

NAPP FUNDING VETOED FROM STATE BUDGET

State funding for Wisconsin's participation in the National Aerial Photography Program (NAPP) was vetoed from the state budget bill by Governor Thompson in August. This veto severely jeopardized the possibility of Wisconsin becoming one of the states for which NAPP will acquire statewide medium-altitude aerial photography in 1992.

In a somewhat related action, the Governor did approve a much more expensive photography program designed to support forest inventory needs (see page 4).

NAPP is a cooperative federal-state program. A state that commits 50% of the cost of the acquisition is guaranteed to be "flown" when its scheduled year arrives. The cost depends primarily on a state's area; for Wisconsin the 50% share is about \$200,000—about one-half cent per acre. Wisconsin is on the NAPP schedule for 1992. NAPP operates on a 5-year cycle, meaning Wisconsin's next chance will be in 1997.

The state budget initiative to fund NAPP was spearheaded by State Representative Alvin Baldus of Menomonie, who believes that state funding of NAPP would benefit a wide variety of users in state and local government. His budget amendment to allocate general purpose revenues (GPR) for NAPP was accepted consecutively by various groups in the State Assembly, and then the State Senate, and ultimately went to the Governor.

As has been widely publicized, Governor Thompson vetoed a record number of items from this budget. In various public statements he characterized many of the vetoed items as "pork barrel"—a term usually reserved for projects that benefit only a local constituency. NAPP, however, has many statewide benefits and does not benefit Baldus' district any more than most other areas of the state.

A number of parties have been actively supporting Wisconsin's participation in NAPP. Included are the Wisconsin Land Information Association, utility companies, counties, and federal agencies active in land management in the state. The Wisconsin Land Information Board has continued to support attempts by the State Cartographer's Office to find cost-share funds for NAPP.

Some of the supporters had written to the Governor, urging his approval of the NAPP funding. In written responses to explain his veto decision, the Governor noted his belief that aerial photography was needed, but that this expenditure did not have sufficiently high priority in times of tight budgets. He further stated that existing state resources should be used to fund this initiative, but he did not identify or even hint at any particular resources he might have in mind.

Acquired from a flying height of almost 4 miles, NAPP photographs are designed to be most useful for natural resource and agriculture programs. Most often, the flights occur in the spring, prior to trees leafing out. A consortium of federal agencies annually commits hundreds of thousands of dollars for the program.

As of the deadline for this issue of the <u>Bulletin</u>, there was a slim thread of hope that NAPP would arrange a 1992 Wisconsin flight despite lack of a state contribution. Presumably since there are relatively few federal lands in the state, however, Wisconsin does not rank near the top of the federal agencies' NAPP priority list for 1992.

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Land Information Board

Meetings

Since our last issue, the Wisconsin Land Information Board has met three times: July 8, September 9, and October 14. Future meetings are scheduled for November 4 and December 9.

Statutory Changes

The statutory language that is the foundation of the Wisconsin Land Information Program was changed slightly by language approved as part of the State Budget. The statutory requirement that a 25% match be provided by the applicant for a grant from the Board has been eliminated. (However, it could still be beneficial for matching funds to be pledged, since this is one of the factors used to evaluate grant proposals.) The Budget Bill as submitted early this year to the Legislature by Governor Thompson contained language that would have shortened the life of the program, by moving up the "sunset" date. This language was removed prior to passage of the bill. There was an attempt to completely eliminate the "sunset" provision, but this effort failed.

On a closely related note, attempts to increase the staff position allocation for the WLIB were unsuccessful. As more and more countywide plans are submitted for approval, and as the grant portion of the program is put into motion, demands on the currently overburdened staff will continue to increase. This is a critical situation. The WLIB staff is supported by a portion of the fees collected under the program; the Board does not have access to General Purpose Revenue under the current budget.

Revenues

The statutory increase in recording fees resulted in \$3.2 million of revenue for the first year of the Land Information Program, the period ending June 30, 1991. This amount is split virtually 50/50 between county land information offices and the WLIB. Effective July 1 of this year, the per-document fee increments another \$2, with all of the new proceeds accruing to the county fund.

Plans Approved

At recent meetings, land records modernization plans have been approved for Dane, Racine, and Rock Counties. Several more will be considered soon.

Grant Applications and Evaluation Criteria

Relatively minor modifications were made to earlier drafts of evaluation criteria, and the finally approved language is expected to be issued by the Department of Administration by about October 31 in the form of emergency administrative rules. These will then be the subject of hearings, perhaps prior to the end of the calendar year.

The WLIB postponed the first grant application period, to the month of October. The second opportunity will be this December.

Winnebago County Selects Genasys

Winnebago County has selected Genasys to provide GIS software and services. The Genasys GIS software, "Genamap", had been called Deltamap earlier. Its core heritage is MOSS, an early GIS software package developed by the U.S. Fish and Wildlife Service. Winnebago County has been using MOSS for a number of years.

> The County has taken the lead in developing WINGS—The Winnebago Geographic Information System—a consortium along with the cities of Oshkosh, Menasha, Neenah, Omro, and Winnecone. WINGS formed the foundation for the Winnebago County plan for land records modernization that was approved by the WLIB earlier this year.



GIS Software On State Contract

Seven software products offering geographic information system (GIS) capabilities have been placed on "State Contract". This means that any government entities in the state can deal with the vendors of these products on the basis of prices and services described in the contract.

State Contract status also simplifies the vendors' role, since a single set of prices can be quoted to any potential purchaser.

The Wisconsin Department of Administration (DOA) has been managing the process of soliciting, analyzing, and awarding these GIS software contracts. This work began last winter. At present, DOA is in its final stages of negotiating packages and prices with each vendor which was successful in qualifying under the terms of the Request for Proposals. As these negotiations lead to signed contracts, the terms will be forwarded to each county Land Information Office by the Wisconsin Land Information Board.

