

QUATERNARY GEOLOGY OF FAYETTE COUNTY, OHIO

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FAYETTE COUNTY QUATERNARY GEOLOGY

Introduction

Fayette County is located in central Ohio and as of 2020 it had a population of 28,951 (U.S. Census Bureau, 2021). The county lies on an important transportation corridor along Interstate 71 (I-71), which crosses the northeastern portion of the county. Although the county remains mostly rural, potential for growth exists as the county lies between the metropolitan areas of Cincinnati, Columbus, and Dayton. The county is bisected by Paint Creek which runs nearly north to south across the county. Detailed mapping of the Quaternary geology is crucial for understanding the availability of natural resources both for future growth within the county and to support its agricultural heritage.

Fayette County contains a host of unique geologic features. Located almost entirely within the Darby Till Plain (Brookman, 1998), much of the county is characterized by low, hummocky ground moraine with several broad recessional moraines trending northwest to southeast through the county. Notable moraines in the county include the Resawille Moraine, Gendron Moraine, Joneseboro Moraine, and Bloomington Moraine. The southeastern three miles of the county fall within the Southern Ohio Loamy Till Plain (Brookman, 1998) and are characterized by higher relief, bedrock-controlled topography and deeply incised streams. This portion of the county provides the best exposure of glacial material, but the unconformable contact is generally thin (Powers and Swinford, 2004) and moraines become nearly impossible to trace. The uppermost bedrock in the county is predominantly Silurian-age carbonates of the Columbus Dolomite, Springfield Dolomite, Ephantus Dolomite, Laurel Dolomite, Tymocleus Dolomite, Greenfield Dolomite, and the Salina Group. Noncarbonate bedrock in the county includes the Silurian-age Massie Shale and the Devonian-age Ohio Shale (Scherer and others, 2006).

Background

Fayette County has long been overlooked by Quaternary researchers because of its relatively flat topography and few outcrops. The Quaternary geology was first described in Hovey (1878) but is too generalized for modern levels of precision. Lovett restated the county in his 1902 monograph, noting the moraines but doing little more than numbering them (Lovett, 1902). The first focused Quaternary mapping of Fayette County was completed by Kelly in his master's thesis on the Octa and Mt. Sterling quadrangles, covering the northern half of the county. Kelly provided the first detailed descriptions of the glacial landforms and named a number of the recessional moraines, including the Gendron, Joneseboro, and Bloomington Moraines. Both Lovett (1902) and Kelly (1907) would interpret a stepwise recession of ice to the northeast with brief pauses to build each of the moraines in Fayette County. Mapping resumed in the 1950s and culminated in the seminal publication of the Glacial Map of Ohio by Goldthwait and others (1967). At this point, a transcription error occurred when the name "Joneseboro" was shortened to "Eskober" in Goldthwait's final publication. This was likely the result of name placement by Kelly, who intended the quadrangle to be stitched together and placed the Joneseboro label across the two sheets. "ESKOB" was placed on the Mt. Sterling quadrangle with "ESBORO" on the Octa quadrangle. The influence of the Goldthwait map popularized the name Eskober Moraine. Within this publication, the Joneseboro Moraine was used to refer to the moraine in Fayette County. The proper name to common use. Research on the Quaternary geology of Fayette County resumed in 1962 with the construction of I-71. Three samples of organic material recovered during construction were radiocarbon dated and used to develop a more complex recessional model (Moos, 1970). In 1999, a statewide Quaternary Map of Ohio (Pavey and others, 1999) was published but relied heavily on Goldthwait's earlier map for the Fayette County area. The most recent work on Fayette County was a subsurface profile along Mount Trace Road in south-central Fayette County, inferred from well logs (Johnson, 2005). The Ohio Department of Natural Resources (ODNR), Division of Geological Survey turned its focus to mapping the geology of the Scioto Sublobe within central Ohio with the publication of the Quaternary Geology of Clinton County, Ohio (Nash, 2020). The next step was to map Fayette County, directly up ice from Clinton County.

Mapping Methods

Descriptions and interpretations of the spatial relationships between glacial sediments were made from the interpretation of existing data, field observations, and cores. Data were collected from numerous sources (see "Data Sources"). The concentration of data was greatest near the surface and decreased with depth. Coarse soil survey maps (Mooser and others, 1973) and previous mapping provided an initial guide to map unit areas. These areas were modified through interpretation of local geomorphic features from a digital elevation model (DEM) and dense, shaded-relief and percent slope models. Light detection and ranging (LiDAR) data for the DEM was collected by The Ohio Statewide Imagery Program (OSIP, 2006).

