

Budget proposals meet opposition

by Ted Koch

Two land information items included in the governor's proposed 1999-2001 budget have run into opposition at recent public hearings across the state. The two items drawing attention are the proposed reallocation of Wis. Land Information Board (WLIB) funds to support soil mapping, and the diversion of WLIB funds toward the development and implementation of a "computer-based land information system."

Opposition to the budget items, as currently written, have been voiced by representatives from both the WLIB and the Wisconsin Land Information Association at public hearing conducted by the legislature's Joint Committee on Finance, and by the Assembly Committee on Conservation and Land Use. For items within its responsibility, the Assembly Committee will make recommendations to Joint Finance which, as the Legislature's committee charged with review of all state appropriations and revenues, is in the process now of considering changes to the budget before it is presented to both houses of the legislature for final passage. When approved by the legislature, the budget then goes to the Governor for his veto or signature of approval. Typically, this final step occurs in July or August.

Timing of soil mapping funds at issue

Although the WLIB took action this January to commit \$415,000 of its funds annually over six years for the statewide completion of digital soil mapping (see Winter, 1999 issue of the *Bulletin*), the Governor's budget proposes to accelerate the WLIB's commitment to \$620,000 annually over a four-year period.

This budget item has run into opposition on two accounts: that the Natural Resources Conservation Service, the federal soil mapping agency, needs six years to complete the soil mapping work; and secondly, that the WLIB believes the impact of \$620,000 annually is too severe on its continued funding of local government land information projects. Spreading the soil mapping funds over six years rather than four is more appropriate.

Land Information System approach questioned

Regarding the computer-based land information system, the Governor's budget proposes to redirect a total of \$612,600 over two years from the WLIB to be used by the Department of Administration for the development and implementation of a statewide, centralized land information system.

The budget proposes that work on the statewide system be done without any direction or supervision from the WLIB. This proposal has raised a firestorm of opposition within the state's land information community, in that it is seen as a reduction in the Board's authority to direct its funds, and that it will have a serious impact on the board's ability to provide continued support of local projects.

Alternatives being sought

At five public hearings conducted at locations across the state by the Joint Committee on Finance, and in Madison by the Committee on Conservation and Land Use, various speakers presented alternatives to the budget proposals, and explained why they believe that the proposals, as they stand now, are not wise policy.

As of the writing of this report, a number of discussions have been held between members of the legislature and representatives the WLIA and WLIB, with the intent of developing changes to the budget that will be acceptable both to the legislature and the administration. If all goes as anticipated with the state budget process, we should be able to present the conclusion to this ongoing story in our next (summer) issue. In the interim, check the "News" section of our web site for updates.

Highlights of this issue....

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WLIB & WLC News

by Ted Koch

The Wisconsin Land Information Board last met on March 10 in Appleton in conjunction with the annual conference of the Wisconsin Land Information Association. The Board's next meeting is set for May 19 in Madison. Future meetings are scheduled for July 21, September 15, and November 17, all in Madison.

Board reaffirms funding for soils mapping

At its March 10 meeting in Appleton, the WLIB reaffirmed its commitment to provide funding for the proposed statewide completion of digital soil mapping by 2004 (see the Winter, 1999 issue of the *Bulletin*). In its action, the board directed that a letter be sent from the WLIB chair to the governor and the Department of Administration stating that the board remained committed to its original plan of allocating \$415,000 annually for soil mapping over a six-year period. The soil funding initiative as it appears in the Governor's proposed biennial budget, specifies a \$620,000 annual contribution from the board over four years. This time frame is not consistent with the WLIB's January recommendations.

Board opposes unauthorized spending of its funds

In another action at its March 10 meeting, the board voted to oppose any expenditure or commitment of its program funds without board approval. This action was in response to the proposal in the Governor's 1999-2001 budget to reallocate a total of \$612,600 from the board for the development and implementation of a centralized, automated land information system.



The draft budget language supporting this proposal specifies that funds directed to the system will be done without the board's direction or supervision. The reallocated funds will come from revenue that the board receives from real estate transaction fees collected by county register's of deeds offices. A portion of this revenue is used to support board administrative costs, while the remainder has historically been returned to local governments in the form of grants supporting land records modernization.

Foundational Element Custodians

A draft of a custodial model for Wisconsin Land Information Program Foundational Elements was presented by the Wisconsin Department of Transportation to the board at its March 10 meeting. The DOT is developing the model for its responsibility for the statewide geodetic network. The model, when approved, will serve as a framework for other agencies to develop custodial details for other WLIP foundational elements.

WLC News

The Wisconsin Land Council last met on March 23 in Madison. The single agenda item of discussion was the Governor's proposed 1999-2001 budget; however, the WLC took no actions regarding the budget proposals at this meeting. Future meetings of the Council have been scheduled for May 26, July 14, September 14, and November 10.

Two WLC sub-groups, the State Agency Resource Working Group (SARWG) and the Technical Working Group (TWG) continue to meet on an approximately monthly basis.

The SARWG has as its main focus the responsibilities to gather and distribute information about state agency land use plans, and to create a system to facilitate the development, training and technical assistance for local governmental land use planning. To more effectively achieve these goals, the SARWG has created four teams, Coordination, Agency Plans, Distribution, and Training and Technical Assistance.

Meanwhile, the TWG continues to refine an outline for the overall purpose, structure, function, and operation of a state land information system. Initial recommendations on this system are expected from the TWG in late May.

Background material on both working groups is located on the web site of the Office of Land Information Services (OLIS). Look in the SCO web site's *Address Book* (part of the *References* section).



Clearinghouse Connection



From the geospatial data almanac...

April showers bring metadata flowers

by AJ Wortley

Spring has sprung and it's time now to sow your metadata seeds in order to achieve a ripe, full harvest of metadata in the coming year. Plant them in your office, plant them in your data directories, but plant them now and be sure to provide proper care to the little fledgling files until they can be transplanted in our clearinghouse garden.

Growing the community clearinghouse

By now it's old hat to say so, but clearinghouse growth is indeed imminent in the coming year. We started with a small test plot tilled and planted several years ago by Hugh Phillips and several cooperators. That test plot is now ready for expansion into a whole field of data documentation just ripe for the pickin'. You can find it through searching the clearinghouse garden directory at the state or federal level, or just come browse the local field of certified grade A (FGDC-compliant) metadata.

Renewed confidence in clearinghouse growth comes from two directions this spring. The SCO's *WISCLINC Expansion Proposal* is again moving forward and should be in place shortly to begin directing WLIB-allocated funds toward clearinghouse goals.

WISCLINC was also included in a consolidated Wisconsin proposal for the FGDC grant program entitled, "Don't Duck Metadata." The FGDC program places emphasis on the documentation (yes, that means metadata) of framework data sets. Funding awards will be announced in early June. With input from either or both of these two sunshine providers, we'll have our clearinghouse growing big and tall in no time.

