INDEX OF GIS SPATIAL DATA, TABULAR DATA, AND METADATA *ASSOCIATED WITH REPORT 380, AGGREGATE RESOURCE POTENTIAL PARTS OF NORTHERN ST. LOUIS AND LAKE COUNTIES, MN.*

Project of the Minnesota Department of Natural Resources (MN DNR), Division of Lands and Minerals, Mineral Potential Evaluation Section, Aggregate Resource Mapping Program. Mapped by Hannah G. Friedrich

Website: http:\\www.dnr.state.mn.us\lands_minerals\aggregate_maps\index.html

Contact:
Industrial Minerals Geologist or GIS Specialist
MN DNR – Division of Lands and Minerals
Aggregate Resource Mapping Program
500 Lafayette Road, Box 45
St. Paul, MN 55155-4045.
Phone: 651.259.5959
Fax: 651.296.5939
Email: aggregatemap@state.mn.us

The spatial and tabular digital data being released for MN DNR Report 380 have been packaged into two types of common GIS spatial data file formats from ESRI (Environmental Systems Research Institute); ESRI **Shapefile** and ESRI **File Geodatabase** (for more information see aboutgisdata.pdf provided in this release). If your ESRI GIS software package is either ArcView 3.x, ArcGIS Desktop 8x, or ArcGIS 9.0/9.1/9.2/ the shapefile format should be used. If you are using ArcGIS 9.3/10, or any later version of ArcGIS post this data release, you can use the File Geodatabase provided. Associated **metadata** has been provided as **pdf files** and as **xml files** for the shapefiles and feature classes. Note the xml files can be viewed in ArcCatalog (ArcGIS Desktop) by clicking on the metadata tab. For better metadata viewing it is recommended to use the 'mgmg' stylesheet developed by LMIC (Land Management Information Center). To download the mgmg stylesheet for ArcGIS 9 visit: http://www.lmic.state.mn.us/chouse/arccatalog.html

This document's goal is to list in detail the GIS data released and its folder directory structure locations for both the shapefiles and file geodatabase.

Contents of the Data Folder

Title Folders:

'report380data\resource\shapefiles'
'report380data\resource\file_geodatabase'
(The file geodatabase is only viewable in ArcGIS 9.3 and any future versions of ArcGIS Desktop)

SHAPEFILES FOLDERS - 'report380data\resource\shapefiles'

GIS data folders are organized by the government agency that developed the data or is most associated with the released datasets. Details of each folder can be found on the subsequent pages.

Minnesota Department of Natural Resources
\mn_dnr
\mn_dnr\spatial
\mn_dnr\tabular
\mn_dnr\metadata

Minnesota Geological Survey
\mgs
\mgs\spatial
\mgs\tabular
\mgs\metadata

Minnesota Department of Transportation
\mn_dot
\mn_dot\spatial
\mn_dot\tabular
\mn_dot\metadata

FILE GEODATABASE FOLDER - 'report380data\resource\file_geodatabase'

(Only viewable in ArcGIS 9.3 and any future versions of ArcGIS Desktop)

File Geodatabase

Name: *report380data.gdb*

Feature Datasets

Feature datasets are organized by the government agency that developed it, or is most associated with the released datasets. In each feature dataset (exp. mn_dnr, mgs) are one or more feature classes. Details of each feature dataset's feature classes are identical to the folder subdirectories for the shapefiles seen above. Therefore that information can also be found on the subsequent pages.

\mn_dnr
\mgs
\mn_dot

File Geodatabase Tabular Related Data

Unlike the shapefiles folder, the related tables in the file geodatabase are attached to the file geodatabase rather than being placed within the government agency folder that they are related to. Below is a list of the three related tables and their government agency. For details see the following subsequent pages following the shapfiles folder directory structure in this document.

\report380_cwistrat0609 (mgs)
\report380_dotquality (mn_dot & mn_dnr)

File Geodatabase Metadata

Metadata for the file geodatabase are embedded into the geodatabase as xml files and cannot be viewed in windows explorer. However, the xml files can be viewed using ArcCatalog (ArcGIS 9.3 only if using file geodatabase) under the Metadata tab.

