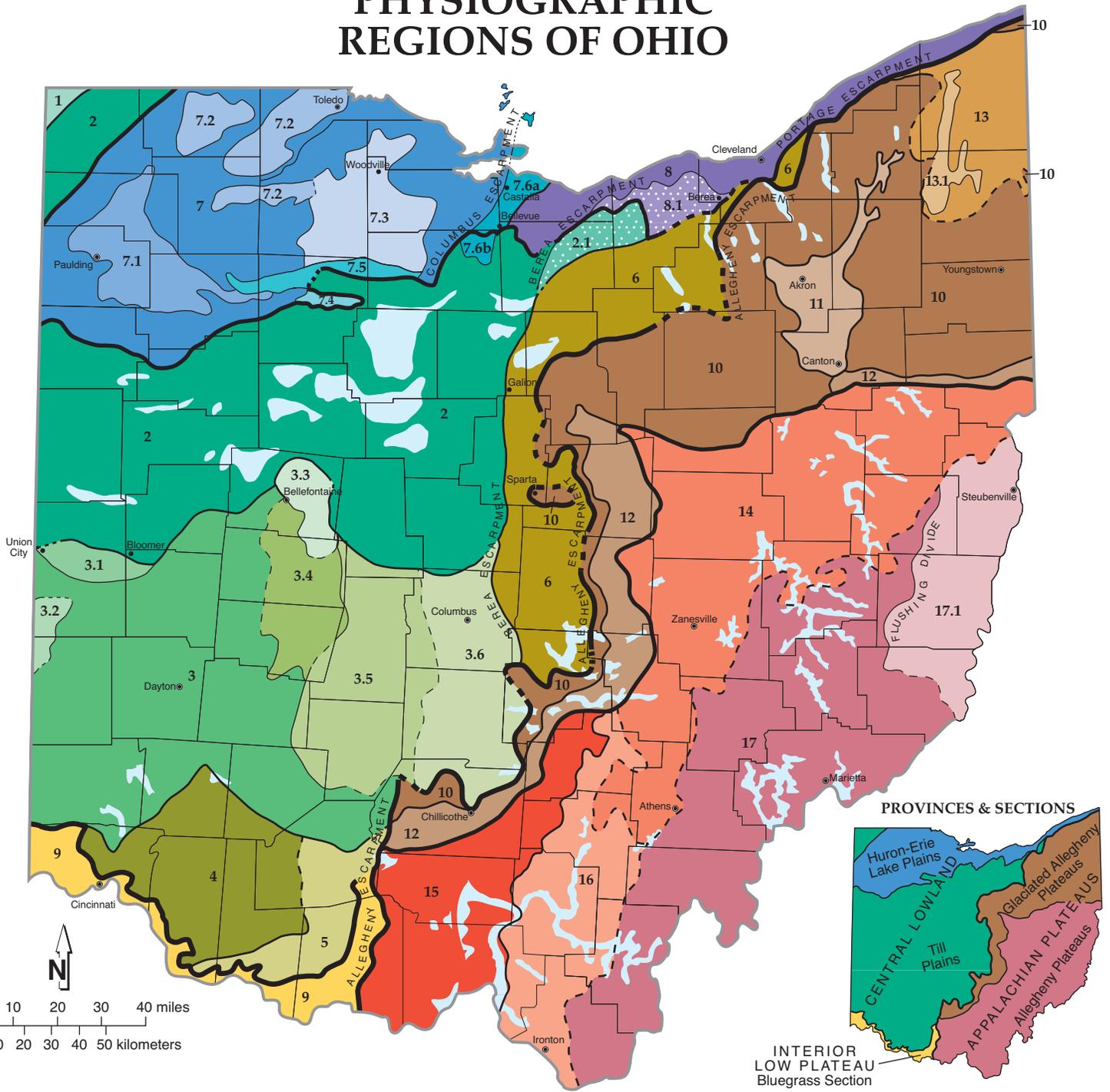


PHYSIOGRAPHIC REGIONS OF OHIO



- Till Plains**
- 1. Steuben Till Plain
- 2. Central Ohio Clayey Till Plain
 - 2.1. Berea Headlands of the Till Plain
- 3. Southern Ohio Loamy Till Plain
 - 3.1. Union City-Bloomer Transitional Terrain
 - 3.2. Whitewater Interlobate Plain
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 - 3.5. Darby Plain
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- Lake basin/deposits outside Huron-Erie Lake Plains**
- Huron-Erie Lake Plains**
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- Bluegrass Section**
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- Glaciated Allegheny Plateaus**
- 10. Killbuck-Glaciated Pittsburgh Plateau
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- Allegheny Plateaus**
- 14. Muskingum-Pittsburgh Plateau
- 15. Shawnee-Mississippian Plateau
- 16. Ironton Plateau
- 17. Marietta Plateau
 - 17.1. Little Switzerland Plateau

PHYSIOGRAPHIC REGIONS OF OHIO

| Major Divisions | Provinces | Sections * | DISTINGUISHING CHARACTERISTICS OF REGIONS & DISTRICTS | GEOLOGY | BOUNDARIES |
|--|--|---|---|--|---|
| INTERIOR PLAINS | CENTRAL LOWLAND | Till Plains | 1. Steuben Till Plain. Hummocky terrain with rolling hills, interspersed flats and closed depressions; wetlands, few streams, deranged drainage; only a small part of the region is in Ohio; elevation 950'-1100', moderately low relief (60') | Wisconsinan-age (latest Ice-Age) loamy till from a northern source (Saginaw glacial lobe) over Mississippian-age Coldwater Shale | Southeast: edge of Wabash Moraine |
| | | | 2. Central Ohio Clayey Till Plain. Surface of clayey till; well-defined moraines with intervening flat-lying ground moraine and intermoraine lake basins; no boulder belts; about a dozen silt-, clay- and till-filled lake basins range in area from a few to 200 square miles; few large streams; limited sand & gravel outwash; elevation 700'-1150', moderate relief (100') | Clayey, high-lime Wisconsinan-age till from a northeastern source (Erie glacial lobe) and lacustrine materials over Lower Paleozoic-age carbonate rocks and, in the east, shales; loess thin to absent | North: Lake Plain; northeast: limit of Berea Sandstone; east: Berea Escarpment; south: Powell and Union City/Bloomer Moraines; northern segment boundaries: Wabash Moraine and lake plain |
| | | | 2.1. Berea Headlands of the Till Plain. Gently rolling to flat terrain of thin drift descending to Lake Erie; punctuated by more than 20 streamlined "whalebacks" of Berea Sandstone, 0.5 to 2.5 miles long, 30'-60' high; somewhat poorly drained; elevation 800'-1000', low relief (20') | Thin, clayey, medium-lime Wisconsinan-age till over resistant Mississippian-age Berea Sandstone | South: limit of Berea Sandstone; elsewhere: Berea Escarpment and/or margin of highest Pleistocene lake |
| | | | 3. Southern Ohio Loamy Till Plain. Surface of loamy till; end and recessional moraines, commonly associated with boulder belts, between relatively flat-lying ground moraine, cut by steep-valleyed large streams; stream valleys filled with outwash and alternate between broad floodplains and narrows; buried valleys common; elevation 530'-1150', moderate relief (200') | Loamy, high-lime Wisconsinan-age till, outwash, and loess over Lower Paleozoic-age carbonate rocks and, in the east, shales | East: Berea and Allegheny Escarpments; north: Powell and Union City/Bloomer Moraines; south: limit of Wisconsinan-age till |