Other data that indicated deposits at depth include water-well logs from the ODNR Division of Geological Survey, test-boring logs provided by the Ohio Department of Transportation, Office of Geotechnical Document Management system, and published or unpublished geologic reports and maps. These data also provided the basis for a description of map units that summarizes, as accurately as possible, geologic materials. Thicknesses of surficial deposits were estimated using ODNR Division of Geological Survey bedrock topography maps (Powers and Swinford, 2004), and bedrock units were summarized from ODNR Division of Geological Survey bedrock geology maps (Scherer and others, 2006).

Preliminary mapping was done checked and revised from field observations. Field data were collected from a total of 112 sites, many of which were located along the banks of streams. Where exposures of glacial sediments were shallow, field data was collected by hand auger borings, soil probes, and dug pits. In addition, two deep borings were collected from within the county using a continuous sampler split tube attached to a rotary drill. Lithologic field descriptions included comments on texture, structure, color, contacts, and bedding. Sample chemistry was analyzed using portable X-ray fluorescence (pXRF; Fig. 1).

New chronologic controls were collected from two sites within the county. Organic material in the form of wood and plant fragments was collected at a depth of 13.8 meters (at 45.3 feet fill) from within borehole FAY-21.1 and was sent to the Woods Hole Oceanographic Institution in Massachusetts for radiocarbon dating. One sample was collected from a dug pit and sent to the University of Illinois' Optically Stimulated Luminescence (OSL) Dating Laboratory and the Illinois State Geological Survey for OSL, analysis.

Quaternary Geology

Fayette County and much of Ohio experienced at least three periods of glaciation: the pre-Illinoian Glaciation (Marine isotope stage [MIS] ~19), the Illinoian Glaciation (MIS 6) and the Wisconsin Glaciation (MIS 2). Only deposits from the most recent glaciation, the Wisconsin Glaciation, remain on the surface of the county. The Scioto Sublobe of the Laurentide Ice Sheet is responsible for all surficial deposits in the county (Fig. 2).

The Scioto Sublobe reached its terminal position at the Cuba Moraine in Clinton County to the southwest approximately 27,500-24,000 years ago. During this advance the sublobe deposited the Caesar Till, described in Hovey (1878) and Nash (2020). The Caesar Till is found south and west of the Resawille Moraine in the far southwestern edge of the county. The Caesar Till is distinguished by its loamy matrix texture, blue, tint, and loess cap.

After deposition of the Cuba Moraine, the ice began to retreat northward. The Gendron, Joneseboro, and Mary Moraines are palimpsest features that likely were deposited during this retreat and before a readvance of the Resawille Moraine. Evidence of palimpsest features within the map area includes the occurrence of the Gendron Moraine by the Jeffersonville Moraine and the uncoupling of the Bloomington Moraine from the Mary Moraine (Scherer, 1952). The strongest evidence for palimpsest features is the uncoupling of the Joneseboro Moraine from the Washington Esker west of the city of Washington Courthouse. Fluting on the ground moraine north of Washington Courthouse between the Joneseboro Moraine and the Bloomington Moraine provides further evidence that there is a palimpsest surface.

However, stratigraphic evidence to support this interpretation is lacking as two boreholes in the Joneseboro Moraine (FAY-21.1) and the Jeffersonville Moraine (FAY-21.2) recessional homogeneity fill (DRT) till up to a depth of 15.2 m (50 ft) and 15.7 m (51.5 ft), respectively. Analysis of pXRF data revealed no clear facies change (Fig. 1). Organic material collected from a depth of 13.8 m (45.3 ft) within the Joneseboro Moraine, was dated and corroborated with radiocarbon material collected during the construction of I-71 in the Darby Till (see below). It is possible that the characteristic loess cap that distinguishes the Caesar Till from the Darby Till was deposited during the readvance to the Resawille Moraine, making the till indistinguishable in core.

After a short interstadial period, a second advance of the Scioto Sublobe occurred and stalled at the Resawille Moraine approximately 21,000 years ago (Nash, 2020). This ice advance covered the existing Gendron, Joneseboro, and Mary Moraines. The Darby Till which covers most of the county is associated with this advance to the Resawille Moraine. The Darby Till is a dark-gray (10YR 4/1), massive, silty loam dominated with typically less than one foot of loess. Loess of sand and gravel may be interbedded within the till. The dominant pebble lithologies are dolomite, limestone, and shale with minor proportions of quartz and metamorphic fragments. The Darby Till contains both silt- and sand-sized and compacted lodgment till units, the contact of which can be identified in the well logs by the term "hardpan." Typically, this contact is between 5 m (16 ft) and 10 m (33 ft) below the surface. Soils associated with the Darby Till within Fayette County include the Breckton, Crosby, and Colina series (Meecher and others, 1973).

