

# Charting Progress

*Minnesota Governor's Council  
on Geographic Information*

*Fiscal Year 1997 Annual Report*

*June 30, 1997*

The Governor's Council on Geographic Information was created in 1991 by Governor Arne H. Carlson to provide leadership in the development, management and use of geographic information and related technology. With assistance from Minnesota Planning, the council provides policy advice to all levels of government and makes recommendations regarding investments, management practices, institutional arrangements, education, stewardship and standards.

Minnesota Planning is charged with developing a long-range plan for the state, stimulating public participation in Minnesota's future and coordinating activities with state agencies, the Legislature and other units of government.

Upon request, *Charting Progress* will be made available in alternate format, such as Braille, large print or audio tape. For TTY, contact Minnesota Relay Service at (800) 627-3529 and ask for Minnesota Planning.

**MINNESOTA PLANNING** LAND MANAGEMENT INFORMATION CENTER



658 Cedar St.  
St. Paul, MN 55155  
(612) 296-1211  
[www.lmic.state.mn.us](http://www.lmic.state.mn.us)

June 1997

For additional information or copies of *Charting Progress*, contact the council staff coordinator at (612) 296-1208 or via e-mail at [gc@mnplan.state.mn.us](mailto:gc@mnplan.state.mn.us). An electronic copy of this report can be found on the Governor's Council on Geographic Information's World Wide Web home page: [www.lmic.state.mn.us/gc/gc.htm](http://www.lmic.state.mn.us/gc/gc.htm).

Cover: Map is from the U.S. Geological Survey 1:24,000 Oslo SE quadrangle.



Geographic information is critical to visualizing and understanding a variety of complex economic, social and natural resource management issues in Minnesota. By bringing together technologies to efficiently store, analyze and display information, geographic information systems give policy-makers and citizens ready access to the benefits of a geographic perspective and powerful tools to better understand and improve their world.

The 18-member Governor's Council on Geographic Information was created by Governor Arne H. Carlson in August 1991 to help coordinate the use and development of geographic information among all levels of government in Minnesota. During 1997, the council provided leadership in six major areas:

- Fostering communication with geographic information users and policy-makers
- Promoting effective uses of geographic information system technology
- Collaborating with groups sharing mutual interests
- Promoting effective data development
- Promoting geographic information standards and guidelines
- Improving access to geographic information

The council worked to widely share information about its activities. It published four reports summarizing its findings and recommendations on a statewide geographic information clearinghouse, geographic data standards and guidelines, soil survey computerizing guidelines and parcel identification numbers. It also strengthened its links with geographic information users and policy-makers through close work with the Minnesota GIS/LIS Consortium and active involvement in its 1996 annual conference.

The council also promoted effective uses of GIS technology by addressing land records modernization and the feasibility of a statewide funding initiative. It formed an advisory group to work with Minnesota Planning to develop guidelines for the technology grants established by the Community-Based Planning Act. The council also initiated a program to commend GIS efforts that have provided exceptional value to Minnesota's geographic information users and policy-makers.

The council continued to increase its dialogue and cooperation with national, state, regional and local organizations involved with information policy issues and expanded its visibility among national and state GIS users.

In its continuing effort to promote effective data development, the council formed two committees to investigate the status of soil and parcel data sets and recommend efficient, coordinated strategies for their development. The Soils Data Committee developed *County Soil Surveys: Guidelines for Digitizing* to help guide organizations in computerizing county soil surveys. The Parcel Data Committee studied the complicated issues surrounding parcel identification numbers and accuracy issues. It then developed *Identifying Land Parcels: Is a Statewide Standard Needed?*, which examines the PIN formats used by each of Minnesota's 87 counties and reviews the need for establishing a statewide PIN standard.

## Charting Progress

Summary 1

Glossary 3

Introduction 4

A Year of Enterprise 5

Possible Initiatives for the 1998 Council 17

Resources 18

1997 Committee Members 19

The council continued to support the establishment, promotion and use of well-designed geographic standards and guidelines. Statewide guidelines for geographic data documentation — the *Minnesota Geographic Metadata Guidelines* — were adopted and promoted. A catalog of ad hoc standards in use around the state was published and widely distributed.

The Data Clearinghouse Committee designed a framework for a statewide geographic information clearinghouse that would be a cooperative effort of government agencies at all levels, public and private organizations, and geographic data users.

During fiscal year 1998, the council will continue to pursue initiatives that further its ambitious goals in the areas of GIS data development, standards, access and education. As a forum for the discussion of statewide geographic information policy issues, the council encourages broad involvement by GIS users and policy-makers in its activities.



Below are generally accepted definitions for terms used in this report.

**Archiving** — Process for copying data onto electronic media for storage, preservation and retrieval.

**Base map** — Map containing geographic features used for orientation.

**Digital soil data** — Soil data stored in a digital, or computerized, format.

**Government lot** — Unit of the Public Land Survey system that designates a parcel that is not a quarter-quarter section. These units resulted from adjustments in the early Public Land Survey, the curvature of the Earth and other factors.

**Land parcel** — Publicly recorded right, title or interest in real property.

**Metadata** — Detailed descriptions of data intended to help users better understand and use the data; the descriptions include geographic area covered, methods used to produce the data, currency and accuracy.

**National Spatial Data Infrastructure** — Program developed by the Federal Geographic Data Committee, a group of 14 federal agencies, to better coordinate the development and use of geographic data across the country. The program encourages data sharing by organizing and providing a structure of relationships between producers and users.

**Orthophoto** — Photograph that corrects for distortion caused by hills, valleys and other landscape features. The resulting accurate view of a portion of the Earth's surface can be used for measurement and integrated with other types of data.

**Parcel identification number** — Code assigned to a land parcel that distinguishes it from other parcels.

**Public Land Survey system** — Gridlike system of defining lands in much of the western and central portions of the United States, known generally as the township, range and section system. In Minnesota and many other states, most legal descriptions are based on the PLS system.

**Quarter-quarter section** — Unit of the Public Land Survey system that designates a rectangular land parcel that is approximately 40 acres in size.

**Soil survey** — Systematic inventory of soil types in a geographic area.



# Introduction

During fiscal year 1997, the Governor's Council on Geographic Information worked to foster communication with geographic information system users and policy-makers and develop initiatives and products with substantial, long-term benefits to the citizens of Minnesota. It furthered its mission to provide leadership in the development, management and use of geographic information by promoting effective uses of GIS technology and collaborating with other organizations on issues of data access, geographic data development, and standards and guidelines.

The Governor's Council on Geographic Information was created by Governor Arne H. Carlson in August 1991 to help coordinate the use and development of geographic information among all levels of government in Minnesota. The council is made up of 18 members who are appointed annually by the director of Minnesota Planning. Members are drawn from state agencies, federal and local governments, higher education and the private sector. Administrative and technical support is provided by the Land Management Information Center at Minnesota Planning.

