

# **Session 33: Future of GIS**

## **Minnesota GIS 2006, 2007 and Beyond**

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**David Arbeit,**  
**Office of Geographic and Demographic Analysis**

**John Lally**  
**Office of Enterprise Technology**

**Fred Logman**  
**Land Management Information Center**

**Robert Maki**  
**Department of Natural Resources**

**Jim Dickerson**  
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Presented at the GIS/LIS Consortium Conference  
October 6, 2006



# **On Common Ground: Towards a Statewide Geospatial Infrastructure**

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# On Common Ground: Shared Geospatial Services Inventory

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## Session Overview

- State enterprise technology vision and strategy
- Strategic planning for geospatial technology
- The geospatial technology architecture concept
- New! Shared services survey and catalog
- Available Now! WMS Image Shared Service



# **On Common Ground: Towards a Statewide Geospatial Infrastructure**

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## **The Minnesota Enterprise Information Management Master Plan**

John Lally  
Director of Strategic Planning  
Office of Enterprise Technology



# The Role of OET

- Enterprise-level planning and leadership
- Business, Information and Technical Architecture
- Portfolio Management – assets, applications, projects
- Oversight
- Policy, practices and standards
- Enterprise services
- Security
- EGS foundations

# Who *is* “the enterprise”

- State agencies, boards and commissions, of course  
but also . . .
- Local government (counties, cities & towns, STDs)
- Higher education
- K-12 education
- Business partners and vendors

# What defines “the enterprise”

Responsibilities, authority and relationships differ,  
but we all share

- Public purpose
- Public funding
- Common customers and stakeholders
- Commitment to serving the best interests of our citizens

# Change Drivers

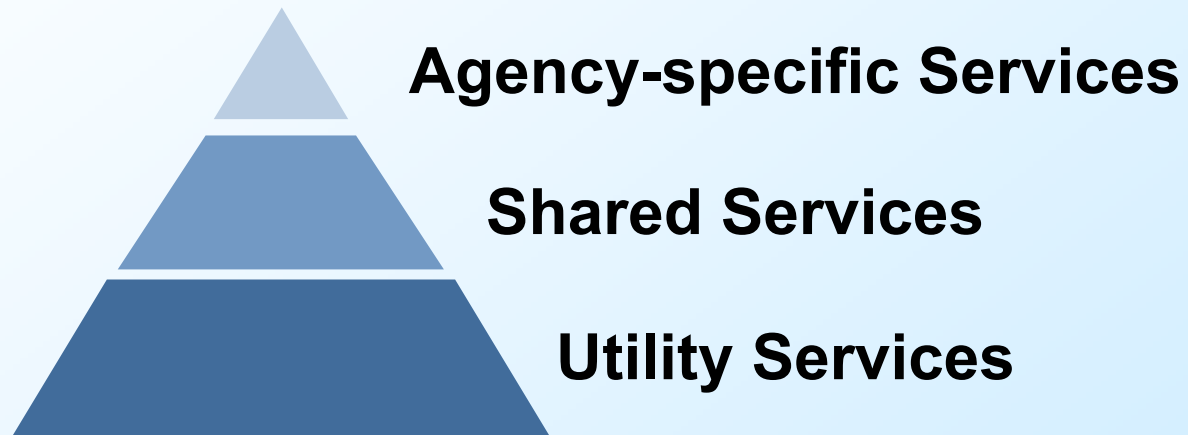
- Our customers and their expectations
- Demand for on-line services
- Inefficient workflow and outdated business processes
- Economic considerations
- **Δ** in information infrastructure and technology
- Our workforce
- Cyber security considerations



# Guiding principles of enterprise IM

- An enterprise view
- Future orientation
- Federated model
- Collaboration
- Shared responsibility for stewardship of public resources
  - budget, data, technology
- A commitment to customer service
- An enterprise architecture
- Business case discipline
- Learning from others

# Our Blueprint: The Federated Governance Model



***The federated enterprise model  
balances three ways of managing IT  
business for the state***

# Purpose of master planning

- To guide policy and investments through:
  - Coordination
  - Cooperation
  - Convergence
- Lay the foundation for effective management of information – data, technology, resources
- Provide the context for transformation of state government programs
- Improve performance of IT-supported business activities

# Strategy Study Teams

- 1: Business Process Redesign
- 2: Shared Services & Agency centers of excellence\*
- 3: Consolidation of utility functions\*
- 4: Electronic Government Services
- 5: Funding Mechanisms
- 6: IT Portfolio Management\*
- 7: Integration of financial, payroll and purchasing
- 8: Information Security
- 9: Comprehensive Telecommunication Planning
- 11: Workforce
- 12: Data Practices

\*LMIC involvement

# Service Types

## Agency-Specific Services

Applications and services of a highly specialized nature for which there are no opportunities to add value through central management.

## Shared Service

Services and applications required by more than one enterprise partner, and managed by one entity to improve service and efficiency.

## Utility Services

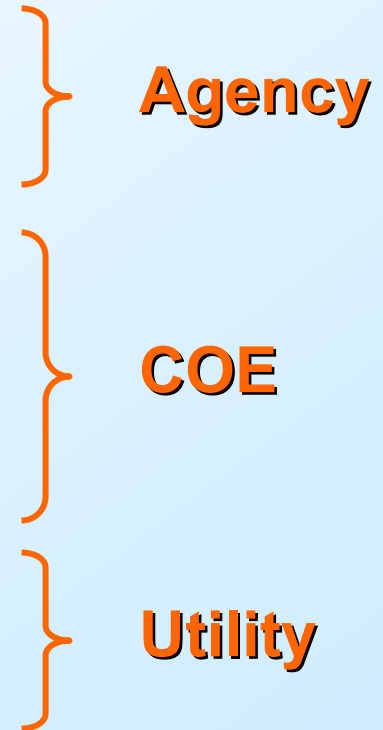
Services and applications common to all enterprise partners, and managed by one entity for all agencies and jurisdictions to improve service and/or reduce costs.

# Why is OET interested in GIS?

- Investment in data and applications is significant and growing
- Opportunities for sharing data and applications are obvious
- Value to citizens and government has been demonstrated in many areas of interest – economic development and analysis, land use, public safety, environment, services distribution, tax administration, benefit management and many more
- Need for standards is apparent

# How *might* Shared Services work for GIS?

4. Specialized applications and thematic data at individual agencies
3. Common applications and tools
2. Baseline map info, standards and general data
1. Infrastructure (and hosting?) at OET



# **On Common Ground: Towards a Statewide Geospatial Infrastructure**

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## **Strategic Planning for Geospatial Technology**

Fred Logman  
Strategic Planning Project Coordinator  
Land Management Information Center





# Strategic Planning for Geospatial Technology

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*Building on decades of informal collaboration, Minnesota's GIS community now needs to collaborate on a strategy that will bring the benefits of GIS to the entire state.*

- Governor's Council on Geographic Information Strategic Plan (2004)
- National States Geographic Information Council and Federal Geographic Data Committee [50 States Initiative](#) (2006)
- A new strategic plan to build common ground



# Governor's Council on Geographic Information

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## Mission

*To provide leadership and direction in the development, management and use of geographic information in Minnesota.*

- Strategic Plan:  
*A Foundation for Coordinated GIS* (2004)
- Conceptual Architecture for Enterprise GIS (2005)
- Second Generation Strategic Plan (2006/2007)

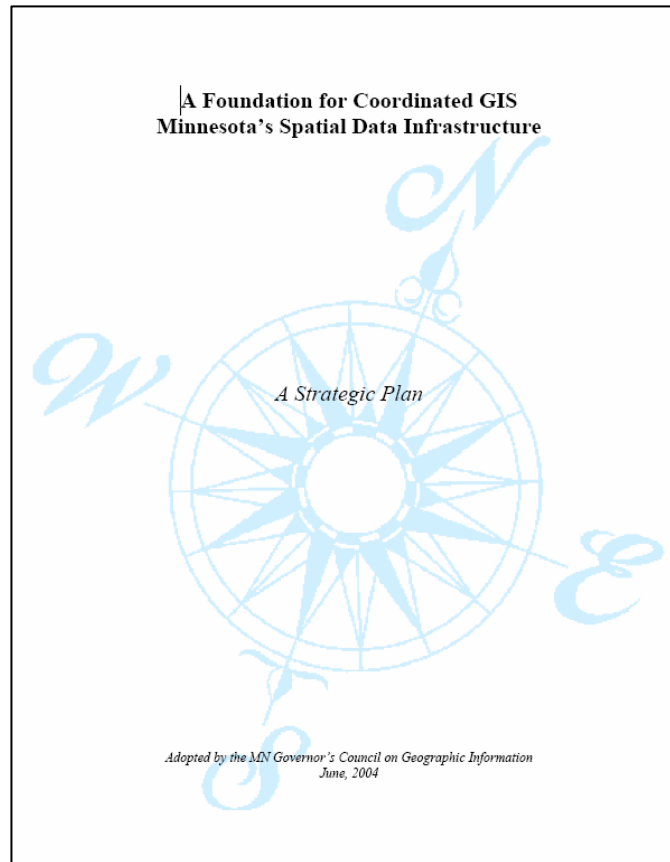
[www.gis.state.mn.us](http://www.gis.state.mn.us)



# A Foundation for Coordinated GIS Minnesota's Spatial Data Infrastructure

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*Supports the National Spatial Data Infrastructure*

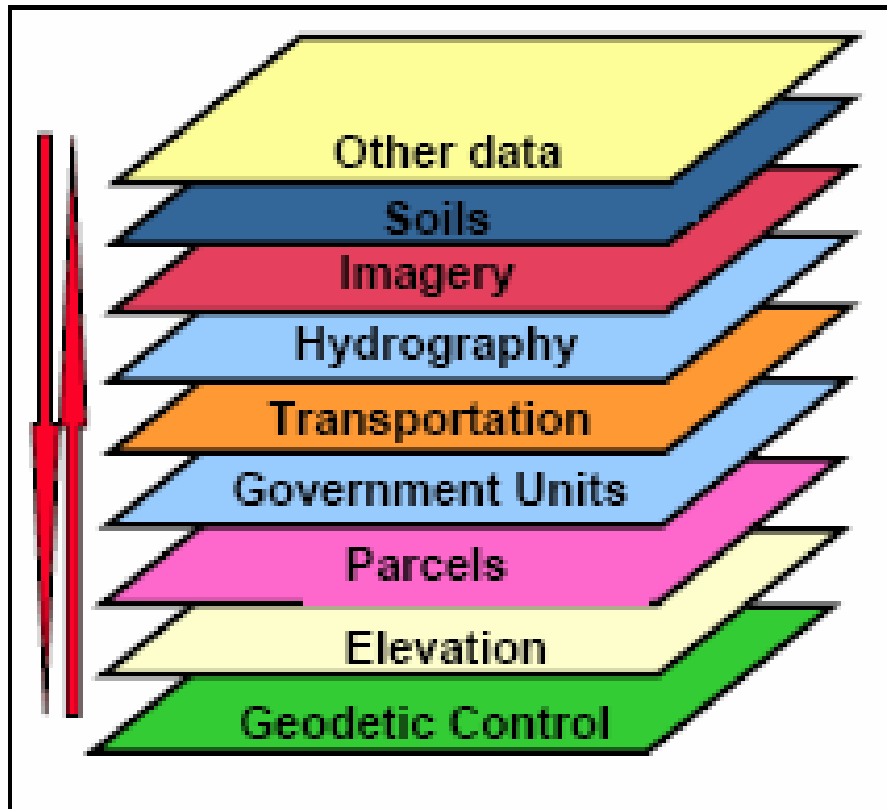


# A Foundation for Coordinated GIS

## Minnesota's Spatial Data Infrastructure

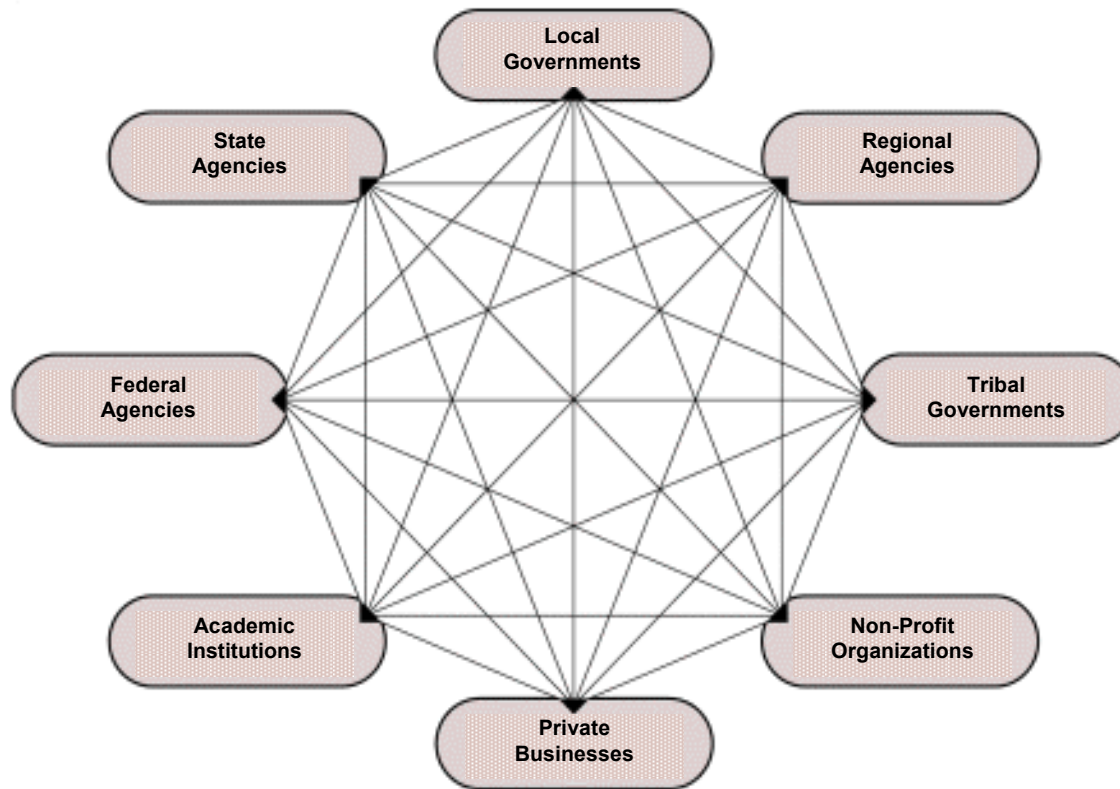
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*Initially focused on foundation data*



# A Foundation for Coordinated GIS Minnesota's Spatial Data Infrastructure

*Inclusive of whole Minnesota geospatial community*



# A Foundation for Coordinated GIS Minnesota's Spatial Data Infrastructure

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## Organizational Issues

- Explicit authority and responsibility for overseeing the development and implementation of the MSDI should be assigned to a state cabinet level agency
- Adequate resources should be provided to support the sustained development and implementation of the MSDI, including necessary funding to sustain the coordination effort
- GIS implementation by state agencies should be coordinated within guidelines established for the state's IT architecture framework and consistent with policies of the state's Office of Technology and Department of Finance

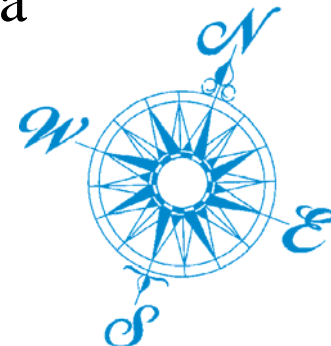


# A Foundation for Coordinated GIS Minnesota's Spatial Data Infrastructure

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## Organizational Issues

- GIS implementation by state, local and regional agencies should be coordinated with similar efforts by state and federal agencies as they relate to the MSDI
- Emphasis should be placed on identifying emerging opportunities for effectively using GIS, identifying opportunities for joint projects and leveraging private and federal resources not otherwise available to Minnesota
- The continued development of the MN Geographic Data Clearinghouse should be supported emphasizing e-government solutions for distributing geospatial data



# Working Towards a Nationwide Infrastructure

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*Federal agencies and state coordinators continue to work towards developing a common National Spatial Data Infrastructure.*

- **FGDC Future Directions – 50 States Initiative**
  - Program emphasizing strategic and business planning
  - Target implementation grants
    - Minnesota among 11 states to receive planning grant
- **National States Geographic Information Council**
  - Worked with FGDC to promote 50 States Initiative
  - Identified criteria, characteristics and activities for success





# National States Geographic Information Council Coordination Criteria

**NSGIC**



**Special points of interest:**

March 6, 2006

- The Fifty States Initiative offers a new "foundation" for the National Spatial Data Infrastructure (NSDI)
- A work group of Federal, State and Local government members created the action plan
- The initiative stresses the wise use of existing funding mechanisms
- In the absence of these recommended coordination criteria, government agencies will waste money and duplicate effort

NATIONAL STATES GEOGRAPHIC INFORMATION COUNCIL

**FGDC Future Directions—Fifty States\* Initiative**

\*Includes other equivalent entities such as the District of Columbia, Puerto Rico, and the Insular Areas

**FGDC and NSGIC Begin Implementing the Fifty States Initiative**

The Fifty States Initiative outlines a fundamental change in the way all governments should work together to build the National Spatial Data Infrastructure (NSDI). Instead of the current "build it and they will come" philosophy that relies on random grants and partnerships, a new program emphasizing strategic and business planning with specifically targeted implementation grants, performance measures and incentives will be employed.