About a dozen vendors submitted proposals in reponse to the RFP. These were analyzed to determine which products met the minimum qualifications. Since each type GIS software is based on its own model, and since all of these softwares are rapidly evolving, it was not practical to select a single vendor as is sometimes done for more traditional and established products. Each product has both strong and weak points.

Below is an alphabetical list of the successful companies. DOA will be making available observations on these companies/products to help guide the potential purchaser.

- Environmental Systems Research Institute
- FMS/AC
- Genasys
- Generation 5
- Intergraph
- McDonnell Douglas
- Ultimap

High Precision Network News

In our last issue, we foreshadowed the availability of new coordinates for Wisconsin High Precision Geodetic Network. This issue is still not completely resolved, but important progress has finally been made.

Recently the National Geodetic Survey delivered its adjusted set of coordinates to the Wisconsin Department of Transportation. These coordinates were derived from Global Positioning System (GPS) measurements made by DOT's contractor last summer, and which had been delivered to NGS about 6 months ago. The contractor had performed its own adjustment of the data earlier, and along with DOT had disagreed with NGS on adjustment methodologies. DOT is now satisfied with NGS' adjustment.



The accepted coordinates now form the basis for a new version of the North American Datum of 1983 for Wisconsin. It will be called NAD83 (1991). The earlier datum will be called NAD83 (1986). Such dual versions of NAD83 will exist in a number of states where high precision networks have been established recently. The complicating historical factor is that GPS technology appeared too late for NGS is incorporate its use in NAD83 (1986).

The only coordinates currently released are for the approximately 98 state-wide control stations surveyed with GPS techniques. Of these, 18 were existing NGS control stations for which both NAD83 (1986) and NAD 27 coordinates had been published earlier. Station descriptions for the 80 new points have not been released by NGS, but should be forthcoming shortly. In addition, NGS is readjusting all 2200 of their existing 1st and 2nd Order control

stations for NAD 83 (1991). These should be available soon.

The State Cartographer's Office will be the Wisconsin point of access for both coordinate and station description information. Availability will be announced once we receive the necessary files in a format that can be distributed efficiently and effectively.

Improvements in the horizontal geodetic network, from NAD27 to NAD83, have been a subject of much discussion across the state. The changes between NAD27 and NAD83 (1986) are not uniform, but vary from place to place. Some major distortions in the old network were resolved by NAD83 (1986).

Since NAD83 (1990) is based on GPS measurements which are of higher quality than those acquired with earlier techniques—there should be some differences between the two versions of NAD83. Based on a comparison of the 18 existing NGS stations, shifts are mostly greater than 20 centimeters. Four are in excess of 40 centimeters. These are not clustered in one part of the state. The largest difference is almost 60 centimeters (about 23 inches) for a 1st Order station in Kenosha County.

State Geologist Killed in Auto Crash

Juergen Reinhardt, who became Wisconsin's State Geologist on July 1st of this year, died on September 18th as a result of a traffic accident in Clark County. We at the SCO, and many others, looked forward to working with Dr. Reinhardt in his roles as a member of the Committee on State Cartography, and as an advisory member of the Wisconsin Land Information Board. Even from our limited contact with him this summer, it was clear that he would be a source of ideas and energy that would benefit the state.

Reinhardt, 44, had worked for the U.S. Geological Survey for 15 years before being selected to replace Merideth "Buzz" Ostrom who retired as State Geologist in September of 1990. The State Geologist additionally serves as Director of the Wisconsin Geological and Natural History Survey. Since another nation-wide search may be necessary to fill the vacant position, it could be next summer until the Survey has a new permanent leader.

"I mourn the loss of Juergen as a friend and as an energetic, vital force in making the earth sciences understandable to the public," said Dallas Peck, Director of the U.S. Geological Survey. "We reluctantly watched him transfer after a distinguished career with the USGS...knowing that the good scientist we were losing would be serving the state of Wisconsin well. Now we can only join with Judy and the family in shocked sorrow."

DNR FORESTRY PHOTOGRAPHY GETS BUDGET APPROVAL

A proposal to acquire statewide aerial photography for forestry management purposes has been approved as part of the State Budget. About \$700,000 of segregated funds in the Department of Natural Resources (DNR) will be used over the next several summers to acquire photographs at a scale of 1:15,840 (4" = 1 mile). All photographs will depict forest vegetation in full "leaf-on" condition.

Additional funds totalling \$3.2 million will be used to interpret the photos and construct a forest inventory. Of this total, DNR has budgeted \$1.4 million, and the U.S. Forest Service will provide \$1.8 million.

Black-and-white infrared film will be used and the flight will result in stereoscopic coverage; this combination is particularly suitable for vegetation interpretation. Based on the state's area, the scale of the photos, and the amount of stereo overlap, this acquisition will total approximately 45,000 frames.

DNR had selected two contractors prior to the budget's signing, and began the acquisition immediately upon budget approval in August. As a result, about 10% of the state was photographed prior to September 8. DNR determined that after that date the over-mature characteristics of deciduous leaves would result in unusable images for forest interpretation purposes. The flights will resume next summer and should be completed by 1993. Twelve counties in the northwest corner of the state are scheduled for completion next summer.

Each standard frame (9 X 9 inches) will depict an area slightly larger than 4 square miles. However, due to irregularities in the layout of the original Public Land Survey System that is the basis for most property description in Wisconsin, it will not be possible to center the photographs over blocks of 4 land sections as was done for a similar flight at slightly higher altitude in 1979-1980. Flight lines will be oriented east to west, and spaced 1.5 miles apart.

Prints from the 1979-1980 flight have been and will continue to be available through the Wisconsin Dept. of Transportation. DNR has not yet determined exactly how the general public will be able to acquire imagery from this new flight, nor the costs for various potential products such as contact prints, photographic enlargements, or screened reproducible film.

