GIS Compilation of MN DNR Project 284: Results from Chemical Analyses and Mineralogical Investigations of Heavy Mineral Concentrate Samples Collected from Glaciofluvial Sediments in Minnesota – Report 284

A Minerals Diversification Project

GIS Data Completed: March 2014 by Andrea Strauch and Kevin Hanson
Original Data Completed: 1991
Authors: S.L. Nelson, S.J. Sutley, and R.B. Tripp
Provided here is a general description of files that are found in 'mpes284_data.zip'
Link to project webpage
Link to project report
Abstract:

The zip file contains data for samples extracted from eighty-eight glaciofluvial samples described in the Minnesota Department of Natural Resources (MnDNR), Division of Land and Minerals Report "Results from Chemical Analyses and Mineralogical Investigations of Heavy Mineral Concentrate Samples Collected from Glaciofluvial Sediments in Minnesota – Report 284," published 1991. Each folder in the zip file contains data from the report in a different format. The data is presented in its original file format, a Microsoft Access database, dBase IV files, and an ArcGIS File Geodatabase. Geospatial information for each sample site was taken from the 'sitedata' table in the UTMs fields. These UTMS fields were projected in NAD 27 Zone 15 and then projected to NAD 83 Zone 15 for this project. The 'sitedata' was then joined to 13 other feature datasets that had the unique sample id called 'DNR_S_NO' in order to make that data viewable in ArcGIS. Additional information about the original data fields can be found in the report listed above. The data is designed to be used as a supplement to the report and plates.

Folders and their contents:

ACCESS_DB_FROM_RAW_DATA

This folder contains an access database into which 17 raw data tables were imported. Files were brought into Microsoft Access in order to assign proper field headings and proper data type, and then they were exported as dBase IV files to be brought into mapping software. At this point, all blank or "NULL" cells were replaced by "-999" to avoid replacement with zeros.

Microsoft Access Database: project284.accdb

- **APATITES.DBF** – Datafile is referenced on page 73 in the report; Table 14, "Mineralogical and chemical data results for apatites identified by electron microprobe analysis for the heavy mineral concentrate test study samples.
- **C2POINT.DBF** - Datafile is referenced on page 74 in the report; Table 13, "Quantitative mineralogical point count percentage data results for the paramagnetic (C-2) fraction of the heavy mineral concentrate test study samples.
- **C2.DBF** – Datafile is referenced on pages 43-45 in the report, Table 8; Analytical results for the paramagnetic (C-2) fraction of the heavy mineral concentrate samples determined by semiquantitative emission spectroscopy [N, not detected at the limit of

detection shown; L, detected but below the limit of detection shown; G, determined to be greater than the value shown]. **Note: The following elements were also analyzed but were not detected at the detection limit shown in ( ): P (0.5%), As (500ppm), Au (20ppm), Bi (20ppm), Cd (50ppm), Ge (20ppm), Sb (200ppm), W (50ppm), Zn (500ppm), Pd (5ppm), and Pt (20ppm).*