An OSL sample (FAY-OSL-1) was collected from the far western edge of the Washington Esker near the inferred ice portal where a small fan now mostly eroded by Sugar Creek had formed. An age of 23.3 ± 3.3 thousand years ago (ka) was calculated using a minimum age model; however, porosity was a significant issue in the sample, so this is interpreted as a maximum limiting age for the Washington Esker. Notably, this OSL age is nominally younger than radiocarbon ages collected within the Cuba Moraine in Clinton County (Brookman, 1998: 22 ka and 25 ka; and Nash, 2020: 27 ka). This OSL age provides further evidence that the Joneseboro Moraine, and by association the Gendron and Mary Moraines, records an earlier recession before the Resawille readvance likely coincided with the retreat from the Cuba Moraine. Lack of chronologic controls on the Resawille Moraine make it difficult to determine a precise age for the Resawille readvance, but it likely occurred slightly before the deposition of the Washington Esker.

The timing of the retreat of the Scioto Sublobe from the Resawille Moraine is poorly constrained, but glacial ice was out of the county before 16,800 years ago, as the ice retreated far enough to allow proglacial Lake Maumee to form in the Erie Basin (Pavey and others, 2015). Deposition of the Jeffersonville and Bloomington Moraines records the retreat from the Resawille. During this final retreat of ice from Fayette County, ice-contact features such as eskers and kames were deposited. In front of the retreating ice, subglacial flows of meltwater from the glacier scoured the ground moraine and crossed and moraines. Much of the smaller tributaries of these meltwater flows are erosional features, however, larger meltwater channels, especially those that trend north to south, are filled with glaciofluvial sand-and-gravel deposits. The deepest and widest of these meltwater channels is the Deer Creek Channel in the northeastern part of the county. Meltwater flowing through this channel eroded through glacial till into the bedrock. The Deer Creek Channel and the Paint Creek Channel, which widen and deepen in Highland and Ross Counties to the southeast, may have been major meltwater channels through multiple moraine-building phases. In addition to the sand-and-gravel deposits, loessite silt and clay are preserved in a basin between the Gendron Moraine and the Salina Moraine and were likely deposited while meltwater was eroding through the bedrock-controlled topography of the uplands to the south. Many of these former meltwater channels are now occupied by modern streams and the outwash has been dissected by these modern streams. In many places these outwash terraces are preserved as upper terraces above the flood stage of modern streams. Further chronologic controls for the moraines in Fayette and surrounding counties is necessary to build a more complete picture of the Scioto Sublobe retreat.

