

# **Orthophotography and Elevation Geodatabase Services to Support the IndianaMap and The National Map**

Agreement Number: 05HQAG0132

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## **NSDI Cooperative Agreements Program Geographic Information Integration and Analysis Final Project Report**

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Submitted by the  
Indiana Geographic Information Council, Inc.  
140 North Senate Avenue, Room 306  
Indianapolis, IN 46204

November 30, 2006



**Cooperative Agreement Program Number:** Agreement Number: 05HQAG0132

**Project title:** Orthophotography and Elevation Geodatabase Services to Support the IndianaMap and The National Map

**Final Report**

**Project start and end dates:** September 1, 2005 – August 31, 2006

**Applicant organization:** Indiana Geographic Information Council, Inc.

**Organization Internet address:** [www.igic.org](http://www.igic.org)

Other key contact personnel  
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<p><b>Key project contact:</b>  <i>Jill Saligoe-Simmel, Ph.D.</i>          IGIC Executive Director          317-234-2924  <a href="mailto:jsaligoe@igic.org">jsaligoe@igic.org</a></p>	<p><b>Key technical contact:</b>  <i>Ms. Anna Radue</i>          Indiana University – UITS          812-855-6865  <a href="mailto:aradue@indiana.edu">aradue@indiana.edu</a></p>
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**2005 IGIC Board - Collaborating Organizations:**

State Government	<ul style="list-style-type: none"> <li>• Indiana Office of Technology</li> <li>• Indiana State Department of Health</li> </ul>
County Government	<ul style="list-style-type: none"> <li>• Association of Indiana Counties</li> <li>• Allen County, Indiana</li> </ul>
Municipal Government	<ul style="list-style-type: none"> <li>• Indiana Association of Cities and Towns</li> <li>• City of Richmond/Wayne County Government</li> </ul>
Federal Government	<ul style="list-style-type: none"> <li>• U.S. Geological Survey</li> <li>• Military Department of Indiana</li> </ul>
Education	<ul style="list-style-type: none"> <li>• Indiana University</li> <li>• Indiana University Purdue University Indianapolis</li> <li>• University Library</li> </ul>
Regional GIS Consortia	<ul style="list-style-type: none"> <li>• Northwest Indiana GIS Forum</li> <li>• Indianapolis Mapping and Geographic Infrastructure System</li> </ul>
Regional Planning Commissions	<ul style="list-style-type: none"> <li>• Indiana 15 Regional Planning Commission</li> </ul>
GIS Service Providers	<ul style="list-style-type: none"> <li>• The Schneider Corporation</li> <li>• EarthData International, LLC</li> </ul>
Private Industry	<ul style="list-style-type: none"> <li>• Zickler Associates, LLC</li> </ul>

	<ul style="list-style-type: none"> <li>• Krieg DeVault, LLP</li> </ul>
Not-For-Profit	<ul style="list-style-type: none"> <li>• The Nature Conservancy - Indiana Chapter</li> <li>• Hoosier Heartland/Indiana Association of Soil and Water Conservation Districts, Inc.</li> </ul>
Utilities	<ul style="list-style-type: none"> <li>• Indianapolis Power and Light</li> <li>• City of Lafayette</li> </ul>
Critical Infrastructure	<ul style="list-style-type: none"> <li>• City of Elkhart</li> <li>• Cinergy</li> </ul>
Surveyors	<ul style="list-style-type: none"> <li>• Indiana County Surveyors' Association</li> <li>• Indiana Society of Professional Land Surveyors</li> </ul>
Members At Large	<ul style="list-style-type: none"> <li>• Indiana Department of Environmental Management</li> <li>• Hamilton County</li> </ul>

**USGS Mapping State Liaison:**

David S. Nail  
 United States Geological Survey  
 USGS Geospatial Liaison for Indiana  
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**Data themes:** Orthophotography, Digital Elevation Model

**Project Summary**

**a. Describe the project; its tasks, highlights, challenges, and accomplishments. What are your approaches to overcoming impediments to participation in The National Map? Based on your experience what would you recommend for implementation and development for project success (technical, institutional and organizational)?**

The State of Indiana has a goal to develop a seamless, statewide, multi-resolution, integrated mapping system, referred to herein as the IndianaMap ([www.indianamap.org](http://www.indianamap.org)). IndianaMap is an initiative of the Indiana Geographic Information Council, Inc. (IGIC), Indiana's statewide GIS coordination council, and is our contribution to The National Map.

