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WISCONSIN MAPPING BULLETIN

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TOPO MAPPING COMMITTEE

On November 10, 1983 the Wisconsin Topographic Mapping Committee met with Mr. Larry Borgerding, Chief of the Mid-Continent Mapping Center and Mr. William Mengel, Chief of the Plans and Programs Office of the U.W. Geological Survey, Rolla, MO. They discussed a wide ranging set of topics, which all have an impact on the USGS's mapping efforts in Wisconsin. The following are the more important highlights of that meeting:

- a. Mr. Borgerding confirmed the production schedule for completing the 7.5-minute topo quad series as reported on page 1 of the October 1983 Wisconsin Mapping Bulletin. He stated that all Wisconsin 7.5' quads will be released for printing by September of 1984. Printing could be completed by the end of 1984, but a more realistic date would be February or March of 1985. USGS is asking the Committee's assistance in planning a state presentation upon completion.
- b. The status of the Intermediate Series of the USGS was reviewed. This series of 1:100,000-scale mapping at both 30 minute by 1 degree quad and county format is approximately 60% complete for Wisconsin. Mr. Borgerding stated that the Bureau of Census plans to use this scale in a digital form for the 1990 census and has requested the USGS to complete the boundary, transportation and hydrography plates in the quad series for all the lower 48 states and Hawaii by 1987. This production can have a significant impact on future cooperative efforts of the Committee with USGS.

MAPPING COMMITTEE, cont.

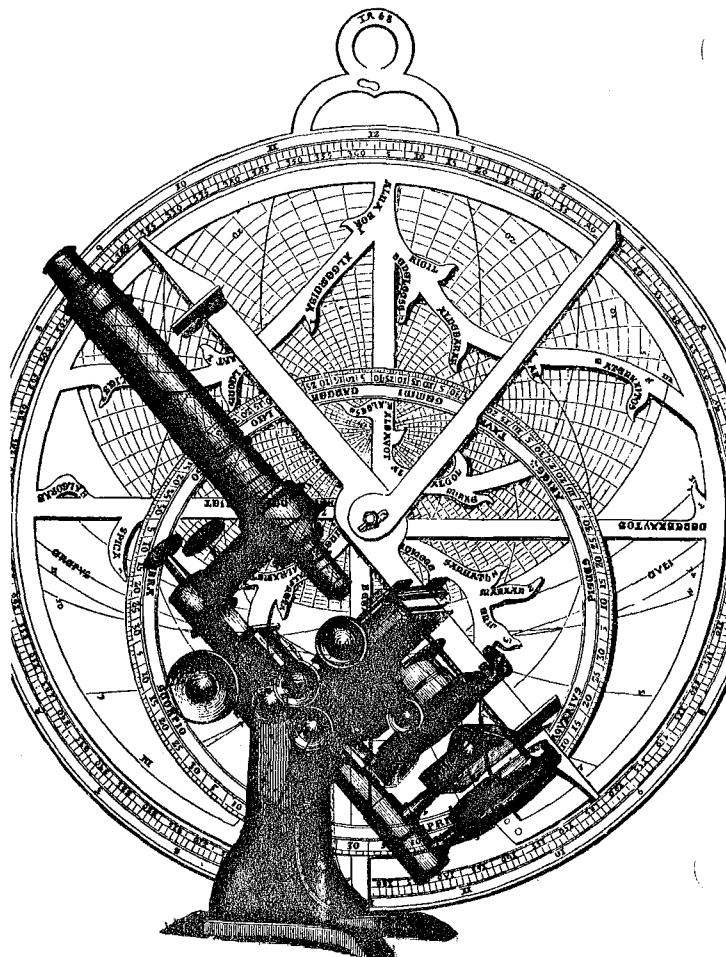
c. The revision program for 7.5-minute topo quads was discussed. Currently the USGS is using the National High-Altitude (aerial photography) Program (NHAP) to verify quads as candidates for revision. Wisconsin now has total coverage of NHAP which places it in a good position for scheduling revisions. Currently the magenta colored printing is being applied to most revisions. However, in certain areas such as Green Bay and Madison, the USGS is printing a "total" revision in which this color is eliminated and all revised features are printed in their normal colors. The 7.5' quads in the Milwaukee area are under consideration for a new USGS mapping program over major cities.