| | | | 3.1. Union City-Bloomer Transitional Terrain. Well-defined moraines with low-relief, hummocky ground moraine like the Central Ohio Clayey Till Plain to the north; loamy till with loess cap like Southern Ohio Loamy Till Plain to the south; elevation 920'-1075', moderately low relief (30') | Loamy, high-lime Wisconsinan-age till with thin loess cap over Silurian-age dolomites | North: Bloomer Moraine and limit of loamy till; south: Union City/Bloomer |
| | | | 3.2. Whitewater Interlobate Plain. An broad between two converging glacial lobes with hummocky moraines, moraine complexes, kames, boulder belts, and outwash trains/plains; contains highest elevations in Indiana (1257') and in adjacent Ohio counties (1240'); elevation in Ohio 980'-1240', moderate relief (150') | Loamy, high-lime Wisconsinan-age till and sand and gravel outwash over resistant Silurian-age carbonate rocks (north) and less resistant Ordovician-age shales and limestones (south) | North: limit of Knightstown/Farmersville Moraines and kame fields; east: high, dissected hills draining to Whitewater River |
| | | | 3.3. Bellefontaine Upland. Moderately high relief (250') dissected topography with moraine complexes, boulder belts, high-gradient major streams, caves and sinkholes; few glacial depressions/kettles compared to surrounding areas; elevation 1100'-1549', includes highest elevation in Ohio (Campbell Hill, 1549') | Loamy, high-lime Wisconsinan-age till over generally deeply buried Silurian- to Devonian-age carbonate rocks and Ohio Shale | North: areas with hilltops above 1200'; elsewhere: hilltops above about 1300' |
| | | | 3.4. Mad River Interlobate Plain. Area between two major converging glacial lobes with extensive outwash, outwash terraces, and bordering moraines; springs and cool, ground-water-fed surface waters; elevation 800'-1350', moderate relief (200') | Loamy, high-lime Wisconsinan-age till and sand and gravel outwash over Silurian- to Devonian-age carbonate rocks and Ohio Shale | East and north: rear edge of Cable Moraine Complex; south: outwash to Clifton Gorge; west: western edge of Mad River Outwash |
| | | | 3.5. Darby Plain. Moderately low relief (25'), broadly hummocky ground moraine with several broad, indistinct recessional moraines; between hummocks are broad, poorly drained swales which held wet prairies/meadows in pioneer days; few large streams; elevation 750'-1100' | Loamy, high-lime Wisconsinan-age till and sparse outwash over Silurian- and Devonian-age carbonate rocks and Ohio Shale in the southeast | South and west: front of Reesville and rear of Cable Moraines; north: Powell Moraine; east: increasing eastward slope (see 3.6) |
| | | | 3.6. Columbus Lowland. Lowland surrounded in all directions by relative uplands, having a broad regional slope toward the Scioto Valley; many larger streams; elevation 600'-850' (950' near Powell Moraine), moderately low relief (25') | Loamy, high-lime (west) to medium-lime (east) Wisconsinan-age till and extensive outwash in Scioto Valley over deep Devonian- to Mississippian-age carbonate rocks, shales, and siltstones | North: Powell Moraine; east and south: Berea and/or Allegheny Escarpments; west: flatter and higher Darby Plain |
| | | | 4. Illinoian Till Plain. Rolling ground moraine of older till generally lacking ice-constructional features such as moraines, kames, and eskers; many buried valleys; modern valleys alternating between broad floodplains and bedrock gorges; elevation 600'-1100', moderately low relief (50') | Silt-loam, high-lime, Illinoian-age till with loess cap; soils leached several feet; underlain by Ordovician- and Silurian-age carbonate rocks and calcareous shales | North: Wisconsinan glacial margin (Cuba and Hartwell Moraines); elsewhere: limit of common till-covered hillslopes |