This initiative is one of twelve planning activities that were begun as part of the Federal Geographic Data Committee's (FGDC) *Future Directions* strategic planning process. For further details on all of the Future Directions projects, see the FGDC web page at the URL listed below.

The Action Plan for the Fifty States Initiative was approved for implementation by the NSGIC Board of Directors and by the Federal Geographic Data Committee. It identifies

the criteria, characteristics and activities that will lead to effective coordination councils in the future. In addition, it lays out implementation steps that the Federal government and other entities need to undertake to establish more formal statewide coordination councils that will take an active roll in completing the NSDI. In this document, the term "statewide" applies to the states, the District of Columbia, Puerto Rico, and all of the Insular Areas.

<http://www.fgdc.gov/policyandplanning/future-directions/index.html>

**NSGIC's Coordination Criteria**

NSGIC published the following nine criteria that its members believe are essential for effective statewide coordination of geospatial information technologies.

1. **A full-time, paid coordinator position is designated and has the authority to implement the state's business and strategic plans.**

Explanation: Many states have created one or more full time positions to oversee coordination of geospatial technologies. These individuals are responsible for implementing the state's business plan and are typically assigned to the Governor's Office, Chief Information Officer, Chief Information Officer, Budget Department, or the Technology Office. In

some states, these duties fall on a volunteer and in others, no one is willing to assume this role. Having a full-time paid individual is advantageous and a significant portion of their energy is channeled into on-going statewide coordination council activities.

2. **A clearly defined authority exists for statewide coordination of geospatial information technologies and data production.**

Explanation: A responsible individual or group has been designated in many states through executive orders, budget authorizations, or legislation. These individuals, or groups, are usually better

(Continued on page 2)

**Inside this issue:**

Coordination Criteria (cont'd)	2
New Strategic & Business Plan Templates Available	2
Required Characteristics	3
Measures of Success	3
Implementing the Vision	4
About NSGIC	4
Contact Information	4

[www.nsgic.org](http://www.nsgic.org)

*A 2005 study revealed that Minnesota had recently regressed and was lacking some important criteria for success!*



# National States Geographic Information Council

## 9 Coordination Criteria

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1. A full-time, paid coordinator position is designated and has authority to implement the state's business and strategic plans

26 of 48 states – Not Minnesota

2. A clearly defined authority exists for statewide coordination of geospatial information technologies and data production

20 of 48 states – Not Minnesota

3. The statewide coordination office has a formal relationship with the State's CIO

28 of 48 states – Not Minnesota



# National States Geographic Information Council

## 9 Coordination Criteria

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4. A Champion (political or executive decision maker) is aware and involved in the process of coordination

16 of 48 states – Not Minnesota

5. Responsibilities for developing the NSDI and State Clearinghouse are assigned

29 of 48 states – Includes Minnesota

6. The ability exists to work and coordinate with local governments, academia, and the private sector

41 of 48 states – Includes Minnesota



# National States Geographic Information Council

## 9 Coordination Criteria

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7. Sustainable funding sources exist to meet projected needs

12 of 48 states – Not Minnesota

8. Coordinators have the authority to enter into contracts and become capable of receiving and expending funds

20 of 48 states – Includes Minnesota

9. The Federal government works through the statewide coordinating authority

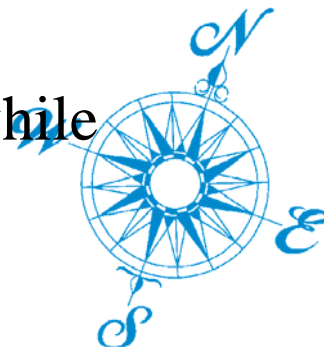
27 of 48 states – Includes Minnesota



# Current Strategic Planning Project

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- Will produce a second generation strategic plan
- Focuses on State agencies while recognizing the larger Minnesota geospatial community
- Mainly looking at organizational and operational issues
- Working toward a Web based shared services environment
  - Geospatial center(s) of excellence
  - Conceptual Architecture
  - Shared Services Survey
  - Implementing shared services
- Recognizes the need to optimize available resources while increasing productivity and availability



# Strategic Planning Project Process

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- Governor's Council on Geographic Information Strategic Planning Committee serves as steering committee
- State agency staff interviews help focus effort
- Research coordination strategies in other states
- Facilitate strategic planning workshop with stakeholders
  - Early adopters
  - Late adopters
  - Emerging users
- Strategic planning workshop will identify:
  - Issues faced by agencies
  - Existing and anticipated needs
  - Areas for collaboration
  - Key recommendations



# Strategic Planning Project Products

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- Strategic Plan
  - Organizational recommendations
  - Governance components
  - Resource optimization opportunities
  - Relationship to traditional IT
  - Components of Web based shared services environment
  - On-going Shared Services Catalog
- Business Plan
  - Organizational and fiscal recommendations – Legislature
- Completed no later than March 2007



# **On Common Ground: Towards a Statewide Geospatial Infrastructure**

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## **Minnesota State GIS Enterprise Architecture**

Robert Maki  
Chief Information Officer  
Department of Natural Resources

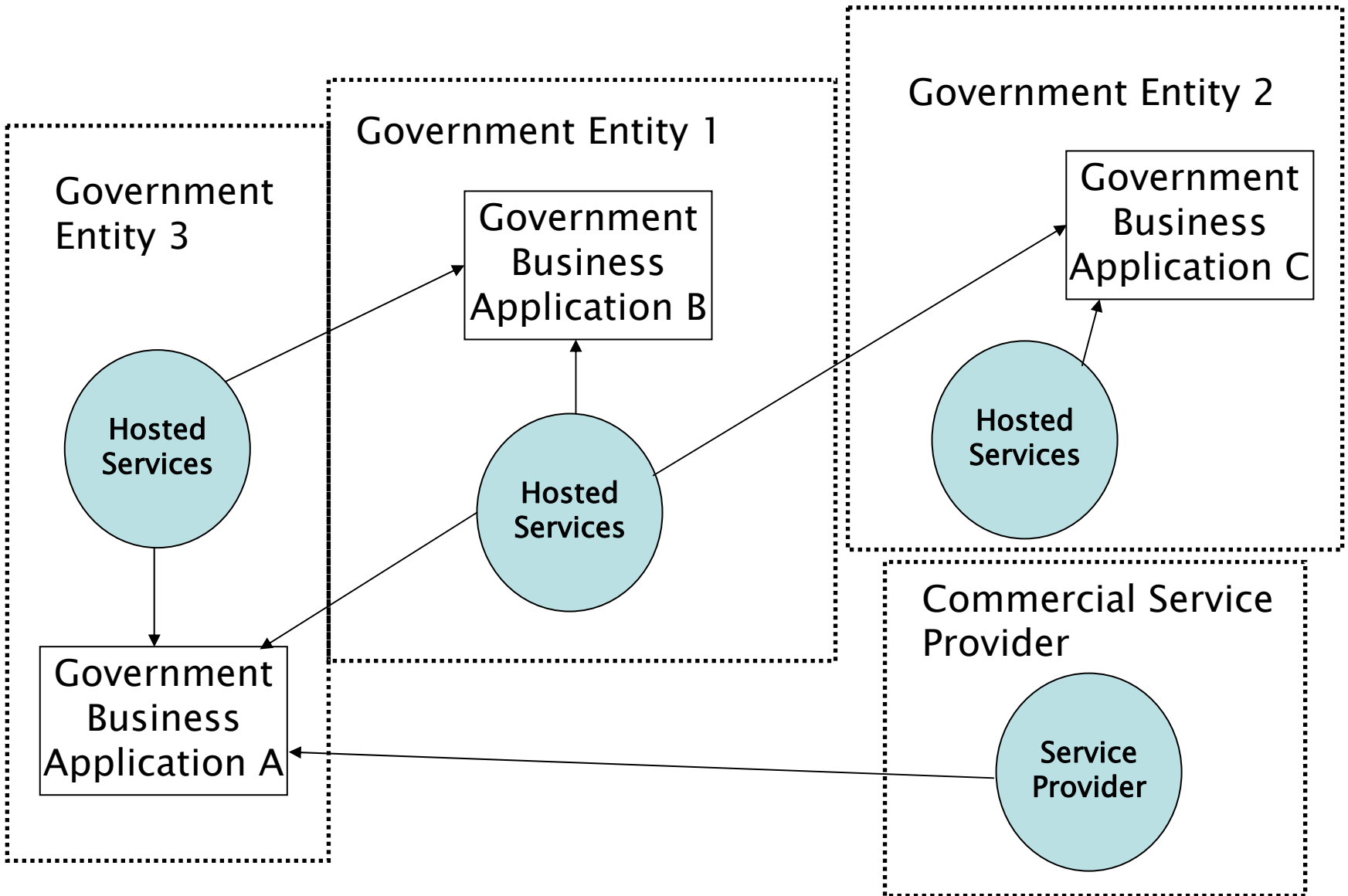
Governor's Council on Geographic Information  
Geospatial Architecture Committee





# Shared Services Concept

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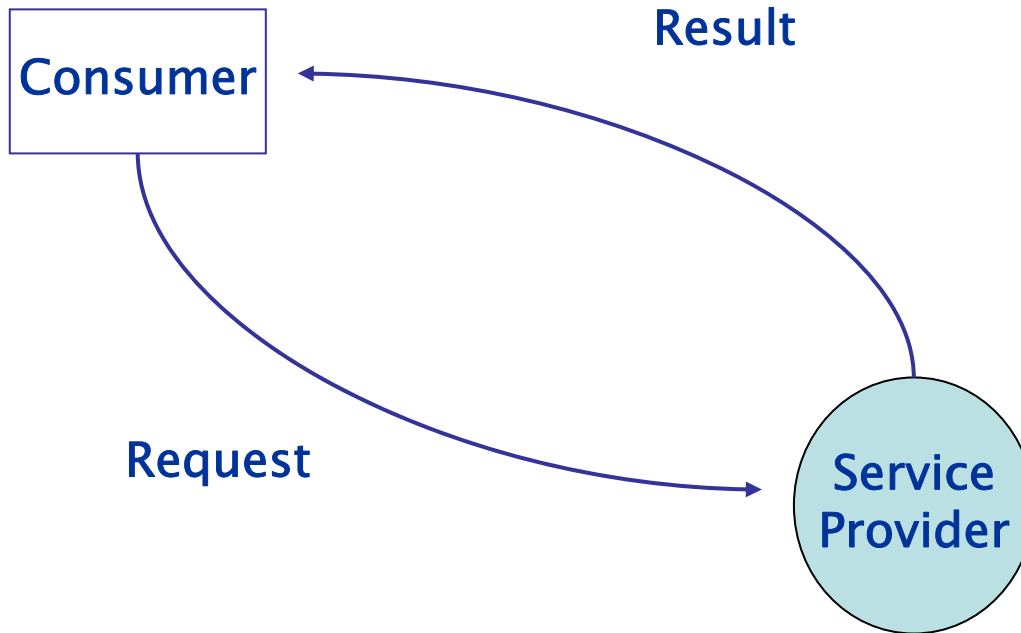
# Services and Consumers

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GIS Desktop User

Government Business Application User

Public Web Application User



Any internet-based service capable of accepting a request and delivering a result in an *agreed upon format*

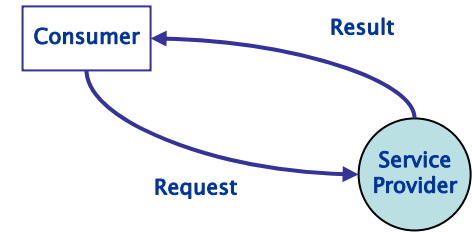
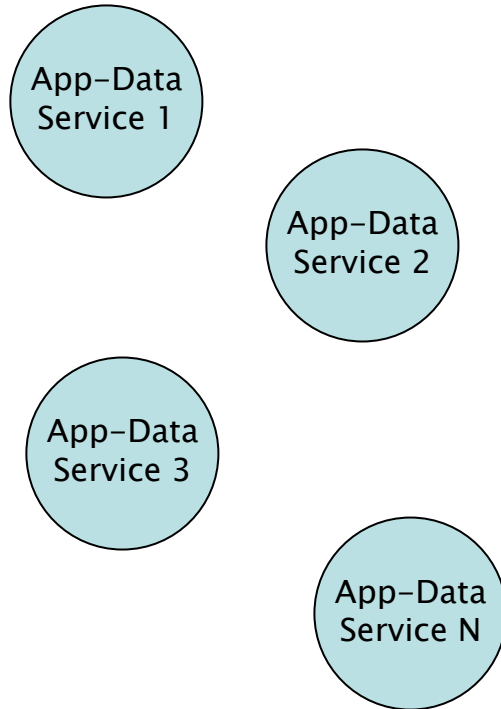
# Example Services

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<i>Name</i>	<i>Request Description</i>	<i>Result</i>
Image	Area of Interest	Image file suitable for viewing
Geocoding	Street Address	Coordinate Location
Lake Buffer	Lake ID Buffer Distance	Area feature (in GML format)
Floodplain Test	Coordinate Location	0 - Not in Floodplain 1 - In Floodplain
Projection Service	GIS data file Input Projection Output Projection	Reprojected data file

