



***North Carolina***  
**Geographic Information Coordinating Council**

**2003 Annual Report to the Governor  
and the North Carolina General Assembly**

June 30, 2003

*Submitted to:*

*Governor Michael F. Easley  
and  
The Joint Legislative Commission on Governmental Operations*

NC Geographic Information Coordinating Council  
**Annual Report to the Governor and North Carolina General Assembly**  
June 2003

**I. Establishing Authority and Precedent**

The North Carolina Geographic Information Coordinating Council was established by Senate Bill 895 in August 2001 and was incorporated in the General Statutes as Article 76, §143-725 through 143-727. This document fulfills the annual reporting requirement.

The purpose of the Council is to develop policies regarding the utilization of geographic information, geographic information systems (GIS), and other related technologies. The Council is responsible for the following:

- Strategic planning,
- Resolution of policy and technology issues,
- Coordination, direction, and oversight of State, local, and private GIS efforts, and
- Advising the Governor, the General Assembly, and the Information Resource Management Commission (IRMC) as to needed directions, responsibilities, and funding regarding geographic information.

The Council is charged with statewide geographic information coordination and fosters cooperation among State, federal, tribal, and local government agencies; academic institutions; and the private sector in order to improve the quality, access, cost-effectiveness and utility of North Carolina's geographic information and to promote geographic information as a statewide strategic resource.

**Precedent.** Prior to the enactment of legislation, the North Carolina Geographic Information Coordinating Council existed through Executive Orders issued by Governor James G. Martin and Governor James B. Hunt Jr. Executive Order No. 147 by Governor James G. Martin first established the Council in July 1991. Governor James B. Hunt Jr. issued Executive Order No. 16 in May 1993 that remained in effect until 2001.

**Staff to the Council.** The Center for Geographic Information and Analysis (CGIA), located in the Department of Environment and Natural Resources and formerly attached to the Office of the Governor, staffs the Council. CGIA manages and distributes digital geographic information about North Carolina maintained by numerous State and local government agencies. It operates a service bureau, a statewide data clearinghouse and provides Internet access to State geographic information.

## **II. Meetings**

Although the enabling legislation was passed in August 2001, the appointment process delayed Council activation until spring of 2002. Meetings were held on May 14, 2002, August 21, 2002, November 13, 2002, February 12, 2003, and May 14, 2003. This report covers actions resulting from those five meetings.

## **III. Membership Structure**

Council Membership reflects the broad community of geographic information users and policy officials. Of the membership, three elected state officials (Secretary of State, Commissioner of Agriculture, Superintendent of Public Instruction), and Secretaries of seven executive departments (Environment and Natural Resources, Commerce, Crime Control and Public Safety, Health and Human Services, Transportation, Administration, and Revenue) serve *ex officio*, as does the State Budget Officer and the State Chief Information Officer.

The academic sector is represented by the President of the University of North Carolina System and the President of the North Carolina Community Colleges System. The utilities sector is represented by the Chair of the Public Utilities Commission.

Other permanent members include the Executive Director of the North Carolina League of Municipalities (NCLM) and the Executive Director of the North Carolina Association of County Commissioners (NCACC). Two other members represent the Council's Local Government Committee and the State Government GIS User Committee.

In addition to these permanent members, the President Pro Tempore of the Senate and the Speaker of the House each appoint three members to one-year terms. The Governor appoints members to three-year terms, including an employee from county government (nominated by the NCACC), an employee from municipal government (nominated by the NCLM), an employee of the federal government who is stationed in North Carolina, a representative from the Lead Regional Organizations, a member of the general public, and the head of an at-large State agency, and any other members deemed appropriate. See Appendix A for a listing of 2002-2003 members.

The Governor appoints the Chair from the Council membership. Dempsey Benton, Chief Deputy Secretary of the Department of Environment and Natural Resources, is the current chair of the Council.

## **IV. Committee Structure**

The work of the Council is carried out through three committees representing specific user communities, a GIS Technical Advisory Committee, a Statewide Mapping Advisory Committee, and a Management and Operations Committee composed of the

chairs of all committees. Each committee established bylaws that were adopted in 2002. The committees have a purpose and membership structure, as follows:

- **Local Government Committee**—Members are from organizations and professional associations that serve or represent local government GIS users, the North Carolina League of Municipalities, the North Carolina Association of County Commissioners, and Lead Regional Organizations. This committee elects one of its members to serve on the Council.  
*2002-2003 Chair, Kelly Laughton, Henderson County*
- **State Government GIS Users Committee**—Membership is open to all interested State government employees. Members of the Executive Committee are appointed by department officials who serve *ex officio* on the Council. The chair of this committee is appointed by the Chair of the Council.  
*2002-2003 Chair, Dianne Enright, Dept. of Health and Human Services*
- **Federal Interagency Committee**—Members of the committee include representatives from all interested federal agencies and Tribal governments with an office located in North Carolina. The chair of this committee is the federal representative appointed by the Governor.  
*2002-2003 Chair, Gerald Ryan, US Geological Survey/Div. of Water Resources*
- **Statewide Mapping Advisory Committee**—Members include representatives appointed from the committees above, the Director of the Department of Transportation/GIS Unit, Director of the Center for Geographic Information and Analysis, Director of Land Records Management Division, State Geologist, State Photogrammetric Engineer, Chief of the State Geodetic Survey, the U.S. Geological Survey state representative, as well as members named by the NC League of Municipalities, the NC Association of County Commissioners, and the University of North Carolina system.

This committee works with data content standards, consolidates statewide mapping requirements, seeks support for financing cooperative programs, and advises the Council on problems and opportunities relating to geospatial data programs. This committee chair is appointed by the Chair of the Council.

*2002-2003 Chair, Bill Holman, Clean Water Management Trust Fund*

- **GIS Technical Advisory Committee**—Permanent members include a staff member of the Information Resource Management Commission, a staff member of the Land Records Management Division, a staff member of the Center for Geographic Information and Analysis, and the chair who has been selected from Council membership and appointed by the Chair of the Council.