*Charting Progress* highlights the council's accomplishments of the past fiscal year and presents a series of possible initiatives for the council to pursue during the coming year.

## **Guiding principles of the Governor's Council on Geographic Information**

- Promote efficient investments in geographic information.
- Promote geographic information as a public resource widely shared with and available to interested parties.
- Support the establishment and use of geographic data standards and guidelines to better exchange and share information resources.
- Promote education and training in GIS.
- Promote the beneficial uses of geographic information in the development of policy and the management of public resources.
- Provide an effective forum for the discussion and resolution of issues important to Minnesota's GIS community.



The 1997 Governor's Council on Geographic Information provided leadership in six major areas:

- Fostering communication with geographic information users and policy-makers
- Promoting effective uses of geographic information system technology
- Collaborating with groups sharing mutual interests
- Promoting effective data development
- Promoting geographic information standards and guidelines
- Improving access to geographic information

## **Fostering communication with geographic information users and policy-makers**

The council continued to actively promote discussion with geographic information users and organizations interested in statewide information technology issues. More than 70 volunteers from about 30 federal, state, local, private, academic and nonprofit organizations participated in council committee activities.

The council made a concerted effort to widely share information about its activities. Almost 300 people and organizations received regular informative mailings; a brochure summarizing council activities and opportunities for participation was distributed widely; and the council published four reports summarizing its findings and recommendations on a statewide geographic information clearinghouse, geographic data standards and guidelines, soil survey computerizing guidelines and parcel identification numbers.

Articles about council activities and products were published in the newsletters of the Association of Minnesota Counties, League of Minnesota Cities, Intergovernmental Information Systems Advisory Council and GIS/LIS Consortium. An article about the council's role in helping coordinate data in Minnesota was featured in *Geo Info Systems*, a national publication.

The council also expanded its World Wide Web site to include the meeting notes and activities of several of its committees, along with additional information resources. This site, which averaged about 8,000 visits per month during fiscal year 1997, will be enhanced over the next year.

### **How to contact the Governor's Council on Geographic Information**

To participate in council activities, obtain more information about the resources and initiatives discussed in this report or discuss ideas and concerns with a council member, contact the council via telephone at (612) 296-1208, fax at (612) 296-1212, e-mail at [gc@mnplan.state.mn.us](mailto:gc@mnplan.state.mn.us) or the council's World Wide Web home page at [www.lmic.state.mn.us/gc/gc.htm](http://www.lmic.state.mn.us/gc/gc.htm).

Links were strengthened with geographic information users and policy-makers through close work with the Minnesota GIS/LIS Consortium, a group that encourages communication and cooperation among users of GIS and land information systems. The consortium chair serves as an ex-officio member of the council and during the past year participated actively in council meetings and activities. Council Chair Fred Logman was a featured participant at the consortium's July 1996 round table forum.

The council also played an active role in the September 1996 Minnesota GIS/LIS Consortium Conference, attended by about 600 people. A metadata guidelines workshop conducted by the council's GIS Standards Committee and several sessions on soil and parcel data development, parcel identifier concerns, funding issues and standards were well-attended and generated considerable discussion. Visitors to the council's exhibition booth were encouraged to review and update the Internet-based directory of Minnesota GIS users and data developed by the council.

Plans for the 1997 conference include a hands-on workshop conducted by the standards committee to introduce a new metadata entry software tool; panel discussions on computerizing county soil surveys, data accuracy and access standards, and parcel-based GIS implementation in local government; and a joint exhibition booth with the Federal Geographic Data Committee featuring council products and resources.

A Communications Committee, chaired by Will Craig, was formed during fiscal year 1997 to evaluate and enhance the way the council communicates with GIS users and policy-makers. The committee developed a worksheet to use in planning and distributing council publications and clarified the process for collaborating with Minnesota Planning on producing reports and other products. During the next year, the committee will lead an effort to redesign the council's web page and help the council inform appropriate audiences about its activities.

The council will continue to promote discussion with Minnesota's geographic information users and organizations responsible for statewide information policy. Understanding the needs and concerns of these groups is a high priority for the council.

*One of the most powerful benefits of land records modernization is increased access and sharing between agencies and organizations, and citizens and their governments. If access to land information can increase participation in government, the benefits will be immeasurable.*

— David Tulloch, associate, University of Wisconsin Land Information and Computer Graphics Facility

## **Promoting effective uses of GIS technology**

During fiscal year 1997, the council promoted land records modernization for local governments, advocated a strong GIS role in the state's new community-based planning initiative and commended exceptional Minnesota GIS efforts.

## **Seeking funding for land records modernization**

The council's Investments and Funding Committee, co-chaired by Jeffrey Grosso and Luci Botzek, continued to work on clarifying the issues around land records modernization for local governments and determining the feasibility of a statewide funding initiative. GIS technology is fundamental to efficiently maintaining land ownership and taxation records. It also can be used to address many other issues important to local governments. The council's 1994 statewide survey of GIS data needs found that parcel boundary data ranked number two, particularly among county, city and private-sector respondents. A Minnesota land records modernization program would update county land records information systems, improve access to parcel boundary information and enhance the usefulness of land records for local, regional and state planning and management activities.

The committee developed a preliminary budget proposal for a statewide land records modernization program. Though this was not included in the Governor's 1997 budget request, the council will continue to explore ways of supporting local GIS development.



Promoting land records modernization will be one of the council's major initiatives during fiscal year 1998.