All this growth won't happen magically, of course. That's why it's time to plant the seeds now. Seed sowing is easy. For a start, get someone in the office to review the metadata creation process, browse through the clearinghouse, or even dig up some already-created framework data for documenting.

Part of growing a clearinghouse will include offering metadata workshops throughout the growing season. These workshops will provide methods for raising your metadata to maturity followed by transplanting it at the WISCLINC site.

Tools for metadata cultivation

Metadata planting can be performed with a variety of tools. Some prefer the older do-it-yourself hand tools (text editors) for the job while others may find comfort in the newer high-powered software entering the market. I have now in-

cluded links to metadata tool lists on the software page of WISCLINC and they can also be located by digging through the metadata resources section of the clearinghouse. For tips on getting started, the *Metadata Primer* and Metadata Tool Exercise continue to be two of the most commonly referenced almanacs nationally. Both are accessible directly through the WISCLINC directory.

Seedlings to fields of metadata

The key to a successful metadata farming operation is to get started early while the spatial data coverage is still in the greenhouse. We can even transplant a preliminary metadata file to the clearinghouse while the data itself is under planning or construction. Just as no one enjoys taming a weed-infested garden for the first time in August, documenting barrels of data coverages well after their completion is hard work. Besides, posting metadata while the data is still in progress works toward the goal of reducing duplication of effort—by letting others know what data you are creating before it's ripe enough for market.

To this end, there are more tools/extensions popping up like daffodils that allow for metadata creation during data production. How about an extension that helps you collect some of the relevant information from within the GIS software itself? Or a standalone graphical interface that sits beside your GIS software and allows you to choose and enter the metadata elements as you encounter them? It's never been easier than now to create metadata throughout the growing season, and spring is the best time to begin.

Reaping the rewards...

The rewards of metadata production reach far beyond a single growing season. Over time, metadata cultivation methods become refined and more automated as they are integrated into the data creation and maintenance process. And, as your geospatial database grows, the metadata foundation allows for greater ease in management and greater confidence in data quality. Last, but not least, as geospatial databases begin to be handed down to the next generation of farmers, metadata is part of the legacy that allows those new data custodians to progress in the footsteps of their predecessors, not backtrack to recover them.

The creation of a geospatial database is an investment and metadata is the insurance on that investment.



Blaska and Storm talk about OLIS and its future

For this issue we met with the Director and Deputy Director of the state's Office of Land Information Services (OLIS), J. Michael Blaska and Jeanne Storm, respectively. The facing page has background on OLIS.

Over the last 8 months you have hired new staff and integrated several other programs into OLIS. How are things working out?

We feel that the office has become a team, that we have jelled as a group. We are fortunate to have a rich mix of backgrounds in the group, with experience in both state and local government, as well as land-related issues, computer systems, and GIS. As more time elapses, we may need additional help with legal issues, information systems, and clerical tasks.

We expected some efficiencies to arise from bringing these groups together, and as an early example the GIS Service Center and the Plat Review Program now have connected computer file servers. Plat Review also has a computer systems specialist who has assisted staff of our other programs.

The budgets of each of the programs within OLIS will remain separate.

Among other things, OLIS provides services to the Wisconsin Land Information Board (WLIB) and the Wisconsin Land Council (WLC). Have you designated a staff person in each case to be the primary contact for questions?

Yes, Georgia Hopf, who has a long history serving the WLIB, will be our primary contact there. Cassandra Waldbrun will handle similar duties for the Land Council. These designations will appear shortly on our web site and telephone messaging system.

Jeanne, now that you have moved up to be Deputy Director, what duties will you have and how will your attention be distributed across OLIS's various units?

So that Mike can concentrate on policy and longer-range issues, I will focus on internal operations. That means monitoring and providing leadership on budgets, personnel, coaching, team building, training, planning, etc. Since Plat Review and Municipal Boundary Review have traditional, well-defined roles with experienced staff and fewer recent hires, they should require less attention than the newer and evolving units of OLIS.

It's possible that that a new division could be established to include OLIS and some other related DOA functions

Each of the programs within OLIS relies on its own source of funds. Will that situation continue?

Basically, there will be no change. Plat Review collects fees for 100% of its support. Municipal Boundary Review relies on funds appropriated by the legislature which are probably not adequate to accomplish all their statutory directives. We would like to remedy their current shortfall, perhaps with fees. If you look at their role and impact in the long term, that program can actually save local governments money by helping mediate disputes as long as adequate staff exists. The GIS Service Center also charges other state agencies, local governments, and non-profit agencies fees for services. The WLIB's funds come from the document recording fee, and the WLC uses funds allocated from several state agencies; these two sources pay for the administrative oversight of OLIS.

All in all, because the types and sources of funds are so different, it's not possible to combine resources into one pot.

However, that won't hamper us from administering OLIS as an enterprise where the programs help support each other.

OLIS currently reports directly to the Secretary of the DOA, rather than through a Division of DOA. That's a somewhat unusual arrangement. How does it work on a routine basis, and do you expect the arrangement to persist?

We meet weekly with DOA Secretary Mark Bugher's deputy and executive assistant. That is working well. It will probably continue in this mode for the foreseeable future.

In the longer term, OLIS could become embedded in one of the existing divisions of DOA. Alternatively, it's possible that a new division could be established to include OLIS and some other related DOA functions such as the Coastal Management Program and the Demographic Services Center. By that time, there may also be a Wisconsin Land Information System functioning at OLIS.

You have had quite a bit of contact with the Wisconsin Land Information Association in the last nine months. Is it likely that a similar group might form in the state to promote changes in land use policy?

Land use is a broad and complex area, and there are a number of existing interest groups. It would be surprising if the different perspectives of those groups could be contained within a single larger group. Some temporary work groups are actively discussing land use issues, but they don't have the same extensive grass-roots structure as WLIA.

We want to provide a full suite of services to Wisconsin residents across the entire spectrum of land use and land information.

Looking back from several years into the future, what would you like to see OLIS having achieved?

We would like to be providing a full suite of services to Wisconsin residents across the entire spectrum of land use and land information. That includes people who traditionally haven't had access to land use planning tools. On the policy side, we hope that we can help achieve consensus on changing the way land use planning occurs. One step in that direction would be adoption of a new definition for a "comprehensive plan."

OLIS active on all fronts

by Bob Gurda

The Office of Land Information Services (OLIS), a unit of the Wisconsin Department of Administration (DOA) is now up to almost full staff levels. OLIS was established in mid-1997 as part of a bureaucratic reorganization and enhancement that was mandated in the state budget which became law about 18 months ago.

DOA includes eleven divisions, but OLIS is somewhat atypically attached because it reports directly to the DOA Secretary rather than being part of a division. OLIS includes several units that were moved from other parts of state government, and also houses the staff that supports both the Wisconsin Land Information Board and the Wisconsin Land Council.