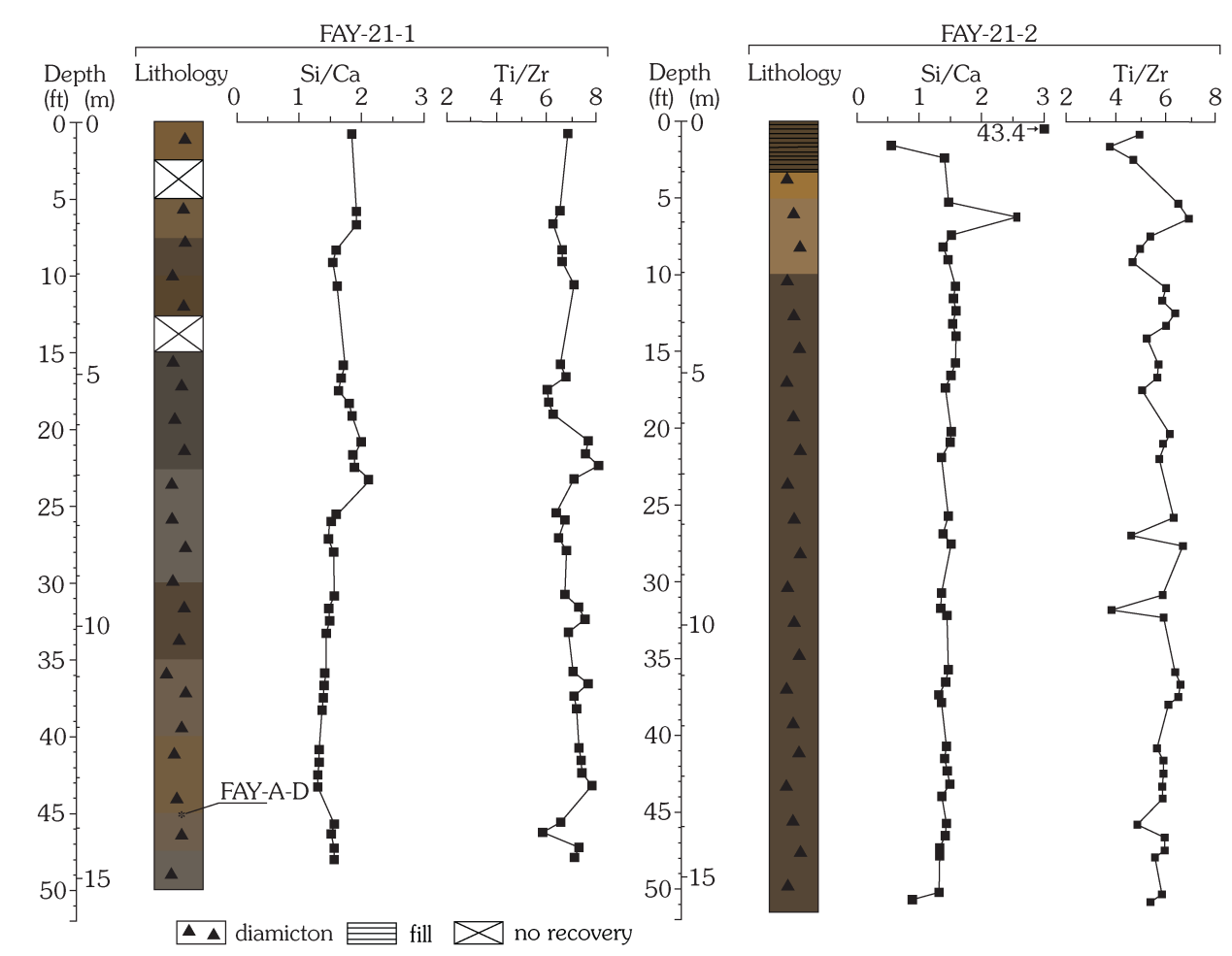


FIGURE 1. Stratigraphic columns and pXRF results for FAY-21.1 and FAY-21.2. Squares represent intervals sampled for pXRF. Spikes coincide with minor texture changes. Silica (Si) and calcium (Ca) elements relate Ohio sourced material within the till. Titanium (Ti) and zirconium (Zr) elements are widely used to determine differences in mineral transport of parent material (Wilgoff and others, 2020; Knight and others, 2021). Lithology colors represent Munsell color codes assigned during core collection.



FIGURE 2. Last Glacial Maximum (LGM) Sublobe map of Ohio showing location of Fayette County (red). Base map is hillshade derived from digital elevation model (DOGRP, 2006).

