, the FGDC plans to cooperatively develop implementation plans to guide NSDI activities for the next several years.

(source: FGDC)

Focus on Dane County and Madison

AM/FM sets November meeting

The Wisconsin Chapter of AM/FM International will meet in Madison on Thursday, November 14. The highlight of this meeting will be presentations by automated mapping staff of both the City of Madison and Dane County.

This meeting will be held at the Best Western—Inn on the Park, located on the Capitol Square, and will begin with a luncheon at 11:30am. Fees are \$25 for members and other interested professionals and \$20 for students.

The presenters will use a live link to their databases and video projection to bring attendees a real-time view of their systems. Following the presentations, interested individuals are invited to see the two operations first-hand at the City and County offices which are only a block away from the meeting site.

For details, contact Lori Ashley at 608/259-7254.

(source: AM/FM)

Selected Conferences, Technical Meetings, and Classes

November 1. **Fundamentals of Geodesy for Surveyors** will be held at the Holiday Inn, East Towne, 4402 E. Washington Ave., Madison, WI. Contact: Dr. Ben Buckner at 423-929-3215.

November 4. **Wisconsin Land Information Board Meeting** will be held from 10:00 a.m. to 4:00 p.m. at the Dept. of Transportation, Room 421, Sheboygan Avenue in Madison, WI. Contact: WLIB at 608-267-2707.

November 11. **What is GIS? GIS for Managers and Decision-makers** will be held at the Geographic Information Systems Research and Development Center at the University of Wisconsin-River Falls, WI. Contact: GIS/RDC, PO Box 385, River Falls, WI 54022-0385.

November 12-14. **International Conference on Land Tenure and Administration** will be held in Orlando, FL. Contact: Prof. Grenville Barnes at 352/392-4998; fax: 352/392-4957; email: GBARN@CE.UFL.EDU.

November 14. **Accessing & Using Wisconsin GIS Data Sets** will be held at the Land Information and Computer Graphics Facility (LICGF) in B102 Steenbock Library, Madison, WI. Contact: Tom McClintock at 608-263-5534; fax: 608-262-2500; email: mcclinto@macc.wisc.edu.

November 14. **GIS/AM/FM in Dane County and the City of Madison** presented by AM/FM International-Wisconsin Chapter will be held at the Best Western-Inn on the Park at 11:30 a.m. in Madison, WI. Contact: Lori Ashley by Monday, 11/11 at 608/259-7254.

November 16-22. **ACSM/ASPRS Fall Meeting and GIS/LIS '96** will be held at the Denver Convention Center, Denver, CO. Contact: GIS/LIS at 301/493-0200; fax 301/493-8245.

November 18. **GIS in Illinois '96 Conference** will be held in Schaumburg, IL. Contact: Carol Zar at 815/753-0927.

November 21. **Wisconsin State Interagency Datasharing Workgroup** will meet at 2:30 p.m. at the Dept. of Transportation in Madison, WI. Contact: Bob Gurda at 608-262-6850.

December 5. **Wisconsin Land Information Association Board Meeting** will be held in the afternoon at the Concourse Hotel in Madison, WI. Contact: WLIA at 800/344-0421.

December 5. **The WISCLAND Steering Committee** will meet at the Dept. of Natural Resources in Madison, WI from 1:00 p.m. to 4:00 p.m. Contact: Bob Gurda at 608-262-6850.

December 5-6. **Wisconsin Land Information Association Quarterly Meeting** will be held at the Concourse Hotel in Madison, WI. Contact: WLIA at 800/344-0421.

December 9-11. **1996 Texas GIS Forum** will be held in Austin, TX. Contact: Drew Decker at 512/463-7314, fax: 512/475-4759.

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January 14. **Wisconsin Land Information Board Meeting** will be held from 10:00 a.m. to 4:00 p.m. at the Dept. of Trade and Consumer Protection in Madison, WI. Contact: WLIB at 608-267-2707.

January 22-24. **Seventh Annual Nevada State GIS Conference** will be held in Reno, NV. Contact: Lorri Peltz-Lewis at 702/877-7619, fax: 702/887-7629, email: lapeltz@usgs.gov.

January 22-24. **Wisconsin Society of Land Surveyor's Annual Institute Convention** will be held at the Holiday Inn in Stevens Point, WI. Contact: Mike Roach at 414-496-6787.