The units that were relocated into OLIS are Plat Review, Municipal Boundary Review, and the GIS Service Center. All three deal with land division, land use, or geographic information. Each has its own distinct funding source.

Staff now assembled, and in one place

After being chosen last summer to head OLIS, Michael Blaska set about defining, recruiting, and selecting staff to fill a number of new positions that support the board and council.

That effort was capped off recently when he selected Jeanne Storm, long-time head of the Plat Review operation, as Deputy Director of OLIS. When her vacated position is re-filled, the staff total will be 17.5 full-time positions. In addition, there are several limited-term positions, primarily in Plat Review and Municipal Boundary Review to deal with increased workload.

The units of OLIS are all housed on the 7th floor at 17 S. Fairchild Street in Madison, one block off the Capitol Square. That location is about four blocks from the DOA Building.

For those who want to make a quick, virtual visit to OLIS, their recently unveiled web site lists the entire staff along with contact information and background information about the various functional units within OLIS. You can find a link to that web site through the SCO's web site; go to "New" (look at links from recent *Bulletins*) or in our References section (look in the Address Book or the List of Acronyms).



Jeanne Storm and Mike Blaska

There has to be a better way

by Ted Koch

Several weeks ago, following one of the legislative committee hearings where presentations were made in opposition to several of the land information initiatives in the Governor's proposed budget (see related story on page 1), I was struck with the realization of the tremendous amount of time and effort individuals commit in bringing their concerns before the legislature. Particularly touching were those physically-challenged individuals who came before the Committee on Joint Finance to plead for adequate state assistance to provide them with some of life's most basic necessities. In some respects, seeing and hearing the challenges these people faced daily made our land information problems seem less pressing.

Certainly, the freedom and opportunity to present one's concerns, in an orderly manner, to those we have selected to make and amend our laws is a precious right. However, at that moment, it seemed to me that so much of the effort expended before legislative committees in presenting the accomplishments of the Land Information Program (WLIP), and the necessity to achieve the WLIP's goals over the next 3-5 years, could have been avoided with a different and perhaps more open and honest process of communication between those representing the WLIP and the administration.

Two years ago we went through a similar process. The Governor's budget at that time proposed to eliminate the Land Information Board. After much public testimony of opposition, and some behind-the-scenes negotiation, the board was preserved, and the work on meeting the goals of the WLIP proceeded. So now, here we two years later returned to a similar struggle, spending huge amounts of time and effort in illustrating many of the same points and making many of the same arguments. I'm convinced, and certainly I'm not alone on this, there has to be a better way to go about this.

Within the past two years, very significant strides have been made in land information system maturity across the state. Much of the recent growth of these systems at the local level can be attributed to investments made with funds other than from WLIP revenue. The WLIP got projects and programs started at the local level, and now those investments are working as a catalyst to leverage and encourage additional expenditures in data enhancement and applications. The soon-to-be-completed WLIP survey of county-based land information programs will be very revealing in how far we have advanced in the past 2-3 years.

There is an important success story to be told here, and we have to tell that story to a much wider audience, including the state government administration and the legislature. Detailing this story will hopefully open new lines of communication. Then perhaps, two years from now, we can come before legislative committees with supportive messages rather than one of opposition.

To feature high-level leaders

National GeoData Forum set for June

by Bob Gurda

Resource conservation...Economic development...Crime reduction...Transportation planning...Social service delivery. What is a key ingredient for success in all these endeavors? *Ready access to the right kinds of geographic information!* To highlight the issues involved in building and providing access to useful geographic information, the Federal Geographic Data Committee (FGDC) and a set of partners is sponsoring the third National GeoData Forum in Washington, D.C., June 7-9.

A goal for this conference is to learn about, discuss, and make recommendations for public policy action. Five-hundred elected officials, community leaders, industry leaders, and technologists will gather for this event.

Some of the questions to be addressed include:

What strategies would pool more public and private financing for standardized data development and data stewardship? How can we make data sharing easier, to avoid wasteful redundant data collection? How can we remove the technical and institutional barriers to widespread use of geospatial data? How can new Internet tools help? What kinds of public-private partnerships should be formed to address these issues?

The three-day schedule is generally as follows:

Monday: Senior-level policy makers will tell WHY they invest in geospatial data in their communities.

Tuesday: Seven concurrent break-out sessions or 'threads' will explore WHAT is happening now. At plenary gatherings, attendees will report their findings and recommendations.

Wednesday: The most compelling ideas and opportunities will be presented in a high-level public policy roundtable. We will consider HOW to move forward together, applying geospatial information technologies to make livable communities a reality.

(source: FGDC)



Ortho imagery & SDTS Raster Profile join other standards

FGDC adopts more standards

by Bob Gurda

The list of standards approved by the Federal Geographic Data Committee (FGDC) has increased to twelve. At its meeting this February, the FGDC Steering Committee endorsed new standards for Digital Orthoimagery and for Raster Data as a data-type profile under the existing Spatial Data Transfer Standard (SDTS).

FGDC acts upon recommendations emanating from its Standards Working Group. That group has twenty-four additional standards in various stages of work from initial proposal through public review.

Copies of FGDC-approved standards are accessible through the FGDC web site (which can be reached through the SCO web site).

(source: FGDC)



SCO spiders busy spinning more pages and functions

SCO web site sports new features

by Brian Van Pay

The SCO web site has seen numerous changes over the past several months. The most immediately noticeable is the new layout of the front page. It is better organized enabling you to find exactly what you are looking for with minimal surfing.

In addition to the new outline format, we have also developed a new Java navigation aide. This feature allows you to see a list of all of the web pages in a simple outline form that expands as you click on a topic to reveal more subtopics. You can activate it with a click on the link labeled "Java page" near the top of the standard home page.

New GIS information

The latest section to grace the SCO web site profiles GIS, and serves as an introduction to the science of Geographic Information Systems. This section gives an overview of GIS history, some basics, example applications, and helpful links. You may learn something new, such as when GIS began or what are the new cutting edge uses of GIS. Connect to this section directly from the SCO front page.

More links

If we at the SCO cannot answer your questions, then we put you in touch with those who can. With this in mind, we expanded our links section to include over 200 other web sites divided into the following categories: cartography, geography, geospatial data, GIS, orthophotography, remote sensing, Wisconsin related sites, and other sites.

Thousands of "hits" per day

SCO Web Site attracts heavy use

by Brian Van Pay

Any article on the SCO's web site statistics must first begin with a brief background on the World Wide Web and web statistics. What happens when somebody connects to your web site, and what statistics you can and cannot calculate are more confusing subjects than you might think.

Some web site promoters make claims such as "30,000 people visited our web site today," something that cannot really be calculated, only roughly estimated. The simple fact is that certain common statistics used to gauge the use of traditional print and even broadcast media are simply not available for the web.