SUB-DIRECTORY FOLDER DETAILS

MN DNR, Division of Lands and Minerals, Aggregate Resource Mapping Program's GIS Spatial and Tabular Data Developed for this Study

{data\resource\shapefiles\mn_dnr}
{data\resource\file_geodatabase\report380data.gdb\mn_dnr}

MN DNR GIS Spatial Data

Shapefiles {report380data\resource\shapefiles\mn_dnr\spatial}
File Geodatabase Feature Classes {report380data\resource\file_geodatabase\report380data.gdb\mn_dnr}

report380_sgp: Polygon Features, Sand and Gravel Potential consists of information about the geology, geological characteristics, and sand and gravel potential of 267 map units. Five fields relate to the surficial geology of the map unit, including a unique map unit id, sediment, landform, surficial geology description, and dominant lithology. Five fields relate to sand and gravel characteristics, including probability, quality, texture, overburden thickness, deposit size, and sand and gravel thickness. These characteristics were used to calculate the aggregate potential of the map unit for sand and gravel. Two additional map units found in this dataset did not evaluate the aggregate potential in the land types; ferrous mining lands and water features. Ferrous mining lands are the locations of current or inactive ferrous mining, mining stockpiles, mining roads, tailing basins, etc. Water features were taken from MN DNR 1:24,000 hydrography lakes and rivers spatial dataset.

report380_siltclay: Polygon Features, Silt and Clay Resource Potential mapped units inferred to contain silt and clay potential. Information gathering was completed in the fall of 2009 through the spring of 2010. It includes 19 polygons within the project boundary in northern St. Louis County and Lake County, Minnesota.

report380_fobs*: Point Features, Aggregate Field Observations include information gathered in the field. Fieldwork was completed in the fall of 2009 and spring of 2010. It includes 841 field observation sites within the project boundary in parts of northern St. Louis County and Lake County, Minnesota. Observations include, but are not limited to: aggregate pits (gravel pits, sand pits), sand pits, and borrow pits; test holes; exposures of surficial geologic sediment, glacial stratigraphy, and bedrock formations in road cuts or along stream banks; excavations for basements, judicial ditches, construction projects, and trenches (cable, pipe, tiling). This spatial dataset contains a field description of each site, the dominant type of material encountered, the source of information, geologic unit thickness, and geologic overburden thickness.
*Shapefile has related database table titled 'report380_sieve' found in the 'MN DNR GIS Tabular Data'

report380_pits^: Point Features, Mining Pits consists of location information, source information, and geological characteristics for 227 aggregate pits (207 Gravel Pits, 10 Sand Pits, 6 Borrow Pits, and 4 Quarries) in parts of northern St. Louis County and Lake County. There are pits that are currently being mined or have been mined. Several sources of information identify pit locations: topographic maps, aerial photographs, soil surveys, Mn/DOT (Aggregate Source Information System) ASIS files, fieldwork, gravel operators, St. Louis County Land Department, and other

miscellaneous sources. Pits range in size from less than 1 acre to greater than 50 acres and may be active, inactive, or reclaimed. The aggregate quality of the pit varies.
^ Shapefile has related database table titled 'report380_dotqualityity'found in both the 'MN/DOT GIS Tabular Data' and 'MN DNR GIS Tabular Data'

report380_prjbdry: Polygon Features, Report 380 Project Boundary was developed to evaluate and map sand and gravel and silt and clay resource potential around known copper+nickel+platinum group element deposits in parts of northern St. Louis County and Lake County, Minnesota. In general the boundary line is 8-12 miles outside the known mineral deposits using the Public Land Survey township boundaries to snap to, as well as, the project boundary line is outside of the Boundary Waters Canoe Area Wilderness.

MN DNR GIS Tabular Data

DBFs {report380data\resource\shapefiles\mn_dnr\tabular}
File Geodatabase Tables {report380data\resource\file_geodatabase\report380data.gdb\}

Report380_dotquality.dbf: Database, MN/DOT ASIS Quality Table Created by MN DNR, 2010, This dataset consists of information about the quality of Minnesota Department of Transportation's evaluated gravel pits and other aggregate sources in the project area for MPES Report 380. In this report there were 9 pit sheets that had quality information that could be summarized. Quality information includes soundness, durability, and mineral content. This table contains the averages and ranges of values for the different quality tests and was summarized by the MN DNR from the MN/DOT pit sheets.

Report380_sieve.dbf: Database, Sieve Analysis table includes 73 selected sediment samples gathered in the field and later analyzed with sieves for textural quality by the Division of Lands and Mineral's Hibbing Lab in the fall of 2010. 12 sieves were used to determine coarse gradations and 8 sieves were used for the fine gradations. The material samples were taken during the fieldwork in the fall of 2009 and spring of 2010. These numbers represent either a single drill hole or a single exposure within a deposit. However, the deposit may vary in textural composition very much from one end to the other, or the top 10 feet may be very different from the lower 10 feet. Thus, great care must be taken when interpreting this information. In order to view the locations of these samples, the user can join this table to the field observations spatial dataset (report380_fobs.shp) table using the field 'FIELD_ID'.