d. A new system of map indexing was displayed at the meeting. It involves the USGS producing a 43-page, 8 1/2 by 11 inch size, two-color booklet illustrating the total mapping coverage of Wisconsin and an accompanying "ordering" catalog which lists the maps available. This indexing and ordering system is to be issued this spring. After review of this system the Committee discussed the possibility of Wisconsin continuing to print the current single sheet map index. The Wisconsin Geological Survey and the State Cartographer's Office are currently looking at the costs of cooperatively producing the map index. Developments on these indexes will be reported in future issues of the Bulletin.

e. Mr. Mengel stated that since Wisconsin now has total coverage of the NHAP 1:80,000-scale, black-and-white photography and since

this photography was flown to the specifications needed for orthophotoquads, the state may want to consider the possibility of developing this program. There would be a cost saving by using the NHAP photography and not having to acquire specifically flown orthophoto coverage. Mr. Mengel quoted a total cost of \$1,500.00 per 7.5-minute orthophotoquad using NHAP. A cooperating agency would pay 1/2 this cost. It should be noted that any governmental agency can cooperate on mapping projects with the USGS.

The meeting adjourned with the Wisconsin Topographic Mapping Committee tentatively scheduling a late winter meeting to review USGS mapping programs. The Committee will consider future cooperative programs with the U.S. Geological Survey, National Mapping Division.



NORTH AMERICAN VERTICAL DATUM (NAVD 88) ADJUSTMENT

The first phase of the readjustment of the North American vertical datum began with the conversion of National Geodetic Survey (NGS) archival observational leveling data to computer-readable form. It began in 1975 and finished in January 1982. The preliminary editing, validation, and review of these data were completed in November 1982. This involved 15,000 lines of leveling containing a total of 1,300,000 kilometers (808,000 miles) of first- and second-order bench marks. These 457,000 bench mark descriptions include the type of monument, stamping, instructions to recover the mark, and other descriptive information. They are now part of the National Geodetic Survey data base.

The dynamic nature of the vertical control network requires a framework of newly observed elevation differences for obtaining realistic contemporary height values from the readjustment. To accomplish this, NGS selected 100,000 kilometers for releveing. Replacement of disturbed or destroyed monuments preceded the actual leveling. As of August 1983, 45,000 kilometers of leveling were finished, with completion scheduled for September 1986.

Studies related to crustal motion, subsidence, and other researches have dramatically increased the requirements for highly accurate elevations. Bench marks that are used as reference points for these precise surveys must have very high stability and longevity. Prior to the start of any precise survey, the user needs to know the reliability of the bench marks that are being used as reference points. NGS has divided the monuments into the

following four classes, based upon their reliability:

Quality Bench Mark Description

- | | |
|---|---|
| A | Monuments of the most reliable nature which are expected to hold their elevations very well. |
| B | Monuments which probably will hold their elevations well. |
| C | Monuments which may hold their elevations but are commonly subject to surface ground movements. |
| D | Monuments of questionable or unknown reliability. |

Frost depth, soil conditions, and local subsidence are some factors which work upon bench mark monuments causing vertical movement. The degree to which monuments maintain vertical stability under the influence of local disturbing effects is a factor in determining the quality of a bench mark. Generally, steel rods or pipes that are driven to a depth sufficient to resist these effects, or disks cemented into large rocks or massive structures, are considered to be of quality B.

The 100,000-km (160,900 mile) framework for NAVD 88, which is called Basic Net A, is comprised of quality A and B monuments. Although it is desirable to have every monument of quality A, a compromise had to be reached between what is desirable and what is most cost effective. The majority of the monuments established for NAVD 88 are of quality B, with quality A monuments set at 16-km (26 mile) intervals, at junctions of leveling lines, and at the "base" of each spur line to water level gages.

