Appendix; Field and lithologic data; maps
Soil Geochemical and Indicator Mineral Reconnaissance Survey of Till in Minnesota

Reaction to HCl

Year of Collection: 2004
Material sampled: C horizon till
Number of samples: 250
Analytical method: Field Observation
Analyzed fraction: Moist till

Kilometers

University of Minnesota
Minnesota Geological Survey, Harvey Thorleifson, Director
Soil Geochemical and Indicator Mineral Reconnaissance Survey of Till in Minnesota

Matrix texture

Year of Collection: 2004
Material sampled: C horizon till
Number of samples: 250
Analytical method: Field observation
Analyzed fraction: Moist till

Matrix texture
- Clayey
- Silty
- Loam
- Sandy
- Gravelly
Consistency

Year of Collection: 2004
Material sampled: C horizon till
Number of samples: 250
Analytical method: Field observation
Analyzed fraction: Moist till

Map of Minnesota showing the distribution of soil consistency samples with symbols indicating soft, firm, and hard consistencies.
Soil Geochemical and Indicator Mineral Reconnaissance Survey of Till in Minnesota

Carbonate pebbles

Year of Collection: 2004
Material sampled: C horizon till
Number of samples: 250
Analytical method: Field observation
Analyzed fraction: Moist till

Kilometers

Carbonate pebbles present
- No
- Yes

UNIVERSITY OF MINNESOTA
Minnesota Geological Survey, Harvey Thorleifson, Director
Soil Geochemical and Indicator Mineral Reconnaissance Survey of Till in Minnesota

Sand

Year of collection: 2004
Material sampled: C horizon till
Number of samples: 250
Analytical method: Sieve
Analyzed fraction: <2 mm

Kilometers

Percentile | Percent sand
---|---
25 | 31.5
50 | 41.1
75 | 52.1
90 | 71.0
95 | 77.4
98 | 80.9
99 | 84.2
100 | 92.6

University of Minnesota
Minnesota Geological Survey, Harvey Thorleifson, Director
Soil Geochemical and Indicator Mineral Reconnaissance Survey of Till in Minnesota

Silt

Year of collection: 2004
Material sampled: C horizon till
Number of samples: 250
Analytical method: Hydrometer
Analyzed fraction: <2 mm

Kilometers

Percentile  Percent silt
25  28.1
50  33.2
75  38.7
90  45.8
95  49.2
98  54.9
99  59.6
100 78.9
Dolomite

Year of collection: 2004
Material sampled: C horizon till
Number of samples: 250
Analytical method: Chittick
Analyzed fraction: <63 μ

Percentile | Percent dolomite
--- | ---
25 | 0.9
50 | 9.0
75 | 13.7
90 | 19.1
95 | 23.4
98 | 30.2
99 | 31.9
100 | 32.1

Kilometers

University of Minnesota
Minnesota Geological Survey, Harvey Thorleifson, Director
Soil Geochemical and Indicator Mineral Reconnaissance Survey of Till in Minnesota

Carbonate

Year of collection: 2004
Material sampled: C horizon till
Number of samples: 260
Analytical method: Chittick
Analyzed fraction: <63 μ

Kilometers

Percentile | Percent carbonate
--- | ---
25 | 2.0
50 | 15.6
75 | 23.5
90 | 32.6
95 | 38.2
98 | 47.3
99 | 50.2
100 | 51.4

UNIVERSITY OF MINNESOTA
Minnesota Geological Survey, Harvey Thorleifson, Director
Soil Geochemical and Indicator Mineral Reconnaissance Survey of Till in Minnesota

**Carbonate**

- Year of collection: 2004
- Material sampled: C horizon till
- Number of samples: 250
- Analytical method: Visual identification
- Analyzed fraction: 8-16 mm

Kilometers

Percentile | Carbonate percent
--- | ---
25 | 2.9
50 | 42.9
75 | 56.6
90 | 71.7
95 | 78.6
98 | 88.0
99 | 89.8
100 | 90.8

UNIVERSITY OF MINNESOTA
Minnesota Geological Survey, Harvey Thorleifson, Director
Soil Geochemical and Indicator Mineral Reconnaissance Survey of Till in Minnesota

Dark Metasedimentary and Metavolcanic

Year of collection: 2004
Material sampled: C horizon till
Number of samples: 250
Analytical method: Visual identification
Analyzed fraction: 8-16 mm

Kilometers

Percentile | Dark Metased/Metavolc percent
--- | ---
25 | 7.3
50 | 13.5
75 | 31.5
90 | 45.6
95 | 48.1
99 | 59.9
100 | 78.0

University of Minnesota
Minnesota Geological Survey, Harvey Thorkelson, Director
Felsic intrusive and high-grade metamorphic

Year of collection: 2004
Material sampled: C horizon till
Number of samples: 250
Analytical method: Visual identification
Analyzed fraction: 8-16 mm

Percentile | Felsic IHGM percent
--- | ---
25 | 11.3
50 | 16.3
75 | 23.0
90 | 32.7
95 | 40.6
98 | 82.9
99 | 90.0
100 | 92.3

University of Minnesota
Minnesota Geological Survey, Harvey Thorleifson, Director
Ironstone

Year of collection: 2004
Material sampled: C horizon till
Number of samples: 250
Analytical method: Visual identification
Analyzed fraction: 8-16 mm

Map showing the distribution of ironstone samples across Minnesota.
Lignite

Year of collection: 2004
Material sampled: C horizon till
Number of samples: 250
Analytical method: Visual identification
Analyzed fraction: 8-16 mm
Quartz

Year of collection: 2004
Material sampled: C horizon till
Number of samples: 250
Analytical method: Visual identification
Analyzed fraction: 8-16 mm

UNIVERSITY OF MINNESOTA
Minnesota Geological Survey, Harvey Thorleifson, Director
Reddish Volcanics

Year of collection: 2004
Material sampled: C horizon till
Number of samples: 250
Analytical method: Visual identification
Analyzed fraction: 8-16 mm

Kilometers

Percentile  Reddish volcanics percent
25  1.5
50  5.5
75  20.4
90  27.2
95  34.4
99  35.0
100 39.7

University of Minnesota
Minnesota Geological Survey, Harvey Thorleifson, Director
Sandstone

Year of collection: 2004
Material sampled: C horizon till
Number of samples: 250
Analytical method: Visual identification
Analyzed fraction: 8-16 mm
Soil Geochemical and Indicator Mineral Reconnaissance Survey of Till in Minnesota

**Shale**

Year of collection: 2004  
Material sampled: C horizon till  
Number of samples: 250  
Analytical method: Visual identification  
Analyzed fraction: 8-16 mm

Kilometers

Percentile | Shale percent |
-----------|---------------|
25         | 1.8           |
50         | 7.3           |
75         | 15.7          |
90         | 20.1          |
95         | 31.4          |
98         | 32.3          |
100        | 40.9          

University of Minnesota  
Minnesota Geological Survey, Harvey Thorleifson, Director