This committee reviews and recommends specifications related to hardware, software and database standards as well as approaches or guidelines for

developing, installing, and managing the components of GIS infrastructure.  
*2002-2003 Chair, Susan Johnson, City of Charlotte*

- **Management and Operations Committee**—Members include the chairs of each standing committee as well as the State Budget Officer, Chair of the Council, and other members of the Council as appointed by the Chair.  
*2002-2003 Chair, Dempsey Benton, Dept. of Environment and Natural Resources*

## V. Council Orientation and Briefing

The Council's first meeting in May 2002 introduced members to the purpose and mission of the Council and the 2001 legislation that created it. Staff reviewed the preceding ten years of Council activity when it existed under the auspice of Executive Orders. That work included the adoption of a Strategic Plan for Geographic Information Coordination in North Carolina, the creation of the Corporate Geographic Database and the North Carolina Geographic Data Clearinghouse with relevant standards and procedures, and the establishment of the Global Positioning System (GPS) base-station and data collection network.

In order to understand why geographic data is vital to government operations, the Council was briefed on the use of geographic information systems (GIS) by local and state decision makers. They were shown numerous examples that combined databases with geographic locations to analyze information for legislative redistricting, to track crime, to configure voter precincts, to plan for disaster recovery, to provide E-911 dispatchers with locations of hazardous materials, to delineate land ownership for tax purposes, to attract economic development, to help citizen water monitoring, to fight fires, and to route school buses.

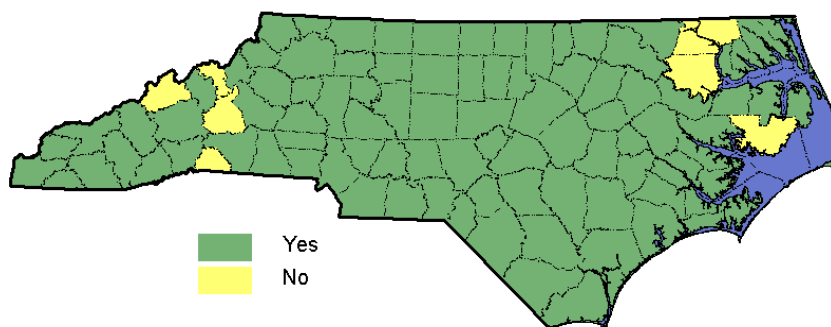


Figure 1: County governments using Geographic Information Systems (GIS).

There are many examples of statewide programs that depend on the accuracy and dependability of North Carolina geographic data, whether supplied by local governments or state programs:

- The Floodplain Mapping Program in the Division of Emergency Management is a unique multi-year effort with the Federal Emergency Management Agency (FEMA) to create digital Flood Insurance Rate Maps (DFIRMs). It uses airborne laser technology called Light Detection and Ranging (or LIDAR) to accurately map terrain elevation and determine true 100-year and 500-year floodplains in North Carolina. The elevation data is valuable for other applications, including highway design, coastal erosion analysis, and statewide mitigation planning, among others.
- The Department of Health and Human Services, the Center for Geographic Information and Analysis, and Duke University are cooperating on a project to build GIS capacity in five local health departments. The team focus is to help health department staff use GIS to support their mission in assessing the affect of environmental factors on septic system failures; assessing flood impacts on water wells; assessing potential sources of pollution when evaluating new well permit applications; and targeting mosquito spraying programs.
- The Clean Water Management Trust Fund (CWMTF) uses GIS to assess grant applications and to identify areas that need to be targeted for conservation and preservation. CWMTF uses its resources to enhance or restore degraded waters, protect unpolluted waters, and contribute toward a network of riparian buffers and greenways for environmental, educational, and recreational benefits. Local governments have received more than \$152 million for water quality improvements, such as storm water management and wetlands and stream restoration.

The past decade marked explosive growth in use of GIS technology around the state and clearly indicates the need for more cooperation among neighboring data providers.

### White Paper Opens Dialog

Council staff prepared a white paper that focused on the *Strategic Plan for Geographic Information Coordination in North Carolina* that had been adopted by the previous Council and had guided their discussion for many years. That document confidently pictured the day when the best North Carolina digital geographic data produced by state, local, and federal government sources would be free and available to everyone. This was to be achieved by working through numerous strategies that would bring data partners and collaborators together in the NC Corporate Geographic Database and the NC Geographic Data Clearinghouse. The vision was also dependent upon technological advances in Internet access and the development of user-friendly software mapping tools, both of which have steadily improved.

1. NC Corporate Geographic Database [www.cgia.state.nc.us/cgdb/](http://www.cgia.state.nc.us/cgdb/)  
This active resource contains more than 100 data layers generated primarily by state and federal government agencies. It contains framework data (i.e. base map data) for the entire state—transportation, state-owned properties, surface waters, jurisdictional boundaries, elevation, geodetic controls, and aerial

imagery for 1993 (black and white) and 1998 (color infrared). It contains other thematic data; for example, census, sewer service areas, water distribution areas, soil surveys, satellite imagery, hospital locations, and hazardous waste sites. The Center for Geographic Information and Analysis manages and distributes these data in a collaborative program with the agency data providers. However, the NC Corporate Geographic Database was unsuccessful in attracting some state data providers and has very few local government data providers.

2. NC Geographic Data Clearinghouse [www.cgia.state.nc.us/nsgdc/](http://www.cgia.state.nc.us/nsgdc/)  
This resource was created to provide a way to search for North Carolina digital geographic information. It is part of a national Clearinghouse effort initiated by the Federal Geographic Data Committee to launch the National Spatial Data Infrastructure (NSDI). Each local, state, or federal government participant in the Clearinghouse agrees to use a specific standard to describe the characteristics of each digital data set (e.g., the source, currency, and accuracy). These characteristics are referred to as “metadata”. This metadata is served by computers through linked Clearinghouse portals.

This structure allows Internet users to quickly search, find, and view detailed information about thousands of data sets and determine the usefulness of any specific one. The NC Geographic Data Clearinghouse contains searchable records for data administered by CGIA, and some local government data. It has been unsuccessful in attracting widespread participation from other state agencies and local government.