# Application–Data Services

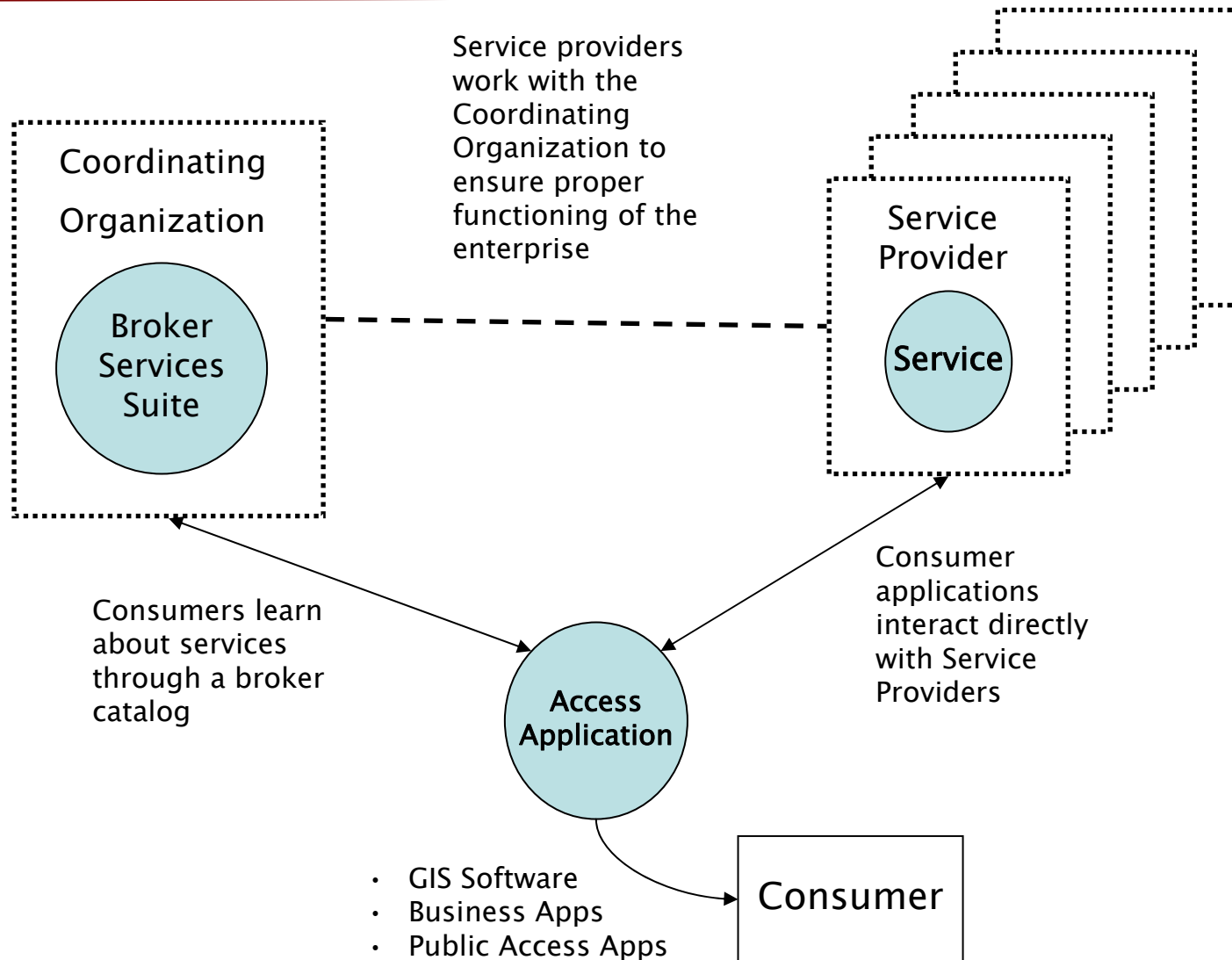
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- Succinct
- Atomic
- Non–dependent
- Focused
- Hosted by business entities (including private entities)
- Conformant to enterprise communication protocol and data format (results) standards

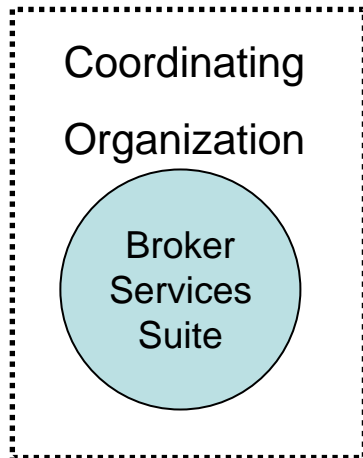
# Enterprise Overview

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# Coordinating Organization (Enterprise Broker) Role

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- Provide services that facilitate data discovery and describe fitness for use
- Provide services that supply server connection information
- Provide some role in authentication process (security)
- Host a source-services catalog (a registry database)
- Ensure compliance with enterprise standards
- Monitor services access-reliability
- Provide support to application developers seeking to work within the system, including documentation type validation services
- Host application objects that connect the broker to client applications

# Minnesota State GIS Enterprise Example Case

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Hypothetically...

Department of Transportation planning staff are considering a new transportation corridor alignment

And they require the following information:

- *the latest information on: impaired waters and sites of known environmental contamination from Pollution Control Agency (PCA);*
- *protected wetland locations and conservation easements from Board of Soil and Water Resources (BWSR);*
- *protected lakes and watercourses, trout streams, endangered species occurrence, recreation easements, and state-managed natural resource lands from Department of Natural Resources (DNR);*
- *known cultural resource locations from the State Archaeologist Office*

How would this work be currently performed?

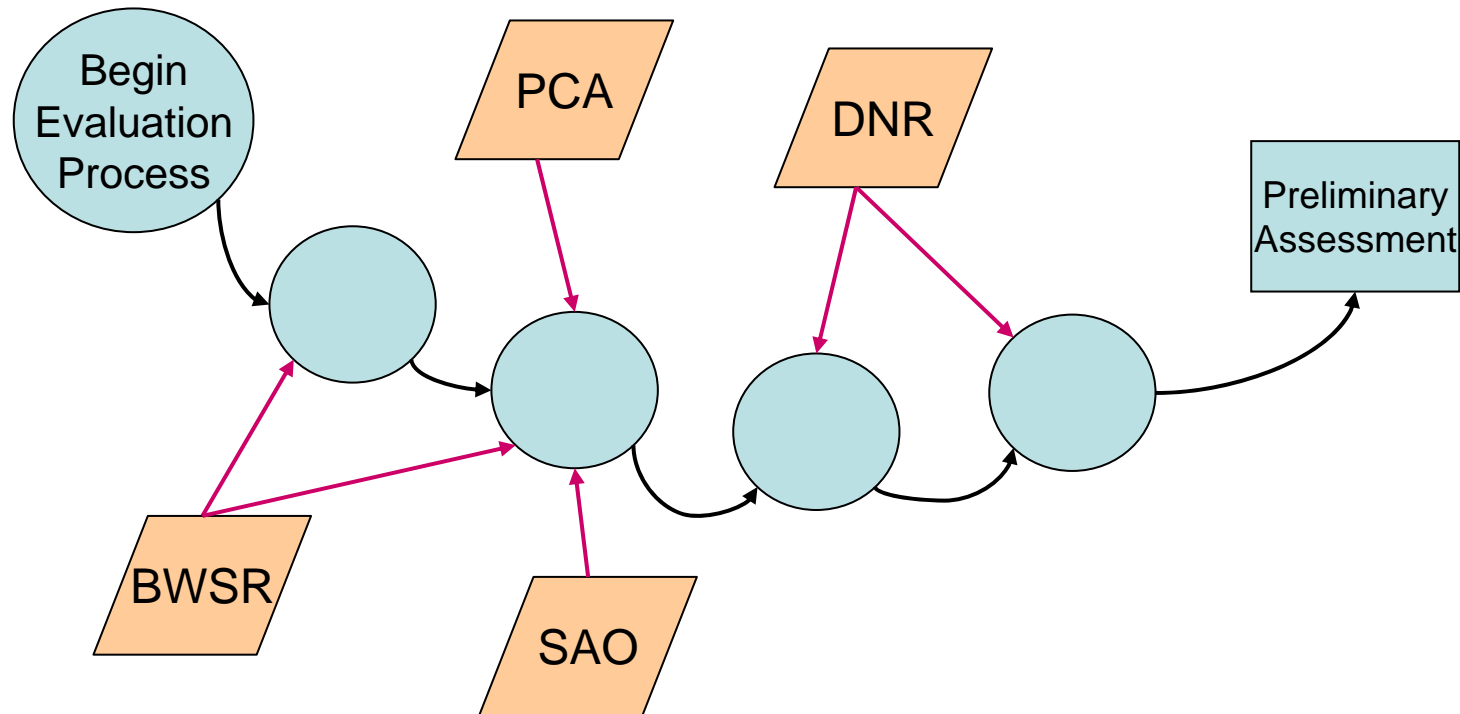
# Minnesota State GIS Enterprise

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How does a next generation architecture address this circumstance?

This approach enables access to the most up to date resources available and reduces the amount of data that the client needs to handle

MnDOT Corridor Assessment Application





# **On Common Ground: Towards a Statewide Geospatial Infrastructure**

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## **Identifying Shared Opportunities: The MN Shared Geospatial Services Inventory**

David Arbeit

Director

Office of Geographic & Demographic Analysis  
Department of Administration



# Identifying Shared Opportunities: The MN Shared Geospatial Services Inventory

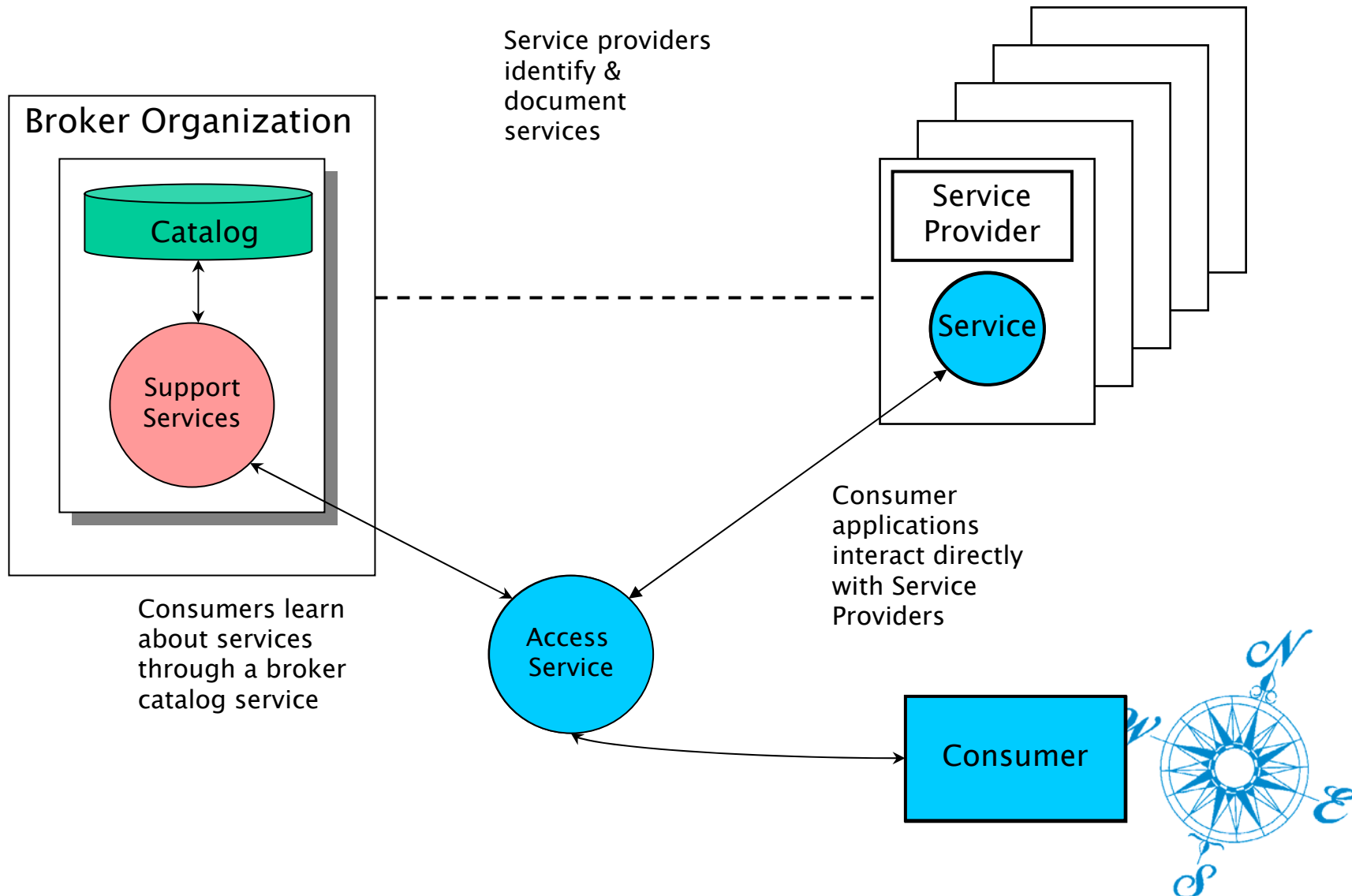
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*By building on a shared service architecture, organizations can more productively develop a GIS applications that serve their business needs, at greatly reduced cost.*

- Illustrate shared service and broker concept
- Describe value of service inventory
- Show examples of shared geospatial services
- Walk through MN Geospatial Resources Inventory
- Invite community to document their stuff



# Enterprise Geospatial Services Architecture



# MINNESOTA GEOSPATIAL RESOURCES INVENTORY

## Tell Us About Your Geospatial Services

The MN Governor's Council on Geographic Information has described a strategy for statewide support for GIS in [Strategic Plan for Coordinated GIS: Minnesota's Spatial Data Infrastructure](#). The MSDI would be supported by a statewide technology infrastructure described in [Enterprise Geospatial Services Architecture](#). As a next step, the Council is collecting information about geospatial applications resources in Minnesota to identify collaboration opportunities among public and private organizations.

You have been identified as someone who can contribute to the Governor's Council vision of information sharing and collaborative development. Specifically, we are looking for applications, services, and shared software components that include:

1. [Internet applications with mapping elements](#),
2. [On-line Internet-based "services" that developers can make use of when creating new applications](#) (e.g. a geocoding engine or an image serving source), and
3. [any software components that you have developed and are willing to share with others](#) (e.g. a development template for Minnesota MapServer).

If you are responsible for developing or supporting technical capabilities such as these, please take the time to tell us about it by filling out a brief questionnaire. For your convenience, please consult the following table for examples of the types of resources we are hoping to identify:

### Applications

[Minnesota GeoGateway \(LMIC\)](#)  
[Minnesota Lake Finder \(DNR\)](#)  
[Interactive Base Map \(MnDOT\)](#)  
[PLS Plat Maps \(LMIC\)](#)  
[What's in my Neighborhood \(MPCA\)](#)  
[Trip Planner \(Metro Transit\)](#)  
[Real Estate Inquiry \(Dakota County\)](#)

- [Listing of all records](#)
- [Search records](#)

### Services

[Geolmage Extract Service \(LMIC\)](#)  
[ArcWeb Services \(ESRI\)](#)  
[Google Maps API \(Google\)](#)  
[OnTok Geocoder \(OnTok Open Source\)](#)  
[National Map Gazetteer Service \(USGS\)](#)  
[EPA Air Emissions Service \(US EPA\)](#)  
[Yahoo Traffic Web Service \(Yahoo\)](#)

### Shared Software Components

[MapServer \(University of Minnesota\)](#)  
[dBox \(DNR\)](#)  
[WMS Client for ArcView 3.3 \(DNR\)](#)  
[ArcView Survey Extension \(DNR\)](#)  
[ArcView Statistics Extension \(Jenness\)](#)  
[AVPython \(SourceForge.net\)](#)  
[ArcView ALOHA Extension \(NOAA\)](#)

You will need to create an account and log in to access the questionnaire. It is designed to identify and document each service or application as a metadata record. It should take you no more than 10 minutes per application or service to complete the survey.