As compared to the NAPP photographs discussed on page 1 of this issue, these forestry photographs will each cover about 20% of the area but at higher resolution, and will be acquired under "leaf-on" conditions—that is, with deciduous vegetation fully leafed-out. In areas where the deciduous tree canopy conceals many ground features in summer, the use of these photographs will be significantly limited for many non-forestry purposes.

Funding for this aerial photography acquisition, and its subsequent interpretation for purposes of statewide forest inventory, comes from a segregated fund that is generated by a fixed portion of the mil rate that results in property tax bills across the state. The rate is 0.2 mils, meaning that a \$50,000 assessment on a property results in a \$10.00 allocation to the fund. Similarly, a \$100,000 assessment generates \$20.00 for the fund.

As part of the budget bill language authorizing this forestry flight, DNR was also given authority to charge fees for prints at such a level as to recoup costs of the flight from sales of prints, thereby generating funds for future flights. Prior to this time, pricing of prints had been subject to the state's open records laws which allow cost recovery only for materials involved in making copies.



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COMMENTARY ... from the State Cartographer

In a sense I have returned home. I was born and raised in Waukesha County and later attended the University here in Madison. I left Madison more than seventeen years ago after completing my course-work towards a Masters in Cartography. Coincidently, it was about this same time that the State Cartographer's Office was being formed. I moved to up-state New York to begin a mapping career with the New York State Department of Transportation in Albany. New York became home and as the years passed, I never considered possible a return to Wisconsin.

The opportunity to become the Wisconsin State Cartographer was unexpected, but an exciting possibility. The chance to return to the University and to become directly involved in the wide variety of state mapping issues and initiatives, including the Land Information Program could not be passed by. Nationally, the University has been a prominent leader in the mapping sciences for years. Additionally, many of the mapping activities at the local, regional and state levels in Wisconsin are models of innovation.

It is a pleasure to be back to Wisconsin and face the many challenges ahead. Through the years, the SCO has developed a reputation for offering the mapping community high quality personal service and respected publications of which the <u>Mapping Bulletin</u> is an example. Certainly, in the SCO, I have inherited a dedicated staff and an ambitious and talented group of student assistants. Any of you who have had contact with either Brenda Hemstead or Bob Gurda know of their significant knowledge and dedication to Wisconsin mapping and the Land Information Program. There is no question that they have made my transition to SCO operations a pleasant experience.

As I settle in to the office, it's important to look to the future. Many important mapping issues confront us, some of which will become significantly more costly if postponed much longer. These include:

- The state needs medium-scale aerial photography coverage such as the NAPP product which has been discussed on these pages many times previously. This imagery could be the basis for a statewide series of medium-scale digital orthophoto maps. The orthophoto product has proven to be a valuable base for a variety of interpretative and analysis activities.
- 2. Many sheets in the 1:24,000-scale topographic map series are rapidly becoming outdated, particularly those maps covering urban and suburban areas. Statewide coverage in this series was completed in 1985, with precious few sheets revised since that time. Establishing a funding process and coordinating a revision and update program for this series will be is a significant and complex task.
- 3. The Land Information Program is off to a good start. Eight counties have approved plans, and the grants-in-aid process has begun. As county, regional and state governments continue to automate their land information records, a tremendous volume of digital information will be created. The establishment of a statewide "clear-inghouse" activity to collect, summarize, index and disseminate information about the automated records in order to minimize unnecessary duplication and encourage efficiency of use will be required.

The issues are diverse and many differing opinions exist on appropriate solutions. As these and other topics develop we will continue to keep you informed through this and a series of publications currently in the "drawing-board" phase of development. As the "new" State Cartographer I invite you to continue to read our publications, use our services, and give us your comments at any time.

USGS PUBLICATIONS

General Interest Publications

The following publications along with price information can be obtained from: USGS Book and Report Sales, Box 25425, Denver, CO 80225 (Telephone: 303/236-7476).

Topographic Maps (28p.)

Describes the nature of a topographic map, the phases of its preparation, and its diverse uses. Explains map symbols and includes full-color map examples.

The Types of Maps Published by Gov't Agencies (16p.) Lists types of maps, the publishing agency, and ordering information.

Land Use and Land Cover and Associated Maps (10p.)

Describes land use and land cover maps as aids to land-use planners, land managers, and resource management planners. Relates associated maps to land use/land cover maps and to other available data.

Elevations and Distances in the United States (24p.)

Lists geographic statistics on elevations, distances between localities, geographic centers, and lengths of United States boundaries.

Geologic Maps: Portraits of the Earth (20p.)

Explains the nature of geologic maps, how they are compiled, and the ways they may be used to determine relationships of rocks on and beneath the Earth's surface. Shows examples of various types of geologic maps.

The following intermediate-scale (1:100,000) maps are prepared on a 30 x 60-minute quadrangle format using featureseparation drawings and symbolization suitable for digitizing. This series is printed on sheets that are 24" x 40" to 46" and costs \$4.00 per sheet.

Map Name	Year Surveyed
Outer Island	1983-90
Rhinelander	1986-89
Richland Center	1983-85
Sheboygan	1981-89
Sparta	1982-85
Sturgeon Bay	1980-84
Wakefield	1984-90
Wausau	1982-84
Wisconsin Dells	1986-90

To order contact the U.S. Geological Survey, Map Distribution, Federal Center, Box 25286, Denver, CO 80225, phone 303/236-7477.

Note: For all USGS orders, make checks payable to "Dept. of the Interior - USGS". For all <u>map</u> orders less than \$10, include an additional \$1 for postage &handling.