**Executive Summary:** *With FGDC CAP funding, IGIC and Indiana University UITS will develop the infrastructure needed to host interactive web and database services for Indiana's statewide 2005 high-resolution orthophotography and digital elevation models. These sustainable services will make the 2005 data sets available to the IndianaMap, The National Map, Geospatial One-Stop, and the NSDI Clearinghouse nodes.*

With FGDC CAP Grant support, IGIC and its partners have worked with the USGS to make base geospatial information widely available to meet government, business and citizen needs. We have successfully implemented Geodatabase and web map services, and download services, for the IndianaMap 2005 data sets.

The services are viewable at:

<http://www.indiana.edu/~gisdata/05orthos.html>

**b. Describe the data themes provided through The National Map. Are there any use restrictions? Are your map services and data documentation (metadata) registered in The National Map and Geospatial One-Stop? What is the status of maintaining, updating and serving themes of data that are included in The National Map? Based on your perspective and project experience describe user requirements for a national level spatial data infrastructure.**

2005 statewide orthophotography and elevation Geodatabase services and web map services were developed and are registered in The National Map and Geospatial One Stop. IGIC continues to pursue maintenance funding for the data themes, as well as maintenance funding for support of the web services for distribution. IGIC's partner at Indiana University has secured additional funding for server maintenance from the Indiana Department of Homeland Security.

**c. Describe the operational capability to maintain and update data through periodic updates of data made available through The National Map.**

Indiana University – University Information Technology Services has committed to long-term support for data services. We do not currently have update plans for the data.

**d. Discuss the issues, difficulties, and challenges (both technical, institutional and organizational) that were encountered. How the CAP program can be improved.**

The project has numerous technical obstacles and lessons learned regarding management and distribution of extremely large data sets (over 7TB of data). These lessons learned are documented in PowerPoint presentations online at:

- 2005 Statewide Orthophotography Project  
<http://www.in.gov/igic/class/pres2006/orthos.htm>
- Archiving and Distributing Indiana's 2005 Orthophotography via the Indiana Spatial Data Portal  
<http://www.in.gov/igic/class/pres2006/isdp.htm>
- Managing Indiana's 2005 Orthophotography in a Geodatabase  
<http://www.in.gov/igic/class/pres2006/orthogeodatabase.htm>

The CAP program worked very well to support this project.

**e. Describe your relationship and issues with the USGS. Has a formal ongoing agreement been established to provide data and web services through The National Map? Describe your plans for follow-on activities. What are the terms and mutual commitment of resources? Please attach copy of written agreement if available.**

IGIC and USGS have a formal ongoing relationship through an executed Memorandum of Cooperation for the IndianaMap and The National Map. (unsigned copy attached)

**MEMORANDUM OF UNDERSTANDING**  
**BETWEEN THE**  
**U.S. GEOLOGICAL SURVEY**  
**AND**  
**THE INDIANA GEOGRAPHIC INFORMATION COUNCIL**  
**FOR**  
**COORDINATION AND COOPERATION**  
**PERTAINING TO**  
**IndianaMap**  
**and**  
***The National Map***

**Memorandum Of Understanding  
Between  
The U.S. Geological Survey  
and  
The Indiana Geographic Information Council  
for  
Coordination and Cooperation  
Pertaining to  
IndianaMap  
and  
*The National Map***

**I. PURPOSE**

The purpose of this Memorandum of Understanding (MOU) is to establish a framework for coordination and cooperation between the U.S. Geological Survey (USGS) and the Indiana Geographic Information Council (IGIC) (hereinafter also referred to as “Parties” or “Party”) that will facilitate the conduct of cooperative activities in areas of mutual interest in support of IndianaMap and *The National Map*.

**II. BACKGROUND**

A core mission of the USGS is to meet the Nation’s needs for current base geographic data and maps. Through partnerships with federal, state, and local governments and the private sector, the USGS is committed to providing the Nation with access to current, accurate, and nationally consistent topographic maps and geospatial and remotely sensed data and information to help informed decision making by resource managers and the public. This synthesis of information, products, and capabilities, *The National Map*, will be a seamless, continuously maintained set of geographic base information that will serve as a foundation for integrating, sharing, and using other data easily and consistently. This MOU supports the mission of the USGS through collaborative efforts to establish partnerships necessary for the development, maintenance, dissemination, and use of *The National Map*.