### Supporting community-based planning

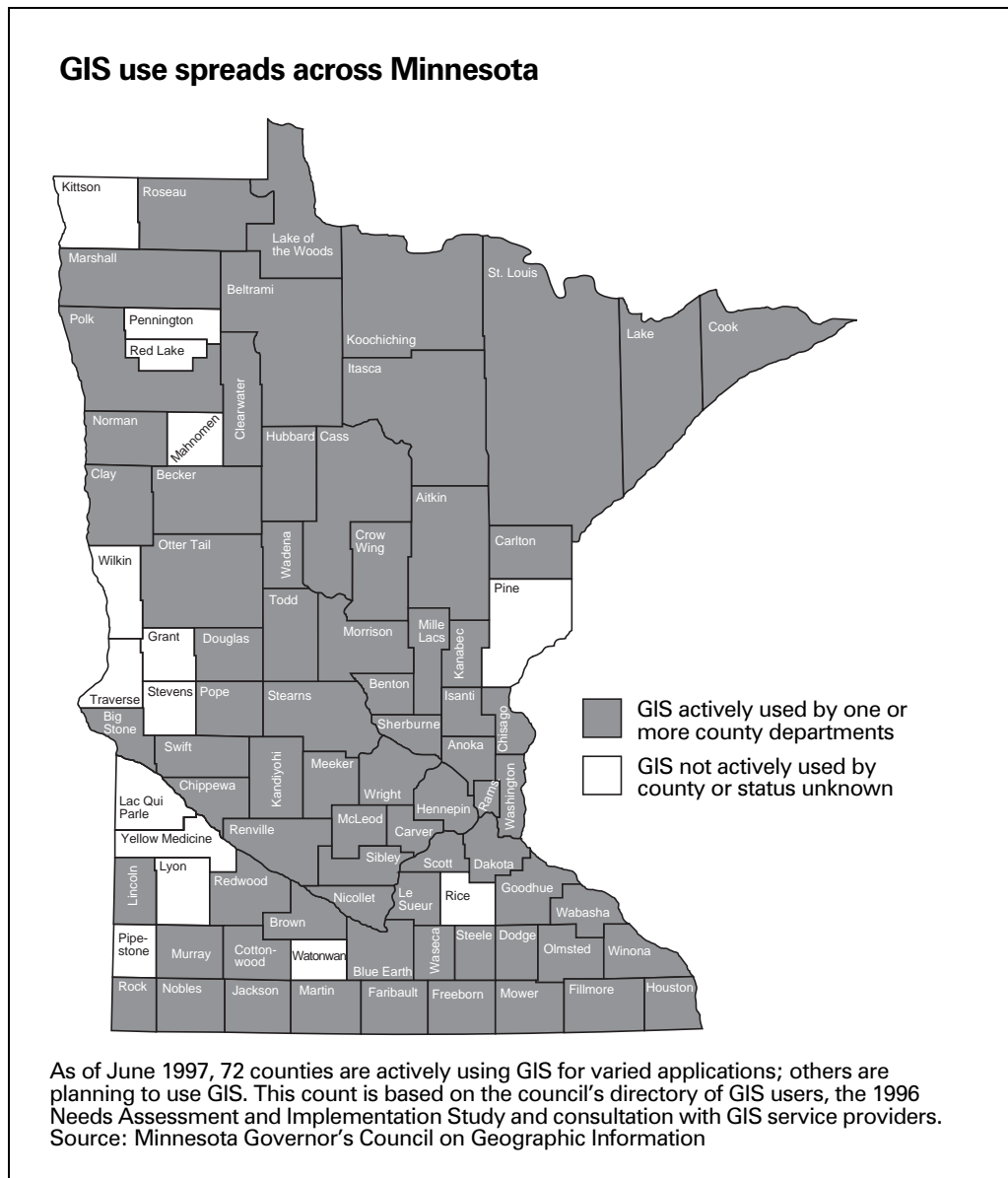
The 1997 Community-Based Planning Act recommends a framework for local government planning throughout Minnesota and assigns Minnesota Planning responsibility for implementing the program. The law acknowledges the use of geographic information systems for community-based plans and provides for technology grants.

In a March 1997 letter to the director of Minnesota Planning, council Chair Logman reflected on the role of GIS technology in community-based planning and made the following recommendations:

- Funding for technology, specifically GIS, should be provided to create a structure in which large amounts of data required for comprehensive land use planning can be collected, analyzed and displayed. The council believes that GIS is the only way to

*GIS has become a familiar tool in nearly every Dakota County department now. Computerized map analysis allows planners to make informed decisions in much less time and really puts far more resources at the staff's disposal.*

— Kurt Chatfield, planner, Dakota County



effectively integrate all the data needed for good planning.

■ The use of standards and guidelines in applying GIS technology will help in developing quality systems and data, enable planning across political boundaries and allow for aggregating data statewide or regionally.

■ Technology, standards and processes should be implemented in phases to allow testing to ensure that they fully support land use planning. Having the time and funds to do this in a few counties would result in good examples for other jurisdictions to follow.

■ The council should advise Minnesota Planning on the technology component of the community-based planning initiative.

The council has formed an advisory group to work with Minnesota Planning to develop guidelines for technology grants for community-based planning and to monitor their effectiveness. This group of professionals experienced in applying GIS to local and regional planning and growth management issues will emphasize the legislative objectives of the Community-Based Planning Act. It also will stress the council's commitment to efficient and effective GIS investments that are based upon established standards and which promote data access.

### **Commending exceptional GIS efforts**

The council initiated a program in fiscal year 1997 to recognize GIS efforts that have provided exceptional value to Minnesota's geographic information community. To be commended as exceptional, projects must demonstrate that they further one or more of the council's guiding principles. Two organizations were recognized at the September 1996 GIS/LIS conference with certificates of commendation from Governor Carlson: the U.S. Fish and Wildlife Service and the Minnesota Department of Transportation. Both programs provide data at a scale (1:24,000) that is useful to local governments.

The U.S. Fish and Wildlife Service was commended for anticipating the widespread need for wetlands information in public policy-making, pioneering free access to public data through the Internet and fostering strong partnerships with state and local agencies in Minnesota. In response to the commendation, the service's director, John Rogers, said, "The information could not have been produced without the interest, involvement and investment of your state. I am most pleased that the council considers the data produced by the National Wetlands Inventory an example of the kind of digital data that is useful for supporting crucial policy decisions."

The Minnesota Department of Transportation commendation recognized that agency's efforts to widely distribute its highway base map data at low cost, in a convenient format and with high-quality documentation. The base map data includes roads, political boundaries and hydrography.

The council will continue to commend state, regional and local projects and programs that demonstrate tangible benefits, exceptional results and a significant effect on other organizations.

### **Collaborating with groups sharing mutual interests**

Collaborating with other organizations is a key to the council's success in coordinating GIS development and promoting efficiencies. During fiscal year 1997, the council continued to increase its dialogue and cooperation with national, state, regional and local organizations involved with information policy issues and expanded its visibility among national and state GIS users.

*Cass County developed a wetlands impact model using National Wetlands Inventory data. We are using this data to draft a wetlands ordinance.... Cass County has been using GIS for 10 years now. Every department is linked into one system, which is interchangeable and compatible.*

— John Sumption,  
wetland act administrator,  
Cass County

## National ties strengthened

The Federal Geographic Data Committee recognized the council as an official cooperating partner in 1996, making Minnesota one of only 18 states with that relationship. The committee, which represents 14 federal agencies, coordinates geographic data development throughout the nation.

In April 1997, council member John Lunde was Minnesota's delegate to the committee meeting in Washington, D.C. Participants deliberated with Secretary of the Interior and committee Chair Bruce Babbitt on what the federal government should do in partnership with state and local governments to further the aims of the national spatial data infrastructure. Federal officials are seeking data, feedback and cooperation from state and local governments, which in turn are looking for funding and leadership from the federal government. The need for increased resources to support a data infrastructure responsive to state and local needs was emphasized in the discussion. As a result of this meeting, a short list of federal programs that might offer funding opportunities for spatial data collection will be developed.