- [User registration](#): To add records, you must first establish a user account. This will allow you to log in at any time to update your records. Once registered to go "Create new content" on the "Your account" page.

# GeoGateway

The search tool of the  
Minnesota Geographic Data Clearinghouse

NODES

KEYWORDS

LOCATION

TIME PERIOD

VIEW/PRINT

HELP

WELCOME

## Welcome

Welcome to the **GeoGateway** . . . . . a tool to help you quickly search for geographic data about Minnesota and its neighboring regions.

The GeoGateway lets you customize your search in four different areas:

- **Nodes:** Simultaneously search one or more data sources from around the state, region and country.
- **Keywords:** Enter up to four keywords or phrases to specify the type of data desired.
- **Location (optional):** Identify the geographic area you are interested in by selecting from the menus or drawing on a map.
- **Time Period (optional):** Specify the time period for the data you want.

The GeoGateway search returns titles of data sets that match your selection criteria. Each title links you to a detailed description of the data, called metadata, which includes the most important facts about the data and information on how to obtain a copy. Data often can be downloaded directly through the metadata.

To begin, click on the Nodes tab and set your search criteria. Review your work anytime by clicking on the View/Print tab.

This search engine is powered by PHP and YAZ.

[exit](#)



# GeoGateway

The search tool of the  
Minnesota Geographic Data Clearinghouse

NODES

KEYWORDS

LOCATION

TIME PERIOD

VIEW/PRINT

HELP

WELCOME

## Nodes

The **GeoGateway** links to a network of data sources called nodes. Each node is an independent data provider that offers detailed descriptions (metadata) of the geographic data it supports. Select one or more nodes to search.

### Select one or more of these data sources:

- Search All Data Sources --
- Minnesota: Land Management Information Center
- Minnesota: Department of Natural Resources
- Minnesota: MetroGIS - Twin Cities Metropolitan Area
- Minnesota: Department of Transportation
- Minnesota: Pollution Control Agency
- Minnesota River Basin Data Center
- Minnesota: Arrowhead Regional Development Commission
- Red River Basin Decision Information Network
- Iowa Geospatial Data Clearinghouse
- Wisconsin Land Information Clearinghouse
- Framework Data Survey
- FEMA MMI Project (Q3 and HAZUS Data)
- Natural Resources Conservation Service
- Bureau of the Census
- USGS Landsat Thematic Mapper Imagery
- USGS Geoscience Data
- USGS Water Resources Spatial Information
- US Army Corps of Engineers
- NOAA National Climatic Data Center
- NOAA National Geophysical Data Center

[search now](#)[start over](#)[exit](#)

MetroGIS

DataFinder<sup>SM</sup>

sharing information across boundaries

[Home](#) | [Catalog](#) | [Café](#) | [Search](#) | [Links](#) | [Help](#) | [Contact us](#)

## DataFinder Search

NODES

KEYWORDS

LOCATION

TIME PERIOD

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HELP

WELCOME

## Welcome

Welcome to the **DataFinder Search Tool** . . . a tool to help you search for geographic data about the Twin Cities Metro area in Minnesota.

The DataFinder Search Tool lets you customize your search in four different areas:

- **Nodes:** Simultaneously search one or more data sources.
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exit

MetroGIS

DataFinder<sup>SM</sup>

sharing information across boundaries

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## MetroGIS DataFinder Mailing Label Application

User Id

Password

Email us if you can't remember your username or password at [metrogis-contacts@metc.state.mn.us](mailto:metrogis-contacts@metc.state.mn.us)

### About this application

MetroGIS DataFinder offers an application that produces mailing labels from the MetroGIS Regional Parcel Dataset.

Please be advised that access to this application is available only to licensed users of the MetroGIS Regional Parcel Dataset. For this reason you should only share your ID and password with individuals in your organization who are authorized to access the data via your license agreement. To learn more about the licensing procedure, please see the MetroGIS page about the [Parcels Dataset](#).

To fully understand the usability of mailing labels you create with this application, it is strongly recommended that you read the [Regional Parcel Dataset Metadata](#). For example, the application supports three address types for labels. They are property address, owner and taxpayer addresses, but some counties do not populate all of the required fields for each of these types of addresses.

In addition, the dataset does not contain every address in the metro area. For example, for apartment buildings only one address of the entire property is available, not the individual unit addresses. In particular, review the description of the address related attributes in [Attribute Detailed Descriptions](#) document.



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## Interactive BaseMap

View, save and print statewide maps including all public roads in Minnesota.  
Download transportation data.



[Download Mn/DOT Data](#)  
Primarily ArcView and ArcGIS

[Launch Interactive BaseMap](#)

[Help Pages](#)

[Contact Us](#)

The BaseMap is a planning level set of data developed at a scale of 1:24000.

This site also includes links to extensive data descriptions (metadata) to support our users. All of these resources are provided free of charge and accordingly, are not warranted for any specific use. We do, however, strive to produce accurate data and would appreciate any comments that you may have. We hope that you find the site useful!

[more](#)

We welcome your feedback on this Web site. Please send us an email at: [gis.info@dot.state.mn.us](mailto:gis.info@dot.state.mn.us)

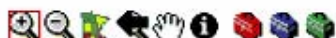
### Instructions:

The map below allows you to make an initial selection of where you would like to view data in more detail. Once in the BaseMap viewer position your mouse over the tools below to learn their function.

[more](#)

### Using the Tools:

Depending on which BaseMap data set you choose you will have a basic set of tools and sometimes a more advanced set of tools. These tool sets can be opened or removed entirely.



Basic Toolbox

Which includes zoom in and out, zoom to full extent of the state, pan, and information identification.



Advanced Toolbox



Markup Toolbox



Selection Toolbox

### Getting Started

### Web Browser Requirements:

Internet Explorer 6.x and higher is recommended for best results when using this Web site but Firefox, Safari and Netscape will work.

### Viewing the Site :

This site is best viewed at a screen resolution of 1024 \* 768 or higher with colors set to thousands or higher.

### Printing:

Pop-up blocking will need to either be disabled or have this site be allowed to use pop-ups in order for you to print any maps. See the next information section below.

### Pop-up Blocking:

Pop-up blocking will need to be disabled in order for you to use all features available on this Web site. You can also add this site to your list of sites where pop ups are allowed. In Internet Explorer, go to tools, Pop-up Blocker Settings and add gismaps.dot.state.mn.us. Click add and close. In Firefox go under tools, options Web Features and add gismaps.dot.state.mn.us as an allowed site.

### Available Layers Include:

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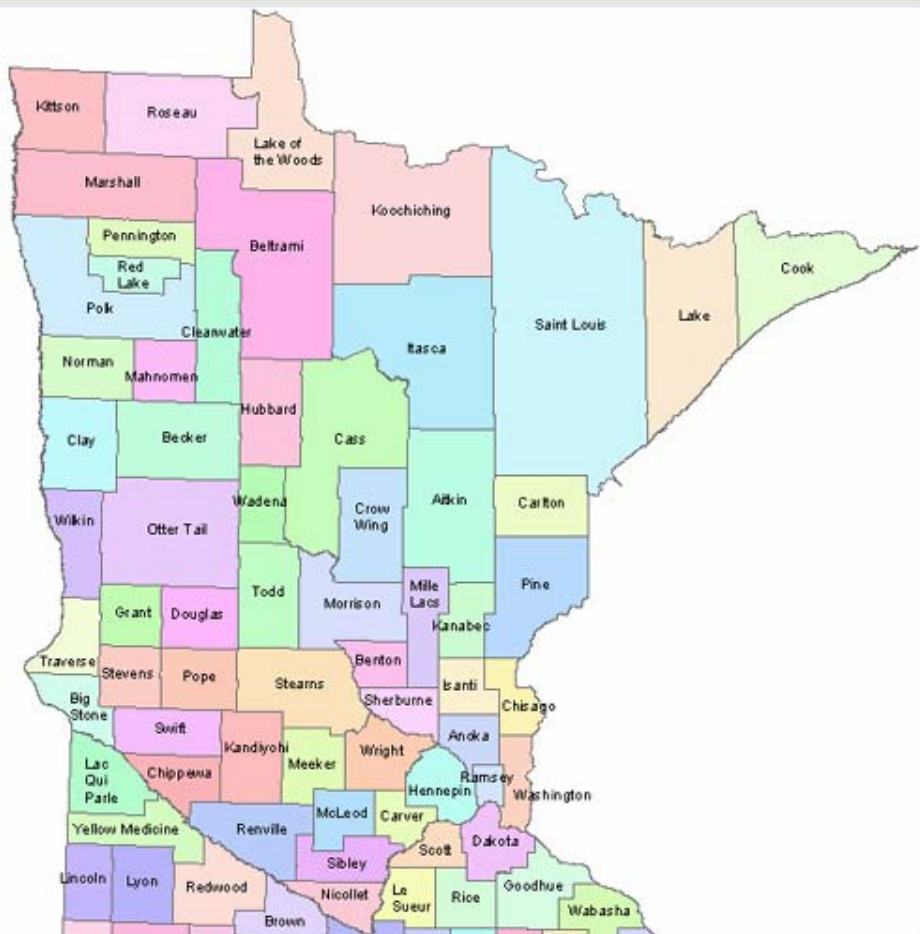
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# ORIGINAL PUBLIC LAND SURVEY PLAT MAPS OF MINNESOTA

- Home
- View the Collection
- History and Origin
- Glossary
- Ordering/Saving Instructions
- Acknowledgements
- Contact Us
- Print Friendly



## PUBLIC LAND SURVEY PLAT MAP RETRIEVAL SYSTEM

Digital Plat Map Images are organized by Public Land Survey township.

You may search for a digital plat map image in one of three ways.

1. Click on the state map to the left.
2. Search by feature name (example: city, county or other feature).

Find places:

3. Provide a Public Land Survey description to view maps available for a Minnesota township and select "List Maps" button below.

Township:  Range:

*Note: On June 6, 2006 seventeen map images were updated and twelve new images were added to the collection!*

*For more information see:  
[Mn PLS Maps Update 1.pdf](#)*

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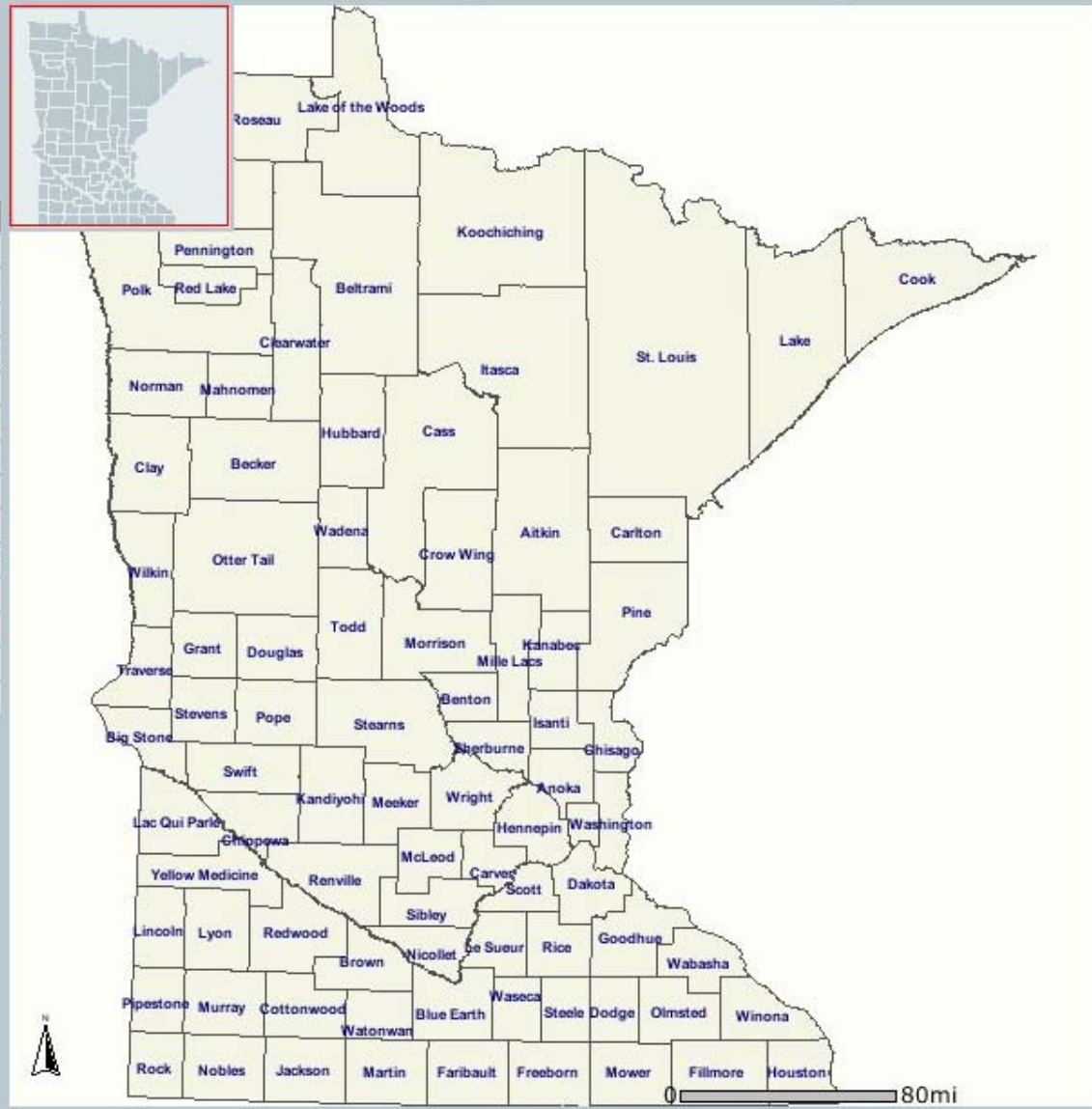
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# What's In My Neighborhood?

Known and potential sources of soil and ground water contamination

## Map Tools

- Zoom In
- Zoom Out
- Pan Map
- ID Site
- Draw Radius
- Measure
- Photo On/Off
- Overview
- Reset Map
- Back
- New Search
- Clear
- Print
- Help
- Exit



### Search

Choose a search method:

- [City/Town/Place](#)
- [Site ID](#)
- [Site Name](#)
- [Street Address](#)
- [Township/Range](#)
- [Zip Code](#)

### Sites

\*Please zoom in to view more details on the map and the sites legend. You must be zoomed to a city level before all the data will appear.

Quick Zoom County:   City:

[Questions/Comments](#)

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# Dakota County Real Estate Inquiry

Data Updated 9/28/2006.