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Horizontal Datum Conversion Software (CORPSCON) Announced

The National Geodetic Survey Division (NGSD) announces an improved datum transformation package. CORPSCON (Version 2.1) allows users to convert coordinate values between the North American Datum of 1927 (NAD 27) and the North American Datum of 1983 (NAD 83) when those values are expressed in either state plane coordinates or latitude and longitude. CORPSCON was designed by the U.S. Army Corps of Engineers Topographic Laboratory, and uses three existing NGSD programs (GPPCGP, NADCON, and SPCS 83) to complete the conversions and transformation. The user may specify NAD 83 state plane coordinate values in meters, the U.S. Survey Foot, or the International Foot. CORPSCON allows conversions to the original (1986) NAD 83 values, rather than to the new high accuracy network values.

CORPSCON can be used on IBM-compatible personal computers. A math coprocessor is required, and at least 1.5 Mbytes of hard drive storage is highly recommended. The program can be purchased for \$30 on either 3-1/2 inch disk or 5-1/4 inch disk. Prepayment is required. Contact: National Geodetic Information Center at 301/443-8631.

(source: Coast and Geodetic Survey)

Editor's note: For Wisconsin use, this version of the program utilizes coordinate values for NAD 83, as published in 1986. It does not yet, but may in the future accommodate the new coordinate values of NAD 83 (1990) that will be tied to the Wisconsin High Precision Geodetic Network (see article on page 3).

Landsat Product Changes

Effective October 1, 1991, EOSAT has made several changes to its digital and photographic lines of Landsat products, and the prices of some products will increase. Included in the changes will be several new products made possible by the ground processing system being installed at EOSAT headquarters.

(source: Landsat World Update, Aug. 1991)

Landsat Postage Stamps

A new collectors series of 29-cent stamps will feature Landsat. The U.S. Postal Service is issuing a 10-stamp series on October 1, 1991 depicting each planet in our solar system plus the moon and the satellites that orbited them. The collection includes Mariner 10 and Mercury, Mariner 2 and Venus, Landsat and Earth, Apollo and the moon, Viking and Mars, Pioneer 11 and Jupiter, Voyager and Saturn, and Pluto as yet unexplored.

(source: Newsday, Aug. 10, 1991).

Guide to U.S. Map Resources

The expanded and updated second edition of the *Guide to* U.S. Map Resources, by David A. Cobb, provides librarians and researchers with the most current, comprehensive information now available on map collections in the U.S.

The number of collections identified in the second edition has increased to more than 950. The scope of the new edition continues to be defined as libraries in the United States with map collections of at least 500 items. In addition, certain collections of regional importance have been included though they hold fewer than 500 items.

Maps represent an important source of information not only for cartographers but for researchers in urban planning, history, sociology, area studies, transportation, and environmental studies. By consulting *Guide to U.S. Map Resources*, one can make better use of the 74,350,296 maps, manuscripts, aerial photos, microforms, gazetteers, serials, remote sensing images, globes, relief models, atlases, and computer tapes available in U.S. collections.

For additional information, contact: Ruth Ann Jones, Marketing Manager, Books & Electronic Products, ALA Publishing Services at 312/944-6780. Cost is \$65.00 cloth with approximately 496p.



Relief Globe Slides

Available from the National Geophysical Data Center are Relief Globe Slides. The set of 20 slides contains 14 global views of the Earth in full-color shaded relief, showing land and undersea topography. The planet is seen from vantage points over the poles and each major ocean and land mass. Also included are a rectangular Mercator projection view of the whole Earth, as well as displays of crustal plates and their relation to world seismic activity. The images are computer-generated from a digital data base of oceanic bathymetry and land topography. The original data points were spaced every 5 minutes of latitude and longitude; the images represent a reduced resolution while preserving all important physiographic features. Other views may be generated on request, either as slides or computer files.

The set of 20 slides costs \$40.00 and can be ordered from the National Geophysical Data Center, NOAA E/GC3 Dept. 874, 325 Broadway, Boulder, CO 80303-3328. Make checks payable to COMMERCE/NOAA/ NGDC. A \$10 handling fee is required on all orders.

(source: National Geophysical Data Center)

SCO NEWS AND UPDATES

SCO Staff Comings and Goings

Since our last issue, three additional graduate students have begun work as part-time Project Assistants at the SCO.

Martha Berry, a July arrival to Madison from New York State, is beginning work on a Master's Degree in the Geography Department. At the SCO she is managing county cartographic catalog production, and will be helping develop some new information products.

Diann Danielsen joined our staff in September. She is a licensed surveyor in both Wisconsin and Colorado, and is working on a Master's Degree in Civil Engineering with emphasis on LIS. Diann will be helping us with management and use of geodetic control information.

Ben Sherman joined us on October 1st. He is beginning the Land Resources Graduate Program of the Institute for Environmental Studies. Ben received his Bachelor's Degree in Landscape Architecture from UW-Madison earlier this year. His interests lie in the use of historical aerial photography to support environmental analysis. Ben's initial work at the SCO will focus on information and education on aerial photography.

SCO County Catalog Developments

The following is a brief update on County Cartographic Catalog production at the SCO.

PORTAGE (2nd edition) and MARATHON: Published in June; complimentary copies distributed in July.

MARQUETTE and GREEN LAKE: Published this summer; complimentary copies distributed in September.

WAUSHARA: Published in October; complimentary copies distributed in October.

SHAWANO & WAUPACA: in production

Copies of the Cartographic Catalogs are for sale from Map Sales, Wisconsin Geological & Natural History Survey, 3817 Mineral Point Road, Madison, WI 53705, 608/263-7389; the cost is \$7.00 at the counter or \$8.00 by mail.

Handbook Sales Booming

The two handbooks on land information systems recently published by the SCO have been selling like hotcakes. The initial printings of 1000 copies each have been exhausted, with demand holding steady. All subscribers to the <u>Wisconsin Mapping Bulletin</u> (except WLIA members) were mailed a flyer with order form in September.