When you go to a web site, typically you don't log in. Rather your browsing software makes a sequence of requests, one for each text file and graphic file on the page you are linked to. For instance, if you download the SCO's front web page, your browser would have made 5 requests for the various text and graphics files that make up that single page on your screen. Hence, the exaggerated statistics so often claimed for some Internet web sites.

The net obscures some information

Like any other web site provider, we can't know certain things about our site's traffic. We cannot know how many visitors we have had. However, we can guess by looking at the number of distinct hosts that have requested files from us; determine from which part of your site a user went off to another site, or where they went next.

Some things are clear

While some of the items listed above might be interesting, there is some quite useful information that we *can* know for certain:



- The number of requests made to our server
- The date and time of each request
- Which text and graphics files were downloaded
- Which Internet address (host) asked for the files
- The make and model of a person's browser;
- Which page referred the person to our site
- Broken links

The bottom line is that HTTP is a stateless protocol. People don't log in and retrieve several documents in a batch. Their browser makes a separate connection for each file they want. A further confusing situation is that a user may retrieve files from our server, or those same files may be already stored (cached) either within that user's computer (if they have visited our site previously) or by a service such as America OnLine (AOL). Unless the files come directly from our server, we don't know they are being accessed.

Nevertheless, web statistics are still informative; it's just important not to slip from "this page has received 30,000 requests" to "30,000 people have read this page."

So, what kind of traffic has the SCO web site attracted? The answer might surprise you. The following statistics were calculated over a recent 25-day period:

- Successful requests: 99,796
- Average successful requests per day: 3,986
- Successful requests for pages: 42,157
- Average successful requests for pages per day: 1,683
- Distinct hosts served: 11,215
- Data transferred: 2,287 Mbytes
- Average data transferred per day: 93,547 Kbytes

Rank	Requests	% of bytes downloaded	From where
1	25108	21.36%	.com (Commercial)
2	21372	21.31%	[unresolved addresses]
3	19005	15.49%	.net (Network)
4	17904	15.84%	.edu (USA Educational)
5	2417	2.18. %	.us (United States)
6	1712	7.68%	.ru (Russia)
7	1512	1.82%	.ca (Canada)
8	952	0.75%	.gov (USA Gov't.)
9	839	2.12%	.uk (U.K.)
10	666	0.66%	.org (Non-Profit Orgs)

SCO web site statistics

Q: *How do I contribute to or update metadata at the WISCLINC clearinghouse site?*

A: Whether it's updating metadata to reflect changes in your data or contributing a metadata set to the WISCLINC clearinghouse for the first time, getting your metadata up-to-date and on-line is easy if you follow these handy instructions. And once you've experienced it, you'll want to do it again and again!

Step 1: Locate your metadata file to be submitted or updated. It's preferable to find these in ASCII text file format as this makes the process much quicker. However, any metadata will do.

Step 2: Verify that your metadata was created according to the FGDC Content Standard for Digital Geospatial Metadata. If you are unfamiliar with the standard, there are many resources on WISCLINC that can help. CNS and MP are two free software tools available for formatting and validating metadata against the federal standard.

Step 3: Make any changes to the metadata to reflect the current state of the data coverage.

Step 4: Send the metadata to the State Cartographer's Office for review. This is best accomplished electronically, most commonly through e-mail but even FTP would work. However, if these are not options, we take metadata any way we can get it: fax, mail, air drop, personal delivery, you name it.

Step 5: Within a short period of time you will receive your reviewed metadata with any questions, comments, or clarifications. Simply review the comments and make any final changes.

Step 6: Repeat step 4 and we'll do the rest. We usually send one more message to the contributor after the metadata has been posted on the clearinghouse.

Step 7: Search for your metadata through either the Wisconsin search page or the FGDC search with the WISCLINC node chosen as a search parameter. This will verify for you that your metadata is now part of the NSDI network.

Finally, a few additional notes are in order. Related questions that surfaced at the annual WLIA conference in March included: Will you take as much metadata as we can send you? and, will you post metadata for data that is being created but is not complete? Good questions.

Responding in order, send us all the metadata you have. We cannot get enough of it and the more populated the clearinghouse becomes locally and nationally, the sooner

we begin to realize the true benefits that the NSDI clearinghouse network was set up to produce.

Secondly, the creation phase of a data coverage is the best time to post its metadata. Two clear benefits of this strategy immediately surface. First, early metadata efforts ensure that metadata is created as the data is created — building the most accurate documentation possible. Secondly, the clearinghouse network was designed to reduce duplication of effort in digital data production; what better way than to let as large an audience as possible know what data you are currently creating?



Q: *Who decided where the boundaries between the states were going to be?*

A: The U.S. Congress has this authority, but only in concert with the states affected. The history of these boundaries in terms of surveying and mapping is covered in a book (Professional Paper 909) published by the U. S. Geological Survey in 1976.

Actually, state boundaries along the east coast have histories that pre-date the American Revolution. Here in the midwest some boundaries were negotiated before reasonably accurate maps were available; this resulted in an occasional surprise once the defined boundaries were laid out on the land. Some disputes have gone as far as the U.S. Supreme Court.

Carrying the story one step further, each state determines how many counties or other units of local government it will have, and their boundaries. Wisconsin's initial few counties had their boundaries changed by the legislature many times, usually shrinking at the expense of new counties that were created.

We discovered an Internet web site that includes animations of both the state boundaries as well as county boundaries from 1650 to 1983. A California company called Gold Bug sells computer programs that provide more detailed access to this level of history as an aid to geneologists.

Look under "New" at the SCO web site for links to these resources.

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.

Adds GIS component to existing services

R.A. Smith acquires Access Tech

The Brookfield-based company, R.A. Smith & Associates, has diversified into the GIS services market by purchasing Access Technologies of Waukesha. R.A. Smith, the parent company of National Survey & Engineering, has now become the state's largest privately-held engineering firm providing GIS and technical services.

Access Technologies was formed in 1992, and served clients in both the private and public sectors. Among its services are GIS, mapping, document scanning/conversion, and facilities management. Mike Stegman, former president of Access, will lead R.A. Smith's GIS operations.

(source: R.A. Smith)



Lave DOT for other jobs

Ries & Danielsen find new homes

by Bob Gurda

Two people heavily involved with GIS development and coordination at the Wis. Department of Transportation have taken positions outside state government recently.

Tom Ries, who over ten years ago helped start up GIS at the DOT along with David Fletcher, has taken a job with the Madison consulting firm GeoAnalytics.

Diann Danielsen has left her agency-wide coordinator position at DOT to join the Dane County Land Information Office in Madison.

Both Danielsen and Ries worked for the DOT out of its main office in Madison.