In April 1997, council member Christopher Cialek spoke at a data standards planning meeting sponsored by the National Mapping Division of the U.S. Geological Survey in Denver. He discussed standards development activities in Minnesota and offered suggestions on how federal and state agencies might better collaborate. This meeting spurred initiatives for the division to lead the development of Federal Geographic Data

### GIS proves invaluable during flooding

Geographic information played a critical role during the spring flooding of the Red River. One dramatic use of this data was reported in the Minnesota Department of Transportation's *Information Management Directions* April newsletter:

*The call came in April 15, 3:30 p.m.: "Could you map routes for volunteer truck drivers to bring sandbags to flood sites?" Many roads and bridges were already closed in northwestern Minnesota, and alternative routes needed to be communicated — fast. In less than an hour, Mike Barnes and Tom Glancy, using MNDOT's geographic information system base map, produced maps for the Office of Communications to send to the Department of Public Safety and the Minnesota Trucking Association for wider distribution. About five years in the making, MNDOT's base map is a database of geographic features (e.g., roadway centerlines and county boundaries) providing a standard electronic map of Minnesota that can be used to produce maps tailored to the needs of the requestor.*

Geographic data also was instrumental in efforts by the Minnesota Office of Pipeline Safety to identify more than 110 river crossings of pipelines in the flood zone. This ability to quickly identify pipeline size, location and owner allowed the office to give early notice to pipeline companies, which was "a great benefit to companies in preparing to respond to potentially flooded rivers and communities," said Charles Kenow, administrator of the Pipeline Safety Office.

The ability to clearly identify these locations on a map also helped the state's Division of Emergency Management and the Federal Emergency Management Agency in their efforts to prepare for a response, he said. In addition, it allowed the National Guard, U.S. Army Corps of Engineers and local contractors building and reinforcing dikes along the rivers to avoid rupturing pipelines.

Committee standards, redirect its focus to assist national and international data users, elevate standards development to become a significant part of the division's mission and work with state and local governments to better coordinate standards activities.

Cialek also was Minnesota's delegate to the National States Geographic Information Council. Through this organization, states share their expertise in GIS technical and policy issues and pursue initiatives of common interest. Cialek worked with the national council's representatives from Florida and the Atlanta-based Southeastern Library Network to develop a grant proposal to establish a digital library of geographic information standards and data development practices. The project, which will receive funding beginning in November, will serve as a clearinghouse of standards relevant to users of geographic data and help build stronger partnerships between geographic information users and libraries.

Cialek also was instrumental in getting a Minnesota delegate appointed to the Federal Geographic Data Committee's Geospatial Positioning Accuracy Standards Adjudication Board. This board will determine new standards for measuring and reporting the positional accuracy of geographic databases, replacing standards created in 1947.

### **State and local cooperative relationships forged**

The council developed a variety of cooperative relationships with state and local organizations. It reviewed the status of the Minnesota Department of Transportation's Global Positioning System Advisory Group, an interagency technical group monitoring development of a statewide global positioning system base station network. The council also initiated discussions with the Government Information Access Council, Minnesota Office of Technology and the Minnesota Department of Administration's Information Policy Council, which deal with broad statewide information policy issues. GIS Standards Committee Chair Cialek updated the policy council on the status of the committee's work developing data documentation, or metadata. This presentation prompted an in-depth discussion of the value of documenting information of all types; this, in turn, led to the policy council forming a work group, with help from the committee, to advise it on how to proceed with documenting public data. This work group, with members from Minnesota Planning, the Office of Technology, the Minnesota Historical Society and the Minnesota Housing Finance Agency, will develop a program to educate state agencies about the importance of good data documentation.

The council was briefed on the findings of the Needs Assessment and Implementation Study funded by the Intergovernmental Information Systems Advisory Council and conducted by BRW, Inc. The council was an official cooperator on the study, which was directed by council member Jeffrey Grosso. The study documented the status of parcel-based GIS in Minnesota and suggested ways for local governments to successfully implement it. It confirmed the importance of state help in developing local GIS activities and fostering cooperation and coordination, and resulted in the following conclusions and recommendations:

- Counties and cities are increasingly using parcel-based GIS and reporting significant benefits as a result.
- Local governments that have had GIS the longest report that it has saved them money.
- Local governments need more information about how to implement GIS, how much it costs and what resources are available to help them.
- Intergovernmental cooperation and coordination, while increasing, are not strong components of GIS implementation by local governments.
- Policy-makers need to be educated about the benefits of GIS and the need for ongoing maintenance and upgrades.

*The council provides a forum for valuable face-to-face discussion of issues. It is important to go beyond just state and federal interaction to include local governments and especially the private sector. The council includes all those players.*

— Ron Wencil, National Mapping Division liaison, U.S. Geological Survey

The council plans to continue to examine statewide geographic information policy issues raised by the Needs Assessment and Implementation Study.