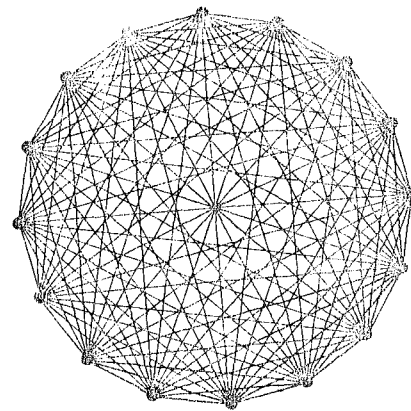
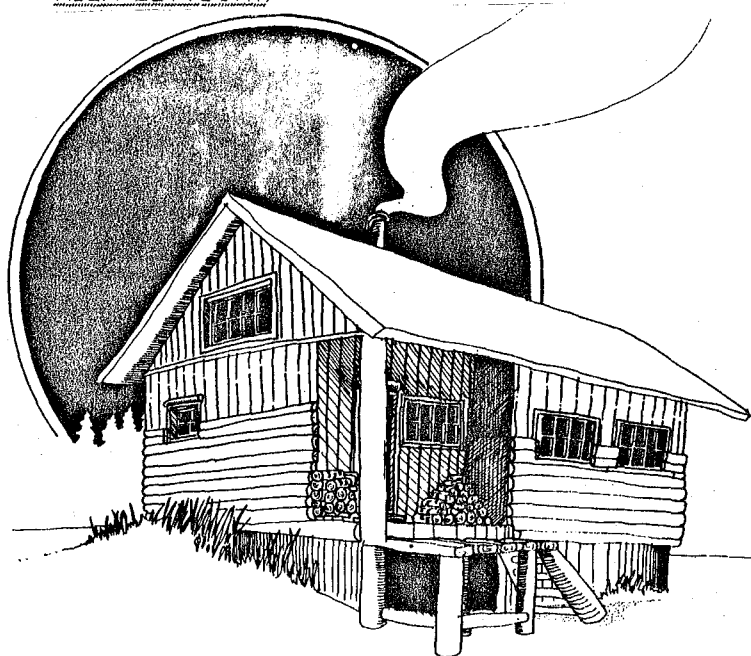
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NAVD 88, cont.

A comprehensive 52-page manual, NOAA Manual NOS NGS 1, Geodetic Bench Marks, covers site selection and installation of highly stable bench marks of the types established by NGS. This publication is available from the National Geodetic Survey, N/CG17x2, NOS, NOAA; Rockville, MD 20852.

To provide automated retrieval capability and apply position-dependent corrections to the observations, a geographic position (latitude, longitude) must be determined for each bench mark. For those monuments not connected to the horizontal control network, the effort involves plotting bench marks on appropriate maps using descriptive data and then determining a "scaled" position by digitizing equipment. Positions have now been determined for 394,000 of the 600,000 bench marks.

The entire project is scheduled for completion in 1988. As part of the project, a new vertical reference surface, named the North American Vertical Datum of 1988 (NAVD 88), will replace the present National Geodetic Vertical Datum of 1929 (NGVD 29). (source: NOAA Geodetic News; ACSM Bulletin)



CART LAB NEWS

This information comes to the WMB from Jim Hilliard, Associate Director of the University of Wisconsin Cartographic Lab (UWCL). For more information contact Jim at 385 Science Hall, Madison, WI 53706, 608/262-1363.

STAR CHARTS

The UW Cartographic Lab has prepared a 28-foot diameter historical star chart for the National Geographic Society. The chart depicts the heavens viewed from Washington, D.C. as they appeared in 1888, the year of the Society's founding. It will be used as a guide for the creation of a lighted star chart which will appear on the domed ceiling of the new National Geographic headquarters building now under construction in Washington, D.C. The chart contains approximately 1500 stars plotted by brightness, constellations and the Milky Way and major Nebulae.

This chart was created using the UWCL's computer-assisted styli for mapping of heavenly bodies. This system employs the UWCL CAM mapping package and the Smithsonian Astrophysical Observatory binary star file consisting of data for over 250,000 stars. The CAM program is capable of generating 22 different map projections in various aspects centered at any location.