Wis. data can be analyzed with GIS

National geo-spatial data survey completed

by Ted Koch

A national survey, designed to provide a summary view of geographic data producers and users at the state and local levels, has been completed. The results are available on the Internet. The survey, conducted from November, 1997 to October, 1998 was targeted at inventorying "framework data".

The survey was funded by the Federal Geographic Data Committee (FGDC), and carried out by the National States Geographic Information Council and state coordinators.

"Framework" data was the focus

This survey requested information on the framework data themes of geodetic control, orthophoto imagery, elevation,

transportation, hydrography, governmental units, and cadastral information. Framework data are those themes of digital geographic data that are commonly used and that provide a base for the use and application of other data.

State and national participation was strong

In Wisconsin, the Framework Survey was coordinated by the State Cartographer's Office, and was mailed to 125 organizations within the state. We sent surveys to state agencies, regional planning commissions, all cities with a population greater than 20,000, and all 72 counties (of which 71 responded). Nationally, the survey was completed by nearly 5300 organizations.

Tables and shapefiles are available for analysis

Survey results are available from the FGDC's web in several formats. These include a database table for each respondent, and downloadable mapping files in the ArcView Shapefile (ESRI) format. Since the number and type of organizations surveyed varied from state to state, it is important to remember that when analyzing results across states, the only common denominator is results from counties.

For more on the Framework Survey, visit the FGDC web site which can be accessed from the SCO site.

(source: FGDC)



Second year for record attendance

WLIA's Annual Conference a success

by Brenda Hemstead

The Wisconsin Land Information Association (WLIA) had a record attendance at its 12th annual conference held at the Paper Valley Inn from March 9-12, 1999 in Appleton, WI. Over 600 people attending the 4-day event, including 42 exhibitors displaying GIS-related hardware, software, services and information, continuing WLIA's tradition of highly successful annual meetings.

A majority of attendees completing the conference evaluations rated the conference as good or excellent. Focused around the theme, "Wisconsin Land Information: Many Communities, One Vision" the event began with a day-long series of eight pre-conference workshops with 218 participants. The workshops were a huge success and well attended, in fact, many of the workshops had a waiting list for attendance.

The conference proper began the second day with a series of four tracks running consecutively throughout the conference totaling 50 different topics.

continued on page 10...

Commercial remote sensing suffers another loss

Second company loses satellite at launch

by Bob Gurda

Another American company has had its first attempt fail to place a private remote sensing satellite into earth orbit. The Ikonos 1 satellite, launched for Space Imaging, Inc. by Lockheed Martin Corporation about mid-day on April 27, failed to send back signals after a point in the launch process by which it should have achieved orbit.

It is not known if the problems were with the launch vehicle, a four-stage Athena rocket supplied by Lockheed Martin, or the satellite payload itself.

Publicity heightens embarrassment

The failure is an especially public event following a feature article that appeared in the *New York Times* the morning of the launch. Space Imaging has a identical satellite available to launch, but it would seem likely that a full analysis of the April 27 events is needed before the company risks a similar loss.

The Ikonos satellites are unique in that they are designed to acquire images with a pixel size of one meter. This results in visual quality that can resolve objects about the size of motor vehicles. This is the highest resolution that has been planned for a non-military remote sensing satellite to date.

EarthWatch had similar failure in 1997

The commercial remote sensing industry in the U.S. hasn't had a good record to date. The only previous launch, of Early Bird 1 by EarthWatch Corp. in late 1997, was successful but radio contact ceased several days later.

Originally, Ikonos 1 was scheduled for a 1998 launch, but after Early Bird's problems Space Imaging lengthened their schedule to June of 1999. However, recently they apparently decided to move that date up to late April.

(source: *Space Imaging*)

April 15 launch a success

Landsat 7 flying high

by Bob Gurda

April 15 means "tax day" to most of us. This year it was also a "countdown day" for people interested in remote sensing of the earth.

After not just months, but years, of waiting, a fresh Landsat satellite was poised for launch this April 15. Happily, the launch was successful. This was a great relief to those who have followed the federal government's Landsat program, especially following the loss of Landsat 6 which apparently failed to achieve orbit back in October of 1993.

Two earlier Landsats continued to operate well beyond their planned lifetimes, covering for the failure of Landsat 6.

Landsat 7 will relieve that pressure, and will provide improved imagery through its Enhanced Thematic Mapper.

As with the earlier vehicles, NASA was responsible for the construction of Landsat 7. However, about 18 months from now the U.S. Geological Survey will assume management. The USGS is poised to be the outlet for data products. This is a departure from recent years where a private contractor has handled data sales and developed value-added products.

On Earth Day (April 22), the first images from Landsat 7 were unveiled in a ceremony in Washington, D.C.

(source: *NASA*)

WLIA's conference a success, continued from page 9

Other highlights of the conference:

- The first day luncheon keynote speakers were: Dr. Ruth Olson, Folklorist and Mark Wagler, Storyteller. They provided the audience with a different form of Wisconsin land information—the land and culture of Wisconsin told in our own stories and words.
- The opening plenary session featured presentations about our past and future—the "History of Wisconsin Mapping" presented by Mark Steuer still has members talking about the great 'old' maps that were displayed and how informative Mark was about Wisconsin's history. Kathleen Falk, Dane County Executive Director, discussed the "Design Dane!" initiative engaging local citizens in land use planning.
- Awards were given for service and special contributions to the association. Of special note, a new award for sustained service was created in the name of its first recipient, Allen Miller, WLIA's first president. Arden Sandsness, long-time advocate of modernized land records, received the "Miller" award.
- Incoming president, Roxanne Brown, announced the results of elections. Steve Ventura, Assoc. Professor of Soil Science & Institute for Environmental Studies at UW-Madison, was chosen to be president-elect. Voted in for 2-year terms on the Board of Directors were:

- Tim Barnett - Ayres Associates
- Al Brokmeier - Kenosha County
- Paula Cummings - Portage County
- Hugh Harper - Vernon County
- Brenda Hemstead - State Cartographer's Office
- Patricia Wodele - Buffalo County

The new millennium will see the WLIA Annual Conference at the Grand Geneva Resort in Lake Geneva, WI.

Completion depends on state budget

Orthophotos planned for soil map work

by Bob Gurda

Fifteen years ago it wouldn't even have been an issue. At that time, both soil mapping and digitizing of existing soil survey maps didn't rely on digital orthophotos.

However technological advances have swept through much of the mapping world recently, and one result is that soil maps and digital orthophotos are often mentioned in the same breath. In fact, the current drive to fully map our state's soils and to convert soil survey maps to GIS format is set up to help fund the completion of orthophotos statewide.

State budget funds are the key

The state budget presently being considered by the legislature contains provisions to accelerate the mapping of soils in several counties, and to digitize soil survey maps to accomplish statewide GIS coverage, both by 2005. (For details, see our Winter 1999 issue). Part of that funding package would pay the non-federal 25% share for digital orthophoto quarter-quadrangles.