The Indiana Geographic Information Council (IGIC) provides leadership, technical expertise and policy for the development, use, dissemination, promotion, and sharing of geographic information in the state of Indiana. IGIC, through IndianaMap, will enable state government to more effectively and efficiently serve the citizens, businesses and other governments of the state in areas of public protection, homeland security, economic development, environmental protection, and transportation.

IndianaMap is Indiana's statewide geographic information (GI) infrastructure and contribution to the National Map. Through the Indiana Geographic Information Council (IGIC), a strong foundation of coordination exists along side an unprecedented spirit of collaboration. IGIC is a representative council of over 12 different sectors that utilize GIS, including counties, cities and towns, state, federal agencies, utilities and private industry. Indiana is a leading I-Team state, recipient of the 2002 ESRI Special Achievement Award, a HAZUS pilot area, NSGIC member state, FGDC cooperating partner, contains parts of five NIMA "133 Urban Areas," and is one of eight states in the NGA Center for Best Practices.

IGIC is working closely with Indiana's homeland security authority, the Counter-Terrorism and Security Council (C-TASC) to develop a strategy to implement the IndianaMap to foster the integration of GI technology in state and local government emergency operations. Indiana was the only state to identify an I-Team as a statewide priority in the President's Homeland Security Report. In addition to homeland security, economic development and land and water resources are driving issues for statewide GIS in Indiana. For each of these driving issues, strong champions back the IndianaMap vision with full recognition of the cross-disciplinary role GIS plays to improve decision making – GIS saves lives and saves money.

The IndianaMap vision embraces the role of geographic information, technologies and innovative institutional agreements to enable improved government service to citizens, and an enhanced ability for citizens to stay informed and to engage in the democratic process. To achieve this vision, IndianaMap encompasses a number of aspects:

- 1) integration now of the best available data, focusing on local sources, with state and federal,
- 2) a distribution mechanism that provides access to data and metadata (i.e., clearinghouse) (IGIC currently operates an NSDI metadata catalog node through the IUPUI University Library),
- 3) a web portal with tiered access for decision-makers and the public with non-technical interface to viewing geospatial information,
- 4) planning through the I-Team process for 100% coverage of all seven framework layers, with variable resolution (minimum 1:24:000), within 3-5 years, and
- 5) education and outreach on the relevancy, importance and capabilities offered by the IndianaMap.



IndianaMap will provide mutual benefit to each level of government that in turn share in its development and maintenance. IndianaMap will initiate a locally-based, distributed statewide GI program of mutual support to county emergency operation centers; facilitate local, state and federal response to human (terrorism) and natural disasters; and, establish a foundation to support field operations and public information. It will:

- 1) establish the interoperable framework of technologies necessary to support discovery, access, integration, and application of spatial information from the local to state level
- 2) research and prototype methods to integrate GI from cooperating jurisdictions in Indiana (semantic interoperability)
- 3) establish a policy forum to identify and address GI policy issues for government services, emergency / disaster management, and citizen democracy.

### **III. AUTHORITIES**

This MOU is entered into by the USGS and the IGIC under Public Law 99-591 that bestows permanent authority to the USGS to “prosecute projects in cooperation with other agencies, Federal, State, and private” (43 U.S.C. 36c). When applicable, any further agreements entered into between USGS and IGIC that implement specific activities under this MOU will be pursuant to the authorities and policies governing such agreements, in accordance with section VI of this MOU.

### **IV. SCOPE**

This MOU serves as an umbrella agreement that sets forth the general terms and conditions under which USGS and IGIC will coordinate and cooperate in activities involving *The National Map*. The activities covered by this MOU will be of mutual interest and benefit within, but not limited to, the following areas:

1. Data and database development
2. Data and database maintenance
3. Data dissemination and distribution
4. Exchange of geospatial and remotely sensed information, data and products
5. Feature serving and generalization
6. Outreach and education
7. Research and applications
8. Sharing technical information and expertise

9. Standards development
10. Web mapping services and applications
11. Workshops, training, and technology transfer

## **V. RESPONSIBILITIES**

The specific relationships and responsibilities of the Parties with regard to the cooperative activities under this umbrella MOU shall be defined in separate agreements, which shall become attachments to this MOU, in accordance with section VI.

Both the partner and USGS will continue to maintain open communication and coordination to facilitate a cooperative working environment to support current agency missions as they relate to *The National Map*. The partner and USGS will provide leadership and program oversight for the cooperative activities conducted under this MOU.

