DIGITAL MAPPING TECHNIQUES 2017

The following was presented at DMT’17
(May 21-24, 2017 - Minnesota Geological Survey, Minneapolis, MN)

The contents of this document are provisional

See Presentations and Proceedings from the DMT Meetings (1997-2017)

http://ngmdb.usgs.gov/info/dmt/
Enhanced Online Public Access to Minnesota Minerals and Geology Data Using ArcGIS Online Web Maps

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The Minnesota Department of Natural Resources (DNR) uses Esri’s ArcGIS Online to facilitate public access to GIS data through web map applications, which are replacing or supplementing printed maps and GIS data downloads as sources of geological and minerals data. One DNR web map application focuses on the potential for construction aggregate resources across the state. A second identifies the locations of exploratory boreholes and areas of metallic mineral exploration. Supplemental map layers, such as Minnesota Geological Survey’s GIS data, add additional value to these web maps, which can be used by the public without need of GIS software.
Enhanced Online Public Access to Minnesota Minerals and Geology Data Using ArcGIS Online Web Maps

Kevin Hanson – GIS Analyst and Division Web Coordinator
Division of Lands and Minerals
DMT Conference 2017 – Minneapolis, Minnesota
May 23, 2017
History of Data Access and Distribution
The 1970s

- Paper
- Typewriters and cartographic press
- Mail or Site visits
History of Data Access and Distribution
The 1980s

- Paper
- PC + Floppy Disks
- Mail or Site visits
History of Data Access and Distribution
The 1990s

• Paper
• PC + CD-ROMS with GIS Data and PDF maps
• Internet and email infancy
History of Data Access and Distribution
2000s to Today

- Cloud data servers
- High-speed web
- Mobile Devices
- Data Downloads
- Web maps
- Email notices
Minnesota DNR – Lands and Minerals
Easy Access to GIS Data and Digital PDF Maps

Lands and Minerals
List of GIS Data, Digital Print Maps, & Web Maps

The Lands and Minerals Division has a history of creating, maintaining, and sharing spatial datasets and digital print maps. Provided here is an extensive list of publicly available GIS datasets, digital print maps, web map services, and associated web map applications authored by the Minnesota DNR’s Lands and Minerals Division. The information has been separated out into tables by subject matter shown below.

- Aggregate Resource Mapping Program
- Dimension Stone Inventory
- Drill Core Library
- Mineral Exploration Collections
- Mineral Exploration Plan Summary Reports and Maps
- Mineral Potential Projects
- Mining Sites in Minnesota from DNR
- Overview Maps of Iron Mining and Nonferrous Mineral Exploration Activity in Northern Minnesota
- Post Inventory Project
- Public Land Survey Data
- Regional Operations Contacts Map
Minnesota DNR – Lands and Minerals
Types of GIS Data and Maps Available

• Sand and Gravel & Crushed Stone Potential Maps
• State Mineral Leasing
• Drill Core Library
• Mineral Potential Projects
• Dimension Stone Inventory
• Mineral Exploration Collections

Mineral Exploration Collections
Minarchive and Lehmann Family Fund Collections

<table>
<thead>
<tr>
<th>Date</th>
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<th>Web Map Application</th>
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GIS Data and Web Maps at DNR Lands and Minerals
http://www.dnr.state.mn.us/lands_minerals/gis_data_maps/index.html
Lands & Minerals Data to Geospatial Commons

Minnesota GIS Data Repository

Mineral Exploration Collections
Minarchive and Lehmann Family Fund Collections

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Mineral Exploration Document Areas - Lehmann Family Fund Collection

Spatial (GIS) footprints that connect to more than 2,000 scanned mineral exploration documents from the Lehmann Family Fund Collection (including the Polaris Joint Venture). The GIS polygon data includes URL links to view or download the document(s) for a mineral exploration area. Please read the lineage and accuracy sections of this form for details on GIS data creation and accuracy.

For information on the Lehmann Exploration Collection inventory please visit the DNR’s webpage at: http://www.dnr.state.mn.us/lands_minerals/polaris/index.html

GIS Data and Web Maps at DNR Lands and Minerals
http://www.dnr.state.mn.us/lands_minerals/gis_data_maps/index.html
• Core Samples Stored in Drill Core Library
• Mineral Exploration Document Areas – Minarchive
• Mineral Exploration Document Areas – Lehmann Family Fund
• DNR Mineral Potential Project Footprints
• Aggregate Resource Mapping Program Compiled GIS Data
• Coming soon...State Mineral Leasing Data
• DNR Drill Core Library and Mineral Exploration Collections
• Areas Offered for the June 2017 State Metallic Mineral Lease Sale
• Aggregate Mapping Program - Sand and Gravel & Crushed Stone Potential Maps
• Aggregate Finder
• What’s Under Your House?
Minnesota DNR – Lands and Minerals

Drill Core Library & Mineral Exploration Collections Web Map

DNR GIS Data

- Drill Core and other Samples in Library
- State Mineral Leasing
- Mineral Exploration Collections
- DNR Mineral Potential Projects
- Lease Sale Areas

Minnesota Geological Survey GIS Data

- Bedrock Geology
- Bedrock Outcrops
- Aeromagnetic
- Gravity
- Depth to Bedrock
- Surficial Geology
- Rock Properties
- Well Index
- MGS Project Footprints

- USGS Mineral Resources Data & USDA Soil Data
- 10 Online Basemaps
- Selectable Queries

5/23/2017

http://mndnr.maps.arcgis.com/apps/webappviewer/index.html?id=0ef01d29d52b4efbb9694f042e83f413
Minnesota DNR – Lands and Minerals
Video Tour of Drill Core Library Web Map App
Minnesota DNR – Lands and Minerals

Where to Find the New Mineral Exploration Georeferenced Data?

The Lands and Minerals Division has a history of creating, maintaining, and distributing GIS data and digital print maps. Provided here is an extensive list of GIS data, digital print maps, web map services, and associated web maps applicable to DNR’s Lands and Minerals Division. The information has been organized into the following collections:

- Aggregate Resource Mapping Program
- Dimension Stone Inventory
- Drill Core Library
- Mineral Exploration Collections
- Mineral Exploration Plan Summary Reports and Maps
- Mineral Potential Projects
- Mining Sites in Minnesota from DNR
- Overview Maps of Iron Mining and Nonferrous Mineral Exploration Activity in Northern Minnesota
- Peat Inventory Project
- Public Land Survey Data
- Regional Operations Contacts Map
- State Aggregate Leasing on School Trust Lands
- State Land for Sale

Mineral Exploration Collections

Minarchive and Lehmann Family Fund Collections

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http://www.dnr.state.mn.us/lands_minerals/dc_library.html
Website References

**DNR Lands and Minerals GIS Data & Maps**
http://www.dnr.state.mn.us/lands_minerals/gis_data_maps/index.html

**DNR Lands and Minerals Web Maps**
http://www.dnr.state.mn.us/lands_minerals/webmaps/index.html

**MGS Online Web Map Services**
http://www.mngs.umn.edu/service.htm

**MGS Publication and Data Search**
https://conservancy.umn.edu/handle/11299/708

**Minerals Coordinating Committee (MCC) Website**
http://mcc.mn.gov/resources.html
A lot more paper left to digitize.
Please visit our Hibbing Drill Core Library and Mineral Exploration Collections

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