If you did not receive the flyer, but did receive this issue of the <u>Bulletin</u>, there may be a problem with your address in our records. Please check your address label and inform us of any needed corrections. The <u>Bulletin</u> is sent via bulk mail without forwarding, to keep costs to a minimum.



The SCO's Information Network

The SCO fields hundreds of inquires each year. These inquiries come to us by telephone, mail, and visitor contact. We answer the great majority of these on the spot, or after a limited period of research.

To support this service, we rely on an array of catalogs, indexes, and reference documents. Some of this information is produced by other agencies, and some of it is compiled by SCO staff. A significant amount of the information at our disposal comes to us in relatively unstructured form: we collect it from reading or listening to formal presentations, from telephone conversations, and from informal discussions at a variety of meetings. All of this information provides our first source of information in answering inquiries.

Probably most people in the general public would describe the SCO staff as experts in a narrow field. However, from our perspective, we are generalists in a broad field. Cartography—and land information more generally involves many disciplines and institutions. While we strive to know as much as we can, and to translate technical jargon and concepts into more generally understandable language, we simply cannot be complete experts in every area.

As a result, when we cannot quickly provide a complete answer from information that is readily accessible, we need to use other methods. Often we will contact one or more persons who are more precisely knowledgeable in the area of the question at hand. We have developed a wide-ranging informal information network, and continue to extend this network. The people who are part of this network can almost always provide the answer we need, or point us to another person who can. Then we will either convey the answer back to the person who made the initial inquiry, or put that person in contact with the expert.

The experts we rely on for occasional consultation are affiliated with every discipline and institution with which we have regular contact. And as the need arises, we seek out new sources of expertise.

This network operates in another mode that is mutually beneficial. We receive regular reports from many of these experts, providing us with news and insights that we might not otherwise notice. At the same time, we can convey new information to these individuals—information that they might not know to ask about. All of this informal contact helps our network of busy experts avoid some of the inquiries we might otherwise refer to them.

USGS MID-CONTINENT STATE MAPPING WORKSHOP

More than thirty people representing fourteen midwestern states recently attended a mapping workshop sponsored by the U.S. Geological Survey's National Mapping Division. It was held at the Mid-Continent Mapping Center in Rolla, MO in early September. The purpose of the workshop was to acquaint the states with USGS facilities and programs, and for USGS to gather advice on the products and services it

should be producing. Wisconsin's representatives at the workshop, were John Haverberg, Department of Transportation; Mike Czechanski, Geological and Natural History Survey; and Ted Koch, the State Cartographer.

During the first half of the workshop, the state visitors were given a series of briefings regarding the status of current USGS mapping programs and future directions. Emphasis was placed on digital map production and the Survey's production transition as part of its automated mapping modernization program. Other topics of discussion included the coordination of surveying, mapping, and spatial data activities, with particular emphasis placed on the future cooperative data sharing roles between the federal government and state/local government.

The second half of the workshop included current mapping activity reports from each state, and

a state caucus intended to identify and summarize areas of concern and advice regarding USGS mapping practices and program objectives. Collectively, the items of highest priority (of eleven identified) to the majority of the represented states were:

1. Revision and update of the 1:24,000-scale 7.5' quadrangles should remain the top priority of the USGS. Note: This is a serious concern to Wisconsin, as very few sheets in this series have been revised since USGS completed Wisconsin's statewide coverage in 1985.

2. Continue the acquisition of statewide aerial photography through the current National Aerial Photography Program (NAPP). Using this photography, begin the production of a nationwide base of 1:12,000-scale digital orthophoto images.

4.

3. Recognized the import-

ance of and support the

continued work on the

nationwide 1:100,000-

scale map series to the

extent that work on this series does not affect re-

vision and update prog-

scale quadrangle series.

Encouraged the rapid de-

velopment of USGS and

state/local communica-

programs as part of the

recently revised federal

Office of Management

and Budget's Circular A-

16 process. This circu-

mapping agencies to so-

input for their mapping

programs and plans with

all levels of government

in order to reduce dupli-

cation and foster devel-

tial geographic data

5. The Denver Distribution

Center needs improve-

ment in management of

distribution of maps to

dealers and the general

public. Delays and un-

filled orders are a major

structure.

problem.

opment of a national spa-

lar directs the federal

lieit and coordinate

tion and data-sharing

ress on the 1:24,000-

- - 6. Recommended that USGS discontinue showing the full Universal Transverse Mercator (UTM) grid on the 7.5minute quadrangles. The only UTM reference needed are the marginal ticks.
 - 7. Requested that the next state mapping workshop be held in two years (1993).

Aerial Photography with GPS: The Possibilities for Economy

There is a very real potential that airborne Global Positioning System (GPS) technology will reduce some of the costs of acquiring aerial photography. In addition, GPS on the aircraft holds an even greater potential to economize on the geodetic control needed to create photogrammetric products.

This is the message of Larry Hothem, a researcher with the U.S. Geological Survey. Hothem spoke at a recent seminar on surveying and photogrammetry held at the University of Wisconsin-Madison. He presented an interim report on a project he has been conducting. His initial findings indicate that the incorporation of GPS into aerial photography acquisition can have significant benefits. At present, the best ways to blend the technologies are not completely understood, but the potential is very bright.

GPS is a technology based on a series of satellites placed in earth orbit by the Department of Defense. Radio signals from these satellites can be received and analyzed by devices which can then produce positional information. Depending on the receiver and the techniques used, positions can be determined from as close as tens of feet down to fractions of centimeters.

At this time a significant limitation on everyday use of GPS is that the complete set of satellites planned is not yet in orbit. Determination of precise positions is only possible when several satellites are above the horizon. As a result, effective observations can now only be made during short, specific windows of time. Aerial photography has its own window of time, mostly dependent on the angle of sunlight hitting the ground. Under the present condition of the GPS satellite constellation, the chance of these two time windows coinciding is not great.