### **Council Establishes Policy Focus on Data Sharing**

Council members were interviewed about their policy priorities and provided feedback on the white paper. Each Council committee thoroughly reviewed the white paper from the perspective of its constituency. The committees submitted detailed reports to Council staff, the Center for Geographic Information and Analysis. Staff prioritized and classified all issues and mapped them to a matrix. See Appendix B.

Four distinct issue areas emerged as vital to creating a robust geographic data sharing program in North Carolina. The Council assigned lead responsibilities as follows:

1. ***Common Understanding***

The Corporate Geographic Database is perceived as a resource containing only state data that is distributed by CGIA. The Clearinghouse is not functioning as a full-fledged statewide data inventory or directory, but includes only those data sets that have appropriate searchable metadata. Confusion exists about the purpose of the Corporate Geographic Database and its relationship to the North Carolina Geographic Data Clearinghouse.

#### Council Action Plan

- Clarify and redefine the Corporate Geographic Database and Geographic Data Clearinghouse
- Publicize and provide compelling reasons for organizations to participate

*Lead: Management and Operations Committee*

#### 2. **Data Inventory**

An on-going, updatable geographic data catalog is needed to capture information about the data sets being generated by various government agencies. State and local governments and councils of government that deal with cross-jurisdictional and regional planning issues are particularly interested in discovering which agency has which data in order to avoid costly duplication. Although the Geographic Data Clearinghouse exists, it does not contain catalog/inventory information about the vast majority of data holdings across the state.

#### Council Action Plan

- Document geographic data holdings within North Carolina
- Support/enhance an on-going inventory of municipal, county, state and federal data

*Lead: Center for Geographic Information & Analysis*

#### 3. **Content Standards and Implementation Plan**

Data content specifications are needed for many popular themes, such as street networks, so that data produced by one jurisdiction will match data produced by its neighbors. Standards affect the ability to integrate data from multiple agency sources and are essential for seamless data sharing. The roles of data providers and stakeholders must be defined within the context of sharing data.

#### Council Action Plan

- Develop content standards for Framework (base map) data layers
- Formalize roles for data providers
- Develop cost projections and plans for implementation and maintenance

*Lead: Statewide Mapping Advisory Committee*

#### 4. **Data Access and Distribution**

The means to access and distribute data to others is essential for sharing digital geographic information among agencies and making it available to citizens. The goal of having data available on the Internet 24/7 requires best practices to be defined and technology to be in place. There is also the need to protect legislatively-defined confidential data, deal with sensitive data, and follow North Carolina public records provisions.

#### Council Action Plan

- Technologically enable widespread use of data (organizationally and geographically)

- Provide distributed links to data
- Evaluate issue of restricted access vs. public domain

*Lead: GIS Technical Advisory Committee*

Staff, in consultation with the committees, prepared a 2003 work plan of tasks with timetables for each of the four data sharing components. See Appendix C.

## VI. Council Actions May 2002 through May 2003

### A. NC OneMap: A Leading-Edge Concept for North Carolina

The Council concluded that a comprehensive, statewide shared data resource is the desired goal of coordination policy. To conceptualize what this shared data resource would “look like,” the Management and Operations Committee defined the vision and the essential characteristics, which were vetted with all Council committees and through special sessions held at the February 2003 North Carolina Conference for Geographic Information Systems. The Council voted to name the concept **NC OneMap**. See Appendix D.

The **NC OneMap** vision proposes that an operational structure be in place in North Carolina by 2005 so that all citizens and government agencies can take the *availability* of comprehensive geographic information for granted. This framework will serve the basic information requirements for decision-making in the community, statewide and in support of national priorities. It will provide information to support the daily business processes of numerous organizations and their functions. Success depends on adoption of standards and procedures, data documentation, Internet accessibility, and partnerships.

Questions to be addressed in the **NC OneMap** implementation plan revolve around assuring adequate resources, both human and financial, to achieve cost-sharing partnerships. Another unresolved issue for local governments is the implied requirement of “free” access rather than current practice that allows some cost-recovery.

The existing entities of the North Carolina Corporate Geographic Database and the North Carolina Geographic Information Clearinghouse will be modified and blended into **NC OneMap** as functions of this larger resource. To ensure Internet viability for this naming convention, CGIA, on behalf of the Council, registered **NC OneMap** in the .org, .com and .net domain configurations.

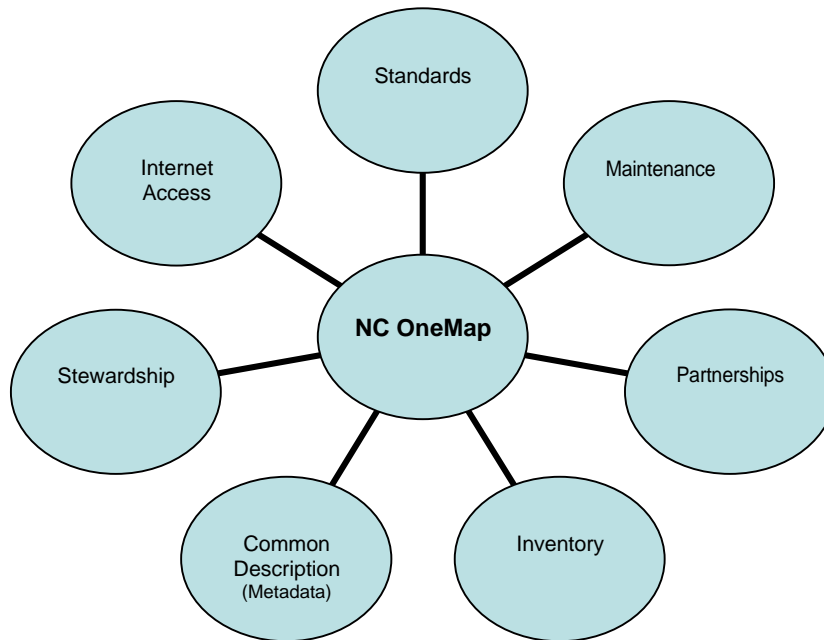


Figure 2: Components of **NC OneMap**.