| | | | 5. Dissected Illinoian Till Plain. Hilly former till plain in which glacial deposits have been eroded from many valley sides; relatively high stream density; elevation 600'-1340', moderate relief (200') | Hilltops of high-lime Illinoian-age till with loess cap; slopes of bedrock- and till-derived colluvium and Ordovician- and Silurian-age carbonate rocks and calcareous shales | East: maximum glacial margin; elsewhere: limit of general absence of till on hillslopes |
| | | | 6. Galion Glaciated Low Plateau. Rolling upland transitional between the gently rolling Till Plain and the hilly Glaciated Allegheny Plateau; mantled with thin to thick drift; elevation 800'-1400', moderate relief (100') | Medium- to low-lime Wisconsinan-age till over Mississippian-age shales and sandstones | North: limit of Berea Sandstone; west: Berea Escarpment; south and east: Allegheny Escarpment |
| | | | 7. Maumee Lake Plains. Flat-lying Ice-Age lake basin with beach ridges, bars, dunes, deltas, and clay flats; contained the former Black Swamp; slightly dissected by modern streams; elevation 570'-800', very low relief (5') | Pleistocene-age silt, clay, and wave-planned clayey till over Silurian- and Devonian-age carbonate rocks and shales | Northeast: Lake Erie; elsewhere: margin of highest Pleistocene lake |
| | | | 7.1. Paulling Clay Basin. Nearly flat lacustrine plain; most clayey of all Lake Plain subregions; low-gradient, highly meandering streams; easily ponded soils; elevation 700'-725', extremely low relief (less than 5') | Pleistocene-age lacustrine clay over clay till and Silurian-age dolomites | Northeast: subdued ("drowned") remnant of Defiance Moraine; elsewhere: limit of lacustrine clay |
| | | | 7.2. Maumee Sand Plains. Lacustrine plain mantled by sand; includes low dunes, inter-dunal pans, beach ridges, and sand sheets of glacial lakeshores; well to poorly drained; elevation 600'-800', very low relief (10') | Late Wisconsinan-age sand over clay till and lacustrine deposits; Silurian- and Devonian-age carbonate rocks and shales buried deeply. | Limit of sandy deposits and/or low dunes |
| | | | 7.3. Woodville Lake-Plain Reefs. Very low relief (10') lacustrine plain with low dunes and lake-margin features, punctuated by more than 75 ancient bedrock reefs rising 10' to 40' above the level of the plain and ranging in area from 0.1 to 3.0 square miles; the oblong reefs are thinly draped with drift; elevation 600'-775' | Thin to absent Wisconsinan-age wave-planned clay till, lacustrine deposits, and sand over Silurian-age reefal Lockport Dolomite | Limit of thinly mantled Lockport Dolomite (Bowling Green Fault to the west and the Defiance Moraine to the south) |
| | | | 7.4. Findlay Embayment. Very low relief (10'), broadly rolling lacustrine plain; embayment of ancestral Lake Erie in which relatively coarse lacustrine sediments collected; elevation 775'-800' | Silty to gravely Wisconsinan-age lacustrine deposits and wave-planned clayey till over Silurian-age Lockport Dolomite | West: 775' beach ridge; north: Defiance Moraine; south: margin of highest Pleistocene lake level |
| | | | 7.5. Fostoria Lake-Plain Shoals. Portion of the Defiance Moraine lightly eroded by shallow Lake Maumee with low north-south trending hillocks and shallow, closed depressions; many sandy areas; elevation 750'-825', low relief, decreasing westward (10'-15') | Silty to gravely Wisconsinan-age lacustrine deposits and wave-planned clay till over deeply covered Silurian-age dolomite | South and east: unmodified Defiance Moraine; elsewhere: very low-relief lake plain |