SURVEYORS WEEK

On November 30th, President Reagan signed into law a Congressional resolution proclaiming the week of March 11-17, 1984 as "National Surveyors Week."

Public Law 98-182 urges "the people of the United States to observe such week with appropriate ceremonies and activities paying tribute to professional surveyors and their contribution to society".

The resolution was introduced in the Senate by Strom Thurmond, of South Carolina, and in the House by G. William Whitehurst, of Virginia. Its passage came only after many individual surveyors and other interested professionals personally contacted elected officials at the state and national levels. A similar resolution failed in the last Congress.

RAILROAD LANDMARKS

Last July Representative Rooney introduced Assembly Bill 467 by request of the Wisconsin Society of Land Surveyors. It remains in the Committee on Local Affairs.

Section 59.635, Wis. Stats., as modified by AB 467, would make "----a railroad track to which a railroad right-of-way or property line has been referenced----" a monument, or landmark which cannot be removed or disturbed without following the statutory procedure of 30 days notification to the county surveyor (or county clerk if no county surveyor has been elected or appointed).

The county, under the basic law, would bear the cost of necessary surveys and erection of appropriate witness or reference monuments.

The penalty provisions of the existing law would remain the same.

SURVEY HUMOR

A winning entry in the 6th annual Best-Stressed Puns competition was:

In the early history of the United States, the compass was indispensable to surveyors, and because one brand, the Bates Compass, was so cheap, many surveyors bought it. Unfortunately, it was so inaccurate that virtually everyone who ventured into the wilderness with one was never seen again. Thus the saying, "He who has a Bates is lost."

(source: Wisconsin State Journal)

REMONUMENTATION

Senate Bill 556, sponsored by Senators Otte and Van Sistine and co-sponsored by Representatives Hephner and R. Travis, is now in the Committee on Urban Affairs and Government Operations. It's scheduled for consideration during the next session of the legislature. The bill creates a program for reimbursing counties for the remonumentation of Public Land Survey section corners. Funding would come from a portion of the "forestration state tax" which is proposed to be changed to a "conservation mill tax." The bill, as currently written, allows for up to 90% of the cost incurred. The bill also contains proposals for a monumentation board, modernizing county's land records systems, time limits on remonumentation and a formula for prorating the funds between counties. For more information contact your legislator or the Legislative Reference Bureau 608/266-0341, 201 North Capital, Madison, WI 53702.

NEW PRODUCTION FROM U.S. GEOLOGICAL SURVEY

These newly published 7½' topographic quadrangle maps (1:24,000) are listed by their location on the superseded 15' topographic map of the area. They are available from the Wisconsin Geological Survey, 1815 University Ave., Madison, WI 53706 (608) 263-7389. Topographic quadrangles are \$2.25* each, plus tax, postage and handling.

1 HERTEL 15' TOPO

NE¼ McKenzie Lake '82
NW¼ none
SW¼ none
SE¼ Poquettes Lake '82

2 HEAFFORD JUNCTION 15' TOPO

NE¼ McNaughton '82
NW¼ Harshaw '82
SW¼ Heafford Junction '82
SE¼ Woodboro '82

3 PEMBINE 15' TOPO

NE¼ Faithorn '82
NW¼ Pembine '82
SW¼ Amberg '82
SE¼ Miscauno Island '82

4 TOMAHAWK 15' TOPO

NE¼ none
NW¼ none
SW¼ none
SE¼ Bloomville '82

5 WASHINGTON ISLAND 15' TOPO

NE¼ Washington Island, NE '82
NW¼ Washington Island, NW '82
SW¼ Washington Island, SW '82
SE¼ Washington Island, SE '82

6 MERRILL 15' TOPO

NE¼ Pine Dells '82
NW¼ Merrill '82
SW¼ Brokaw '82
SE¼ Nutterville '82

7 SISTER BAY 15' TOPO

NE¼ Sister Bay '82
NW¼ Ephraim '82
SW¼ Baileys Harbor West '82
SE¼ Baileys Harbor East '82

8 STURGEON BAY 15' TOPO

NE¼ none
NW¼ Peshtigo Harbor '74
SW¼ Little Sturgeon, SW '82
SE¼ Little Sturgeon '82