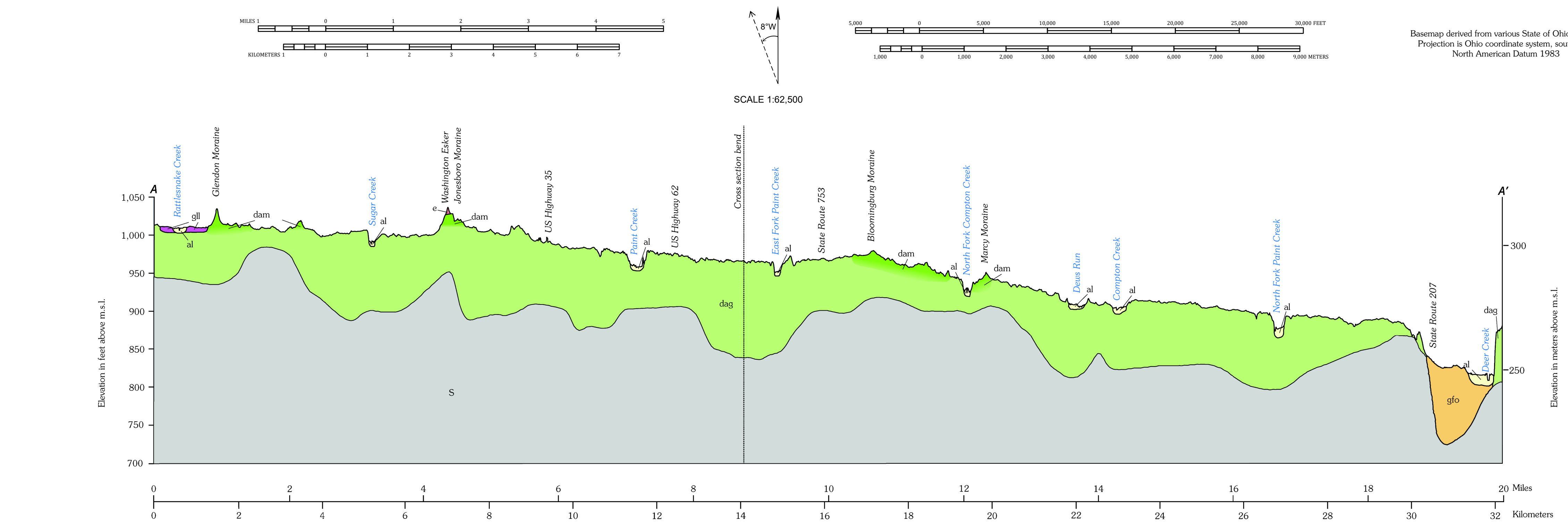
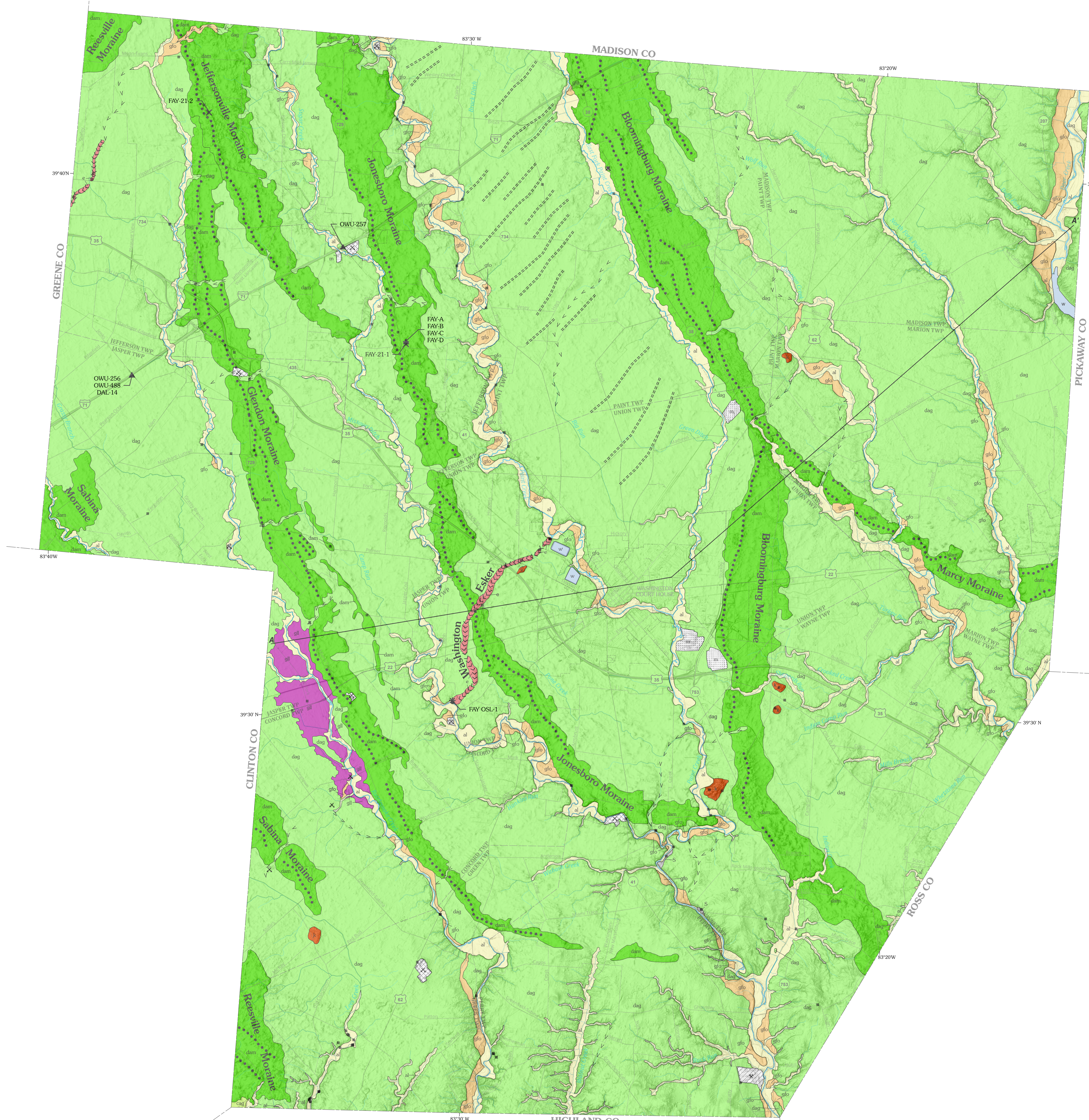