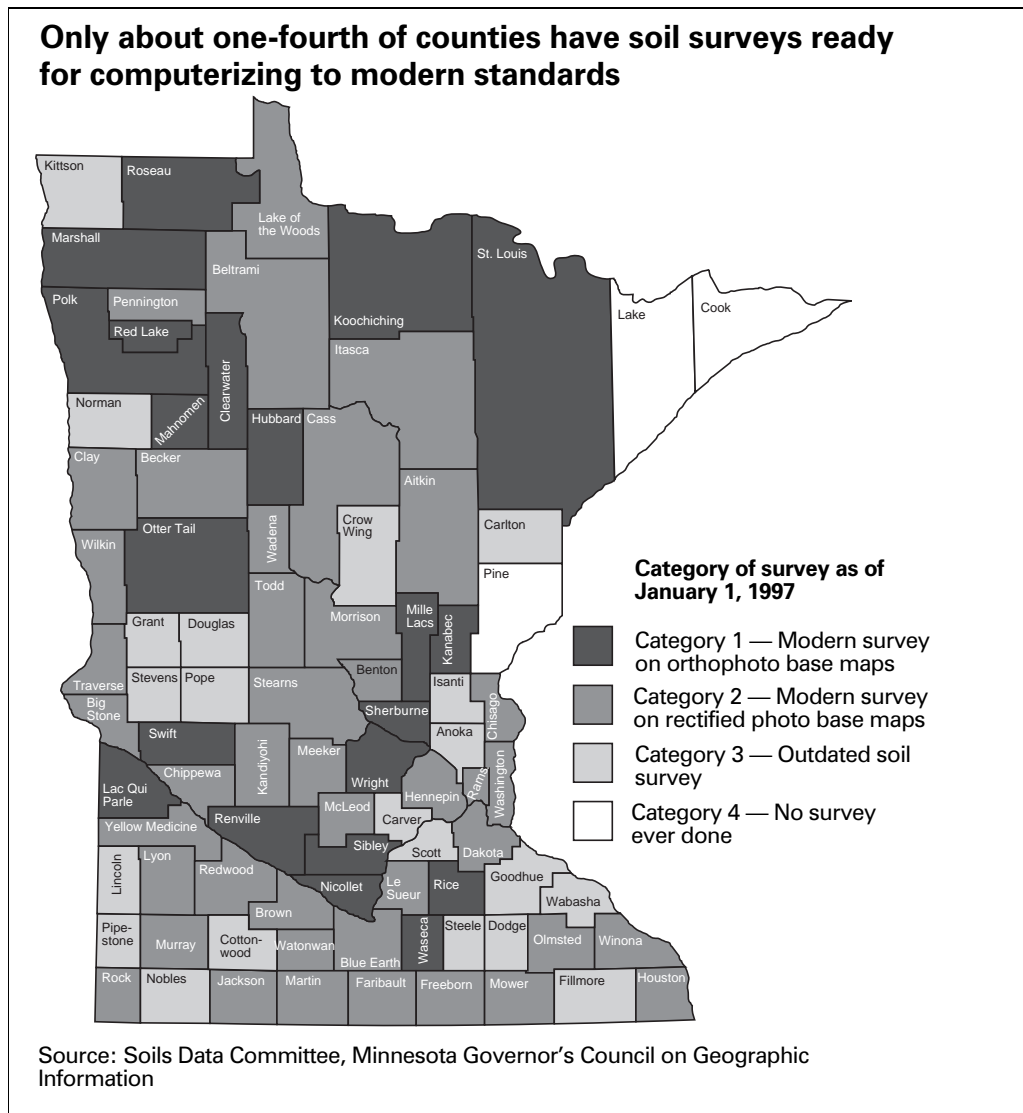
Council members participated actively in MetroGIS, a regional GIS coordination effort that was begun in 1995 by the Metropolitan Council and shares many goals with the Governor's council. MetroGIS has spearheaded the sharing of GIS development costs within the seven-county metropolitan area and promoted the cooperative development of digital databases such as metropolitan area streets, jurisdictional boundaries, parcels and land use. Several Governor's council members serve on key MetroGIS planning committees, including its coordinating committee. Likewise, many of the people participating on MetroGIS committees contributed to council activities during fiscal year 1997.

## Promoting effective data development

The council's 1994 survey of GIS use in Minnesota showed that the highest demand is for soil and parcel data. In response to this finding, the council formed two committees to investigate the status of soil and parcel data sets and recommend efficient, coordinated strategies for their development.

*The soil report is very useful because it puts a lot of information into the hands of local government and people who are going to invest money in digitizing. This information heads off at the pass wastes in public expenditures.*

— Greg Larson, water and land management section head, Minnesota Board of Water and Soil Resources



## Developing digital soil data

The 1994 survey suggested that soil data be developed as a statewide resource for local and state planning efforts. The council's Soils Data Committee, co-chaired by Les Maki and Don Yaeger, recommended that statewide standards be followed for mapping soils to achieve a seamless, cost-effective, accurate and widely accessible statewide digital database.

*We were ready to incorporate our soil survey into our GIS until we accessed the Governor's council web site and learned from the soil report that to digitize a level-three soil survey could be a waste of public funds. We are now cautiously continuing and seeking help in assessing the quality of our soil survey.*

— Phil Jensen, county assessor, Wabasha County

During fiscal year 1997, the committee developed *County Soil Surveys: Guidelines for Digitizing* to help guide organizations in computerizing county soil surveys. The report categorizes the nature and status of all county soil surveys in Minnesota, describes common GIS data formats by which soil data can be stored, identifies methods and resources for converting soil surveys into digital map files and related databases, and suggests a three-step process for elected officials and others to use in making decisions about creating digital soil data and dealing with vendors. For a copy of *County Soil Surveys*, see the "Resources" section of this report or visit the council's web site.

The Soils Data Committee also developed and submitted through the Minnesota Board of Water and Soil Resources a proposal to the Legislative Commission on Minnesota Resources to investigate methods to convert many older county soil surveys to modern standards before computerizing. Forty-two of Minnesota's 87 counties have such older surveys. The project was awarded \$145,000 for the 1998-99 biennium. Research will be conducted under the leadership of Soils Data Committee member Jay Bell. Standardized, cost-effective methods resulting from this project will be used by local governments and private-sector vendors to computerize county soil surveys in a way that contributes to a seamless statewide digital soil database.

The committee also evaluated a proposal by the U.S. Department of Agriculture's Natural Resources Conservation Service to accelerate the national program to computerize county soil surveys. The committee's efforts were used to reinforce Minnesota's high priority within the service's digitizing program.

## Examining parcel data issues

Minnesota has about 2.5 million parcels, the basic unit of land ownership. Uniquely identifying and accurately locating parcels is a daily task for governments at all levels.

During fiscal year 1997, the council's Parcel Data Committee, co-chaired by Mark Kotz and Richard Elhardt, extensively examined the complicated issues surrounding parcel identification numbers and accuracy issues. Counties assign each parcel a unique parcel identification number. While this PIN identifies a parcel, it may not contain information about its location. Some users of parcel data have suggested that a standard format be instituted for identifying and locating land parcels. This would help counties share data, hardware, software and computer applications and would allow parcel data to be combined across counties. Others maintain that this would be costly and disruptive for many local governments.

The council created the Parcel Data Committee to promote understanding of these issues. In developing *Identifying Land Parcels: Is a Statewide Standard Needed?*, a report that examines the PIN formats used by each of Minnesota's 87 counties and reviews the need for establishing a statewide PIN standard, the committee arrived at the following findings and recommendations:

- A parcel identification numbering system that uniquely identifies every parcel in Minnesota is needed.
- County and local governments have little to gain from using a statewide PIN standard.

- It is unrealistic and inappropriate to demand that counties change their existing formats.
- Since counties already maintain unique parcel identifiers for each of their tax parcels, unique statewide PINs could be created by attaching each county’s unique three-digit county code to the front of each parcel identifier.
- Counties that do not yet have an operational GIS parcel layer are urged to consider linking Public Land Survey information to their parcel identification numbers to take advantage of existing, low-cost Public Land Survey GIS layers.
- The Public Land Survey data elements linked to the parcel identification number should be the township number, range number (and range direction in Cook County), section number and quarter-quarter section or government lot number or both.