### **B. GIS and Managing Long Term Water Supply in North Carolina**

The Council chair appointed a working group to discover the range of relevant geographic information, its condition and quality, and its availability to assist local government officials. The working group investigated existing data resources maintained in the Department of Environment and Natural Resources by the Division of Water Quality and Division of Water Resources. It found that the state needs current, high-quality digital data to address the long term water supply issue. A statewide monitoring and modeling system is needed to help predict water shortage situations. Incentives should be developed for electronic reporting of water use among regulated entities. Some necessary data such as agricultural and industrial uses are frequently inadequate and underestimate the impact of those uses on the total water resource. And some existing critical state data were not in the Corporate Geographic Database where it is most accessible to everyone.

The report of the findings and recommendations from the Council on the role of GIS in helping to manage the state's long term water supply is attached to this report as Appendix E.

### **C. Endorsed National White Paper: Public Safety, Saving Lives and Saving Money**

This initiative, led by the National States Geographic Information Council (NSGIC), is a declaration of interdependence and prompts Congress to include funds for the development and use of GIS data in Homeland Security initiatives. The white paper

argues that most public safety information resources have a geographic context, and there is a demonstrated value in using geographic data in law enforcement and for public safety support. The Council endorsed the white paper, joining 36 other state councils from Alaska to West Virginia.

The white paper is being used by NSGIC and its partners in various congressional forums, most recently as part of testimony on June 10, 2003 to the House Government Reform Committee's Oversight Hearing on Geospatial Information: Improving Our Nation's Map-Related Data Infrastructure. If legislation is submitted to fund the National Spatial Data Infrastructure, NSGIC and member states plan to use the paper in briefings to legislators and congressional staffs.

#### **D. Council Role in Ratified Legislation on Offensive Place-Names**

The General Assembly ratified a bill in the 2003 legislative session calling for the abrogation of offensive place-names throughout North Carolina. Governor Easley signed the bill into law on June 19, 2003. Under the provisions of the law, the Secretary of State will work with the Council to adopt procedures to effect the change of geographic place names that are offensive or insulting. The Council has the responsibility to notify a county governing body of its intention to make an application to change a place-name. The county will forward a replacement name to the Council. Then, upon acceptance of the name, the Council will work with the U.S. Board of Geographic Names to change the offensive name.

## **VII. Outreach**

### **A. GIS Day Live—November 20, 2002**

This international activity, now in its fourth year, seeks to build awareness in the general public and in K-12 education about how geography and GIS technology help people in all communities. In 2002, the North Carolina GIS consortium that included the Department of Public Instruction, NC State University, CGIA (on behalf of the Council) and numerous state agencies, the NC School of Science and Math and public schools from across the state, held a full-day Internet-streamed live video conference and also produced an interactive teacher symposium. More than 1000 people from around the world joined in on the Internet and hundreds of North Carolina teachers and students participated at 13 different school video conferencing sites. Teams of middle- and high-school students conducted a biological exploration and GIS mapping exercise in the Museum of Natural Sciences' butterfly garden that was broadcast over the Internet. North Carolina successfully created one of the most complex events in GIS Day history.

### **B. 2003 North Carolina Geographic Information Systems Conference, February 20-21**

The eighth biennial conference in February attracted almost 800 people, mainly from local government, who depend on this conference to provide a forum to discuss issues with colleagues around the state, and learn about technological advances. More than 50

professional organizations and universities join with the Council to co-sponsor this event. This is the one event that brings together local governments that have highly developed and sophisticated GIS applications with local governments that are just beginning the process. Participants include state and federal government, and a significant number of university faculty and students. The North Carolina Geographic Information Systems Conference is the largest public venue to promote Council coordination issues with the audience most interested in data sharing and collaboration.

## **VIII. 2003-2004 Proposed Actions**

### **A. NC OneMap: A Leading-Edge Concept for North Carolina**

Work is in progress on each of the four priority areas to launch the **NC OneMap** umbrella for North Carolina's geographic data:

- **Common Understanding**—An implementation plan is being prepared that will address issues relating to data sharing and **NC OneMap**.
- **Data Inventory**—The survey tool has been selected to conduct a comprehensive survey over the Internet, and the full survey will be released in fall 2003. This survey will reveal data holdings and where significant data gaps exist across the state. Data captured will be available through the **NC OneMap** web site.
- **Content Standards and Implementation Plan**—The seven framework data themes (geodetic control, cadastral [land ownership], elevation, roads, jurisdictional boundaries, digital imagery, and surface waters) will have standards and implementation plans developed for Council review. Throughout this process, the Council will cooperate with ongoing national efforts to develop/adopt content standards for framework data themes.
- **Access and Distribution**—Access issues related to common policies, data confidentiality requirements and other restrictions will be assessed. Datum questions (the mathematical description of the shape of the earth which forms the basis for all map projections and coordinate systems) will be resolved for **NC OneMap**.

### **B. GIS and Managing Long Term Water Supply in North Carolina**

An implementation plan is being drafted to consider the data issues and procedures for bringing relevant state data together. This plan will be submitted to the Joint Legislative Commission on Governmental Operations and to the Governor.

## Appendices

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- B. Response Matrix to Topics of Concern raised by White Paper on the Corporate Geographic Database pp. 17-18
- C. 2003 Council Work Plan on Four Priority Areas p. 19
- D. North Carolina OneMap Vision and Characteristics (adopted May 14, 2003) pp. 20-21
- E. Final Report: Long Term Water Supply Working Group, February 10, 2003 pp. 22-27