FIGURE 3. Cross section showing the Quaternary geology of Fayette County, Ohio. See "Description of Map Units" for explanation of symbology. m.s.l. = Mean Sea Level. Horizontal scale same as map. Vertical exaggeration is 6X.

- ### DESCRIPTION OF MAP UNITS
- ML** **Make land**—Heavily modified and/or terraced areas.
 - PT** **Pit**—Pits larger than 10 acres. Pit bottom generally underlain by unconformable lithologic units of surrounding polygons. May contain reclaimed areas.
 - Q** **Quarry**—Quarries larger than 10 acres. Pit bottom generally underlain by consolidated lithologic units of carbonate bedrock. May contain reclaimed areas.
 - W** **Water**—Lakes generally larger than 20 acres.
- ### HOLOCENE
- ca** **Caesar Till Ground Moraine (Wisconsin)**—Silt loam, marlgray, pebbly (distinct) associated with the ground moraine between the Cuba and Resawille End Moraines. Typically capped with 100-150 centimeters (cm) or 40-60 inches (in) of loess cover. Includes lenses of sand and gravel interbedded within the till.
 - dm** **Darby Till Ground Moraine (Wisconsin)**—Silt loam, dark-gray, pebbly (distinct) associated with the ground moraine northeast of the Resawille End Moraine. Typically 0-30 cm (0-12 in) of loess cover. Includes lenses of sand and gravel interbedded within the till. Includes both abrasion till units and lodgment till units. Contact between abrasion till and lodgment till can be recognized in well logs by the term "hardpan" typically found at depths of 5-10 m (16-32 ft).
 - dm** **Darby Till End Moraine (Wisconsin)**—Silt loam, dark-gray, pebbly (distinct) associated with the Resawille, Salina, Gendron, Jefferson, Joneseboro, Bloomington, and New Holland End Moraines. Some moraines show geomorphic evidence of being overrun because of a readvance or ice readvancement and may be palimpsest features. Typically 0-30 cm (0-12 in) of loess cover. Includes lenses of sand and gravel interbedded within the till. Contact between abrasion till and lodgment till can be recognized in well logs by the term "hardpan" typically found at depths of 5-10 m (16-32 ft).
 - es** **Esker (Wisconsin)**—Stratified sand and gravel deposits formed by meltwater flowing within subglacial tunnels. Occurs in sinuous ridges parallel to the direction of flow.
 - ka** **Kame (Wisconsin)**—Poorly sorted sand and gravel deposits formed as groups of high hummocks directly on top of glacial till.
 - gfo** **Glacial fluvial outwash (Wisconsin)**—Sand and gravel deposited in meltwater channels. Deposits isolated above modern flood plains on terraces.
 - gm** **Gendron Moraine Proglacial Lake (Wisconsin)**—Glacial lacustrine silt and clays adjacent to the Gendron Moraine.
- ### SILURIAN
- s** **Carbonate bedrock**—Varying facies of carboniferous dolomite and limestone. Facies may be massive (used to interbedded with shale levels). Small amounts of bedrock may be present at the surface within active stream channels.

- ### EXPLANATION OF MAP SYMBOLS
- *** Field data collection location
 - ✕** Borehole
 - ✕** OSL sample
 - ▲** Radiocarbon sample
 - ▲** Esker
 - >>** Meltwater scar
 - ==** Fluting
 - ***** Moraine crest
 - Cross section
 - Contacts
 - PT** Pit
 - ✕** Quarry