MN DNR GIS Associated Metadata Including Field and Attribute Tables

PDF {report380data\resource\shapefiles\mn_dnr\metadata}
XML {report380data\resource\shapefiles\mn_dnr\spatial}
XML {report380data\resource\file_geodatabase\report380data.gdb\mn_dnr}

The associated metadata in pdf and xml format. Important note, the field and attribute tables are only viewable in the .pdf document, not in the .xml document.

PDF {report380data\resource\mn_dnr\metadata}
Field and attribute tables found at the bottom of each document.

report380_sgp.pdf
report380_siltclay.pdf
report380_fobs.pdf
report380_pits.pdf
report380_dotquality.pdf
report380_sieve.pdf
report380_prjbdry.pdf

XML {report380data\resource\shapefiles\mn_dnr\spatial}
Viewable in ArcGIS 9x within ArcCatalog using the 'Metadata' tab.

report380_sgp.shp.xml (For attribute table see report380_sgp.pdf)
report380_siltclay.shp.xml (For attribute table see report380_siltclay.pdf)
report380_fobs.shp.xml (For attribute table see report380_fobs.pdf)
report380_pits.shp.xml (For attribute table see report380_pits.pdf)
report380_prjbdry.shp.xml (For attribute table see report380_prjbdry.pdf)

XML {report380data \resource\shapefiles\mn_dnr\tabular}

report380_dotquality.dbf.xml (For attribute table see report380_dotquality.pdf)
report380_sieve.dbf.xml (For attribute table see report380_sieve.pdf)

XML {report380data\resource\mn_dnr\file_geodatabase\ report380data.gdb\mn_dnr}

Metadata for the file geodatabase mn_dnr feature classes are embedded into the data and cannot be viewed in windows explorer. The xml file can only be viewed using ArcCatalog (ArcGIS 9.3 only if using file geodatabase) under the 'Metadata' tab.

Minnesota Geological Survey (MGS) Data Used in this Study

{report380data\resource\shapefiles\mgs}

{report380data\resource\file_geodatabase\report380data.gdb\mgs}

MGS GIS Spatial Data

Shapefile {report380data\resource\shapefiles\mgs\spatial}
File Geodatabase Feature Class {report380data\resource\file_geodatabase\report380data.gdb\mgs}

report380_cwiwells0609**: Point Features, CWI Well Locations, 2009, are locations of wells drilled within MPES Report 380 project boundary in northern St. Louis County and Lake County, Minnesota. The County Well Index (CWI) is a database that contains geologic information about wells drilled throughout Minnesota. Locations were used to look at the geological descriptions of these wells. This CWI dataset was downloaded from the Minnesota Geological Survey (MGS) in June of 2009 and contained 1452 wells within the project's spatial extent. 48 of these wells were located from the MGS unlocated CWI well database and merged into this dataset. This is indicated in the attribute table under field 'DNRLOCATED' with a 'Yes'. Further information on the methodology for locating unlocated wells can be found at the bottom of this document in the attribute table descriptions.

The definitions of the fields found in report380_cwistrat0609.dbf are included in the report380_cwiwells0609.pdf document.
** Shapefile has related database table 'report380_cwistrat0609' found in 'MGS GIS Tabular Data'

MGS GIS Tabular Data

DBF {report380data\resource\shapefiles\mgs\tabular}
File Geodatabase Table {report380data\resource\file_geodatabase\report380data.gdb\}

report380_cwistrat0609: Database, CWI Well Stratigraphy Table, June 2009, is a subset of the STRAT table of the CWI database. The report380_cwiwells0609 shapefile relates to the report380_cwistrat0609.dbf table as a one-to-many relate on the relateid field. The additional table contains only those fields that were considered directly applicable to developing aggregate resource mapping units for this project. Descriptions can vary from well to well, due to different individuals completing the well logging. As an example of the detail found in these descriptions: detailed descriptions often cover 5 to 10 feet of thickness per glacial material type or bedrock type. Less detailed descriptions may say 0-240 feet glacial drift and 240-360 feet bedrock. This data table consists of 5560 stratigraphic records and as mentioned is related to the 1452 well locations of wells drilled within this report's project boundary (report380_cwiwells0609 shapefile). This CWI dataset was downloaded from the Minnesota Geological Survey (MGS) in June of 2009.

MGS GIS Associated Metadata

PDF {report380data\resource\shapefiles\mgs\metadata}
XML {report380data\resource\shapefiles\mgs\spatial}
XML {report380data\resource\file_geodatabase\report380data.gdb\mgs}

The associated metadata in pdf and xml format. Important note, the field and attribute tables are only viewable in the .pdf document, not in the .xml document.