NRCS is coordinating ortho orders

The federal government's Natural Resources Conservation Service (NRCS) is preparing for the release of state funds later this the summer (assuming that the funds are included in the final budget signed by the governor). Ken Lubich, the State Soil Scientist with NRCS, is identifying areas over which they would first order digital orthophotos. Delivery time has been running about 16 months through the National Digital Orthophoto Program (NDOP).

NAPP photographs are necessary condition

Digital orthophotos produced under the NDOP use a particular source of aerial photographs—the National Aerial Photography Program (NAPP). See the accompanying article for an update on recent Wisconsin coverage.

Because some extensive sections of the state already have recent NAPP photographs (acquired last spring), orthophotos over those areas can be ordered sooner than for areas which hopefully will have their photographs acquired this spring.

Some areas to be produced sooner

Some significant portions of northern and western Wisconsin have no (or incomplete) orthophoto coverage, but have 1998 NAPP photos read to use. The following counties are expected to have orthophotos ordered first: Barron, Oneida, Langlade, Washburn, Burnett, Buffalo, Oconto, Marinette, Sawyer, Chippewa, and Rusk.

Clearer spring skies raise hopes for full state coverage

NAPP reflights aim to complete photos

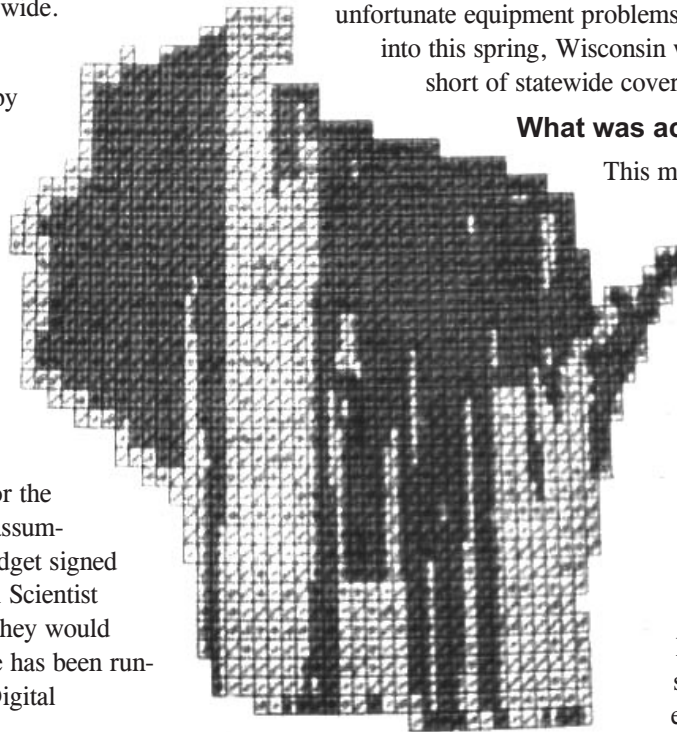
by Bob Gurda

The National Aerial Photography Program's contractors were back over Wisconsin again this spring. They achieved their goal of completing the statewide project that was begun last spring.

This spring's weather has been fairly conducive to aerial photography, with many days of clear skies. By comparison, last spring featured long cloudy periods. And, even when the weather cooperated last year the contractors had some unfortunate equipment problems. As a result, going into this spring, Wisconsin was still forty percent short of statewide coverage.

What was acquired in 1998?

This map shows the extent of accepted NAPP coverage from 1998. We have updated our web site's aerial photography catalog to indicate the portion of each county which has 1998 NAPP coverage. For more detailed information, the USGS PhotoFinder web site shows localized coverage.



1998 NAPP coverage

Because Wisconsin's NAPP photographs are specified to be acquired during "leaf off" conditions, the window of weeks in spring is fairly short—after snow has melted but before trees leaf out. The film is black-and-white, and the images are at a scale of 1:40,000.

By later this summer we should have reports on which of this spring's NAPP photos have been inspected and accepted.

Minnesota border may be a problem

One twist on Wisconsin's second NAPP project (the first was done primarily in 1992) is that a narrow strip along the western edge of the state won't have spring photographs. This area was acquired as part of a Minnesota NAPP project a few years ago, and wasn't slated for reacquisition as part of the Wisconsin project. However, the Minnesota photos were taken in the summer, with leaves on the trees.

What's available? ...and what might the future hold?

Elevation data to be scrutinized

by Bob Gurda

DEMs. DTMs. LIDAR. RADAR. GPS. Contours. Benchmarks.

Information about elevations in our landscape can be collected and stored in a variety of forms. Some of these forms are traditional, while others are emerging approaches.

Understanding the status and future of elevation information statewide will be the focus of a **meeting on the morning of June 18**. Organized under the auspices of WISCLAND, this meeting is designed to evaluate what is currently available in the way of elevation data, and to assess the interests that various organizations might have in working together to build more and better data in the future.

Anyone is welcome to attend the meeting, which will be held in the Madison area. For details, contact Bob Gurda at 608/262-6850, or visit the WISCLAND section of the SCO web site.



GIS layer also available

DOT updates railroad map

A map detailing Wisconsin's freight railroads is available from the Wis. Department of Transportation. This map, which is published annually, is generated from a GIS and measures 22" x 28" and is available for \$4.00.

The map shows current railroads operating in Wisconsin. Each railroad is assigned a unique color or line symbol. Further symbols indicate Amtrak stations, major commercial ports, rail lines that are out-of-service, corridors that are owned by the state, and lines that have been acquired before abandonment for recreation use.

The map is available from DOT's Map and Publication Sales office. Call 608/246-3265.

The GIS layer is also available. Find it, and an accompanying metadata report, on the WISCLINC web site (reached directly from the SCO's web site).

(source: WisDOT)



Single year production cycle this time

New state highway map published

by Bob Gurda

Like clockwork, Wisconsin has a fresh state highway map. Produced again by the Wis. Dept. of Transportation, this edition is printed on somewhat lighter weight paper than past editions.

Previous editions were released every two years, but the timing was awkward relative to the state budget cycle which traditionally has included funds for printing so that the maps can be distributed free. The new map will be available for one year, and beginning in the year 2000 production will return to a two-year cycle.

The design of this year's map is similar to previous edition. The back side of the sheet has a new regional focus on tourist destinations.

An error on the map gained some publicity in the mass media. The names of three municipalities are missing, but DOT has remedied the problem by stamping the three names along with location information on a vacant space on the map.

Copies of the standard folded map are available free from numerous outlets including the Department of Tourism. As in past years, a larger version printed on heavy stock is available unfolded to be used as a wall map; it is available from the DOT for \$ 6.00 plus tax and shipping. Call 608/ 246-3265.