| 7.6a and 7.6b. Bellevue-Castalia Karst Plain. Hummocky plain of rock knobs and numerous sinkholes, large solution features, and caves; large springs; thinly mantled by drift; region straddles both Lake Plain (7.6a) and Till Plain (7.6b); 7.6a has greatest relief of any Lake Plain region (25'); elevation 570'-825' | Columbus and Delaware Limestones overlain by thin clay till in 7.6b, and thin silty and sandy Wisconsinan-age lacustrine deposits and wave-planned clay till in 7.6a | Limit of thinly mantled Columbus and Delaware Limestones, which is marked in the west by the Columbus Escarpment | | | |
| 8. Erie Lake Plain. Edge of very low-relief (10') Ice-Age lake basin separated from modern Lake Erie by shoreline cliffs; major streams in deep gorges; elevation 570'-800' | Pleistocene-age lacustrine sand, silt, clay, and wave-planned till over Devonian- and Mississippian-age shales and sandstones | North: Lake Erie; south: margin of highest Pleistocene lake | | | |
| 8.1 Berea Headlands of the Erie Lake Plain. Portion of the Erie Lake Plain underlain by resistant Berea Sandstone; several large sandstone headlands jut into the Ice-Age lake basin; contains several streamlined "whalebacks" of Berea Sandstone, 0.5 to 2.0 miles long, 20'-35' high; poorly drained; elevation 670'-800', very low relief (10') | Thin lacustrine deposits over thin, wave-planned, clayey, medium-lime Wisconsinan-age till; underlain by resistant Berea Sandstone | North: portion of Lake Plain underlain by soft shales; south: margin of highest Pleistocene lake | | | |
| 9. Outer Bluegrass Region. Moderately high relief (300') dissected plateau of carbonate rocks; in east, caves and other karst features relatively common; in west, thin, early drift caps narrow ridges; elevation 455'-1120' | Ordovician- and Silurian-age dolomites, limestones, and calcareous shales; thin pre-Wisconsinan drift on ridges in west; silt-loam colluvium | Eastern segment: maximum glacial margin and high eastern ridges capped by noncarbonate rocks; connected by Ohio River bluffs to western segment which is bounded by nondissected till plain | | | |
| APPALACHIAN HIGHLANDS | APPALACHIAN PLATEAUS | Bluegrass Section | 10. Killbuck-Glaciated Pittsburgh Plateau. Ridges and flat uplands generally above 1200', covered with thin drift and dissected by steep valleys; valley segments alternate between broad drift-filled and narrow rock-walled reaches; elevation 600'-1505', moderate relief (200') | Thin to thick Wisconsinan-age clay to loam till over Mississippian- and Pennsylvanian-age shales, sandstones, conglomerates and coals | West and north: resistant sandstones of the Allegheny and Portage Escarpments; south and east: Wisconsinan glacial margin |
| | | | 11. Akron-Canton Interlobate Plateau. Hummocky area between two converging glacial lobes dominated by kames, kame terraces, eskers, kettles, kettle lakes, and bogs/fens; deranged drainage with many natural lakes; elevation 900'-1200', moderate relief (200') | Sandy Wisconsinan-age and older drift over Devonian- to Pennsylvanian-age sandstones, conglomerates and shales | Limit of common, sandy ice-contact features and deposits |
| | | | 12. Illinoian Glaciated Allegheny Plateau. Dissected, rugged hills; loess and older drift on ridgetops, but absent on bedrock slopes; dissection similar to unglaciated regions of the Allegheny Plateau; elevation 600'-1400', moderate relief (200') | Colluvium and Illinoian-age till over Devonian- to Pennsylvanian-age shales, siltstones and sandstones | North and west: Wisconsinan glacial margin; south and east: Illinoian (maximum) glacial margin |
| | | | 13. Grand River Low Plateau. Gently rolling ground and end moraine having thin to thick drift; poorly drained areas and wetlands relatively common; elevation 760'-1200', low relief (20') except near Grand River Valley (200') | Clayey, low-lime Wisconsinan-age till over deeply buried, soft Devonian-age shales and near-surface Mississippian-age sandstones and shales | North: Portage Escarpment; south and west: Defiance Moraine; southeast: increasing relief from proximity of buried Pennsylvanian-age sandstones |