A GPS receiver can be carried in an aircraft, and coupled with another receiver located at a known position on the ground, the aircraft's position can be precisely computed. Several ground receivers may produce better results. This positional information can be used to assist the routing of the aircraft, so that planned flight lines are followed more closely than is typically possible with standard guidance techniques. Knowing the position of the aerial antenna relative to an aerial camera allows the position of the camera to be determined also.

The position of the camera, determined for the exact instant of each exposure for each frame, provides critical information needed to create the photogrammetric models which are the basis of turning photographs (acquired with stereo overlap) into base maps or orthophotos. Traditionally, the development of photogrammetric models has relied on positional information of scattered identifiable points on the ground ("ground control"). These points are either obvious from the air (e.g., corner of a building) or are specially marked on the ground just for the photo acquisition (targets). In both cases, a significant cost arises from work done to mark and/or determine coordinates for these points. Hothem is of the opinion that the additional costs of installing and using GPS on aircraft will be more than offset by the savings realized by aerial photography contractors in minimizing reflights caused by deviations from prescribed flight lines. This savings should allow contractors to provide lower bids to potential clients.

In addition, once it becomes routinely possible to precisely determine the camera position for each image, parties soliciting vendors for airphoto services can be expected to specify airborne GPS since the end user will want to avoid ground control costs. While this feature of the photographs will make them more valuable, competition among vendors should keep the costs down.

Great Lakes Shoreline Mapping Pilot Study to Begin

The U.S. Great Lakes Shoreline Mapping Plan describes a NOAA/U.S. Geological Survey (USGS) joint effort to assess erosion, sedimentation, and flooding in the Great Lakes Basin. As a first step in the 10-year effort, NOAA and USGS agreed to conduct a pilot study during the summer of 1991 along the Lake Michigan shoreline northward from the Michigan-Indiana border to Benton Harbor, MI. This coastal reach was chosen because it is undergoing severe erosion, is subject to flooding, and lacks modern surveys of the nearshore area.

NOAA will conduct low-altitude aerial photography to determine present shoreline location and nearshore bathymetry along transects lying at right angles to the shoreline and extending offshore approximately 6 kilometers. USGS will collect single-channel seismic data, side scan sonar data, cores, and bottom samples in the nearshore waters and surface and subsurface samples on land. All of these data along with existing data for this area will be integrated into a GIS. Direct all inquiries to Dennis Carroll at 301/443-8157

(source: Coast and Geodetic Survey Newsletter, Summer 1991)

WLIA Meets in Rhinelander, Sets Plans for La Crosse and Madison

The Wisconsin Land Information Association met in Rhinelander on September 13. The meeting concentrated on draft criteria developed by the Wisconsin Land Information Board by which to judge applications for land information modernization grants. In formulating the criteria, the Board relied heavily on the results of a "town meeting" held at the 1991 WLIA Annual Conference

The next WLIA meeting is scheduled for the Radisson Hotel in La Crosse on December 13. This meeting will focus on education and training issues.

The 1992 Annual Conference will be held at the new Holiday Inn in Middleton (Madison area), February 26-28. A pre-conference workshop on parcel mapping will be held on Feb. 25.

For more information, call Bob Gurda at 608/262-3065.

CONFERENCES AND TECHNICAL MEETINGS

October 20-24, American Society of Civil Engineers Annual Convention. Orlando, FL. Contact: Maureen Rafferty, ASCE, 345 E. 475th St., New York, NY 10017. Call: 212/705-7543.

October 21-24, Geological Society of America Annual Meeting. San Diego, CA. Contact: GSA, 3300 Penrose Place, Box 9140, Boulder, CO 80301. Call: 212/705-7543.

October 22-23, Earth Observations and Global Change Decision Making: A National Partnership 3rd Annual Conference. Washington, D.C. Contact: Robert H. Rogers, ERIM, Box 8618, Ann Arbor, MI 48107-8618. Call: 313/994-1200.

October 23-25, Fifth Annual Midwest/Great Lakes ARC/INFO User Conference, Hilton on the Circle, Indianapolis, IN. Call: 317/635-2000.

October 24-27, GIS Higher Education Symposium. University of South Florida, Tampa. Contact: Robert Aangeenbrug, President, World Computer Graphics Foundation, c/o Dept. of Geography, SOC 107, Univ. of South Florida, Tampa, FL 33620-8100.

October 25-28, ERDAS Users' Group Meeting, ERDAS, Inc., Atlanta, GA. Contact: Kim Marsh, 404/248-9000.

October 27-November 1, GIS/LIS '91 Annual Conference and Exposition and ACSM/ASPRS Fall Convention will be held in Atlanta, GA. Contact: ACSM, 5410 Grosvenor Lane, Bethesda, MD 20814-2122. Call: 301-493-0200.

October 28-November 1, 5th Latin American Symposium on Remote Sensing & Workshop on Applications of Remote Sensing in Anthropology & Archaeology, SELPER, Cuzco, Peru. Contact: Dr. Luis Bartolucci, 502/762-2085, Fax 502/762-4417.

October 30-November 5, Asian Conference on Remote Sensing, Asian Assn. on Remote Sensing and the National Univ. of Sinapore, Siongapore. Contact: Prof. Shunji Murai, Inst. of Industrial Science, Univ. of Tokyo, 7-22 Roppongi, Minatoku, Tokyo 106 Japan. Fax +81-3-3479-2762.

November 11-13, Spatial Data Structures for GIS, Computer Graphics and Image Processing will be held at the Faculty Club Library, University of California, Berkeley. Contact: Continuing Education in Engineering, UC Berkeley Extension, 2223 Fulton St., Berkeley, CA 94720. Call: 415/642-4151.

November 14-15, GIS III—A Present Bursting with Activities, Canadian Institute of Surveying and Mapping, Montreal, Quebec. Contact: CISM, P.O. Box 5378 Station F, Ottawa, Ontario, Canada K2C 3J1, call: 514/369-5000.