9 RICHLAND CENTER 15' TOPO

NE¼ Rockbridge '83
NW¼ Gillingham '83
SW¼ Richland Center '83
SE¼ Sextonville '83

10 PRAIRIE DU CHIEN 15' TOPO

NE¼ Eastman '83
NW¼ Harpers Ferry '83
SW¼ Prairie du Chien '83
SE¼ Bridgeport '83

11 SPRING GREEN 15' TOPO

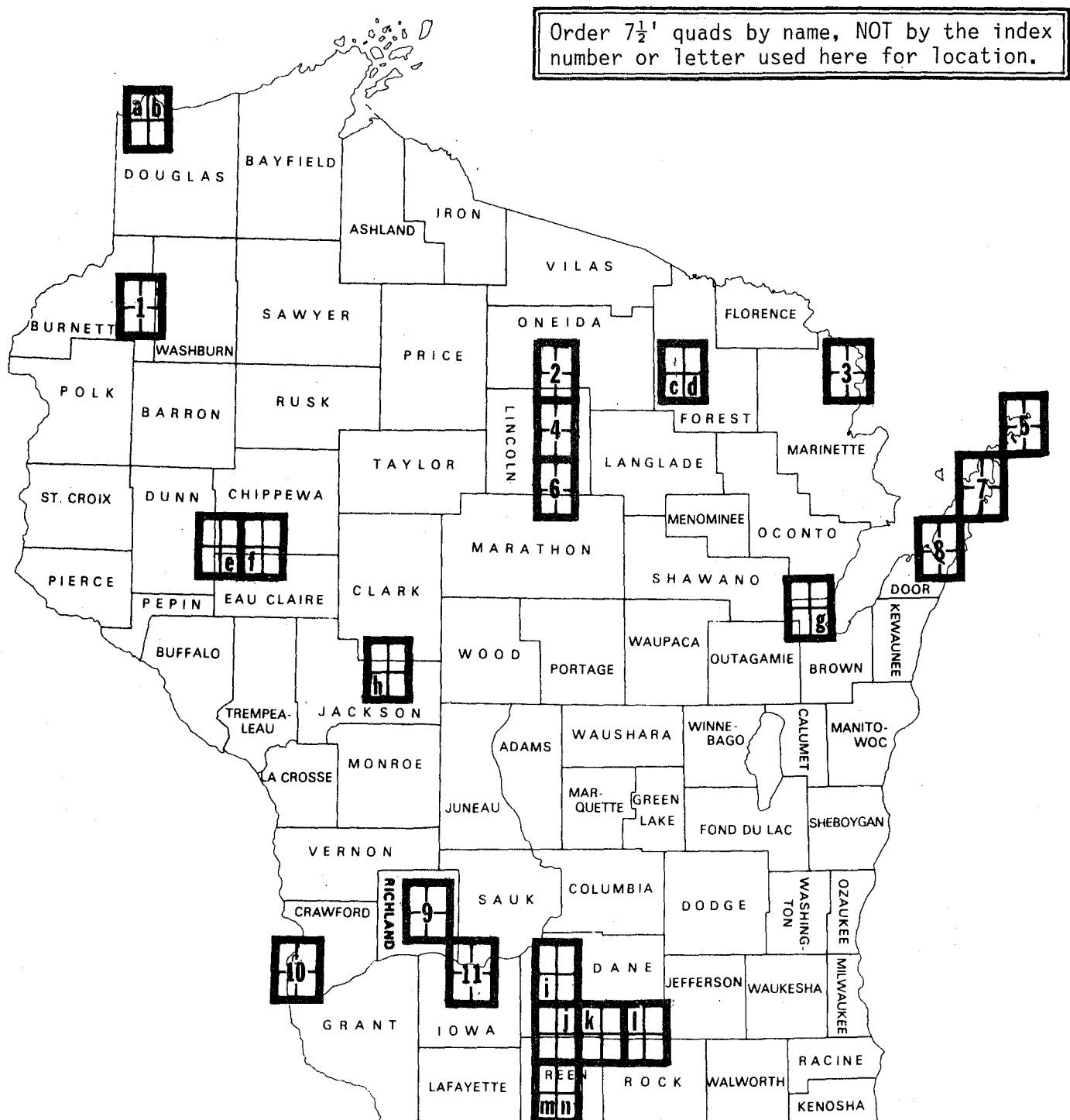
NE¼ Spring Green '83
NW¼ Lone Rock '83
SW¼ Clyde '83
SE¼ none