[Need Help?](#) [What's New?](#)

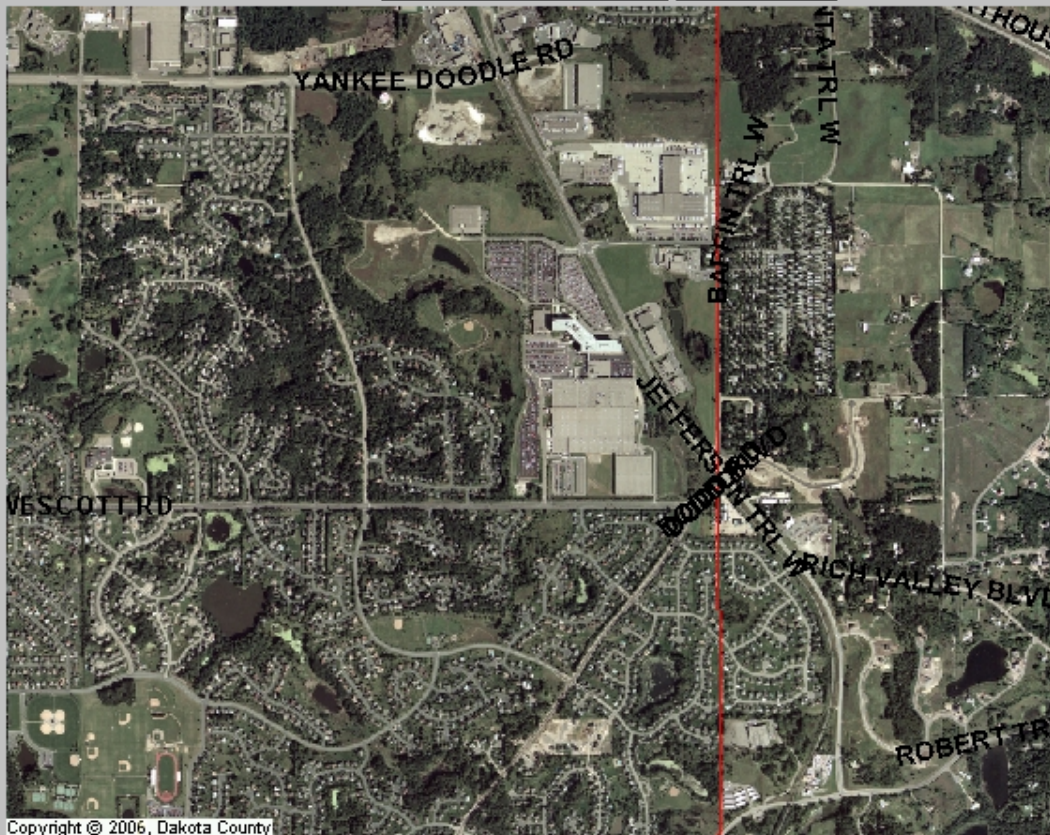
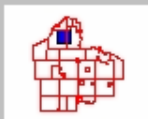
Map navigation

Select option and click on map:

- Zoom In
- Zoom Out
- Pan
- Identify

Show Full County Map

Small Map



Copyright © 2006, Dakota County

## Legend

Air photos may be displaced by up to 60 feet. Shadows may cause additional apparent displacement. Buildings may appear to lean due to camera angle.

Date of photography: 2002

- Tax Parcels
- Market Value
- Recent Sales
- Year Built
- Air Photo
- Torrens

Refresh Map

Choose ONE search method, enter criteria, and click Go or hit enter key.

House #:  Go

OR

PIN:  Go

This application was developed by the Dakota County [Office of GIS](#) in cooperation with [Assessing Services](#), [Treasurer - Auditor](#) and [Property Records](#) Departments





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## LMIC'S MINNESOTA GEOSPATIAL IMAGE SERVER

**Provided by the Land Management Information Center  
Minnesota Department of Administration**

LMIC's Geospatial Image Server has been developed to provide versatile access to large statewide raster databases according to the Open GIS Consortium's Web Map Service (WMS) standards. LMIC – the Land Management Information Center – is a GIS service center for state government in Minnesota.

### LMIC'S GEOSPATIAL IMAGE SERVER WMS SPECIFICATIONS

#### DATA LAYERS SERVED

##### Digital orthophotography

- Statewide 1991 USGS B&W DOQs, 1 meter resolution
- Statewide 2003 FSA NAIP color orthoimagery, 1 meter resolution
- Metro Twin Cities 2004 NGA color orthoimagery, 0.3 meter resolution

##### Scanned USGS quadrangles (Digital Raster Graphics – DRGs)

- Statewide 1:24,000-scale, 2.4 meter resolution
- Statewide 1:100,000-scale, 10.0 meter resolution
- Statewide 1:250,000-scale, 25.4 meter resolution

#### REQUEST URL PREFIX

Digital Ortho Photography: <http://geoint.lmic.state.mn.us/cgi-bin/wms?>

Scanned USGS quadrangles: <http://geoint.lmic.state.mn.us/cgi-bin/wmsz?>

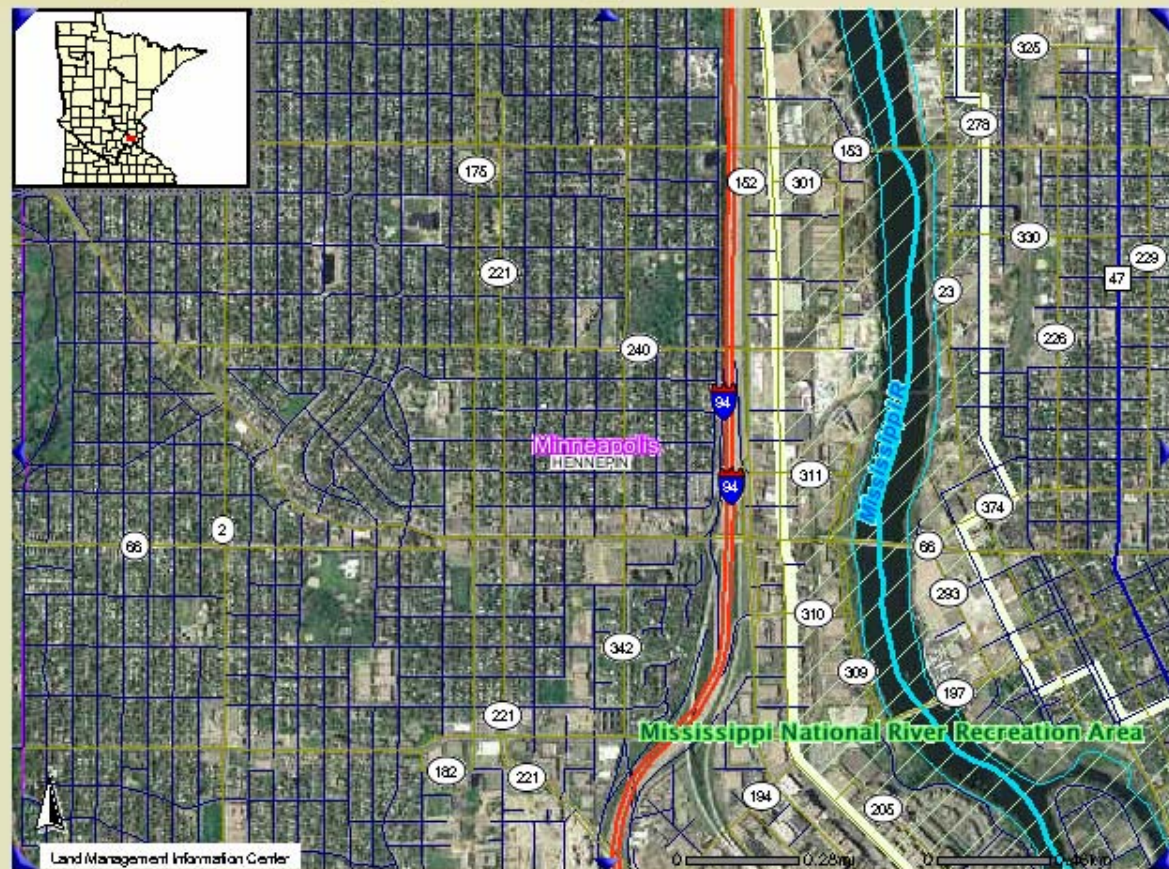
#### PROJECTION

# MN NorthStar Mapper

Navigate To:

Map navigation icons: Home, Back, Forward, Refresh, Stop, Full Screen, Print, Scale:

[Map Layers](#) [Legend](#) [Information](#)



- LAYERS**
- Place Names
  - Roads
  - Boundaries
    - County
    - City and Township
    - Township and Range (PLS)
    - MN House
    - MN Senate
    - US Congress
    - Indian Reservation
    - Minnesota
    - Other States
  - Parks & Forests
    - National Forest
    - National Park Service
    - State Forest
    - State Park
  - Water Features
    - Lakes
    - Rivers and Streams
    - Major Watershed
  - Land Characteristics (opaque)
    - Land\_Cover\_1990
    - Shaded Elevation

**Air Photos and Basemaps** (Opaque layers must be off)

Twin Cities Air Photos 2004

Map Coordinates: X= 477288.46 Y= 4983727.4      Latitude = 45.00663101 Longitude = -93.28819482

### Reference Map



### Legend

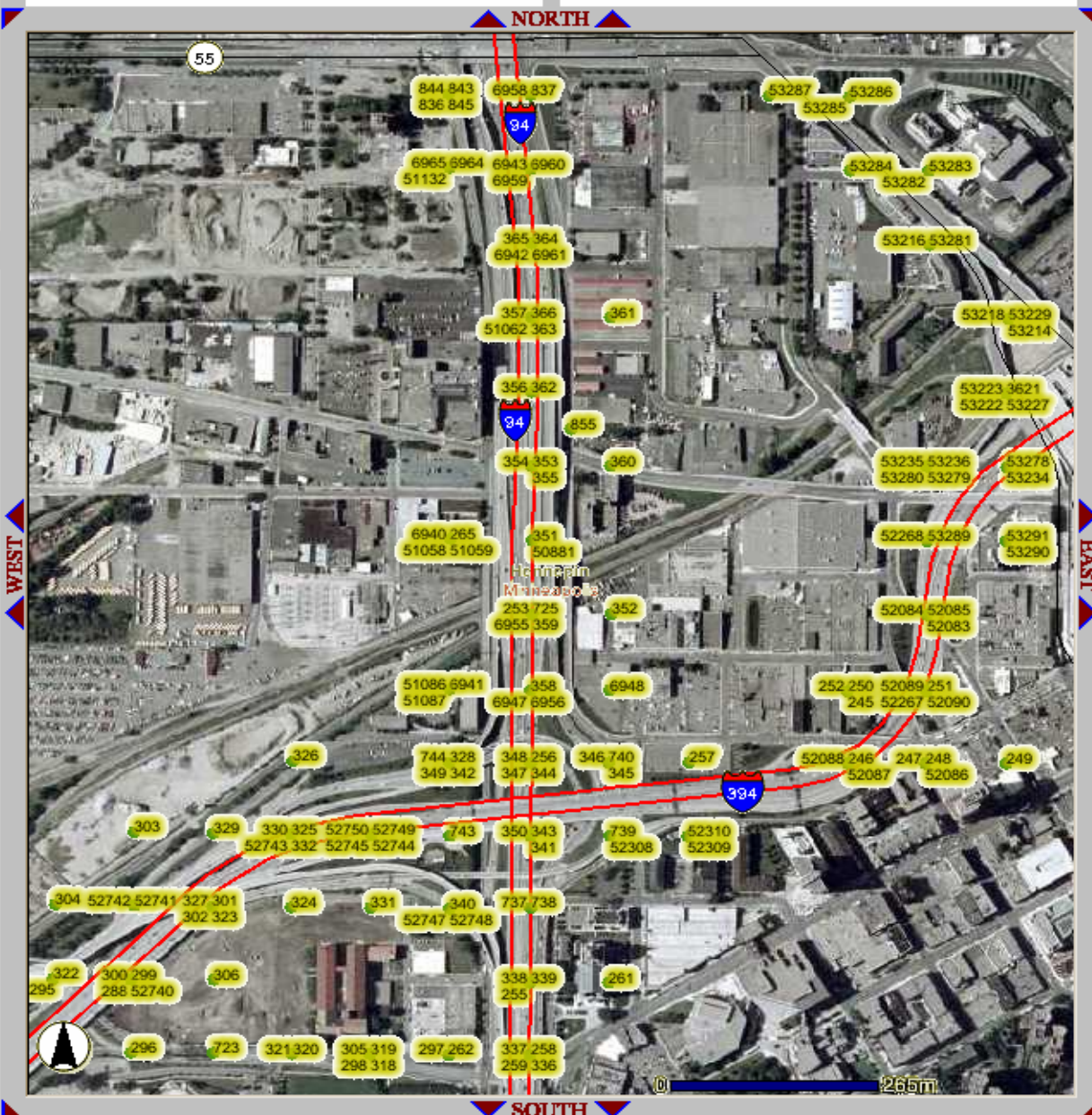
- DOQ - NAIP\_2003**
- Municipal Boundaries
  - County Boundaries
  - Lakes
  - State Boundary
  - County Roads
  - Highways
  - Interstate Highway
  - US Highway
  - State Highway
  - Foundation Borings



Drag a box or click a point to Zoom In on map

### Tools

- » [Query Borings](#)
- » [Show Attributes for Current Selection](#)
- » [Create a Printable Report for Current Selection](#)
- » [Create a Printable Map of Current View](#)
- » [Change Map Background](#)
- » [Change Map Layers](#)



# Metropolitan Mosquito Control District

## Breeding Site and Treatment Lookup Service


Zoom In Zoom Out Pan Attribute Data

### Layers

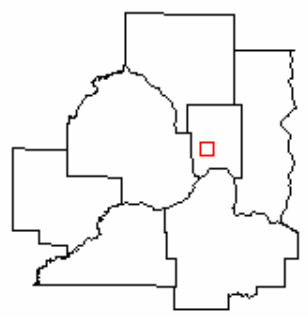
- NEXRAD Current
- NEXRAD Storm Rainfall
- EROS Metro Air Photo
- Air Photos
- Cities Boundaries
- County Boundaries
- Water
- Breeding Sites