Appendix A: 2002-2003 Geographic Information Coordinating Council Membership

<b>2002 - 2003 Member</b>	<b>Title and Organization</b>	<b>Appointing Authority</b>
<b>Chair, Dempsey Benton</b> 1601 Mail Service Center Raleigh, NC 27699-1601	Chief Deputy <i>Environment and Natural Resources</i> 919/715-0183	Governor's Appointment
<b>C. Ronald Aycock</b> PO Box 1488 Raleigh, NC 27602-1488	Executive Director <i>NC Assoc. of County Commissioners</i> 919/715-2893	Executive Office <i>Designee--Rebecca Troutman</i> 919/733-1065
<b>George Bakolia</b> 4101 Mail Service Center Raleigh, NC 27699-4101	State Chief Information Officer <i>Information Technology Services</i> 919/981-2680	Executive Office <i>Designee-- Michael Fenton</i> 919/981-5520
<b>Bryan Beatty</b> 4701 Mail Service Center Raleigh, NC 27699-4701	Secretary <i>Crime Control and Public Safety</i> 919/733-2126	Executive Office
<b>Bob Brinson</b> 2020 Yonkers Road Raleigh, NC 27604	Director, CJIN <i>Correction</i> 919/716-3500	Governor's Appointment
<b>Dr. Molly Broad</b> PO Box 2688 Chapel Hill, NC 27515-2688	President <i>UNC-Office of the President</i>	Executive Office <i>Designee--Dr. Hugh Devine,</i> <i>NCSU</i> 919/515-3439
<b>Terry Ellis</b> PO Box 1373 Smithfield, NC 27577	GIS Technology Director <i>Johnston County Government</i> 919/989-5147	NC House of Representatives
<b>Dianne Enright</b> 1908 Mail Service Center Raleigh, NC 27699-1908	Geographic Analysis Unit Mgr. <i>State Center for Health Statistics</i> 919/715-4473	Appointed by GICC Chair <i>Chair, State Government</i> <i>GIS Users Committee</i>
<b>Jim Fain</b> 4301 Mail Service Center Raleigh, NC 27699-4301	Secretary <i>Commerce</i> 919/733-3449	Executive Office <i>Designee-- John Correllus</i> 919/715-2358
<b>Thomas Gray</b> PO Box 1000 Manteo, NC 27954	IT Director <i>Dare County</i> 252/475-5840	NC Senate
<b>Billy Ray Hall</b> 4021 Cary Drive Raleigh, NC 27610	President <i>NC Rural Economic Development Center</i> 919/250-4314	NC Senate

<b>2002 - 2003 Member</b>	<b>Title and Organization</b>	<b>Appointing Authority</b>
<b>Ellis Hankins</b> PO Box 3069 Raleigh, NC 27602	Executive Director <i>NC League of Municipalities</i> 919/715-4000	Executive Office <i>Designee-- Dr. Lee Mandell</i> 919/715-3933
<b>Jay Heavner</b> PO Box 1578 Gastonia, NC 28053	Director of Revenue <i>Gaston County Tax Office</i> 704/810-5840	NC House of Representatives
<b>Curtis Hinton</b> 1100 Parkway Drive, Ste D Goldsboro, NC 27534	Principal <i>Geographic Technologies Group, Inc.</i> 919/759-9214	NC House of Representatives
<b>Bill Holman</b> 1651 Mail Service Center Raleigh, NC 27699-1651	Executive Director <i>Clean Water Management Trust Fund</i> 919/716-0056	Governor's Appointment <i>(At Large State Agency)</i>
<b>Carmen Hooker Odom</b> 2001 Mail Service Center Raleigh, NC 27699-2001	Secretary <i>Health and Human Services</i> 919/733-4534	Executive Office <i>Designee--Carol Burroughs</i> 919/733-3845
<b>Susan Johnson</b> 600 E. Fourth Street 9th Fl. Charlotte, NC 28202	Key Business Executive <i>City of Charlotte</i> 704/336-6252	Governor's Appointment <i>(Municipal Government)</i>
<b>Tim Johnson</b> 20322 Mail Service Center Raleigh, NC 27699-0322	Acting Director <i>Center for Geographic Information and Analysis</i> 919/733-2090	Staff
<b>Kelly Laughton</b> 200 N. Grove St., #386 Hendersonville, NC 28792	IT Director <i>Henderson County</i> 828/698-5150	Local Government Committee Chair, elected
<b>Martin Lancaster</b> 5001 Mail Service Center Raleigh, NC 27699-5001	President <i>NC Community College System</i> 919/733-7051	Executive Office <i>Designee--Tim Brewer</i> 919/733-7051
<b>Timothy Lesser</b> 102 W 3rd Street, Suite 600 Winston-Salem, NC 27102	Senior GIS Analyst <i>City of Winston-Salem Information Sys</i> 336/727-2846.	NC Senate
<b>Elaine F. Marshall</b> PO Box 29622 Raleigh, NC 27626-0622	Secretary of State <i>Office of Secretary of State</i> 919/807-2008	Executive Office

<b>2002 - 2003 Member</b>	<b>Title and Organization</b>	<b>Appointing Authority</b>
<b>David McCoy</b> 20320 Mail Service Center Raleigh, NC 27699-0320	State Budget Officer <i>Office of State Budget and Management</i> 919/733-7061	Executive Office <i>Designee--Tom Newsome</i> 919/733-7061
<b>Joe McKinney</b> 25 Heritage Drive Asheville, NC 28806	Executive Director <i>Land of Sky Regional Council</i> 828/251-6622	Governor's Appointment <i>(Lead Regional Organization)</i>
<b>Bill Ross</b> 1601 Mail Service Center Raleigh, NC 27699-1601	Secretary <i>Environment and Natural Resources</i> 919/715-4102	Executive Office
<b>Gerald L. Ryan</b> 3916 Sunset Ridge Road Raleigh, NC 27607	District Chief <i>US Geological Survey / Water Resources</i> 919/571-4044	Governor's Appointment <i>(Federal Government)</i>
<b>JoAnne Sanford</b> 4325 Mail Service Center Raleigh, NC 27699-4325	Chair <i>NC Public Utilities Commission</i> 919/733-4249	Executive Office <i>Designee--Mike Wilkins</i> 919/733-6060
<b>Meg Scott Phipps</b> 2 W. Edenton Street Raleigh, NC 27611	Commissioner of Agriculture <i>Agriculture and Consumer Services</i> 919/733-7125	Executive Office
<b>Gwynn Swinson</b> 1301 Mail Service Center Raleigh, NC 27699-1301	Secretary <i>Administration</i> 919/807-2318	Executive Office <i>Designee-- Carlton Myrick</i> 919/807-2341
<b>Lyndo Tippet</b> 1501 Mail Service Center Raleigh, NC 27699-1501	Secretary <i>Transportation</i> 919/733-2520	Executive Office <i>Designee--Forrest Robson</i> 919/212-6001
<b>E. Norris Tolson</b> 4501 Mail Service Center Raleigh, NC 27699-4501	Secretary <i>Revenue</i> 919/733-7211	Executive Office
<b>Charlotte Turpin</b> 405 Weather Green Drive Raleigh, NC 27615	Wake President <i>NC Association of Educators</i> 919/821-3128	Governor's Appointment
<b>Mike Ward</b> 301 N. Wilmington Street Raleigh, NC 27601	State Superintendent <i>Public Instruction</i> 919/807-3430	Executive Office <i>Designee-- Derek Graham</i> 919/807-3571
<b>Chris Wease</b> Anson County Courthouse Wadesboro, NC 28170	Anson County Manager <i>Anson County</i> 704/694-2796	Governor's Appointment <i>(County Government)</i>