*Identifying Land Parcels* suggests parcel identifier specifications for counties that have not yet developed a computerized PIN system or are reprogramming their system. The report also sets out guidelines for users of PIN data statewide or regionally. For a copy of the report, see the “Resources” section of this report or visit the council’s web site.

The Parcel Data Committee also examined issues surrounding the positional accuracy of digital parcel boundary data and noted that:

- Recommendations on data accuracy must consider the unique circumstances of each parcel data user and require detailed understanding of user resources and intended uses.
- Organizations developing a geographic information system for the first time should assess the needs of their specific program. Such a detailed blueprint should review intended uses of the GIS; examine system requirements and resources; provide a comprehensive, integrated and staged implementation strategy; and establish updates of the system and the implementation plan.
- A good needs assessment should provide clear direction on the level of positional accuracy needed to develop the parcel boundary layer.
- Source data should be collected at a resolution supporting the scale at which it will be displayed. Every map should include a statement describing the accuracy of the data, stressing that the best expected accuracy is based on the least accurate data set used.
- Data should be captured at the best possible resolution, considering the accuracy of the source material, the instruments and methods used for data collection and the skills of the people involved.
- Data quality and positional accuracy should be recorded as a component of the data documentation, using the *Minnesota Geographic Metadata Guidelines* developed by the Governor’s council. This will help in determining whether the data is appropriate for a particular use.

*The parcel report does an excellent job of presenting and analyzing the issues. The Parcel Data Committee recognizes the need for standards, but also understands that the counties have many types of parcels and may use identifiers for very different applications.*

— Mary Durward,  
county assessor,  
St. Louis County

# Promoting geographic information standards and guidelines

*I am part of a fledgling GIS committee for Nicollet County and greatly appreciate the need for concise standards.*

— Peter Blethlen,  
Nicollet County GIS  
Committee member and  
associate of Bolton and  
Menk, consulting  
engineers and surveyors

The council continued to support the establishment, promotion and employment of well-designed and useful geographic standards and guidelines. As the use of geographic information becomes more widespread, the GIS community looks to standards to guide the production of accurate, accessible and affordable data. Over the long term, use of standards will cut costs, reduce repetitious data collection and encourage data sharing among organizations.

The council's GIS Standards Committee, chaired by Christopher Cialek, pursued several initiatives to promote standards and collaborate with other organizations on their development and use. The council adopted statewide guidelines for geographic data documentation — the *Minnesota Geographic Metadata Guidelines*. This simplified approach to documentation encourages consistent reporting of data content and quality by all geographic data creators. By providing a standard structure for “data about data,” the guidelines encourage access to data and help guarantee that it will be interpreted and used appropriately. Typical metadata describes database characteristics, data processing histories, file formats and methods for data retrieval.

The committee actively promoted use of the new metadata guidelines. At the September 1996 Minnesota GIS/LIS Consortium Conference, the committee conducted a half-day workshop on the guidelines, along with demonstrating software tools designed to



[Why Use Standards?](#) | [Types of Standards](#)  
[Standards Endorsement Process](#) | [Standards Committee Contacts](#)

## Pros and Cons

At their worst, standards are unfunded burdens foisted upon people who already have too many things to do. These nagging requirements add indefensible expense to budget-sensitive projects. They are tolerated when necessary and ignored when possible. At their best, standards provide a common way of organizing information, one that improves understanding and creates new potentials for sharing. Adherence to well-designed standards streamlines data development, saving money in the long run and ensuring that data collected today will continue to have value long into the future.



Early on, the Minnesota Governor's Council on Geographic Information identified the issue of standards as crucial in promoting efficient and effective publicly funded geographic information analysis. The Council's GIS Standards Committee has been working since 1993 to help enhance the investments of GIS user in Minnesota. Information is available for:

- [Background](#) - Why GIS standards matter
- [Types of standards](#) - What are GIS standards?
- [Starting Points](#) - Standards that already exist in Minnesota to get GIS users started
- [Metadata Guidelines](#) - A better way to document geographic data
- [The Standards Process](#) - How standards and guidelines receive state endorsement
- [GIS Standards Committee Meeting Notes](#)

The GIS Standards Committee World Wide Web page at <http://www.lmic.state.mn.us/gc/stds/index.htm> provides access to the *Minnesota Geographic Metadata Guidelines* and other standards-related resources.



simplify implementation. Participants represented city, county and regional organizations, state and federal agencies, and the academic and private sectors. A workshop introducing metadata-gathering software tools will be presented at the 1997 Minnesota GIS/LIS Consortium Conference. The guidelines were also made available on the council's web site and described in a presentation to the Information Policy Council. Negotiations continued with Michigan on an agreement to distribute DataLogr, a metadata entry software tool that the council would like to make available to Minnesota's geographic data users. The committee plans to complete these negotiations during fiscal year 1998.

The metadata guidelines are being implemented by the Land Management Information Center at Minnesota Planning, Minnesota Department of Natural Resources, Metropolitan Council and others. Funds will be provided by Minnesota Planning to acquire DataLogr and distribute it free of charge throughout Minnesota so that more organizations can begin to efficiently document their geographic data sets.

As part of its effort to promote widespread use of metadata, members of the GIS Standards Committee participated in making a tape for an October 1997 national video conference on metadata sponsored by the National States Geographic Information Council and produced by the University of Wisconsin. In addition, several members of the council and the standards committee will be featured in the live broadcast of the conference. The council endorsed a cost-sharing arrangement that will enable a large number of Minnesotans to view the video conference free of charge

*Starting Points: Conventions for Geographic Information*, a catalog of ad hoc standards in use around the state, was published and widely distributed during fiscal year 1997. The council report describes 57 formal and informal geographic information standards established by 20 county, state and federal organizations. It is designed to be a first stop for people embarking on new GIS projects. Sixty public- and private-sector GIS users were asked by the standards committee to review and comment on each of the conventions listed in the report and recommend whether it should receive further study, become an official standard or best practices guideline, or not be addressed further. These findings will be used by the committee during fiscal year 1998 to establish priority standards and guidelines for formal adoption. For a copy of *Starting Points*, see the "Resources" section of this report or the council's web site.

The council collaborated closely with federal, state and local organizations developing standards. A February 1997 all-day workshop examining the council's standards-related goals and priorities was attended by 22 participants representing 15 private- and public-sector organizations. The council also collaborated closely with MetroGIS efforts to promote standards within the metropolitan area. Also during fiscal year 1997, the Information Policy Office promoted the council's second Minnesota state standard, "Numeric Codes for the Identification of Counties in Minnesota," by making it widely available on its web home page. The standards proposed by the council have been adopted by the Information Policy Council as the only official state data standards.