Update Map

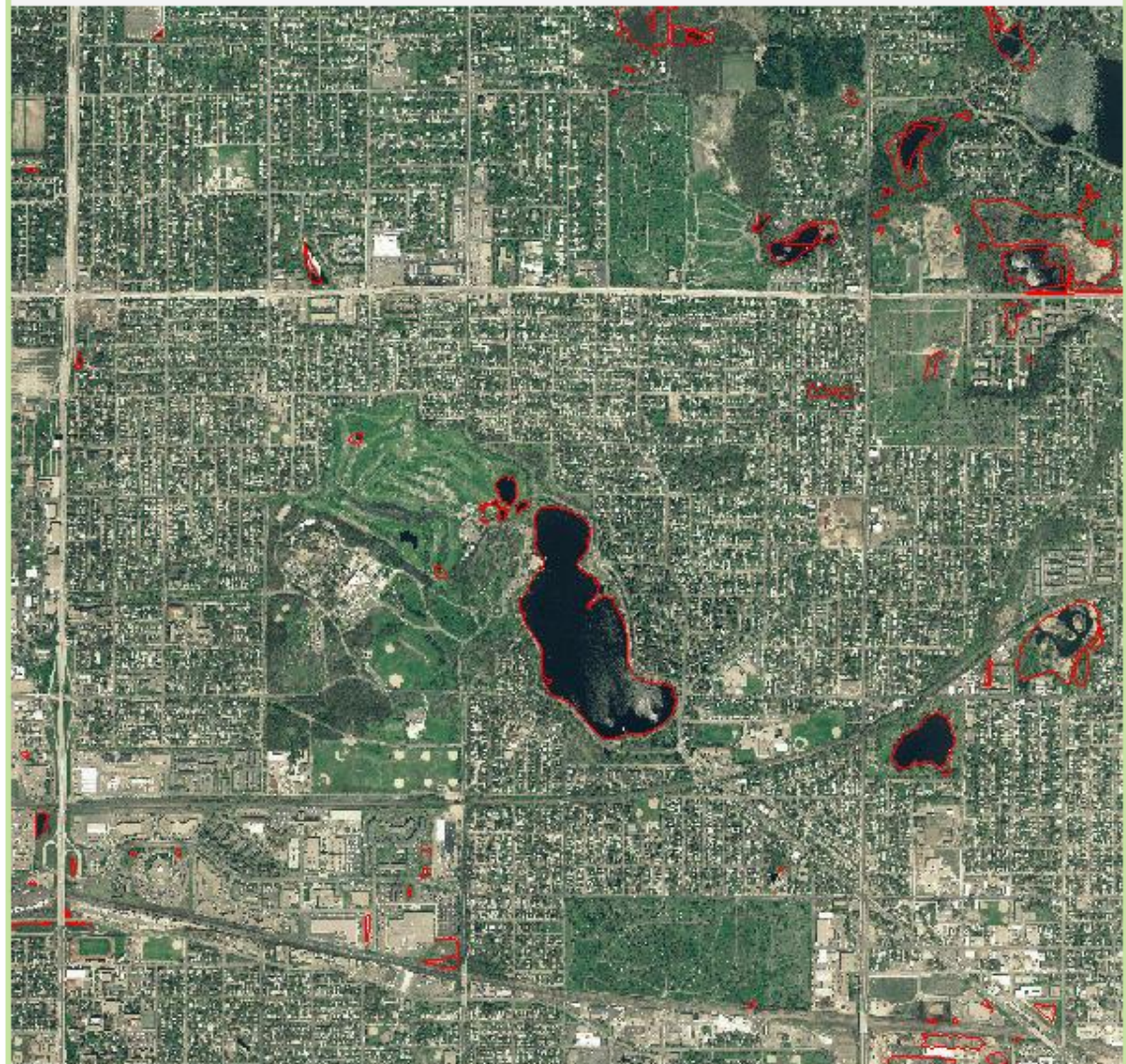
### Legend

 Breeding Sites

### Reference Map



### Scale





# Demo Application



- MMCD
  - Breeding Sites
    - Site Lines
  - Regional Facilities
    - Regional Facility Areas
- ADMINISTRATIVE
  - Political Boundaries
    - County Boundary
    - City Boundary
  - Land Ownership
    - Property Lines
- TRANSPORTATION
  - Major Roads
    - Interstate
    - U.S. Highway
    - State Highway
  - Secondary Roads
    - County Road
    - City Road
    - Ramp
- HYDROGRAPHY
  - Waterbody
  - Lakes/Ponds
- BACKGROUND
  - 2003 Aerial Photos

Click or Drag Box to Zoom In

0 0.1 0.2 0.3 0.4 mi  
1:22,397

# OpenMNND Collaboration

---

- Open Source software project
- Coop. with Dakota Co.(MN), Richland Co. (ND) and others
- FGDC CAP grant \$75,000
- Meet common development needs
  - parcel look-up
  - geocoding
- Reduce cost
- Provide more uniform user experience



# OpenMNND Collaboration

---

- Using “GeoMOOSE” as starting point (City of St. Paul)
- Uses MapServer for core
- Services-Oriented Architecture
- Multi-layer management
- Make easy to customize interface

(See talk by Randy Knipple)





# OpenMNND Prototype

Address <http://openmnnd.mapmorph.net/openmnnd.html>

0 1000 2000 3000 4000 m



OpenMNND Project Demo (Richland County, ND)

**Tools**

- Zoom In
- Zoom Out
- Pan
- Data Inspector
- Reload Layers
- User Settings
- Add Layer or Tool
- Layer Properties
- Previous Zoom
- Create Polygon Area
- Create Point

**Map Layers**

- Scale Bar
- Parcels
- Townships
- County Map
- Orthos

670226.6646546713,5104747.866505207

Internet



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## Google Maps API

### Google Maps API

[Sign up for an API key](#)

[API Documentation](#)

[API Help](#)

[API Terms of Use](#)

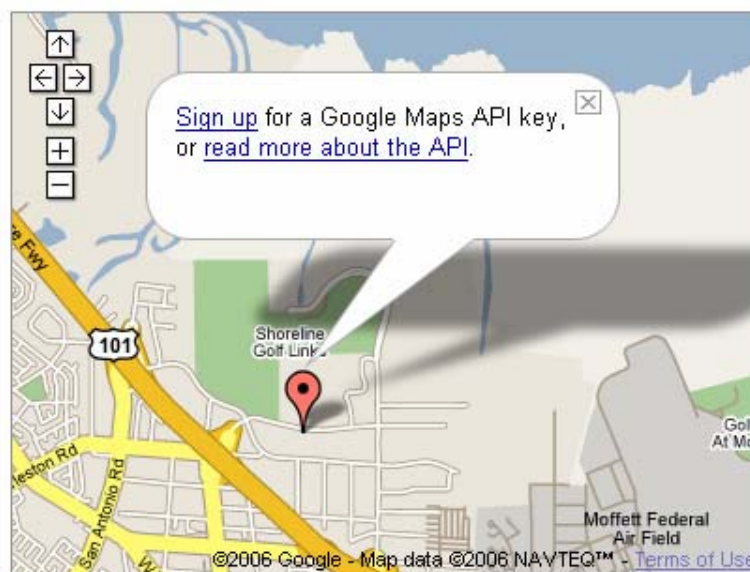
[API Blog](#)

[API Discussion Group](#)

## Put Google Maps on Your Own Web Site

[Sign up for a Google Maps API key](#)

The Google Maps API lets you embed Google Maps in your own web pages with JavaScript. You can add overlays to the map (including markers and polylines) and display shadowed "info windows" just like [Google Maps](#).



The Maps API is a free beta service, available for any web site that is free to consumers. Please see the [terms of use](#) for more information.

To use the Maps API on an intranet or in a non-publicly accessible application, please check out [Google Maps for Enterprise](#).

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# YAHOO! DEVELOPER NETWORK

## Traffic Web Services - Traffic REST API

### Get Started

- [Home](#)
- [About Us](#)
- [Developer Network Blog](#)
- [Frequently Asked Questions](#)
- [Support Communities](#)
- [Working Examples](#)

### Developer Central

- [Browser Based Auth](#)
- [Design Pattern Library](#)
- [JavaScript Developer Center](#)
- [.NET Developer Center](#)
- [Flash Developer Center](#)
- [PHP Developer Center](#)
- [Python Developer Center](#)
- [Ruby Developer Center](#)
- [.NET Developer Center](#)
- [Search SDK](#)
- [Security Best Practices](#)
- [User Interface Library](#)
- [Utility Web Services](#)

### Work With Us

- [Get an Application ID](#)
- [Usage Policy](#)

## Traffic Web Services - Traffic REST API

Version 1

The Traffic Web Services from Yahoo! enable you to get traffic alert information from a given location. Use the Traffic REST API to customize your request with many parameters including indicating locations based on city state, zip code, or a combination of any of these things, latitude-longitude, whether to include a map image, or a search radius in miles.

Traffic Web Services are also available through a [dynamic RSS feed](#).

### Request URL

`http://local.yahooapis.com/MapsService/V1/trafficData`

### Request parameters

See information on [constructing REST queries](#)

Parameter	Value	Description
appid	string (required)	The application ID. See <a href="#">Application IDs</a> for more information.
street	string	Street name. The number is optional.
city	string	City name.
state	string	The United States state. You can spell out the full state name or you can use the <a href="#">two-letter abbreviation</a> .
zip	integer or <integer>-<integer>	The five-digit zip code, or the five-digit code plus four-digit extension. If this location contradicts the city and state specified, the zip code will be used for determining the location and the city and state will be ignored.
location	free text	This free field lets users enter any of the following:

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## ArcWeb Services—Public Services

- [Main](#)
- [Commercial Services](#)
- **Public Services**
- [Focused Solutions](#)
- [Managed Services](#)
- [ArcWeb Services for Students and Educators](#)

### About Public Services

- [Key Features](#)
- [Who Uses ArcWeb Services?](#)
- [Literature](#)
- [System Requirements](#)
- [FAQ](#)
- [Case Studies](#)
- [Related Products](#)

### Evaluate

- [Evaluate Commercial Services](#)
- [Sign Up for Public Services](#)
- [Sign Up for ArcWeb](#)

## Public Services

**ArcWeb Services—Public Services** offers free access to a subset of ArcWeb Services—Commercial Services.

Public Services is offered through a one-year subscription; it is intended to be used for the development of personal interest Web mapping applications that are non-commercial and non-governmental.

Individuals can use Public Services to build Web sites that promote free volunteer activities such as providing maps for habitat education to teach students about birds, habitats, and nature. Another example of a Public Services site is one that provides maps for volunteer conservation efforts that promote local wildlife research and community building.

Advantages of Public Services include

- **Flexible.** Public Services offers a wide variety of APIs, functionality and geographic data. It also provides a migration path for developers that wish to upgrade to Commercial Services.

### Try Public Services Developer APIs

### Showcase



- [ArcWeb Services Labs for Developers](#)
- [ArcWeb Services Sample Applications](#)

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GIS

Enter Keywords

search

[Site Map](#) | [Contact the DNR](#) | [What's New?](#) | [Newsroom](#) | [Events & Seasons](#)
[> MN DNR Home](#) > [About the DNR](#) > [Bureaus](#) > [Management Resources](#) > [Management Information Services](#) > [GIS](#) > [ArcView Resources](#) >

## DNR Survey Extension

### DNR Survey Extension

**Current Version:**

 Version: 1.09  
 Build Date: 9/29/2005  
 Posted Date: 9/29/2005

**Dependencies:**

- ◆ [DNR Garmin Extension](#) - Provides communication with GPS unit which allows for real-time tracking in Arcview.

**Platform/ArcView Version:**

Windows/3.x

**RELATED PAGES:**
**Bureaus**

- [Human Resources](#)
- [Information & Education](#)
- [Management & Budget Services](#)
- [Management Resources](#)
- [About the DNR](#)

### Purpose of this Extension

This ArcView extension, used in conjunction with a GPS receiver and the DNR Garmin program (see Installation section of documentation), enables wildlife biologists conducting aerial surveys to display background themes such as aerial photography and survey transects, observe the aircraft's flight path over these themes in real time, and record flight path and animal observation data directly to shapefiles.

DNR Survey is designed to be used out in the field on a tablet-style computer that supports a tablet (digitizer) pen as an input device. Menu-driven data entry eliminates the need for text entry and provides the ability to quickly record an observation in anticipation of the next one.



# Identifying Shared Opportunities: The MN Shared Geospatial Services Inventory

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**Seen Enough!**

**Tell us about your services . . .**



# Identifying Shared Opportunities: The MN Shared Geospatial Services Inventory

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**Seen Enough!**

[www.lmic.state.mn.us/GeoSpatialSurvey/](http://www.lmic.state.mn.us/GeoSpatialSurvey/)



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## David Arbeit's Workspace



User name: david.arbeit@state.mn.us

[Contact support](#)Application: GeoSpatial ([change](#))

Welcome

Add content

Your content

Your profile

Search

Logout

## WELCOME

Thank you for adding information about your resources to this inventory. Taking a few minutes to describe your geospatial tool will help others in the GIS community to minimize duplicated services and will help advertise the availability of the information / services you offer. You may view other's tools at: <http://www.lmic.state.mn.us/GeoSpatialServices/GeospatialPublishedListing.html>

## INSTRUCTIONS

This inventory tool allows you to create and manage multiple resource records - one for each distinct service or tool. The menu above provides you with tools to manage resource records (i.e. descriptions of your services) and your account information (i.e. phone number, address...)

- ◆ **Welcome:** The page you are reading now.
- ◆ **Create new content:** Takes you to the input form used to describe your geospatial resources. When you create a record, it is marked as "draft" and can be seen only by you.
- ◆ **Your content:** Review all of your "Draft", "Pending", and "Public" content using this panel. Each record is in one of the following states:
  - ◊ **Draft:** These items are not displayed to the general public. In order for them to be seen by other users, you will need to "request publishing" by clicking on that Action link. This will send an email to a content administrator, who will review the content and then publish the record.
  - ◊ **Pending:** Items awaiting publishing by a content manager.
  - ◊ **Public:** Items which are publicly visible.

Depending on the state of the record, certain actions can be performed:

- ◊ **Edit:** Reloads your resource information into the editing form.
- ◊ **Request publishing:** Signals that you are done creating the record, and it should be available for public review. All records are reviewed by a site administrator prior to being published. If a record is not approved for publication, the record will be marked as "Rejected".



## MINNESOTA GEOSPATIAL RESOURCES INVENTORY

**Resource name**

**Description**

Briefly describe what this service or application does.

**Availability**

When will this resource be available for use?

- Available now
  Currently being developed
  Being considered for future development

**Audience**

What type of users was this application or service designed for? *Check all that apply*

- General public
  GIS professionals  
 Business users
  Programmers

**Resource type**

What type of resource is this?

- Internet applications
  On-line internet based service
  Shared software component

**Conditions of use**

*Check all that apply*

- None
  Subscription or fee required  
 Acknowledge disclaimer
  Use or distribution is restricted  
 License required

Other Conditions of use:

**Features**

What features are supported by this application or resource? *Check all that apply*

- Display map
  Data search
  Find a location  
 Spatial query
  Data download
  Determine a route  
 Spatial analysis
  Geocode an address
  Format and print a map  
 Generate report

Other features (describe below):

**Geographic coverage of resource**

What geographic area is this application or resource designed to serve?

State of Minnesota and parts of neighboring states  
 State of Minnesota  
 Area that crosses county boundary  
 Single county  
 Area smaller than a county

**Data used**

Which of the following types of geospatial data are used by this resource?