## Appendix B: Response Matrix to Topics of Concern Raised by White Paper on the Corporate Geographic Database

*The GICC subcommittees were asked to review the CGDB Issue Paper, to identify the most critical issues and to recommend specific actions. This handout presents a general summary, by subcommittee, of the critical issues and their key components. Almost all components can be cross-referenced to the four high priority issues identified by CGIA staff (see below).*

Topics of Concern	State	Local	Federal	TAC	Staff Issues
<b>Corporate Geographic Database</b>					
Inadequately defined	X	X		X	1
Needs promotion & education	X	X			1
Change name		X			1
Requirements not Understood		X			1
Increase State and Local Participation	X	X	X	X	1
Data Maintenance and Custodians	X		X	X	3
Funding: Cost share with Federal			X		3
Need formal custodian/service agreements	X			X	3
Merge CGDB and Clearinghouse	X				1
Archive old data	X				1
Data that crosses state line (ex. watersheds)	X				
<b>Metadata</b>					
Education		X		X	2
Incentives		X		X	2
Quality			X		2
Consistency			X		2
Need Easier Tools to Create	X			X	
<b>Data Content</b>					
Core Data Standards (ex. Standards exist for the NC land cover classification, rural water and sanitary sewer)	X	X			3
Address Standard	X				3
Data Integration		X			3
<b>Data Distribution</b>					
Privacy/Public Access	X	X		X	4
Homeland Security	X	X			4
Sharing Standards		X			4
Better Access to State data		X			
Public Domain			X		4
Automated Data Transfer			X		4
Tools, Browsers, Viewers				X	4

<b>Information Technology</b>					
WorldWide Web vs. WAN	X	X			4
Support Rural Internet Access Authority		X			
Integration of GIS into State Tech Arch				X	4
Federal Initiatives				X	4
Participate/Portals in Geospatial One-Stop	X			X	4
Bandwidth	X				4
24x7 Availability, Storage, Funding same				X	4
<b>GIS Elected Officials</b>					
Promote more, provide examples on web		X			1
<b>Data Inventory &amp; Survey Tool</b>					
Include distribution policies in survey		X			2
<b>Legislation</b>					
If compendium, add to CGIA web		X			
State impacts on local government		X			
<b>Update Strategic Plan</b>					
				X	
<b>Statewide Procurement</b>					
GIS Tools and Datasets	X			X	
<b>Funding</b>					
24x7 data availability	X			X	4
Maintenance of CGDB	X				3
Cost-sharing of data	X				3

Key to "Staff Issues" Column

**CGIA Staff Priority Issues:**

- (1) Build Common Understanding
- (2) Data Inventory
- (3) Content Standards/Implementation Plan
- (4) Access & Distribution

## Appendix C: 2003 Council Work Plan in Four Priority Areas

<b>Task/Milestone Name</b>	<b>Start Date</b>	<b>Finish Date</b>
GICC Winter Meeting	2/12/03	-
GICC Spring Meeting	5/14/03	-
GICC Summer Meeting	8/20/03	-
GICC Fall Meeting	11/19/03	-
<b>1. Common Understanding</b>		
1.1 Further define the vision	2/12/03	2/28/03
1.2 Conduct outreach activities	2/12/03	12/31/03
1.3 Develop implementation plan	2/12/03	8/19/03
1.4 Perform implementation	8/20/03	Ongoing
<b>2. Data Inventory</b>		
2.1 Research questionnaire types/instruments	2/12/03	3/31/03
2.2 Develop domain of priority datasets	2/12/03	3/31/03
2.3 Prepare contact list of questionnaire recipients	2/12/03	4/30/03
2.4 Reach agreement on instrument	4/1/03	5/14/03
2.5 Develop instrument	5/15/03	6/30/03
2.6 Conduct publicity/education campaign	5/15/03	8/20/03
2.7 Locate and manage instrument for Internet access		
<b>3. Content Standards and Implementation Plan</b>		
3.1 Inventory existing standards for framework themes	2/12/03	4/15/03
3.2 Assess existing standards	4/16/03	7/15/03
3.3 Adopt or modify existing standards	7/16/03	11/19/03
3.4 Implement standards as adopted/modified	11/20/03	Ongoing
<b>4. Access and Distribution (of Data)</b>		
4.1 Identify existing technical issues to address	2/12/03	3/15/03
4.2 Perform thorough evaluation/assessment of issues	3/16/03	4/30/03
4.3 Advise GICC on recommended approach to solve	5/1/03	5/14/03
4.4 Receive and evaluate new issues from GICC	2/12/03	Ongoing

***North Carolina OneMap***  
*“Geographic Data to Serve a Statewide Community”*

**NC OneMap**

*North Carolina Geographic Information Coordinating Council*

***Vision Statement***

*North Carolina aims to have a statewide framework of geographic information operational by the year 2005. That framework will promote the maintenance of economic vitality in our communities, public health and safety, and the quality of life for all North Carolinians. Our citizens will take the availability of comprehensive geographic information for granted.*

*The foundation of the vision is a comprehensive statewide geographic data resource, called **NC OneMap**. Data content, accuracy and scales of the resource will be determined through consensus and in recognition of the critical uses to which it is applied. NC OneMap will serve the basic information requirements for decision-making in the community, statewide, and in support of national priorities. NC OneMap will provide information to support the daily business processes of numerous organizations and their functions. While any user may have a unique view of the resource and it ostensibly may be physically distributed and maintained by a variety of data producers, it will appear to users as consolidated and integrated.*