In May 1997, the council co-sponsored a workshop on the proposed national standard for spatial data accuracy with the Land Management Information Center and the GIS/LIS Consortium. The proposed standard defines positional accuracy for spatial data from sources such as aerial photographs, satellite imagery and maps. Julie Binder Maitra of the U.S. Geological Survey described to more than 30 participants the content of the standard, its relationship to other accuracy standards and methods of implementation. The review process for other Federal Geographic Data Committee standards was closely monitored by the council, and other Minnesota organizations, such as the Minnesota Department of Transportation, were urged to become involved in reviewing standards relevant to their activities.

*If the Minnesota metadata guidelines are as helpful to other states as they are to Ohio, then Minnesota can be proud that it has set a national example. Minnesota's work proves that it is committed to excellence in the development of geographic information.*

— Jean Field,  
coordinator,  
Ohio Geographically  
Referenced Information  
Program

The council will continue promoting the value and use of standards and guidelines by actively seeking the involvement and cooperation of a broad cross-section of Minnesota's geographic data users and policy-makers in creating and reviewing standards and helping set direction for the GIS Standards Committee.

## Improving access to geographic information

Promoting geographic data as a widely available public resource is a major council goal. The increasing number of Minnesota geographic data producers and users, the millions of dollars spent on building and maintaining spatial data sets and evidence from the council's 1994 survey that many Minnesota GIS users are unaware of the availability of existing data sets spurred the council to form a Data Clearinghouse Committee to review data access issues and investigate the feasibility of establishing a clearinghouse for the state's computerized geographic information.

During fiscal year 1997, the Data Clearinghouse Committee, chaired by Carl Hardzinski, developed a conceptual framework for a statewide geographic information clearinghouse that would be a cooperative effort of government agencies at all levels, public and private organizations, and geographic data users. The committee describes this framework in *Laying the Foundation for a Geographic Data Clearinghouse*.

The report recommends that a geographic data clearinghouse be implemented that would allow broad public access to search tools for acquiring information about the state's most valuable geographic data resources and would encourage the cooperation of data producers in collecting, sharing and preserving important geographic data sets. The clearinghouse would have three components:

- Data documentation, or metadata, collected and maintained in an electronic format that can be searched through a single entry point
- Data storage and archiving to preserve data sets and supporting documentation that are determined to be useful to current and future data users
- Access to data and metadata through a responsive search system

The search mechanism would be rapid, easy to use, reliable and secure. It would take into consideration the technical limitations of users, and alternative, noncomputerized ways to access metadata would be provided. The clearinghouse also would emphasize the importance of standards and guidelines in making easier the access to and use of geographic data. For a copy of *Laying the Foundation for a Geographic Data Clearinghouse*, see the "Resources" section of this report or visit the council's web site.

During fiscal year 1997, the council agreed to be a formal cooperator on a Legislative Commission on Minnesota Resources-funded project called "Foundations for Integrated Access to Environmental Information." The \$650,000 project is a collaborative effort among natural resource agencies to design, develop and test a model for Internet-based access to environmental and natural resource data. A council representative will participate in a group advising Minnesota Planning on the project.

### Minnesota GIS resources directory available for updating

The council organized its 1994 inventory of GIS users and data into a directory at [www.lmic.state.mn.us/gc/gisdir.htm](http://www.lmic.state.mn.us/gc/gisdir.htm). The directory indexes geographic data, hardware and software in use around the state and identifies resources available for sharing. Organizations listed in the directory are encouraged to update their entries by contacting the council via e-mail at [gc@mnplan.state.mn.us](mailto:gc@mnplan.state.mn.us).

*There is a need to initiate a geographic information clearinghouse in order to consolidate data into libraries, integrate data into common formats and distribute data to users.*

— Governor Arne H. Carlson,  
executive order 93-17,  
August 1993

*GIS is a powerful tool that can democratize data and make information understandable by the average person. I believe that the use of this technology is critical for local governments as well as citizens. A good understanding of geographic information makes sound decision-making easier.*

— Minnesota State  
Senator Steve Morse



## Possible Initiatives for the 1998 Council

Recognizing that it must focus its limited resources on a few key initiatives, the council recommends that the fiscal year 1998 council consider the following possible initiatives in setting its priorities.

### **Communication and collaboration**

- Promote dialogue with GIS/LIS users through participation in GIS/LIS Consortium events and active sharing of council activities through use of the Internet, newsletters, publications and other means.
- Communicate with policy-makers about council initiatives to encourage their input.
- Continue to provide a forum for the discussion and resolution of issues important to Minnesota's GIS users and policy-makers.
- Engage in collaborative efforts with organizations pursuing similar initiatives and sharing mutual interests, including MetroGIS and the Minnesota Office of Technology.
- Recognize and promote exceptional GIS projects and programs.

### **GIS development**

- Gain broad support for a statewide initiative to modernize land records for local governments.
- Help identify and advance critical statewide GIS funding opportunities by identifying low-cost, high-benefit data development opportunities and advising the Legislative Commission on Minnesota Resources on GIS-related funding proposals.
- Provide policy support and technical advice for legislation supporting statewide community-based planning.
- Document and evaluate positional accuracy issues for geographic data.

### **Standards**

- Continue to advance statewide geographic data standards and guidelines and promote their use.
- Promote software tools to encourage data documentation.
- Help finalize the Federal Geographic Data Committee's spatial accuracy standards.
- Develop a method to standardize the state's hydrologic databases.

### **Data access**

- Foster the development of a statewide geographic information clearinghouse by creating an effective structure of advisory groups.
- Ensure the currency of the World Wide Web directory of Minnesota GIS resources.
- Provide advice on policy issues related to public access to data.

### **Education**

- Help promote, in cooperation with the Minnesota GIS/LIS Consortium, the development and implementation of an education plan for state and local GIS users.
- Develop a strategy to educate policy-makers about the value of GIS technology.



The following documents, many of which are mentioned in this report, are available by calling (612) 296-1208, via e-mail at [gc@mnplan.state.mn.us](mailto:gc@mnplan.state.mn.us) or on the council's web home page at [www.lmic.state.mn.us/gc/gc.htm](http://www.lmic.state.mn.us/gc/gc.htm).