TABLE 1. Radiocarbon samples collected from within Fayette County

ID	Material	Depth (m)	¹⁴ C age (BP)	Calibrated Age (BP)	Source
DAU-14	Total carbon	Unknown	20,700 ± 3000	23,099 ± 2,168	Higley and Norris, 2020
FAY-A	Plant material, wood	13.8	18,600 ± 150	22,604 ± 323	this publication
FAY-B	Plant material, wood	13.8	18,600 ± 150	22,604 ± 323	this publication
FAY-C	Plant material, wood	13.8	18,350 ± 150	22,261 ± 306	this publication
FAY-D	Plant debris	13.8	18,600 ± 160	22,599 ± 338	this publication
OWU-256	Organic silt with plant fragments	14.0	17,340 ± 390	21,087 ± 1,014	Ogden and Hay, 1969; Moos, 1970 (location)
OWU-257	Organic silt with plant fragments	12.8	19,735 ± 475	23,960 ± 1,150	Ogden and Hay, 1969
OWU-488	Chemical fragment, silt	14.0	19,303 ± 1,089	23,468 ± 2,561	Ogden and Hay, 1973

All ages calibrated using IntCal20 calibration curves (Reimer and others, 2020). Calibrated age shows 2σ mean age in calendar years before present (BP). FAY-A through FAY-D were processed at Woods Hole Oceanographic Institution; Woods Hole report number 202247.

REFERENCES

Brookman, C.S., 1998. Physiographic regions of Ohio. Columbus, Ohio: Department of Natural Resources, Division of Geological Survey, page-size map with text, 2 p., scale 1:2,100,000.

Dobson, M.P., 1996. The late Wisconsin Glaciation: Ice age and implications for ice sheet behavior. Cincinnati, University of Cincinnati, 53 p., 1 pt., 15 fig.

Fisher, T.G., Brookland, J.D., Anderson, B., Krantz, D.E., Swinford, D.J., and Golts, R., 2015. Evidence of sequence and age of ancestral Lake Erie Lake Levels. *Northeast Ohio: Ohio Journal of Science*, v. 115, no. 2, p. 62-78.

Goldthwait, R.P., White, G.W., and Fopph, J.L., 1967. Glacial map of Ohio. Washington, D.C.: Department of the Interior, U.S. Geological Survey, Miscellaneous Geologic Investigations, Map 1316, scale 1:500,000.

Higley, M.C., and Norris, T.A., 2020. Ohio Radiocarbon Report—Radiocarbon ages from Ohio surficial material. Columbus, Ohio: Department of Natural Resources, Division of Geological Survey, Open File Report 2020-12, 8 p.

Hussey, John, 1878. Report on the geology of Clinton and Fayette Counties, chap. 74 of Report of the Geological Survey of Ohio, v. 3, pt. 1, sec. 2—Local geology. Columbus, Ohio: Ohio Legislature, p. 429-490.

Johnson, R.L., 2005. Glacial deposits of south-central Fayette County, Ohio. Columbus, Ohio: Ohio State University, MS thesis (unpub.), 30 p.

Kelly, J.A., 1937. The Pleistocene geology of the Octa and the Mt. Sterling quadrangles, Ohio. Columbus, Ohio: Ohio State University, MA thesis (unpub.), 72 p.

Koucky, R.D., Hargrave, R.A., and Haver, R.J., 2021. An analytical protocol for determining the elemental chemistry of Quaternary sediments using a portable X-ray fluorescence spectrometer. *Applied Geochemistry*, v. 131, 10 p.

Lovett, Frank, 1902. Glacial formations and drainage features of the Erie and Ohio basins. U.S. Geological Survey Monograph, v. 41, 802 p.

Meecher, R.L., Bray, W.H., Matzner, F., Coopers, R.L., and Schuler, G.M., 1973. Soil survey of Fayette County, Ohio. U.S. Department of Agriculture, Soil Conservation Service, 82 p.

Moos, M.H., 1970. The age and significance of a pebbled in Fayette County, Ohio. Columbus, Ohio: Ohio State University, MS thesis (unpub.), 88 p.

Nash, T.A., 2020. Quaternary geology of Clinton County, Ohio. Columbus, Ohio: Department of Natural Resources, Division of Geological Survey, Open File Report 2019-1, 27 p., 1 fig.

Ohio Department of Transportation (ODOT), 2020. Transportation Information Mapping System (TIMS). Columbus, Ohio: Department of Transportation, last accessed June 29, 2022, at <https://tims.odot.ohio.gov/tims/>.

Ohio Geographically Referenced Information Program (OGRIP), 2006. Ohio Statewide Imagery Program (OSIP). Ohio: Office of Information Technology, Statewide Imagery Program, last accessed September 12, 2022, at <https://git.odot.ohio.gov/geodata/osip/download/>.

Ogden, J.G., III, and Hay, R.J., 1969. Ohio Wesleyan University natural radiocarbon measurements IV. *Radiocarbon*, v. 11, p. 137-149.