*NC OneMap will include data that are current and accessible over the **Internet** to all statewide sectors including government agencies, utilities, private firms, schools, universities and individual citizens. Data on the Internet will be free to search, discover, view and acquire. It will be available 24 hours per day and seven days per week.*

***Standards and procedures** will ensure that data contain no unnecessary redundancies or inconsistencies, and that data are adequately and **uniformly documented**. Security measures will be implemented to protect confidential/restricted data and to limit access to any user's esoteric, local data.*

*Innovative **partnerships** and cooperative agreements between municipal, county, regional, state, federal agencies, utilities, and others will be in place to ensure that the geographic information infrastructure endures and continues to meet user needs.*

*This vision will be realized through the leadership of the **North Carolina Geographic Information Coordinating Council** in collaborative endeavors with numerous organizations.*

## ***Characteristics of NC OneMap***

***NC OneMap will include, but not be limited to the following characteristics:***

*NC OneMap data are free to view and download in accordance with federal and state privacy, security, and data confidentiality laws.*

*NC OneMap data are redistributable, without restriction.*

*NC OneMap is accessible 24 hours per day and seven days per week on the Internet and data are searchable using key word and geographic prompts.*

*NC OneMap includes the minimum of 7 framework data themes, including geodetic control, elevation, orthophotography, surface waters, cadastral [land ownership], streets and other transportation features, and jurisdictional boundaries.*

*NC OneMap includes other critical and strategic data, such as land use, land cover, water lines and systems, sanitary sewer lines and system; and demographics, but is not limited to these themes.*

*Although map scale is not specified, NC OneMap data are derived from large map scales and/or high resolution sources that are typical of products traditionally derived by counties and municipalities.*

*Historic and temporal data will be maintained and available.*

*NC OneMap provides data that represent the most current version of a data holding.*

*NC OneMap data are reliably maintained by the data provider organization through partners and formal arrangements.*

*NC OneMap data are reliably funded through partners and cost shares.*

*NC OneMap provides data that are based on accepted and published standards.*

*NC OneMap data are documented using published standards.*

*Policy oversight for NC OneMap is provided by the NC Geographic Information Coordinating Council and administrative oversight is provided by the NC Center for Geographic Information and Analysis.*

### Purpose

The Geographic Information Coordinating Council (GICC) formed the Long-Term Water Supply Working Group as a temporary committee. The purpose of the group was to look at ways to leverage statewide GIS resources (data, software applications, expertise) in dealing with the state's long-term water supply issues. The Working Group was provided with a set of questions to address. The Working Group was asked to report its findings to the GICC at a subsequent meeting.

### Members of the Working Group

Allan Axon, DENR-Information Technology Services  
Jean Crews-Klein, NC Rural Economic Development Center  
Boyd Devane, DENR-Division of Water Quality  
Tom Fransen, DENR-Division of Water Resources  
Diana Hales, CGIA (staff support to GICC)  
Tim Johnson, CGIA (staff support to GICC)  
Lee Mandell, NC League of Municipalities  
Jessica Miles, DENR-Division of Environmental Health, Public Water Supply  
John Morris, DENR-Division of Water Resources  
Ed Regan, NC Association of County Commissioners  
Jeanne Robbins, US Geological Survey  
John Spurrell, NC League of Municipalities

### Questions Addressed

The Long-Term Water Supply Working Group was tasked to answer the following questions raised by Dr. Lee Mandell, representing the NC League of Municipalities, at the August 21 meeting of the GICC.

1. What data layers exist in the Corporate Geographic Database, and other available sources, that usefully relate to water supply issues?
2. What is the quality of these data layers?
3. What layers are missing that would be important for analyzing water supply issues?
4. How can we get the data and the quality needed for a comprehensive statewide database for use in working on water supply issues?
5. How can we productively use this data to work on the long-term problem of water supply, as well as drought?
6. How can we leverage other investments the state is making in GIS-related or water-related projects to address the long-term water supply issue?
7. What structure and process should be used to fund, design, build, manage, use, and maintain a statewide comprehensive water supply GIS?

## Findings

The declining water level of aquifers, drought, and the impacts on surface water represent long-term water issues for state of North Carolina. There are impacts to public health, short-term economic costs, and long-term economic development impacts associated with the water supply issue. The State of North Carolina needs to designate sufficient resources to address this issue. The Working Group considered each of the seven questions in reviewing the current situation with respect to data availability and actions that need to be taken to address the problem.

The North Carolina Department of Environment and Natural Resources (DENR) Division of Water Resources (DWR) is the focal point in state government for many of the water supply issues related to the quantity of supply. The Division is responsible for preparing a North Carolina Water Supply Plan and updating it every five years. The need for this plan resulted from action by the 1989 General Assembly in passage of House Bill 157. General Statute 143-355 now calls for Local Water Supply Plans that ultimately fold into the State Water Supply Plan. Local plans are updated every five years. These plans include: present and projected population, present and projected water use in the service area, present and future water supplies, and other information. More information on these plans can be found on the Division web site at [www.ncwater.org](http://www.ncwater.org).

The Working Group discussed the need for more attention to the issue of water rights as well as the need for better regional cooperation and better financing to ensure satisfactory water resources. In looking at the overall state water resource, DWR intends to build a hydrologic simulation model for each river basin as part of a new river basin water supply planning initiative, pending availability of funds. A water supply plan for the Cape Fear River Basin has been completed and models have been developed for the Roanoke and the Cape Fear River Basins.

The Cape Fear model was developed with \$350,000 from the legislature through the Cape Fear River Assembly. The model uses surface water withdrawals and discharges and accounts for interbasin transfers in its calculations. During the 2002 drought, the model accurately predicted that the towns of Carthage, Vass, and Robbins would be severely affected by drought conditions. DWR plans to work on models for the Catawba and Yadkin-Pee Dee basins next. One goal of DWR is to synchronize its river basin water supply plans with the river basin water quality plans prepared by the DENR Division of Water Quality.