November 14-16, Introduction to PC ARC/INFO will be held at the Thompson Conference Center on the University of Texas-Austin campus. Contact: Continuing Engineering Studies at 512/471-3506.

November 18-21, Exposition of Document Image Management in Government, "Increasing Productivity through Imaging Technology," Government Computer News, Bethesda, MD. Call: 301/445-4400.

November 19-20, GIS Technology in Land 7 Resource Management Workshop, Oregon State University, Corvallis, OR. Contact: Conference Assistant, 503/737-2329.

November 19-21, NHAP-NAPP-NASA Color Infrared Aerial Photography (CIR) and (CAD) Computer Mapping Workshop, USGS-NMD, Bldg. 3101, Stennis Space Center, MS 39529. Contact: 601/688-3541.

November 25-26, GIS Seminar 1991, sponsored by the Ontario Ministry of Natural Resources and the Canadian Institute of Surveying and Mapping, Toronto, Canada. Contact: Tom Malone, 416/733-5090. December 1-4, GIS in Public Utilities, Orlando, FL. Contact: Joe Myers, GIS Conference Chairman, EMA Inc., 1970 Oakcrest Avenue, St. Paul, MN 55113, 612/639-5600.

December 3-5, Montana GIS - Plans to Practice will be held in Bozeman, MT. Contact John Wilson, Dept. of Earth Sciences, Montana State University, Bozeman, MT 59717. Call: 406/994-6907.

December 4, Trends in GIS Hardware & Software Technology will be held at the Wyndham Hotel in Milwaukee, WI. Sponsored by the Wisconsin Chapter of AM/FM International and UW-Milwaukee Center for Continuing Engr. Education. Contact: Steve Scott, Program Director at 414/227-3115 or Betty Warras, Program Assistant at 414/227-3116.

December 5-6, Introduction to Digital Computer Mapping will be held at the University of Wisconsin-Milwaukee Civil Center Campus. Contact: Steve Scott, Program Director at 414/227-3115 or Betty Warras, Program Assistant at 414/227-3116.

December 13, WLIA Quarterly Membership Meeting will be held at the Radisson in LaCrosse, WI. Contact: Bob Gurda, WLIA Secretary at 608/262-6850.

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January 18-23, 4th Annual Conference on Integrating Data for Decision-Making, National Governors' Association, Washington, DC. Contact: Kristen Gooch, 202/624-5426.

January 22-24, Wisconsin Society of Land Surveyors 43rd Annual Technical Institute will be held at the Holidome in Stevens Point, WI. Contact: Mike Roach at 414/497-2500.

January 31-Februray 1, **31st Annual Surveying Conference**, California State Univ., Fresno Surveying & Photogrammetry Student Assn., Fresno, CA. Contact: Dr. James K. Crossfield, Surveying Engr. Program, CSU, Fresno, CA 93740-0094, 209/278-4827.

February 26-28, Wisconsin Land Information Association Annual Conference will be held in Madison, WI at the Holiday Inn (West), 1313 John Q. Hammon Drive, Middleton, WI. Contact: Bob Gurda, WLIA Secretary at 608/262-6850.

February 29-March 5, 1992 ASPRS/ACSM Annual Convention will be held in Albuquerque, N.M. Contact: Mary Cullen, ASPRS/ACSM '92, 5410 Grosvenor Lane, Bethesda, MD 20814-2122, 301/493-9199.

March 2-4, 1992 GIS for Transportation Symposium will be held at the Hilton in Portland, OR. Contact: Jim Dolson, GIS-T '92 Symposium Chair, Florida DOT, 605 Suwannee St., MS43, Tallahassee, FL 32399, 904/488-1954.

March 27-30, AM/FM International Annual Conference XV will be held in San Antonio, TX. Contact: Paula Delie, AM/FM International, 14456 E. Evans Ave., Aurora, CO 80014, 303/337-0513.

May 4-7, MidAmerica GIS Symposium will be held in Kansas City, MO. Contact: Karl Kappelman, The University of Kansas, Div. of Continuing Education, 1246 Mississippi St., Lawrence, KS 60045-2607, 913/864-3284.

July 12-16, URISA '92 Annual Conference, will be held in Washington, D.C. Contaat: Urban & Regional Information Systems Assoc., 900 Second St., N.E., Ste. 302, Washington, D.C. 20002, 202/289-1685.

MEETING REPORTS AND ANNOUNCEMENTS

ASPRS Meets in the U.P.

The Western Great Lakes Chapter of the American Society for Photogrammetry and Remote Sensing (ASPRS) met in August in Houghton, Michigan. Bob Gurda of the SCO attended the gathering along with several dozen ASPRS members from the region. Professor Ann MacLean of Michigan Technological University hosted the meeting, and arranged excellent weather.

The long distance travel award went to Tony Shupin, a Sales Manager for EOSAT in New Jersey. EOSAT is a private company that has the contract with the the U.S. Government to operate the Landsat satellite system.

A series of presentations comprised the bulk of the meeting. Tony Shupin addressed the future of the Landsat program, particularly the final stages of development of the Landsat 6 vehicle, Congressional discussions surrounding funding for a Landsat 7, and modifications in pricing and distribution of products from EOSAT. Tony pointed out that while prices are rising, turn-around time on orders is decreasing, and the number of tailor-made products that are available is increasing. He also brought along a freshly produced Landsat mosaic of the U.P.

Other subjects covered included multi-institutional and multi-disciplinary management of the upper Mississippi River with GIS support, development of a GIS for Isle Royale National Park, use of GIS to analyze the spatial distribution of subsurface materials to support landfill siting, and use of satellite AVHRR data to determine water temperatures in the Great Lakes.

