Glacial Geology Landforms and Lobes

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Glacial Landforms in Minnesota

Alluvium: Sediment deposited by a river including the river bed and floodplain.
Colluvium: Sediment, commonly rocky, that accumulated at the base of steep slopes by falling from above.
End moraine: A ridge that formed along the front of a glacier by bulldozing and accumulation of sediment, primarily glacial till, the unsorted mix of debris deposited by ice.
Ground moraine: The flat terrain of glacial till formed beneath a moving glacier.
Glacial lake – clay and silt: Fine-grained sediment deposited in a deep-water lake.
Glacial lake – silt and sand: Medium to fine-grained sediment deposited in shallow to moderately deep water.
Glacial lake – sand and gravel: Beach ridges formed along the former shores of a large lake.
Gray glacial sediment: Sediment related to earlier glaciations and derived primarily from ice the flowed from the northwest.
Outwash: The sand and gravel deposited by streams that flowed from a melting glacier.
Moraine – Lake modified till: A glacial ridge that was eroded by waves.
Peat: Brown to black organic residuum formed from the partial decomposition of dead plants that accumulated in wet places like bogs and marshes.
Red glacial sediment: Sediment related to earlier glaciations and derived primarily from ice the flowed from the northeast.
Residuum: Weathered rock and sediment was exposed for a long time to sometimes very harsh conditions. Easily dissolved minerals were removed; resistant rocks (chert) and clay remain.
Stagnation moraine: Irregular terrain, primarily redeposited glacial till, that formed as the glacier melted in place resulting in a broad band of hills, lakes and wetlands.
Terraces: Former river floodplains that were abandoned as the river cut deeper into the landscape.

Major Glacial Lobes in Minnesota

Des Moines lobe: The last tongue of ice to flow from the Laurentide ice sheet across the state, it flowed from northwest to southeast and reached Des Moines, Iowa, spreading clayey, yellow-brown to gray glacial sediment and shale, limestone and other rocks from Saskatchewan and Manitoba.
Rainy lobe: A tongue of ice that flowed from the Laurentide ice sheet to the southwest along the highlands above Lake Superior that deposited a grayish brown, stony sediment.
Superior lobe: A tongue of ice that flowed from the Laurentide ice sheet through Lake Superior that deposited reddish brown, sandy to clayey sediment, with primarily red, black and gray rocks.
Wadena lobe: The first ice advance of the last glaciation, this tongue of ice flowed from Laurentide ice sheet to the north depositing brown to gray glacial sediment. Its ground moraine preserves a large area of streamlined hills—the Wadena Drumlin field.