PHOTOREVISED 7½' QUADS

a West Duluth, '75, '82PR
b Superior, '75, '82PR
c Crandon, '65, '82PR
d Lake Lucerne, '65, '82PR
e Eau Claire West, '72, '82PR
f Eau Claire East, '72, '82PR
g Green Bay West, '71, '82PR
h Hatfield SW, '70, '82PR
i Cross Plains, '62, '82PR
j Verona, '69, '82PR
k Oregon, '69, '82PR
l Stoughton, '69, '82PR
m Monroe, '62, '82PR
n Juda, '71, '82PR

* new price, effective immediately

NEW PRODUCTION FROM U.S. GEOLOGICAL SURVEY



CENSUS MAPS

There is a plethora of 1980 census maps available. To add to the confusion, there are three distribution sources. For unpublished and reproducible maps:

Data Preparation
Division (DPD)
Geography Branch
Bureau of the Census
Jeffersonville, IN 47132
812/288-3213
ATTN: Wendell McManus

To order tapes, most microfiche, and some printed reports:

Data User Services Division
Customer Services
Bureau of the Census
Washington, D.C. 20233
301/763-4100

To order some maps and most reports:

Superintendent of Documents
Government Printing Office (GPO)
Washington, D.C. 20402
202/783-3438

From whom should you buy a census map when both GPO and the Census Bureau sell it? If you need a map set (covering, for example, an entire SMSA), it's cheaper to buy the published maps from GPO. Also, these maps show slightly sharper detail than the maps available from the Bureau.

If, however, you need just one or two map sheets or if you need reproducible maps, then the Data Preparation Division is the place to contact.

The Data Preparation Division also prepares customized versions of census maps. DPD can provide maps with certain boundaries eliminated, at varying scales, and with color overlays. Contact DPD for details.

OUTLINE MAPS

*State SCSA/SMSA Outline Maps. Single-page State maps showing the boundaries and names of counties, SMSA's, SCSA's, and selected places. Published in 1980 report series. Also available separately.

+County Subdivision Maps. State maps showing counties, minor civil divisions or census county divisions, and places. Published in sections in several 1980 census report series. Available separately as an unpublished set of single-page maps.

+Urbanized Area Outline Maps. State maps showing the boundaries of urbanized areas and their parts of counties, minor civil divisions or census county divisions, and places. Published in 1980 report series. Unpublished maps available for separate States.

+Census Tract Outline Maps. One map set for each SMSA and one set for all the nonmetropolitan tracted areas within each State. Show census tract boundaries and numbers.

DETAILED MAPS

+Block Statistics Maps. Very detailed maps showing streets and other features. Identifies most census areas, including tracts and blocks. Enumeration districts shown outside block-numbered areas on the maps. One map set for each SMSA and for all non-SMSA block-numbered areas within each State.

+Published maps available in sets from GPO.

*Paper and reproducible map available only from DPD.



LAND INFORMATION SEMINAR

The Institute for Environmental Studies at the UW-Madison is sponsoring a series of 16 seminars on "The Multipurpose Cadastre: Modernizing Land Information in North America." The two university departments which have had a major role in organizing these seminars are Landscape Architecture and Civil and Environmental Engineering. In addition to three speakers from the University, a total of 21 guest speakers will be brought in. The speakers come from around the United States with one from Canada and from West Germany.

The free seminars will be held in Union South on the Madison campus every Friday starting January 27, with none held on March 23 (spring break) or on April 20 (Easter break), ending May 18. The time is 12 noon to 1:30 p.m. High-level representatives of nine federal mapping agencies in Washington D.C. will be on campus for a unique panel discussion on April 27th. These include the director of the National Geodetic Survey, the civilian administrator of the Defense Mapping Agency, and the Chief of the USGS National Mapping Division.