PDF {report380data\resource\shapefiles\mgs\metadata}
Field and attribute tables found at the bottom of each document.

report380_cwiwells0609.pdf
report380_cwistrat0609.pdf

XML {report380data\resource\shapefiles\mgs\spatial}
Viewable in ArcGIS 9x within ArcCatalog using the 'Metadata' tab.

report380_cwiwells0609.shp.xml (For attribute table see report380_cwiwells0609.pdf)

XML {report380data\resource\shapefiles\mgs\tabular}
Viewable in ArcGIS 9x within ArcCatalog using the 'Metadata' tab.

report380_cwistrat0609.dbf.xml (For attribute table see report380_cwistrat0609.pdf)

XML {report380data\resource\file_geodatabase\report380data.gdb\mgs}

Metadata for the file geodatabase mgs feature class and mgs shapefile are embedded into the data. This information is best viewed using ArcCatalog (ArcGIS 9.3 only if using file geodatabase) under the Metadata tab.

Minnesota Department of Transportation (Mn/DOT) Data Used in this Study

{report380data\resource\shapefiles\mn_dot}
{report380data\resource\file_geodatabase\report380data.gdb\mn_dot}

Mn/DOT GIS Spatial Data

Shapefile {report380data\resource\shapefiles\mn_dot\spatial}
File Geodatabase Feature Class {report380data\resource\file_geodatabase\report380data.gdb\mn_dot}

report380_asis1208: Point features, Mn/DOT Aggregate Source Information System (ASIS) spatial data downloaded in December of 2008. This is the original Mn/DOT ASIS shapefile that was reviewed and edited in the field for purpose of completing the mining pit inventory for parts of northern St. Louis and Lake Counties. The updated data based on field work and pit sheet review can be found in the report380_pits shapefile under field 'source' attribute 'ASIS'. See report380_dotquality.dbf below for more details.

About ASIS: The Office of Materials developed the Aggregate Source Information System (ASIS) in 1985. It is a database used to store and retrieve information on gravel pits, rock quarries and commercial aggregate sources. It is used primarily by the Aggregate Unit at the Maplewood Lab and District Materials personnel as a data resource for recommending aggregate sources for construction projects. The Aggregate Unit manages this database. This database is dynamic and for updates visits the Mn/DOT Aggregate home page at http://www.dot.state.mn.us/materials/aggsource.html

Mn/DOT GIS Tabular Data

DBF {report380data\resource\shapefiles\mn_dot\tabular}
File Geodatabase Table {report380data\resource\file_geodatabase\report380data.gdb\mn_dot}

report380_dotquality.dbf: Database, MN/DOT ASIS Quality Table Created by MN DNR, 2008. This dataset consists of information about the quality of Minnesota Department of Transportation's evaluated gravel pits and other aggregate sources in the project area for MPES Report 380. In this report there were 9 pit sheets that had quality information that could be summarized. Quality information includes soundness, durability, and mineral content. This table contains the averages and ranges of values for the different quality tests and was summarized by the MN DNR from the MN/DOT pit sheets.

Mn/DOT GIS Associated Metadata

PDF and PDF {report380data\resource\shapefiles\mn_dot\metadata}
XML {report380data\resource\shapefiles\mn_dot\spatial}
XML {report380data\resource\file_geodatabase\report380data.gdb\mn_dot}

The associated metadata in pdf, xml, and pdf format. Important note, the field and attribute tables are only viewable in the .pdf document, not in the .xml document for report380_dotquality.dbf. The attribute table for report380_asis1208 can be found in the oasismeta08.pdf.

PDF and PDF {report380data\resource\shapefiles\mn_dot\metadata}
Field and attribute tables found at the bottom of each document.

report380_dotquality.pdf (For attribute table see report380_dotquality.pdf)
report380_asis1208.pdf
oasismeta08.pdf (Metadata in PDF format for attribute fields in report380_asis1208.shp)

XML {report380data\resource\shapefiles\mn_dot\spatial}
Viewable in ArcGIS 9x within ArcCatalog using the 'Metadata' tab.

report380_asis1208.shp.xml (For attribute table see oasismeta08.pdf)

XML {report380data\resource\shapefiles\mn_dot\tabular}
Viewable in ArcGIS 9x within ArcCatalog using the 'Metadata' tab.

report380_dotquality.dbf.xml (For attribute table see report380_dotquality.pdf)

XML { report380data\resource\file_geodatabase\report380data.gdb\mn_dot}

Metadata for the file geodatabase report380_dotquality tabular data and report380_asis1208 are embedded into the file geodatabase. This information is best viewed using ArcCatalog (ArcGIS 9.3 only if using file geodatabase) under the Metadata tab.