- **C3.DBF** - Datafile is referenced on pages 53-62 in the report; Table 9: Analytical results for the non-magnetic (C-3) fraction of the heavy mineral concentrate samples determined by semiquantitative emission spectroscopy [N, not detected at the limit of detection shown; L, detected but below the limit of detection shown; G, determined to be greater than the value shown]. **Note: The following elements were also analyzed but were not detected at the detection limit shown in ( ): Cd (50ppm), Ge (20ppm), Pd (5ppm), and Pt (20ppm).*
- **C3MINOGY.DBF** - Datafile is referenced on pages 64-73 in the report; Table 11: Optical mineralogy data results for the non-magnetic (C-3) fraction of the heavy mineral concentrate samples; Table 12: Description of the ore-related, rock forming, and accessory minerals observed optically in the non-magnetic (C-3) fraction of the heavy mineral concentrate samples.
- **COMPANY.DBF** - Datafile is not referenced in the report. Includes greater information about each of the 88 sample gravel sites. This information was joined to the feature class 'project284_sitedata_include_owner_and_company' within the file geodatabase.
- **CYANIDE.DBF** - Datafile is referenced on page 63 in the report; Table 10: Analytical results for cyanide leach assay of three pilot study archive samples.
- **FA.DBF** - Datafile is referenced on pages 43-45 in the report; Table 7: Analytical results for the total heavy mineral concentrate samples (before magnetic separations) determined by fire assay analysis [N, not detected at the limit of detection shown; L, detected by below the limit of detection shown]. **Note: Test study samples 20431 and 22631-22637 were analyzed using a lead-oxide flux; all other samples were analyzed using a nickel-sulfide flux.*
- **FADETECT.DBF** - Datafile is referenced on page 6 in the report; Table 1: Lower limits of detection for the fire assay analysis of heavy mineral concentrates.
- **GEOLOGY.DBF** - Datafile is referenced on pages 19-39 and 94-95 in the report; Table 5: Geologic descriptions of the sand/gravel pits and the material sampled for the test and pilot study samples; Appendix C: Underlying bedrock map unit symbols and depth to bedrock for the test pilot study sample sites.
- **MAPUNIT.DBF** - Datafile is referenced on pages 96-99 in the report; Appendix D: Explanation of bedrock map unit symbols (as shown in Appendix C).
- **MONAZITE.DBF** - Datafile is referenced on pages 76-79 in the report; Table 15: Mineralogical and chemical data results for monazites identified by electron microprobe analysis for the heavy mineral concentrate test study samples.

- **OTHERMISC.DBF** - Datafile is referenced on pages 80-87 in the report; Table 16: Mineralogical and chemical data results for miscellaneous minerals identified by electron microprobe analysis for the heavy mineral concentrate test study samples.
- **OWNER.DBF** - Datafile is not referenced in the report. Includes greater information about each of the 88 sample gravel sites. This information was joined to the feature class 'project284_sitedata_include_owner_and_company' within the file geodatabase.
- **SITEDATA.DBF** - Datafile is referenced on pages 12-15 in the report; Table 3: Site locations, surface ownership, and sand/gravel pit activity information for the test and pilot study samples.
- **SPEC.DBF** - Datafile is referenced on page 8 in the report; Table 2: Lower limits of detection for the spectrographic analysis of heavy mineral concentrates based on a 5-mg sample.
- **VOL_WT.DBF** - Datafile is referenced on pageS 40-42 in the report; Table 6: Volume and weight measurements of various sample fractions for the test and pilot study samples. **Note: Heavy mineral concentrates produced from -10 mesh material for test study samples and from -20 mesh material for pilot study samples. See Table 6 for a greater extent to references.*

FILE _GEODATABASE

This ArcGIS File Geodatabase (viewable in ArcGIS 9.3 and above) contains most of the tables described in the Microsoft Access Database. The tables in the Access Database that were not converted to a spatial ArcGIS database are because they didn't have a relational sample number for a site.

File name - mpes284_data.gdb

- **Feature Dataset – Features**
  - project284_apatites
  - project284_c2
  - project284_c2point
  - project284_c3
  - project284_c3minogy
  - project284_cyanide
  - project284_fa
  - project284_geology_mapunit
    - Joined the mapunit table to the geology table.
  - project284_monazite
  - project284_sitedata_include_owner_and_company
    - Joined the Owner.dbf and Company.dbf files to the sitedata table.
  - project284_vol_wt

DBF_EXPORTED_FROM_ACCESS

This folder contains all the datafiles exported out of the Microsoft Access Database listed above as DBF files.

RAW_DATA

This folder contains all the data in its original file format. These files were brought into Microsoft Access (database listed above).

Any questions regarding the GIS compilation contact:

Kevin J Hanson
Geographer/GIS Specialist
Mineral Potential Evaluation Section
Aggregate Resource Mapping Program
MN DNR - Division of Lands & Minerals
Work Phone - 651-259-5429
Work Email - kevin.hanson@state.mn.us