Maps, charts, graphs, and demographics galore

Wis. ethnic atlas now available

by Bob Gurda

For the second time in less than a year, we have a new specialty atlas of Wisconsin. This one is *The Atlas of Ethnic Diversity in Wisconsin*. Like *Wisconsin's Past and Present: A Historical Atlas* which appeared last fall, the ethnic atlas is published by the University of Wisconsin Press.

Running almost 250 pages, the ethnic atlas allocates 2-3 color pages for each ethnic group. One page for each group shows a state map of geographic distribution, supported by tables of counties with the highest raw number and the highest percentage of each group. An adjacent page contains graphs illustrating characteristics such as employment sector, household income, educational attainment, and population composition by 5-year cohorts.

The data for the maps and tables comes from the 1990 Census. The atlas includes several paragraphs of text for each ethnic group, discussing the history of migration and geographic and demographic highlights.

The authors are Kazimierz J. Zaniewski of UW-Oshkosh and Carol J. Rosen of UW-Whitewater.

The Atlas of Ethnic Diversity in Wisconsin is available from the UW Press for \$65.00. For orders, call 773/568-1550, or link to their web site from "Mapping Bulletin highlights" which is under "New" on the SCO web site.

Differential GPS made easier

NGS enhances CORS web site

by Brian Van Pay

What is CORS?

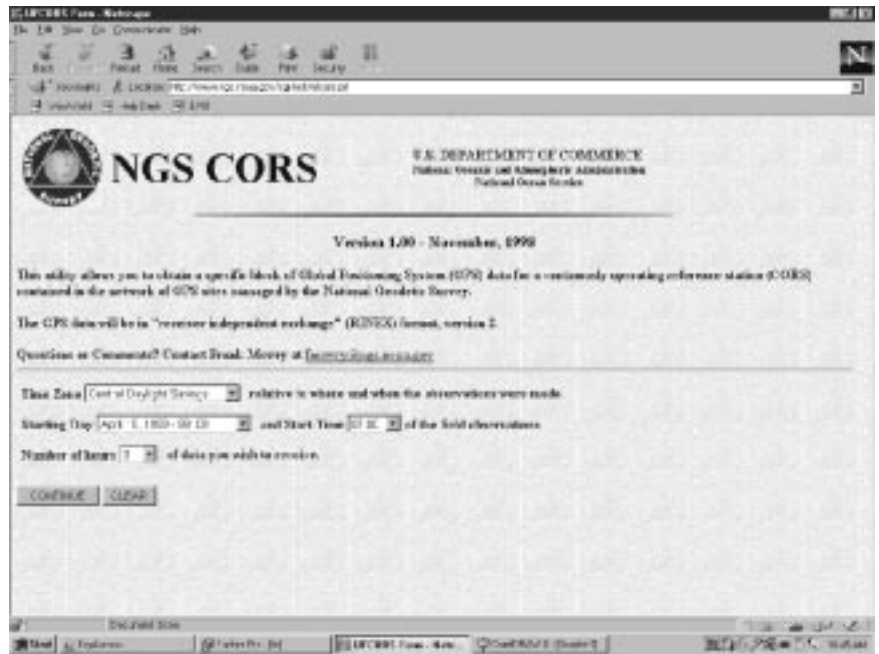
The National Geodetic Survey (NGS), operates a network of continuously operating reference stations (CORS) that provide Global Positioning System (GPS) base station data throughout the United States. Surveyors, GIS/LIS professionals, engineers, scientists, and others can apply CORS data to improve, through a differential correction process, the spatial accuracy of GPS data collected in the field. The CORS system enables positioning accuracies that approach a few centimeters relative to the National Spatial Reference System, both horizontally and vertically.

There are currently 225 CORS stations in the United States, of which 6 are in or near Wisconsin. The system is continually growing at a rate of a few sites per month.

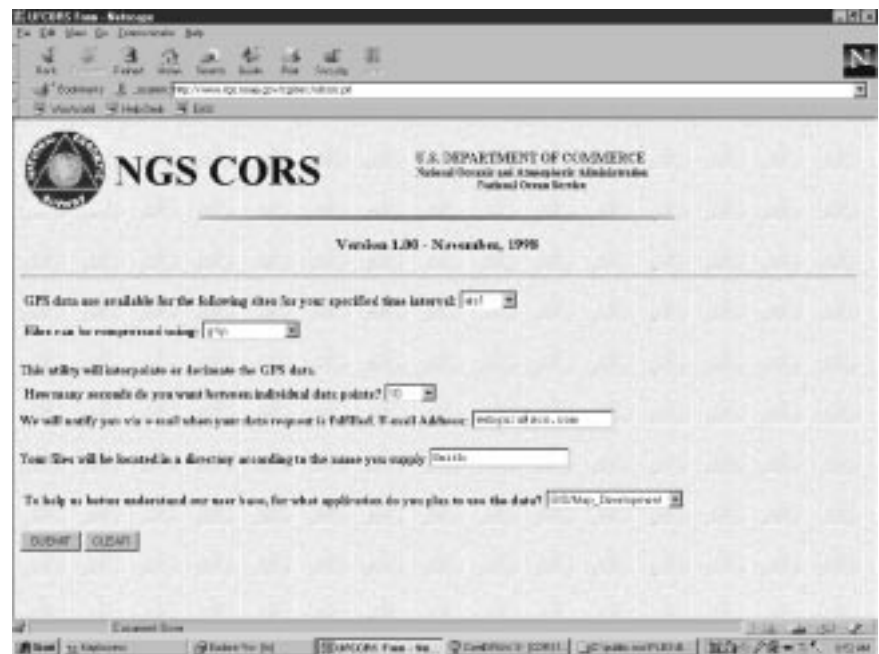
A new user-friendly CORS page

NGS has unveiled a new CORS web page that simplifies the process of obtaining customized data sets. This utility allows you to obtain a specific block of GPS base station data. Just insert your time zone, start day, start time, and the number of hours you were collecting data. With these parameters you can then choose the site nearest you, the type of compression algorithm to be applied to your base station data, how you would like your GPS data interpolated or decimated, and how many seconds to be included between each data point. The system will then send you an e-mail when your data is ready to be downloaded from the CORS web site. This site also contains a number of useful resources including: software, FAQs, and GPS links.

Make a short cut to the CORS site by visiting the SCO's site and looking under "New", or under "CORS" in our list of acronyms in the Reference Section.



Examples from the CORS web site



Traveling north for next quarterly meeting

WLIA to visit Eagle River

by Brenda Hemstead

The next Wisconsin Land Information Association (WLIA) gathering is the summer quarterly meeting at the Chanticleer Inn in Eagle River on June 3 & 4. Non-members are welcome!