<input type="checkbox"/> Imagery	<input type="checkbox"/> Addresses	<input type="checkbox"/> County boundaries
<input type="checkbox"/> Parcels	<input type="checkbox"/> Water features	<input type="checkbox"/> City boundaries
<input type="checkbox"/> Geodetic control	<input type="checkbox"/> Soils	<input type="checkbox"/> School districts
<input type="checkbox"/> Elevation or contours	<input type="checkbox"/> Demographic data	<input type="checkbox"/> PLSS boundaries
<input type="checkbox"/> Roads	<input type="checkbox"/> Utilities	<input type="checkbox"/> Landuse or cover

Data licensing required is required

Other data used:

**Coordinate system and datum used for data**

Identify the coordinate system used to reference the data

State Plane Coordinates  
 Latitude/Longitude  
 UTM  
 County Coordinates  
 User specified

Identify the reference datum used for the coordinate system

NAD83  
 NAD27

Other reference datum:

Other projection:

**Requirements for use**

What hardware and software is needed by this resource or application? *Check all that apply.*

<b>Hardware</b>	<b>Software</b>
<input type="checkbox"/> Desktop workstation	<input type="checkbox"/> Web browser
<input type="checkbox"/> High speed internet	<input type="checkbox"/> ArcGIS

**Requirements for use** What hardware and software is needed by this resource or application? *Check all that apply.*

<b>Hardware</b>	<b>Software</b>
<input type="checkbox"/> Desktop workstation	<input type="checkbox"/> Web browser
<input type="checkbox"/> High speed internet	<input type="checkbox"/> ArcGIS
	<input type="checkbox"/> ArcGIS

Other hardware needed to use:

Other software needed:

**Requirements for deployment** What hardware and software is needed by this resource or application for deployment? *Check all that apply.*

<b>Hardware</b>	<b>GIS system</b>	<b>Environment</b>	<b>Software</b>	<b>RDMS</b>	<b>Programming language</b>
<input type="checkbox"/> Server	<input type="checkbox"/> ArcIMS	<input type="checkbox"/> Apache	<input type="checkbox"/> Oracle	<input type="checkbox"/> Microsoft SQLServer	<input type="checkbox"/> ASP
<input type="checkbox"/> High speed internet	<input type="checkbox"/> MN MapServer	<input type="checkbox"/> Windows server	<input type="checkbox"/> MySQL	<input type="checkbox"/> PostgreSQL	<input type="checkbox"/> HTML
<input type="checkbox"/> Large storage capacity	<input type="checkbox"/> MapGuide Open Source	<input type="checkbox"/> Linux	<input type="checkbox"/> PostGIS	<input type="checkbox"/> ArcSDE	<input type="checkbox"/> Java
	<input type="checkbox"/> Geoserver	<input type="checkbox"/> Solaris			<input type="checkbox"/> Javascript

Other hardware:

Other GIS:       Other Environment:       Other DBMS:       Other software:

**Standards used** What adopted or *de facto* technology or data standards are used by this resource for use? *Check all that apply.*

<input type="checkbox"/> OGC WMS	<input type="checkbox"/> Metadata standard	<input type="checkbox"/> SOAP
<input type="checkbox"/> OGC WCS	<input type="checkbox"/> FIPS codes	<input type="checkbox"/> RMI
<input type="checkbox"/> OGC WFS	<input type="checkbox"/> XML	<input type="checkbox"/> GNIS database
<input type="checkbox"/> OGC catalog services	<input type="checkbox"/> GML	Other standards used: <input type="text"/>
<input type="checkbox"/> z39.50 protocols	<input type="checkbox"/> KML	

**Service dependencies of application** Identify any applications or services that must exist for this resource to function.  
(Ex: District Finder, a web application offered by the Legislative GIS Office uses geocoder.us to locate an address).



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Identify any applications or services that must exist for this resource to function.  
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**Developer organization**

Name of organization that developed the resource.

Identify type of organization:

State agency                       Federal agency                       Business  
 Local government agency               Educational organization               Other  
 Regional government agency               Non-profit organization

**Source organization**

Name of organization that offers the resource.

Identify type of organization:

State agency                       Federal agency                       Business  
 Local government agency               Educational organization               Other  
 Regional government agency               Non-profit organization

**Link to resource**

If the resource is available for use, identify the URL or FTP link to the resource.

**Notes**

Provide any additional information you would like to give on this service.

**Contact information for resource**

Are you the contact for this item? (**David Arbeit, david.arbeit@state.mn.us**)  
 Contact is another person

**Contact information for survey follow up**

Are you the follow up contact for this item? (**David Arbeit, david.arbeit@state.mn.us**)  
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[Welcome](#)[Add content](#)[Your content](#)[Your profile](#)[Search](#)[Logout](#)

## SEARCH GEOSPATIAL SERVICES

Search for any published Geospatial resource records.

- ◆ You may enter single words or phrases into text fields.
- ◆ Each row is linked with an AND statement, thus the more attributes you search on, the more restrictive the search will be.

Title	<input type="text"/>
Description	<input type="text"/>
Availability	Available now <input type="button" value="v"/>
Audience	GIS professionals <input type="button" value="v"/>
Type	Shared software component <input type="button" value="v"/>
Restrictions	— Internet applications On-line internet based service Shared software component
Features	Shared software component
Coverage Type	State of Minnesota <input type="button" value="v"/>
County	— Aitkin County Anoka County
Other coverage	<input type="text"/>
Data used	— <input type="button" value="v"/>



Address <http://www.lmic.state.mn.us/GeoSpatialServices/searchGeospatial.html#results> Go Links

County

—  
Aitkin County  
Anoka County

Other coverage

—

Data used

—

Other data

—

Search Clear

9 record(s) retrieved

- [NorthStar Mapper Website](#)
- [DNR Data Deli](#)
- [Data Deli Web Mapping Service](#)
- [dBox](#)
- [Recreation Compass](#)
- [AniMap](#)
- [AirPhotos Online](#)
- [Scott County Property Information Search](#)
- [macnoise.com interactive mapping application](#)



## NORTHSTAR MAPPER WEBSITE

**Description:** This mapping website helps users quickly find and view key data layers for their area of interest in Minnesota. NorthStar Mapper lets you browse air photos, land cover, topographic maps and a variety of place name, boundary and other GIS data layers. With NorthStar Mapper, users can:

- Display a variety of map layers
- Navigate directly to a county, city, civil or PLS township
- View a customized attribute report on any spot they identify
- Find the elevation of any point
- Display full PLS labels for any township/range/section
- Define an area from which any vector or raster data layer can be clipped, zipped and downloaded to their computer
- Bookmark and share URLs of particularly interesting views

**Availability:** Available now

**Audience:** General public; Business users; GIS professionals

**Resource type:** Internet applications

**Conditions of use:** None

**Features:** Display map; Generate report; Data download; Find a location; Format and print a map

**Coverage:** State of Minnesota

**Data used:** Imagery; Elevation or contours; Roads; Water features; County boundaries; City boundaries; PLSS boundaries; Place names; Indian reservation boundaries; Park and forest boundaries; Land use/cover.

**Coordinate system and datum used for data:** UTM; NAD83

**Technical requirements (software):**

To deploy: ArcIMS; MN MapServer

To use: Web browser

**Technical requirements (hardware):**

To deploy: Server; High speed internet; Large storage capacity

**Standards used:** OGC WMS; Metadata standard; XML; GNIS database

**Developer:** Land Management Information Center; State agency

**Source:** Land Management Information Center; State agency

**Link:** <http://www.lmic.state.mn.us/chouse/northstarmapper.html>

**Contact information:** Jim Dickerson, 651-201-2484, jim.dickerson@state.mn.us

**Followup contact:** , ,

[Return to resource list](#)

Technical problems? Contact: [admin.webmaster@state.mn.us](mailto:admin.webmaster@state.mn.us)



**Minnesota Geographic Data Clearinghouse**

- MGDC Home
- What's new
- About us
- Data
- Map gallery
- Metadata tools
- About Minnesota
- More resources

• Contact us

- Feedback
- LMIC Home

**Display Options**

- Print Friendly
- Preferences

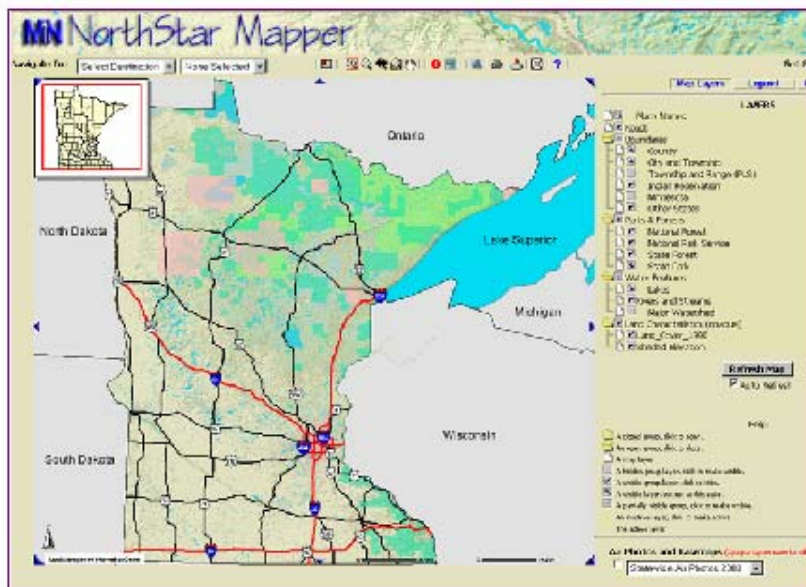
**Intranet Options**

- SQL: Show | Hide
- Menus: Show | Hide
- Home

Dept. of

# MN NorthStar Mapper

*Explore Minnesota with maps online*



**START MAPPING**

[Help](#)

[Contact Us](#)

- **Navigate the state**
  - Zoom-in to areas of interest
  - Jump to a city, county or township
  - Quickly find information about a place, including its population and elevation
- **Customize and print your map**
  - View color air photos
  - Look at topographic maps
  - Mix-and-match place names, roads, boundaries, lakes and streams, parks, forests, land cover and elevation
- **Share your map** with a friend
- **Download data** for use with GIS (geographic information systems) software

## Geospatial Services Links

- Home
- Browse records
- Search
- Register
- Login

## Display Options

- Print Friendly
- Preferences

## Dept. of Administration: ▼ Divisions

### MACNOISE.COM INTERACTIVE MAPPING APPLICATION

Description: Allows residents near MSP International Airport to determine their eligibility for mitigation programs and provides access to historical flight and noise data.

Availability: Available now

Audience: General public; Business users; GIS professionals

Resource type: Internet applications

Conditions of use: None

Features: Display map; Spatial query; Spatial analysis; Generate report; Geocode an address; Format and print a map

Coverage: Area that crosses county boundary; Anoka County; Carver County; Dakota County; Hennepin County; Ramsey County; Scott County; Washington County; Reference data spans 7 county metro. Flight data spans approximately 40km circle from MSP.

Data used: Roads; Addresses; Water features; County boundaries; City boundaries

Data license required: Yes

Coordinate system and datum used for data: UTM; NAD83

Technical requirements (software):

Technical requirements (hardware):

Standards used:

Developer: Metropolitan Airports Commission: Regional government agency

Source: Metropolitan Airports Commission: Regional government agency

Link: <http://maps.macnoise.com/interactive/>

Contact information: David Bitner, --, bitner@macnoise.com

[Return to resource list](#)

Technical problems? Contact: [admin.webmaster@state.mn.us](mailto:admin.webmaster@state.mn.us)

[About this site](#)



**- Locate Address**

Street Address (no city, state, or zip):  
   
*\*address as shown is approximate*

---

**- Date Range**

Start Date:  Start Time:  :   
 End Date:  End Time:  :   
 Available Dates:  
 10/31/2004 23:50 - 09/30/2006 23:52

---

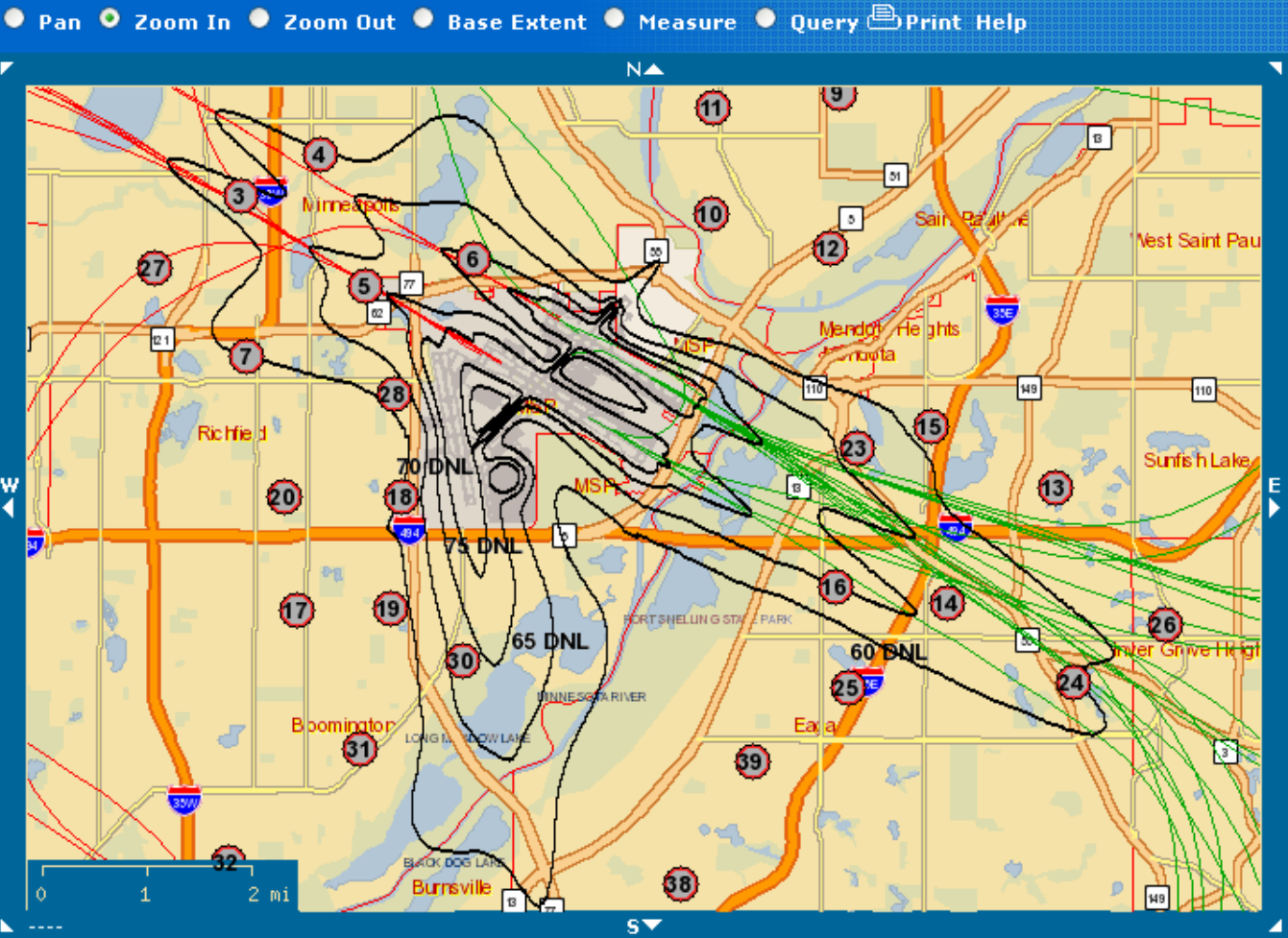
**- Legend** [show details](#)

- Base
- Rev. Draft 2007 Mit. Blocks
- Runway 17/35 INM Tracks
- Roads
- Flight Tracks
- Flight Tracks Grid
- Rev. Draft 2007 Mit. Contours
- Remote Monitoring Towers

---

**- Query Results**

This information is to be used for reference purposes only. The Metropolitan Airports Commission does not guarantee accuracy of





# Identifying Shared Opportunities: The MN Shared Geospatial Services Inventory

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[www.lmic.state.mn.us/GeoSpatialSurvey/](http://www.lmic.state.mn.us/GeoSpatialSurvey/)



# **On Common Ground: Towards a Statewide Geospatial Infrastructure**

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## **Shared Services in Action: Minnesota's WMS Image Service**

Jim Dickerson  
Geospatial Technology Specialist  
Land Management Information Center



# What is WMS?

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- The Open GIS Consortium, (OGC) created a standard interface called the Web Mapping Service (WMS).
- Allows access WMS compatible map servers using a standard set of requests and parameters.