- *Laying the Foundation for a Geographic Data Clearinghouse* (1997)
- *Identifying Land Parcels: Is a Statewide Standard Needed?* (1997)
- Numeric codes for the identification of counties in Minnesota (1997)
- *County Soil Surveys: Guidelines for Digitizing* (1997)
- *Minnesota Geographic Metadata Guidelines* (1996)
- *Starting Points: Conventions for Geographic Information* (1996)
- Resource list for parcel data development (1996)
- *Seeking Common Coordinates: Fiscal Year 1996 Annual Report of the Governor's Council on Geographic Information* (1996)
- Guidelines for recognizing exceptional GIS projects and programs (1996)
- By-laws of the Governor's Council on Geographic Information (1996)
- *Standards for GIS* (1995)
- *Progressing on Course: Fiscal Year 1995 Annual Report of the Governor's Council on Geographic Information* (1995)
- Analysis of the 1994 survey of Minnesota GIS users: Adequacy of the current data and needs for new or improved data (1995)
- *Survey of Current GIS Data and Needs: Technical Report* (1995)
- *Mapping a Course of Action: Fiscal Year 1994 Annual Report of the Governor's Council on Geographic Information* (1994)
- Codes for the identification of states (1994)
- Executive Order 93-17 providing for the establishment of a Governor's Council on Geographic Information (1993)



## **Communications Committee**

David Arbeit, Land Management Information Center at Minnesota Planning  
Robert Bixby, St. Cloud State University  
Will Craig, Center for Urban and Regional Affairs, University of Minnesota (chair)  
Fred Logman, Minnesota Counties Computer Cooperative  
Kathy Svanda, Minnesota Department of Health  
Doug Thomas, Minnesota Board of Water and Soil Resources  
Mary Welfling, Minnesota Department of Transportation  
Heidi Welsch, Metropolitan Council  
Judy Winiecki, Minnesota Department of Natural Resources

## **Data Clearinghouse Committee**

Christopher Cialek, Land Management Information Center at Minnesota Planning  
Tom Glancy, Minnesota Department of Transportation  
Carl Hardzinski, Bureau of Indian Affairs, Minneapolis Area Office (chair)  
Roger Hirschman, Natural Resources Conservation Service  
Susanne Maeder, Land Management Information Center at Minnesota Planning  
Tanya Mayer, Metropolitan Council  
Ken Saffert, City of Mankato  
Wendy Treadwell, Machine Readable Data Center, University of Minnesota  
Ron Wencl, U.S. Geological Survey

## **Investments and Funding Committee**

David Arbeit, Land Management Information Center at Minnesota Planning  
Luci Botzek, Minnesota Association of County Officers (co-chair)  
David Claypool, Ramsey County  
Kathy Conlon, Nicollet County  
Will Craig, Center for Urban and Regional Affairs, University of Minnesota  
Jeffrey Grosso, Goodhue County (co-chair)  
Richard P. Johnson, Metropolitan Council  
Fred Logman, Minnesota Counties Computer Cooperative  
John Lunde, BRW, Inc.  
Gary Stevenson, Dakota County

## **Parcel Data Committee**

Mar Alojado, Minnesota Department of Transportation  
Jill Bornes, Minnesota Department of Natural Resources  
Richard Elhardt, Northern States Power Company (co-chair)  
John Gellatly, St. Louis County  
Mark Kotz, Metropolitan Council (co-chair)  
Jay Krafthefer, Washington County  
Jim Krautkremer, Intergovernmental Information Systems Advisory Council  
Lee Meilleur, Minnesota Legislative Coordinating Commission  
Lowell Pommerening, Minnesota Department of Natural Resources  
Michael Pressman, 4Ever Land Conservation Association  
Lisa Skipton, Dakota County  
Ken Whitehorn, Itasca County  
David Windle, City of Roseville

## **Soils Data Committee**

Jay Bell, Department of Soil, Water and Climate, University of Minnesota  
Robert Bixby, St. Cloud State University  
Al Giencke, Natural Resources Conservation Service  
Tim Kelly, Minnesota Department of Natural Resources  
Greg Larson, Minnesota Board of Water and Soil Resources  
Les Maki, Minnesota Department of Natural Resources (co-chair)  
Joe McCloskey, Natural Resources Conservation Service  
Glenn Radde, Minnesota Department of Natural Resources  
Doug Thomas, Minnesota Board of Water and Soil Resources  
David Vessel, Metropolitan Council  
Don Yaeger, Land Management Information Center at Minnesota Planning (co-chair)

## **GIS Standards Committee**

Mar Alojado, Minnesota Department of Transportation  
John Anderson, City of St. Paul  
Michael Barnes, Minnesota Department of Transportation  
Anne Bentley, Information Policy Office, Minnesota Department of Administration  
Robert Bixby, St. Cloud State University  
Chuck Bryant, Minnesota Department of Transportation  
Roberta Casey, Minnesota Department of Transportation  
Christopher Cialek, Land Management Information Center at Minnesota Planning (chair)  
Sherry Coatney, Intergraph Corporation  
George Coulombe, Beltrami County  
Wayne Hartman, REMAP Corporation  
Mark Kotz, Metropolitan Council  
Robert Maki, Minnesota Department of Natural Resources  
John Moriarty, City of St. Paul  
Robert Patton, Minnesota Department of Agriculture  
James Piegat, Hennepin Conservation District  
Lynn Rabuse-LaMott, Environmental Systems Research Institute, Inc.  
Nancy Rader, Land Management Information Center at Minnesota Planning  
Wayne Simacek, Cooperative Power Association  
Gary Swenson, Minnesota Department of Military Affairs  
John Thuente, REMAP Corporation  
Ron Wencl, U.S. Geological Survey  
Mary West, VectorVision, Inc.  
Blane White, Minnesota Department of Agriculture



## 1997 Council Members

David Arbeit, director, Land Management Information at Minnesota Planning  
(ex-officio)

Robert Bixby, director, Spatial Analysis Research Center, St. Cloud State University

Christopher Cialek, geographic information supervisor, Land Management Information  
Center at Minnesota Planning

Will Craig, assistant director, Center for Urban and Regional Affairs, University of  
Minnesota (vice chair)

Kari Craun, assistant chief, Mid-Continent Mapping Center, U.S. Geological Survey,  
Rolla, Missouri

Richard Elhardt, GIS consultant, Northern States Power Company

Jeffrey Grosso, Goodhue County surveyor

Carl Hardzinski, GIS coordinator, Bureau of Indian Affairs, Minneapolis Area Office

Roger Hirschman, GIS specialist, Natural Resources Conservation Service

Richard Johnson, associate regional administrator, Metropolitan Council

Fred Logman, executive director, Minnesota Counties Computer Cooperative (chair)

John Lunde, functional head of GIS, BRW, Inc.

Les Maki, GIS administrator, MIS Bureau, Minnesota Department of Natural Resources

Ken Saffert, Mankato city engineer

Gary Stevenson, land information director and surveyor, Dakota County

Kathy Svanda, manager, Environmental Health Hazard Management Section,  
Minnesota Department of Health

Doug Thomas, water planning coordinator, Minnesota Board of Water and Soil  
Resources

Mary Welfling, director, Office of Information Policy, Minnesota Department of  
Transportation

Judy Winiecki, principal land surveyor, Minnesota Department of Natural Resources  
(ex-officio)