| | | | 13.1. Grand River Finger-Lake Plain. Very low relief (10') lake deposits in steep-sided troughs (200' relief) within the Grand River Low Plateau; cut by glacial and stream erosion; extensive wetlands; elevation 800'-900' | Surficial lacustrine clay and drift over deeply buried, soft Devonian-age shales | Margins of steeply sloping troughs containing the Grand River and parts of Rock and Mosquito Creeks |
| | | | 14. Muskingum-Pittsburgh Plateau. Moderately high to high relief (300'-600') dissected plateau having broad major valleys that contain outwash terraces, and tributaries with lacustrine terraces; medium-grained bedrock sequences coarser than those in Marietta Plateau (17) but finer than those in Ironton Plateau (16); remnants of ancient Teays-age drainage system uncommon; elevation 650'-1400' | Mississippian and Pennsylvanian-age siltstones, shales, sandstones and economically important coals and claystones; Wisconsinan-age sand, gravel, and lacustrine silt; silt-loam colluvium | North and west: maximum glacial margin; southeast: transition to finer grained bedrock; southwest: transition to coarser grained bedrock |
| | | | 15. Shawnee-Mississippian Plateau. High relief (400'-800'), highly dissected plateau of coarse and fine grained rock sequences; most rugged area in Ohio; remnants of ancient lacustrine clay-filled Teays drainage system are extensive in lowlands, absent in uplands; elevation 490'-1340' | Devonian- and Mississippian-age shales, siltstones, and locally thick sandstones; Pleistocene-age sandy outwash in Scioto River; Teays-age Minford Clay; silt-loam and channery colluvium | North: Maximum glacial margin; west: carbonate bedrock; east: limit of Mississippian-age bedrock |
| | | | 16. Ironton Plateau. Moderately high relief (300') dissected plateau; coarser grained coal-bearing rock sequences more common than in other regions of the Allegheny Plateau; common lacustrine clay-filled Teays Valley remnants; elevation 515'-1060' | Pennsylvanian-age (Pottsville, Allegheny and Conemaugh Groups) cycles of sandstones, siltstones, shales and economically important coals; Pleistocene (Teays)-age Minford Clay; silt-loam and channery colluvium | West: limit of common Pennsylvanian-age bedrock; north and east: gradation to finer rock sequences |
| | | | 17. Marietta Plateau. Dissected, high-relief (generally 350', to 600' near Ohio River) plateau; mostly fine-grained rocks; red shales and red soils relatively common; landslides common; remnants of ancient lacustrine clay-filled Teays drainage system common; elevation 515'-1400' | Pennsylvanian-age Upper Conemaugh Group through Permian-age Dunkard Group cyclic sequences of red and gray shales, and siltstones, sandstones, limestones and coals; Pleistocene (Teays)-age Minford Clay; red and brown silty-clay loam colluvium; landslide deposits | North and west: transition to medium-grained Lower Conemaugh rocks; east: Flushing Divide |
| | | | 17.1. Little Switzerland Plateau. Highly dissected, high-relief (generally 450', to 750' along Ohio River) plateau; mostly fine-grained rocks; red shales and red soils relatively common; landslides common; high-gradient shale-bottomed streams subject to flash flooding; no remnants of ancient Teays drainage system; elevation 540'-1400' | Similar to Marietta Plateau but lacking Pleistocene (Teays)-age Minford Clay | North: transition to medium-grained rocks; west and south: Flushing Divide; east: Ohio River |

* Section names modified from Fenneman (1938, 1946).