March 4-7. **Wisconsin Land Information Association's Annual Conference** will be held at the Grand Geneva Conference Center in Lake Geneva, WI. Contact: WLIA at 800/344-0421.

March 17-19. **Fourth International Conference on Remote Sensing for Marine and Coastal Environments: Technology and Applications** will be held in Orlando, FL. Contact: Wendy Raeder at 313/994-1200, ext. 3453, fax: 313/994-5123, email: raeder@erim.org.

March 25-28. **AM/FM Annual Conference** will be held in Nashville, TN. Contact: AM/FM at 303/337-0513, fax: 303/337-4001.

April 1-5. **AAG Annual Conference** will be held in Ft. Worth, TX. Contact: Kevin Klug at 202/234-1450, fax: 202/234-2744, email: gaia@aag.org.

May 26-29. **GIS AM/FM '97 and Geoinformatics '97** will be held in Taipei, Taiwan. Contact: Chinese Geographic Information Society at 886 2 362 1499.

May 28-29. **Tenth Annual Towson State University GIS Conference (TSUGIS '97)** will be held in Baltimore, MD. Contact: Jay Morgan at 410/830-2964, fax: 410/830-3888, email: e7g4mor@toe.towson.edu.

June 5-6. **Wisconsin Land Information Association Quarterly Meeting** will be held in Waukesha, WI. Contact: WLIA at 800-344-0421.

June 23-27. **18th International Cartographic Conference** will be held in Stockholm, Sweden. Contact: Jean-Philippe Grelot, International Cartographic Assoc., 136 bis Rue de Grenelle, 75700 Paris, 07 SP-France. Fax: +33-1-43-98-8-00.

July 7-11. **Seventeenth Annual ESRI User Conference** will be held in San Diego, CA. Contact: User Conference Agenda Committee at fax: 909/307-3051, email: papers@esri.com, web: www.esri.com.

July 20-24. **URISA Annual Conference** will be held in Toronto, Canada. Contact: URISA at 202/289-1685.

September 4-5. **Wisconsin Land Information Association Quarterly Meeting** will be held at the Radisson Inn in LaCrosse, WI. Contact: WLIA at 800-344-0421.

October 24-31. **GIS/LIS Annual Conference** will be held in Cincinnati, OH. Call: 301/493-0200; fax: 301/493-8245.

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 1st Floor of Science Hall.

Our permanent staff consists of five people—Ted Koch, State Cartographer (608/262-6852), Bob Gurda, Assistant State Cartographer (608/262-6850), Hugh Phillips, Information Processing Consultant (608/262-8776), Brenda Hemstead, Administrative Assistant (608/263-4371), 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 36.25 (12m). In addressing this role, the SCO functions in a number of ways:

- publishes the *Wisconsin Mapping Bulletin*, catalogs, guides, brochures, and other documents 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.
- 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.

Wisconsin Mapping Bulletin

Published quarterly by the Wisconsin State Cartographer's Office. A University of Wisconsin-Madison outreach publication distributed free upon request.

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 January 6, 1997.

Editor: Bob Gurda

Illustrations: Brenda Hemstead

Desktop publishing: Brenda Hemstead

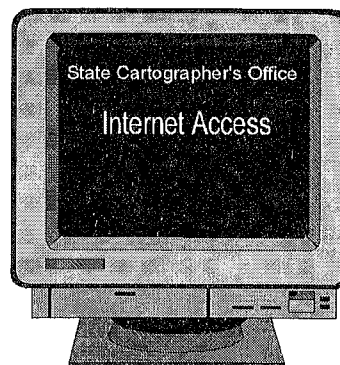
Mailing: UW-Extension Bulk Mail

Please send all comments, corrections, and news items to:

State Cartographer's Office
Room 160 Science Hall
550 N. Park Street
Madison, WI 53706-1491
phone: 608/262-3065
fax: 608/262-5205
email: sco@facstaff.wisc.edu

About our Web site...

We maintain a "homepage" on the Internet world wide web. We encourage those of you with Internet access and browsing software, to 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 prototype metadata files, learn about our continuing work in this area, and link to other state clearinghouses.

State Cartographer's Office
Univ. of Wisconsin-Madison
Rm. 160 Science Hall
550 N. Park Street
Madison, WI 53706-1491

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