The Department of Landscape Architecture, Dane County Land Records Project issued a four-page announcement with names, affiliations and topics. All readers of the Bulletin should have received a copy. If you haven't received it and are interested in one or several of these seminars, contact the State Cartographer's Office and we will send you a copy.

OUR 10TH VOLUME

This issue marks the beginning of the Bulletin's 10th year. We've given it a new look from front to back. The greatest change comes from producing almost all the text on our IBM pc XT. We used the Proofwriter word processing software and a Toshiba dot matrix printer. There are a few problems yet to be solved. Hopefully we'll have the bugs out of the system for the April issue. Your comments are certainly welcome.

MAILING LIST UPDATE

We're in the process of verifying our Bulletin mailing list. You'll soon be receiving a separate letter asking you to update your address. We need to contain our mailing costs and eliminate undeliverable Bulletins. By keeping our mailing charges low, we can continue to issue the Bulletin free-of-charge.

You must return the form to us by April 1st in order to continue receiving our newsletter. Your prompt attention to the letter and a 20-cent stamp will guarantee uninterrupted delivery four times a year.

NO RSB

Dr. Tom Lillesand of the Environmental Remote Sensing Center is preparing a lengthy Remote Sensing Broadcast for the April Bulletin. Stay tuned for news on satellite commercialization and the launching of Landsat D'prime (to be Landsat 5 in orbit).

TOPOGRAPHIC CURIOSITY

A recently published U.S. Geological Survey 7.5 minute topographic quadrangle has attracted the attention of the office staff by the number of unusual and picturesque names it contains. It has villages named "Fargo", "Liberty Pole" and "Rising Sun"; roads named "Sag City Road" and "Hornby Hollow Road" and a hill named "Monument Rock." It also has a valley called "Bull Run." The quad sits over the boundary of Crawford and Vernon Counties. It's named after one of the villages, Rising Sun. This quad is the northwest 1/4 of the Gays Mills 15-minute quad.

DULUTH BLM CLOSES

Following an Interior Department decision last December, the Bureau of Land Management (BLM) permanently closed its Duluth, MN field office on July 22. The decision called for merging the Minerals Management Service's onshore activities into BLM. The Bureau will consolidate its Duluth and Indianapolis field offices into a single Milwaukee district office, which will additionally be responsible for 17 other states throughout the northeast and midwest. The new BLM office's address is P.O. Box 631, Milwaukee, WI 53201-0631 (phone 414/291-4400).

PUBLICATIONS OF INTEREST

USGS MAP PROJECTIONS

The first edition of "Map Projections Used by the U.S. Geological Survey" sold out in 6 months. The 313-page manual includes extensive descriptions of 16 projections. Order USGS Bulletin 1532 for \$8.00 (payable to USGS Distribution) from the Text Product Section, Distribution Branch, U.S. Geological Survey, 604 S. Pickett Street, Alexandria, VA 22304, phone 703/756-6141.

USGS DIGITAL CARTOGRAPHIC DATA STANDARDS

The U.S. Geological Survey has developed and defined standards for digital cartographic data collected and archived in a national data base. Circular 895 has seven separately bound chapters:

- A--Overview and USGS Activities (available)
- B--Digital Elevation Models (in work)
- C--Digital Line Graphs from 1:24,000-Scale Maps (in work)
- D--Digital Line Graphs from 1:2,000,000-Scale Maps (available)
- E--Land Use and Land Cover Digital Data (out of print)
- F--Geographic Names Information System (available)
- G--Digital Line Graph Attribute Coding Standards (in work)

Single copies of these circulars are available from the U.S.G.S. Text Product Section (address above).

MAP USES, SCALES AND ACCURACIES

The American Society of Civil Engineers (ASCE) has issued a valuable reference book for people involved in large-scale mapping or mapping for engineering purposes. Map Uses, Scales, and Accuracies for Engineering and Associated Purposes is available from ASCE Headquarters, 345 E. 47th Street, New York, NY 10017-2398 for \$12.00 (soft cover).

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