## **VI. IMPLEMENTATION**

Specific activities to be conducted under this MOU and the method of their implementation will be determined on a case-by-case basis by USGS and IGIC, in consideration of the merit, existing commitments, projected schedules, available funding and personnel resources, and other relevant factors.

As appropriate, implementation of specific activities under this MOU will be outlined in separate agreements, such as, but not limited to, Interagency, Joint Funding, Innovative Partnership, Workshare, or Data Sharing Agreements, which will be coordinated through mutual agreement between the Parties and independently authorized by appropriate statutory or other authority. As appropriate, the agreements implementing specific activities shall be made attachments to this MOU. Each agreement shall describe the project or activity agreed upon in regard to its objectives, scope, responsibilities of the Parties, project schedule, deliverables, and funding.

## **VII. FINANCIAL ARRANGEMENTS**

This MOU defines the general terms upon which the USGS and IGIC will cooperate. Performance under the terms of this MOU is subject to the availability of appropriated funds and personnel resources through each Party's respective funding procedures. This MOU is neither a fiscal nor a funds obligation document and, as such, does not constitute a financial commitment on the part of either Party. Any endeavor or transfer of anything of value involving reimbursement or contribution of funds between USGS and IGIC will be handled in accordance with applicable laws, regulations, and procedures including those

for Government procurement and printing. Any such endeavors will be outlined in separate agreements, including work plans or statements of work, which shall be made in writing and shall be independently authorized by appropriate statutory authority. This MOU does not provide such authority. Specifically, this MOU does not establish authority for noncompetitive award of any contract or other agreement. Any contract or agreement for training or other services must fully comply with all applicable requirements for competition.

### **VIII. PUBLICATIONS AND RELEASE OF INFORMATION**

When deemed appropriate, the activities conducted, or scientific data developed, under this MOU will be documented and made available to the general scientific community through publication in appropriate journals or other established channels as soon as practicable and consistent with good scientific practice. Publications documenting cooperative efforts may be prepared by either Party, or jointly, provided that both Parties have an opportunity to review manuscripts prior to publication. In the event such reports or publications are copyrighted, each Party shall have a royalty-free right under the copyright to reproduce, distribute, and use such copyrighted work for their own purposes.

Releases of general information to the public may be made by the appropriate Party with respect to its own portion of the project/cooperation as desired. The Parties will seek to consult with each other prior to any such releases that reference the other Party's participation, consistent with the Parties' respective laws and policies.

The Parties agree that sharing credit is mutually beneficial, and will assure that appropriate citation and attribution, including the use of official agency visual identifiers, is given for work performed under this MOU. Specific uses of a Party's logo or seal, however, will require advance approval by that Party.

### **IX. PARTICIPATION IN SIMILAR ACTIVITIES**

This MOU in no way restricts any of the Parties from participating separately in similar activities with other public or private agencies, organizations, and individuals, including other activities between USGS and IGIC.

### **X. EFFECTIVE DATE, REVIEW, MODIFICATION, AND TERMINATION**

This MOU shall take effect upon the date of the last signature and shall remain in effect for a period of five (5) years. This MOU may be reviewed annually or at the request of either party. This MOU may be modified at any time upon joint

approval. This MOU may be terminated at any time by mutual written agreement of the Parties, or by either Party upon 90 days written notice to the other Party.

**XI. POINTS OF CONTACT**

The following individuals will be the points of contact for this MOU:

	<u>U.S. Geological Survey</u>	Indiana Geographic Information Council
Name:	Charles Hickman	Dr. Jill Sailgoe-Simmel
Title:	Geographer	IGIC President
Address:	6480 Doubletree Avenue Columbus, Ohio 43229	IndianaMap Crisis and Response Center 101 W. Ohio Street, Suite 800 Indianapolis, Indiana 46204-1974
Phone:	(614) 430-7768	(317) 233-6009
FAX:	(614) 430-7777	(317) 233-9000
Email:	chickman@usgs.gov	jsaligoe@iupui.edu

**XII. APPROVALS**

**U.S. GEOLOGICAL SURVEY**

**INDIANA GEOGRAPHIC  
INFORMATION COUNCIL**

\_\_\_\_\_  
**PAM MALAM  
EASTERN REGION GEOGRAPHER**

\_\_\_\_\_  
**JILL SALIGOE-SIMMEL, Ph.D.  
IGIC PRESIDENT**

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**Date**

\_\_\_\_\_  
**Date**