Thursday: workshops & free seminar

On Thursday, June 3rd, plans include two half-day workshops. The morning workshop, *“The Mysteries of Conversion and Common Relationships: ARC/INFO-Autocad- AutoCADMAP-Public Access”* will focus on both the technical and political aspects that face municipal and county organizations while looking for common integration practices and standard easy-to-understand work practices. The afternoon workshop, *“GIS for the Beginner: An Introduction to ArcView”* will offer an orientation to basic GIS using ArcView; the different kinds of data that can be used in a GIS; visualizing GIS data; producing simple maps; performing simple queries/analyses with GIS, issues in creating your own data; and using GIS data from other sources. The registration fee for each workshop is \$40 member and \$50 non-member.

Scheduled later that Thursday evening, from 7:00 p.m. to 9:00 p.m., are two “free” presentations; open to the public:

- ü State Soil Scientist, Ken Lubich and Soil Scientist, Jim Barnes will be presenting the Natural Resource Conservation Service’s **update on the soil survey initiative**. The initiative includes both completion of initial soil surveys (9 counties in NW Wisconsin), and digitizing or certification of the soil surveys for 29 remaining counties. Topics will included: current funding status, proposed completion dates for all affected counties, use of orthophotography and who will produce orthophotography where none is available now.
- ü **Riparian Rights & Regulations; Origin, Interpretation & Application**, overview of current laws, DNR’s interpretation and application, etc., presented by Jim Rusch, Surveyor/Developer.

Friday: Developing of a Plat Book; Census 2000 & Redistricting

The next morning’s program begins at 9:30 a.m. (\$20 registration includes lunch) with **program updates** on the Wisconsin Land Information Program (WLIP) and the governor’s budget.

Following are presentations by Janet Krucky, Price County, and Dianne Caffrey, Douglas County explaining how their counties used and benefitted from WLIP funds and avoided copyright issues in their successful creation of digital **County Plat Books**. Dennis Kanten, GIS Coordinator, USDA-Forest Service, will explain issues and objectives of the **Northland GIS Users Group**.

After lunch, a presentation on **Census 2000** will cover the census process, from local government involvement to the final product distributed by the federal Census Bureau. Definitions of terms, relationships between various agencies, redistricting, and the utilization of Geographic Information System processes will be discussed.

The day will conclude with an LIO Council Meeting from 2:00pm to 3:30pm. To register, or for further information on WLIA, call 800/344-0421, or visit their website at: www.wlia.org/.

Looking toward September

WLIA is planning its fall meeting to be held at the Best Western Northwoods Lodge in Siren (Burnett County, in north-western Wisconsin) on September 9-10.



To piggyback on Geography Awareness Week

GIS DAY set for November

by Bob Gurda

This coming November 19 will be the first global GIS Day. The event is scheduled for the Friday of Geography Awareness Week. Its purpose is to raise awareness within schools, businesses, and the general public of how GIS is used to deal with real-world applications

We will report in our next two issues about specific plans for GIS Day 1999 in Wisconsin and our region. As events materialize we will also set up a set of links on our web site.

GIS Day is being sponsored by the National Geographic Society, the Association of American Geographers, and Environmental Systems Research Institute.

(source: ESRI)

Navy Pier to host conference in August

URISA set to breeze into Chicago

by Bob Gurda

August can be HOT in this part of the country. But the Great Lakes stay cool all summer, providing some natural air conditioning—even when Chicago’s fabled winds aren’t blowing.

So, it’s fortunate that the Navy Pier complex, right down on the lakefront, will be the site for this year’s annual conference of the Urban and Regional Information Systems Association (URISA). The dates are August 21-25.

Some changes since Milwaukee

URISA last brought its conference to the Midwest in 1994, when Milwaukee served as host. A large number of Wisconsin attendees took advantage of the nearby location.

Since that time, URISA’s executive management has changed, and the home offices have moved from Washington, D.C. to the Chicago area. In addition, the conference fee now includes entrance to any one of URISA’s many workshops, held on Saturday/Sunday prior to the conference proper. This arrangement helps travelers take advantage of cheaper airline fares.

Students can attend free!

URISA needs a cadre of people to help manage various logistics at the Chicago meeting. Full-time university students who work at the conference receive a free, full conference registration.

For more information, contact URISA at 1460 Renaissance Dr., #305, Park Ridge, IL 60068, or on the web at www.urisa.org.

June 3, 1999, **Workshop on the Mysteries of Conversion and Common Relationships: ARC/INFO–AutoCAD–AutoCADMAP–Public Access** will be held from 9am - noon at the Chanticleer Inn in Eagle River, WI. Contact: WLIA at 800/344-0421.

June 3, 1999, **Workshop on GIS for the Beginner: An Introduction to ArcView** will be held from 1pm - 4pm at the Chanticleer Inn in Eagle River, WI. Contact: WLIA at 800/344-0421.

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

June 15–August 3 (eight Tuesdays, 4:00–6:00 p.m.), **Geographic Information Systems (GIS) for Managers**. The UW-Madison and the Department of Engineering Professional Development are hosting a videoteleconference explaining the basics of GIS. The course fee is \$495. Contact: the Engineering Professional Development program at 800/462-0876, or visit their web site at <http://epd.engr.wisc.edu/>.

June 18, 1999, **The WISCLAND Steering Committee** meeting will be held from 1pm - 4pm plus a meeting on elevation data will be held from 9am - noon at the USGS Water Resources Division office, 8505 Research Way in Middleton, WI. Contact: Bob Gurda at 608/262-6850, email: rfgurda@facstaff.wisc.edu.

July 14, 1999, **The Wisconsin Land Council** will meet in Madison. Contact: OLIS at 608/267-2707.

July 21, 1999, **The Wisconsin Land Information Board** will meet at the Wisconsin Dept. of Agriculture, Trade, and Consumer Protection Building at 10am in Madison, WI. Contact: OLIS 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. For further information, please visit URISA’s homepage at www.urisa.org.

September 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 14, 1999, **The Wisconsin Land Council** will meet in Madison. Contact: OLIS at 608/267-2707.

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

October 20-23, 1999, **The North American Cartographic Information Society** will hold their 1999 annual conference in Williamsburg, Virginia. Email your abstracts to Tom Patterson by May 17 at patterson@ix.netcom.com. Contact NACIS at 414-229-6282 or 800-558-8993 or email at cmb@uwm.edu.

November 10, 1999, **The Wisconsin Land Council** will meet in Madison. Contact: OLIS 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 10am in Madison, WI. Contact: OLIS at 608/267-2707.

November 19, 1999, **GIS Day**—sponsored by the National Geographic Society, the Association of American Geographers, and Environmental Systems Research Institute to promote awareness of how GIS is used to deal with real-world applications within schools, businesses, and the general public.

December 3, 1999, **The Wisconsin Land Information Association Quarterly Meeting** will be held at the Best Western Grand Seasons Hotel & Conference Center in Waupaca, WI. Contact: WLIA at 800/344-0421

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 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

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 July 5, 1999.

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