# WMS Requests

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- **GetCapabilities**
  - Allows a Map Server to describe itself
  - Responds with information about service and available map layers
- **GetMap**
  - Returns a map image with defined geospatial and dimensional parameters
- **GetFeatureInfo**
  - Returns information about particular features on a map



# Get\_Map Request Parameters

---

- REQUEST=GetMap
- VERSION=1.1.0
- LAYERS=
- BBOX=
- WIDTH=
- HEIGHT=
- FORMAT=PNG
- BGCOLOR=0xFF55FF
- TRANSPARENT=TRUE
- SRS= (4326 is Lat/Long) (26915 is UTM Zone 15)



# What services are available?

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- In Minnesota, several agencies host WMS services for general use.
  - LMIC
  - MN DNR
  - MN DOT
  - Metro GIS



# LMIC Shared Services

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- LMIC WMS Image Server
  - Statewide Imagery
    - 2003 FSA, 1991 USGS DOQ, USGS DRG
  - Metro
    - NGA 2005
    - Metro Infrared
- LMIC WMS Services
  - ISO categorized base layers





# Minnesota Shared Services

## Basemap

[Place Names](#)

## Transportation

[Major Roads](#)

[All roads](#)

[Railroads](#)

[U.S. Highways](#)

[Interstate Highways](#)

## Imagery

[2004 NGA Metro](#)

[2003 FSA Color](#)

[1991 DOQ](#)

## Health

[Nursing Homes](#)

[Hospitals](#)

## Social

[Correctional Facilities](#)

## Elevation

[HILLSHADE 100M](#)

[HILLSHADE 30M](#)

[ELEVATION 30M](#)

## Land Cover

[Land Cover 1990](#)

## Boundaries

[County](#)

[Minnesota Zipcodes](#)

[Census Blocks - 2000](#)

[Precincts 2000](#)

[Precincts 2002](#)

[Counties - Census 1990](#)

[Counties - Census 2000](#)

[School Districts 2001](#)

[Minor Civil Divisions](#)

[Counties - MnDOT 2001](#)

[Other States](#)

[Minnesota](#)

[National Park Service](#)

[National Forest](#)

[State Forest](#)

[State Park](#)

[Indian Reservation](#)

[Township and Range \(PLS\)](#)

[MN House](#)

[MN Senate](#)

[US Congress](#)

[City and Township](#)

## Hydrography

[County Borders](#)

[USGS 100K Hydrography - Lake features](#)

[USGS 100K Hydrography - all polygons](#)

[USGS 100K Hydrography - River features](#)

[USGS 100K Hydrography - all lines](#)

[USGS 6-digit Hydrologic Units](#)

[USGS 4-digit Hydrologic Units](#)

[USGS 2-digit Hydrologic Units](#)

[Major Watershed](#)

## Geology

[Bedrock Geology - Polygons](#)

[Bedrock Hydrogeology](#)

[Depth to Bedrock](#)

[Bedrock Outcrops](#)

[Quaternary Geology](#)

[Quaternary Hydrogeology](#)

[Bedrock Geology - Lines](#)

[DNR Peat Inventory Sites](#)





# Who Uses WMS Image Server?

---

- LMIC - NorthStar Mapper
- MN DOT-Boring Sites
- MN Dept. of Agriculture - Weed Mapping
- MN DNR- Firewise program
- U of MN - Swine Disease Mapping Project
- U of MN Natural Resources Research Institute
- Private companies
  - Houston Engineering
  - The Lawrence Group
  - Riverside Companies



# LMIC NorthStar Mapper

north star mapper - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://geoserver.state.mn.us/northmap/viewer.htm

Getting Started Latest Headlines

## MN NorthStar Mapper

Navigate To: Select Destination None Selected

Set Scale 1: 5264591 Go

Map Layers Legend Information

### LAYERS

- Place Names
- Roads
- Boundaries
  - County
  - City and Township
  - Township and Range (PLS)
  - MN House
  - MN Senate
  - US Congress
  - Indian Reservation
  - Minnesota
  - Other States
- Parks & Forests
  - National Forest
  - National Park Service
  - State Forest
  - State Park
- Water Features
  - Lakes
  - Rivers and Streams
  - Major Watershed
- Land Characteristics (opaque)
  - Land\_Cover\_1990
  - Shaded Elevation

Air Photos and Basemaps (Opaque layers must be off)

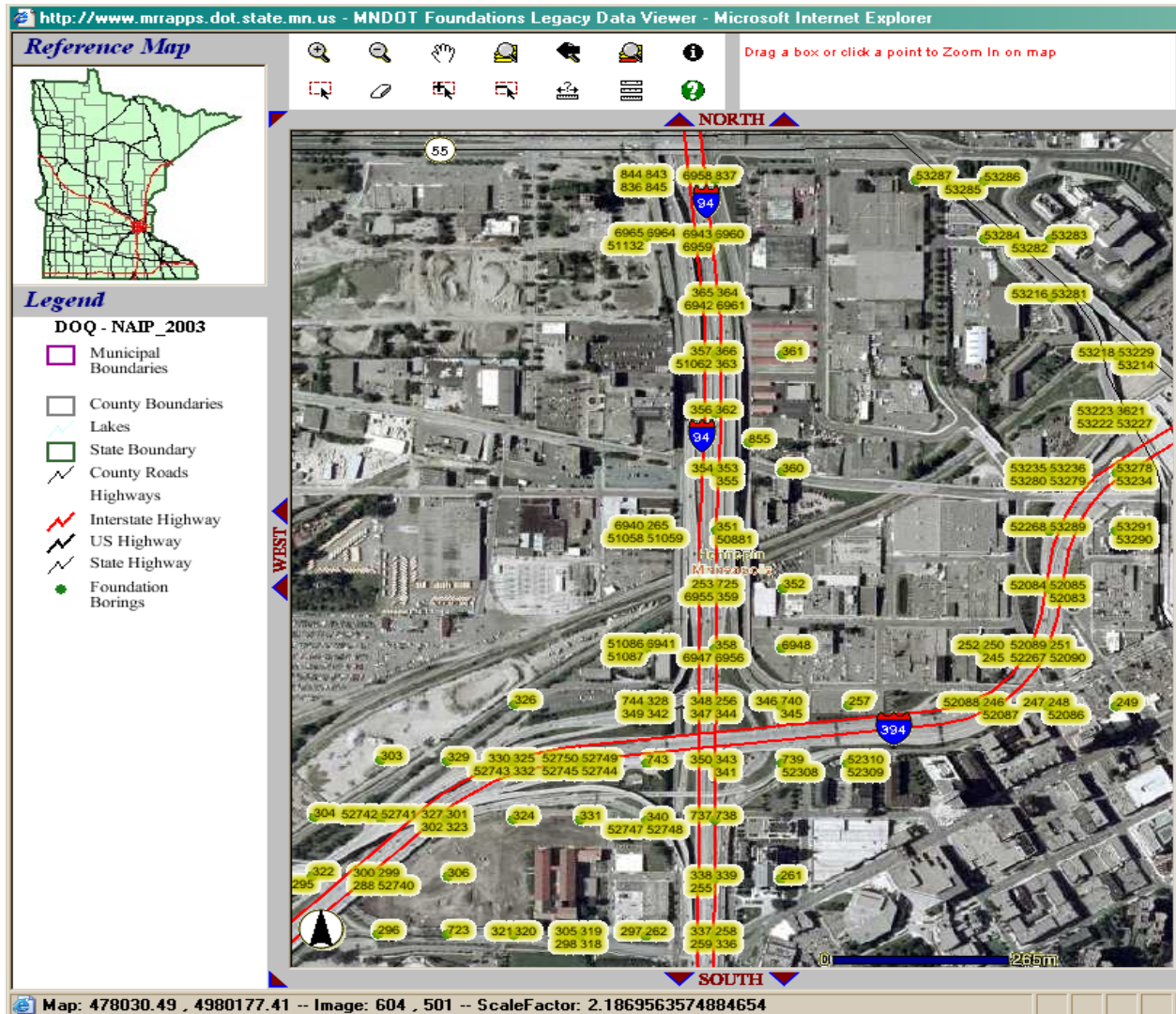
Statewide Air Photos 2003

Map Coordinates: X= 759005.85 Y= 5204963.27 Latitude = 46.94757668 Longitude = -89.59636815

Done



# MN DOT Boring Sites



# MN Dept. of Agriculture Weed Mapping

**Map Legend**

Biocontrol Release

- Canada Thistle
- Leafy Spurge
- Musk Thistle
- Plumeless Thistle

**Warning:**  
background distortion

**Current Tool:** Provides help documentation and information about the website

**LAYERS**

- Canada Thistle
- Leafy Spurge
- Musk Thistle
- Plumeless Thistle
- Spotted Knapweed
- Allaria officinalis
- Artemisia absinthium
- Carduus acanthoides
- Carduus nutans
- Centaurea diffusa
- Centaurea maculosa
- Cirsium arvense
- Cirsium vulgare
- Coronilla varia
- Dispacus laciniatus
- Elaeagnus angustifolia
- Euphorbia esula
- Hypericum perforatum
- Lotus corniculatus
- Lythrum salicaria
- Pastinaca sativa
- Phalaris arundinacea
- Rhamnus cathartica
- Rhamnus frangula
- Sonchus spp.
- Tanacetum vulgare
- Weed Areas



# U of MN Natural Resources Research Institute

Duluth Township Map Viewer - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://gisdata.nrii.umn.edu/website/duluthtownships/Viewer.htm

Duluth Township Map Viewer Zoom to Parcel ID...

Legend

- Major Roads
- City Streets
- County Roads
- Township Roads
- Other Roads
- Forest Roads
- Railroads
- Lakes
- Streams
- Duluth Township

Backgrounds

Visible

- Color aerial photo-2003
- B&W aerial photo-1990
- Topo Map

Layers

Visible/Active

- Wetlands
- Lakes
- Streams
- Duluth Twp Watersheds
- Township Lines
- 40s
- Range Lines
- Section Lines
- Zoning Codes
- Scale and Load

Map created with ArcGIS - Copyright (C) 1992-2002 ESRI Inc.

Zoom In

Transferring data from gisdata.nrii.umn.edu...









# Duluth Township Land Use Permit


Duluth Township Land Use Permit Application - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

**Figure 1: Site Planning Sketch Form for Parcel # 315-0020-06450**

	Existing		Proposed	
The instructions for drawing each of these items is found on the following pages...		Topography (10 feet of vertical distance between brown lines)		New Impervious Surface
		Impervious Surface		Actions taken to minimize impact to sensitive areas/resources
	<b>Sensitive Areas/Resources</b>			
		Wetlands		
		Bluffs Steep slopes		

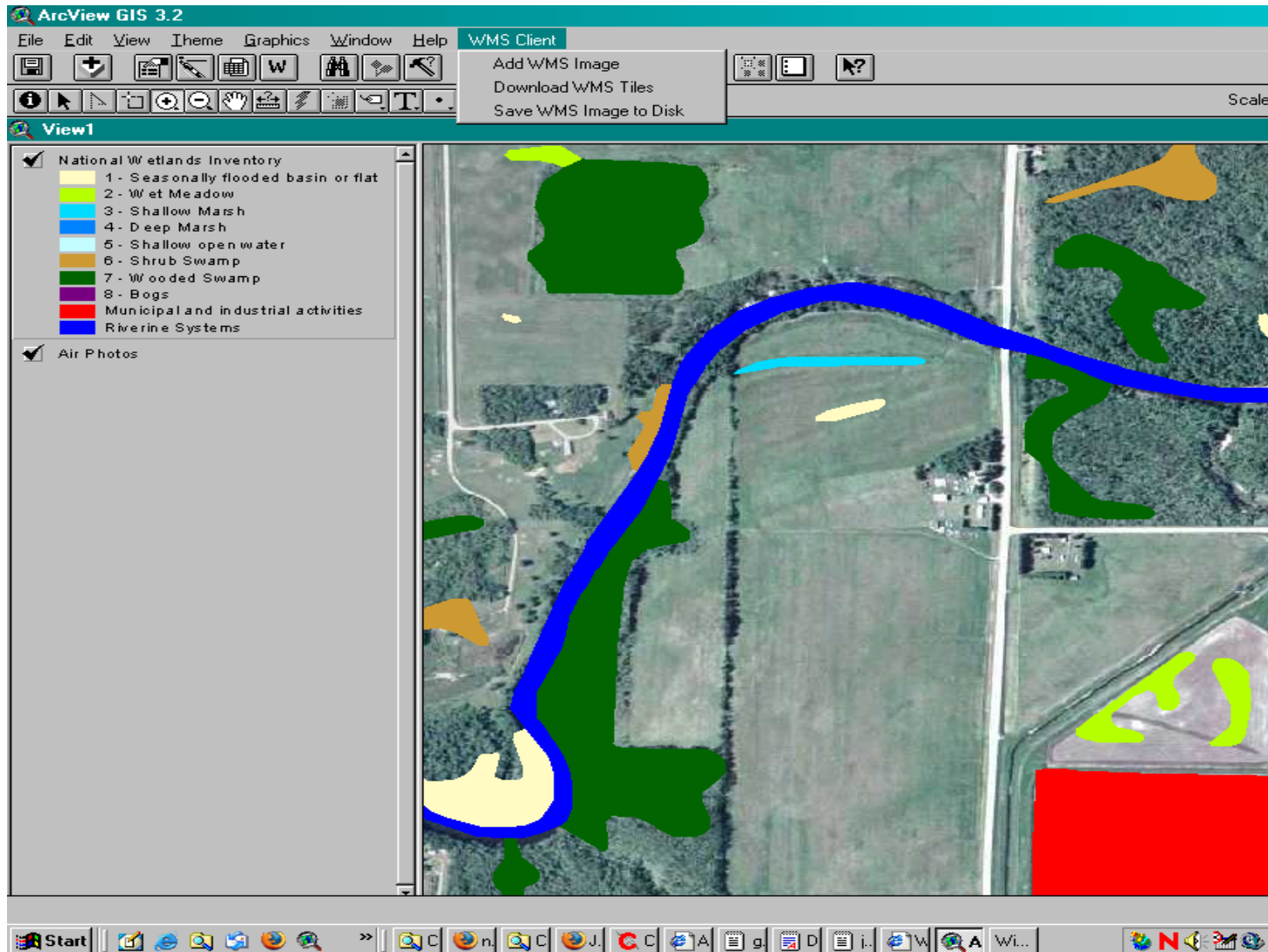
[Click here to see example sketch....](#)



Done



# MN DNR ArcView WMS Extension



# Web Mapping Resources

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- **GeoSpatial Resources Inventory**

[www.lmic.state.mn.us/GeoSpatialServices/](http://www.lmic.state.mn.us/GeoSpatialServices/)

- **GeoSpatial Image Server**

[www.lmic.state.mn.us/chouse/wms\\_image\\_server\\_description.html](http://www.lmic.state.mn.us/chouse/wms_image_server_description.html)

- **LMIC WMS Catalog**

<http://geoserver.state.mn.us/wmslayers.htm>





# On Common Ground: Towards a Statewide Geospatial Infrastructure

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**Now What?**