The Western Great Lake Region will be scheduling several additional meetings over the next year. Since these gatherings rotate amongst the states in the region, there may be one in Wisconsin relatively soon. The <u>Bulletin</u> will carry meeting announcements as they are received.

Editor's Note: As all faithful students of the history of Wisconsin's borders are aware, the western part of what is now Michigan's Upper Peninsula (including the entire Keweenaw Peninsula where Houghton is located) was originally planned to be part of Wisconsin. The Michigan Territory, as established by Congress in the early 1800s, included only the eastern part of the U.P. Based on a somewhat inaccurate map of the region, Congress believed that its dividing line between Michigan and Ohio would result in the Toledo area (and its fine natural harbor) being part of Michigan. When surveys established that Toledo actually was part of Ohio (since the dividing line of latitude was to the north of Toledo), Michigan demanded compensation. As a result, Congress added the western part of the U.P. to Michigan. This act reduced the size of the area planned to become Wisconsin, which was admitted to the Union in 1848.

The area transferred was thought at the time to be relatively devoid of significant exploitable natural resources. Shortly thereafter, however, major copper deposits were discovered, and the U.P. was developed into the world's largest copper producing region for decades to follow.

URISA Spotlights Standards

The Annual Conference of the Urban and Regional Information Systems Association was held in San Francisco in August. It attracted a large attendance, including a goodsized Wisconsin contingent.

A major topic of discussion was standards for GIS. One day included a complete series of sessions devoted to various aspects of standards, including the Spatial Data Transfer Standard (SDTS) as issued for comment earlier this year by the National Institute of Standards and Technology (NIST).

Earlier in the summer, URISA had officially commented to NIST on SDTS, essentially saying that its adaptability to transfer of parcel information was limited, and that it would be very clumsy to use for transfer of incremental modifications to larger digital files. Many land records change daily due to transaction initiated by land owners and managers, so the efficient distribution of these changes is a critical issue to many persons.

Another area of standards discussion was "metadata", or data about data. An analogy is the library card catalog (metadata) as compared to the books themselves (data).

There are two primary types of interest in metadata. On one hand, there needs to be a standard way for a spatial data file to be documented so that its heritage is clear to another person who might use it later. This documentation could be very detailed and extensive.

On the other hand, a clearinghouse on spatial data has to be based on a highly organized method for searching through short information profiles of many different data files, with the goal of accomplishing a first-cut screening (by date, area of interest, theme, data format, etc.). It ought to be possible to perform a search without having the actual data files themselves. If such a search turns up some potential files that might satisfy the need at hand, then those files can be analyzed in greater detail.

Overview of GIS Technolgy Trends Set for Milwaukee in December

The Wisconsin Chapter of AM/FM International is holding a full-day course on GIS Trends, covering both computer hardware and software. This course is scheduled for the entire day of December 4 at the Wyndham Hotel in Milwaukee. A fee of \$50 includes lunch and printed materials.

The morning portion of the course covers general concepts and trends, and the afternoon is a series a short presentations by various companies on their products. A vendor demonstration period follows from 5-9 pm.

The following two days another course is being offered by UW-Milwaukee's Center for Continuing Engineering Education. *Introduction to Digital Computer Mapping* has a fee of \$395.

For more information on either course, contact Steve Scott at (414) 227-3115.

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 staff presently consists of two full-time academic staff—the State Cartographer, and an Assistant State Cartographer—and one full-time classified staff, plus several graduate student employees and several part-time undergraduate hourly employees.

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 a series of catalogs which document and guide users of mapping resources.
- inventories mapping practices, methods, accomplishments, experience, and expertise.

• develops experimental and prototype products.

- publishes the Wisconsin Mapping Bulletin and other documents to inform the mapping community.
- participates on committees, task forces, boards, etc.
- serves as the state's affiliate for cartographic information in the U.S. Geological Survey's Earth science Information Center (ESIC) network.
- provides information and advice in support of sound mapping practices and map use.

The Office answers a wide range of inquiries ranging from simple to complex, in the following general categories:

- 1. Geodetic Control—Requests for surveying information which as been established by some office or agency, and upon which the requestor wishes to base a survey or map.
- 2. Aerial Photographic Coverage—These are requests for information about existing or planned aerial photographic coverage which can be utilized for a variety of projects. These requests, in many instances, are motivated by the desire to avoid the exceedingly more costly route of acquiring specifically flown photography.
- 3. General Map Coverage—The requestor is seeking map coverage to fulfill a specific need, from utilization as a base map upon which other information can be compiled, to determination of location or extent of a resource such as wetlands, to use as a recreation guide.
- 4. Specific Unique Data—These types of requests change as various programs are implemented. Examples include Magnetic Declination (for land surveying), and Latitude/Longitude (federal requirement for placement of sending satellite dishes or radio towers).
- 5. General Requests—Such as size of an area, height of a particular feature, location of a named feature, explaining contours, digital methods, software, hardware, etc.
- 6. Activities of Others—This provides access to publications, news, anecdotal information, and referrals to appropriate agencies, programs, organizations, or individuals who may be able to provide the information being sought.

In each issue of the *Bulletin*, we will discuss an area of SCO activity in more detail. By this means we will help you better understand and more effectively utilize the SCO's services. If you have any questions concerning these topics, please contact the Office at 608/262-3065 for a detailed explanation.

Wisconsin Mapping Bulletin

Published bimonthly by the 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, conferences/workshops. Local and regional information is especially welcomed. The Editor makes all decisions on content. Deadline for the next issue is January 10, 1992.

Editor: Bob Gurda Contributors: Ted Koch, Brenda Hemstead Desktop publishing: Brenda Hemstead Mailing: SCO Production Staff

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

State Cartographer's Office 155 Science Hall Madison, WI 53706-1404 phone 608/262-3065 State Cartographer's Office Univ. of Wisconsin-Madison 550 N. Park Street Rm. 155 Science Hall Madison, WI 53706-1404

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