Ogden, J.G., III, and Hay, R.J., 1969. Ohio Wesleyan University natural radiocarbon measurements IV. *Radiocarbon*, v. 11, p. 354-360.

Pavey, R.R., Goldthwait, R.P., Brookman, C.S., Hall, D.N., Swinford, E.M., and Van Horn, R., 1999. Quaternary geology of Ohio. Columbus, Ohio: Department of Natural Resources, Division of Geological Survey Map No. 2, scale 1:500,000.

Powers, D.M., and Swinford, E.M., 2004. Shaded depth thickness of Ohio, Columbus, Ohio: Department of Natural Resources, Division of Geological Survey Map 563, scale 1:500,000.

Reimer, P., Austin, W., Bard, E., Bayliss, A., Beck, P., Blackwell, P., Bronk Ramsey, C., Butzin, M., Cheng, H., Edwards, R.L., Friedrich, M., Grootes, P.M., Hajdas, M., Hogg, E.H., Hogg, T.P., Hogg, A.G., Hogg, K.A., Kromer, B., Manning, S.W., Muschler, R., Paterson, J.G., Pearson, C., van der Plicht, J., Reimer, R.W., Richards, D.A., Scott, E.H., Sowers, J.R., Tarron, C.S.M., Wacker, L., Adkins, F., Baker, M., Bayliss, M., Barnier, S.M., Fogelman, Schütz, A., Friedrich, B., Kocher, P., Kudsk, S., Miyake, F., Olsen, J., Petráš, J., Sankarac, M., Sookdeo, A., and Talamo, S., 2020. The IntCal20 Northern Hemisphere Radiocarbon Age Calibration Curve (0-55 cal BP). *Radiocarbon*, v. 62, no. 4, p. 725-737.

Rosenberg, T.E., 1974. Glacial geology of Highland County, Ohio. Ohio: Department of Natural Resources, Division of Geological Survey Report of Investigations No. 92, 36 p.

Scherer, R.L., 1952. The glacial geology of Pickaway County, Ohio. Columbus, Ohio: Ohio State University, MS thesis (unpub.), 74 p.

Scherer, R.L., Swinford, E.M., Larsen, G.E., Schumaker, G.A., Strake, D.L., Roe, C.L., Caxill, M.R., Rea, R.G., and Powers D.M., 2006. Bedrock geology map of Ohio. Columbus, Ohio: Department of Natural Resources, Division of Geological Survey Map RG-1, scale 1:500,000.

U.S. Census Bureau, 2021. 2020 Census Redistricting Data (Public Law 94-171) Summary File. U.S. Department of Commerce, last accessed June 29, 2022, at <https://www.census.gov/2020census/data/redistricting/interactive/2020-population-and-housing-data.html>.

Wilgoff, C., Bentley, J.K., Koenig, R., Bovee, A., George, R.B., Kowalski, A.R., St. Clair, K., Peyer, C., and Broecker, A., 2020. Influence of provenance and transport process on the geochemistry and radiogenic ⁸¹Rb/⁸⁷Sr isotopic composition of Pleistocene glacial sediments, Minnesota, USA. *Chemical Geology*, v. 532, 17 p.

DATA SOURCES

Data were collected from numerous sources (see "Data Sources"). The concentration of data was greatest near the surface and decreased with depth. Coarse soil survey maps, which describe the top 1.5 m (5 ft) of surficial materials, provided an initial guide to map unit areas. These areas were modified through interpretation of local geomorphic settings and other data that indicated changes of deposits at depth, including water-well logs from the Ohio Department of Natural Resources (ODNR), Division of Geological Survey, test-boring logs provided by the Ohio Department of Transportation, Office of Geotechnical Document Management system, including well logs at <https://git.odot.ohio.gov/tims/> and Ohio Environmental Protection Agency and county engineers office, sheets, and published and unpublished geologic reports, maps, and field notes (see the ODNR Division of Geological Survey). These data also provided the basis for lithologic unit descriptions that summarizes, as accurately as possible, recognized associations of genetically related materials. Total thickness of each surficial deposit was calculated using ODNR Division of Geological Survey open file bedrock topography maps, and bedrock units were summarized from ODNR Division of Geological Survey bedrock geology maps, all of which are available for each 7.5-minute quadrangle in the map area. The Ohio Statewide Imagery Program collected LiDAR data at 2.5 x 2.5 m resolution digital elevation model (DEM). Using the DEM, the ODNR Division of Geological Survey generated a shaded-relief and a percent-slope digital model of the land surface.

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