These hydrologic models require high-quality data that is kept current through on-going maintenance. Data for agricultural and industrial water uses are frequently inadequate and underestimate the impact of those uses on the overall water resource. The models would also benefit from data on water use from groundwater sources. Evaluation of the groundwater resource, used as the primary water supply in the Coastal Plain of North Carolina, could be enhanced by additional groundwater monitoring and modeling.

A number of GIS datasets were identified that are critical to evaluation of the water supply issue in the state. These datasets are listed in the attachment to this report. Although, many of

these datasets exist in the Corporate Geographic Database, some are not current with the last update in 1993 in one case and 1998 in several other instances. In other instances, data is reported to the state, but no staffing or database exists to capture the data electronically. Supporting and promoting electronic data capture would allow DENR to take fuller advantage of data that is already being submitted and use it more readily for planning purposes.

The Working Group also identified additional key GIS datasets that do not appear in the Corporate Geographic Database. A list of these datasets also appears in the attachment. Among them, Groundwater Monitoring Wells and Local Water Supply Service Areas can be found as GIS datasets in DWR and can be readily added to the Database.

### Recommendations

The Long-Term Water Supply Working Group makes the following recommendations based on its assessment of the issues and the availability of pertinent data to address the long-term water supply situation in North Carolina.

1. The State of North Carolina should direct sufficient resources to the issue of long-term water supply.
2. The GICC should convene a meeting of stakeholders for long-term water supply. The stakeholder group should be comprehensive statewide in scope. The set of stakeholders should include state and local government, regional councils of government, academia, environmental groups, and other interest groups. The meeting would focus on the water resource and management of the resource. Stakeholders are best positioned to identify questions that need to be answered by both state and local decision makers. These stakeholders should also address the future integration of water supply planning, water quality planning, and other relevant planning activities.
3. The GICC should provide leadership on the long-term water supply issue by emphasizing the need for current, high-quality data by data providers and being proactive in identifying the datasets that are most critical and need the most attention. This involves promoting data content standards and ongoing maintenance of the relevant data. The final step is ensuring that the data becomes a part of the Corporate Geographic Database and is readily accessible through that system (unless restrictions apply).
4. The GICC should complete a data inventory for identification of the relevant pieces of data to address the long-term water supply issue. The inventory would focus on questions of data quality, scale of existing data, and geographic coverage area for the data.
5. The GICC and its membership should prepare cost estimates for developing critical datasets (i.e., spatial location and attribute components) that are not currently in place including level of effort, timeframe, and the cost of ongoing maintenance.

6. The GICC should support development of a statewide monitoring and modeling system to predict water shortage situations to help assess impacts on public health, short term costs, and long-term economic development while time for proactive response remains.
7. The GICC should support provision of financial resources for DENR to develop electronic reporting capabilities and develop incentives for regulated entities to report electronically.
8. The GICC should direct the GIS Technical Advisory Committee to evaluate the ability of GIS software and database management systems to handle “time series” data. This data consists of water use readings, flows, and levels over time and is critical to effective use of GIS as a tool in addressing water supply issues.
9. The GICC should advocate for the following specific enhancements to data that are critical to the long-term water supply issue: (1) additional stream gages, (2) additional groundwater monitoring wells, (3) more data on per capita water use rates, (4) a better means of projecting population growth, and (5) a better means of projecting industrial and agricultural water use.
10. The GICC should inform the Governor, the General Assembly, and the Information Resource Management Commission (per General Statute 143-725) as to needed direction, responsibilities, and funding to support the long-term water supply issue.

**ATTACHMENT  
Status of GIS Datasets**

Relevant GIS Datasets in the Corporate Geographic Database

<b><u>Dataset</u></b>	<b><u>Data Provider</u></b>	<b><u>Currency</u></b>
Ambient Water Quality Monitoring Sites	DENR-Water Quality	2000
Groundwater Recharge/Discharge	DENR-Water Quality	1993
High Quality Waters and Outstanding Resource Water Management Zones	DENR-Water Quality	1999
Hydrogeology (Piedmont and Blue Ridge only)	DENR-Water Quality	1998
Hydrography (1:24,000-scale)	CGIA	Ongoing
NPDES Sites	DENR-Water Quality, Planning	2000
National Wetlands Inventory	CGIA	1999
Potential Wetland Enhancement and Restoration Sites	DENR-Coastal Management	1999
Stream Gaging Stations and Monitoring Wells	USGS	1998
Sanitary Sewer Systems including: Discharges Land Application Areas Pipes Pumping Stations Treatment Plants Type A Service Areas Type B Service Areas Type P Service Areas	NC Rural Economic Development Center	1998
Surface Water Intakes	DENR-Water Quality, Planning	2001
Water Distribution Systems including: Intakes Master Meters Pipes Type A Service Areas Type B Service Areas Type P Service Areas Water Pumping Stations	NC Rural Economic Development Center	1998
Water Supply Watersheds	DENR-Water Quality, Planning	2001
Wetland Types	DENR-Coastal Management	1999

## Key Data Absent from the Corporate Geographic Database

	Name	Comment
1.	Areas Where Storage of Water Could Occur	Includes aquifer storage and recovery areas, abandoned quarries, and other future impoundment sites
2.	Climatological Data	Including weather data collection points and time series data
3.	Depth to Water Table	
4.	Existing Impoundment Sites	Including stage-storage-area curves, operational data, minimum release requirements and capability, etc.
5.	Extent of Aquifers	
6.	Groundwater Monitoring Wells	Currently exists in DENR Division of Water Resources; needs to be placed into the Corporate Geographic Database
7.	Historical Data on Water Withdrawals and Discharges	
8.	Interbasin Transfers	
9.	Interconnectivity Between Water Systems	
10.	Irrigation and Industrial Withdrawal Locations and Usage	
11.	Local Water Supply Service Areas	Including urban and rural counties; currently exists in DENR Division of Water Resources; needs to be placed into the Corporate Geographic Database
12.	Population Growth Projections	
13.	Public Water Supply Intakes and Wells	Industrial and agricultural intakes are needed; key attribute information such as size, flows or water levels at which the intake will have a problem
14.	Salinity Data for Surface and Groundwater	
15.	Terrain/Topography	Existing statewide data from USGS; new, more detailed data being developed through NC Floodplain Mapping Program