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Bedrock Geology of the Logansport 30- x 60-Minute Quadrangle, Indiana

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By
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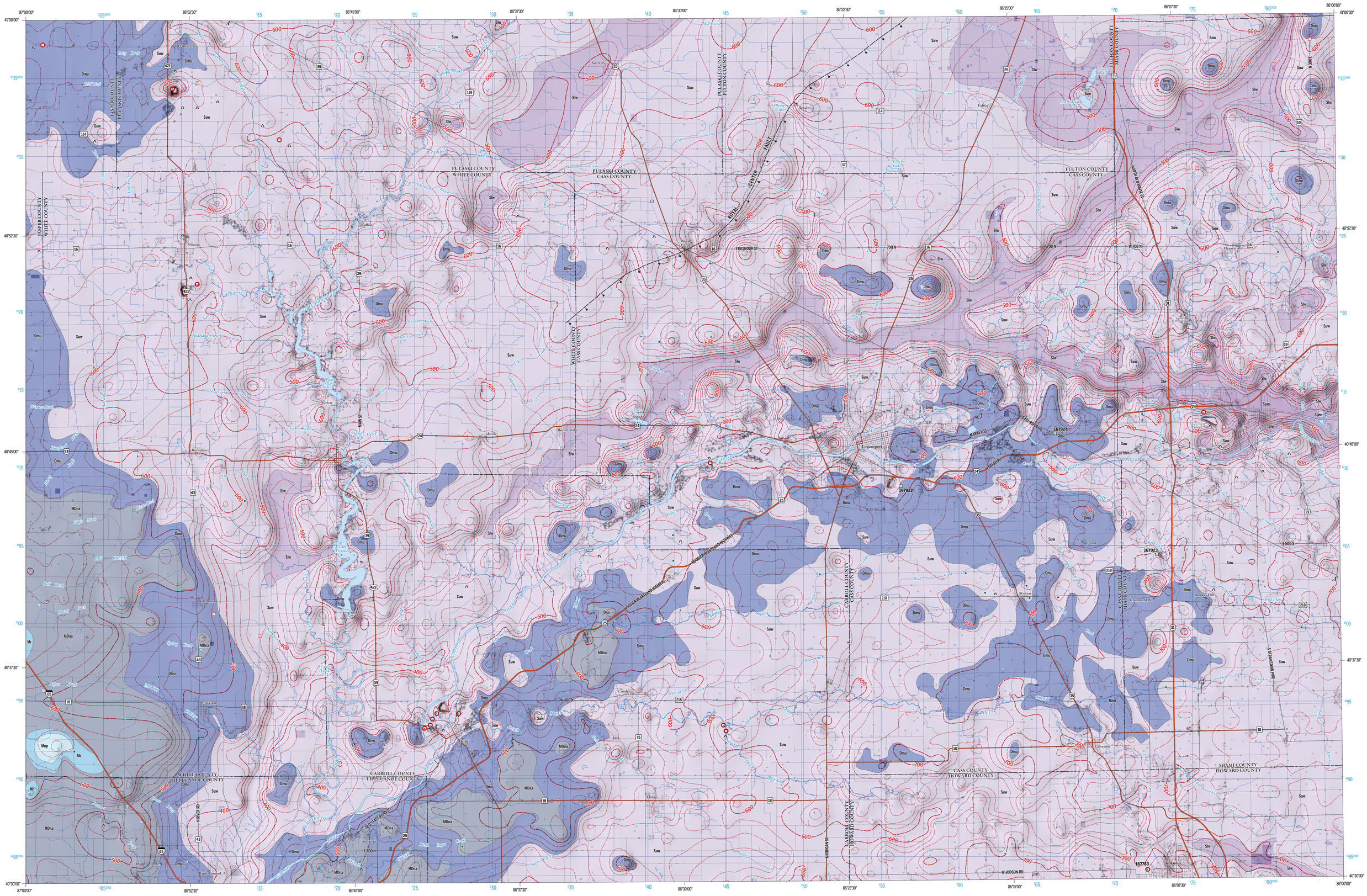

INTRODUCTION

Overview of the Geology

The Logansport quadrangle is located in the north-central portion of Indiana (see index map above) where bedrock units that straddle the Kankakee Arch are buried by up to 400 ft of glacially derived Quaternary sediments. High-purity carbonate from Silurian reefs provides raw materials for construction and manufacturing in the region. The bedrock units between the shales of the New Albany Shale (Devonian-Mississippian) and Maquoketa Group (Ordovician) compose the "Silurian-Devonian carbonate bedrock aquifer."

DESCRIPTION OF MAP UNITS

Quaternary and Tertiary

Qtu — ***Undifferentiated unconsolidated deposits***
Unconsolidated sediments, including soils, from the ground surface down to the bedrock surface. (Included only in cross section.)

Mississippian

Mnp — ***New Providence Shale***
Calcareous green and maroon shale and yellowish-gray silty limestone and dolostone. Up to 90 ft thick. Tournaisian in age.

Mr — ***Rockford Limestone***
Yellowish- to greenish-gray, fine- to medium-grained dolostone with minor argillaceous partings and thin beds. Up to 7 ft thick. Tournaisian in age.

Devonian-Mississippian

MDna — ***New Albany Shale***
Light-gray to black shale with minor siltstone and dolostone stringers. Ranges from 0 to 130 ft. Frasnian to Tournaisian in age.

Devonian

Dm — ***Muscatatuck Group***
Brownish-gray to light-gray skeletal limestone and dolostone with mudstone to packstone textures. Ranges from 0 to 30 ft. Eifelian to Givetian in age.

Silurian

Suw — ***Upper Wabash Formation***
Light- to dark-gray, fine- to coarse-grained limestone and dolostone (mudstone to grainstone textures), often cherty, typically 70 to 120 ft thick; includes Liston Creek Limestone Member, Kokomo Limestone Member, and Kenneth Limestone Member (not differentiated here). Fossil reefs locally can be up to 200 ft thick, primarily originating near the base of the unit. Ludfordian to Pridoli in age.

Slw — ***Lower Wabash Formation***
Bluish medium-gray to light-gray argillaceous dolostone, with lesser amounts of nodular dolostone near the middle of the unit; typically lacks chert, commonly 100 to 150 ft thick, but locally thins to 0 ft. Contains crinoids, particularly near top of unit. Includes the Mississinewa Shale Member. Gorstian in age.

Spm — ***Pleasant Mills Formation***
Fine-grained limestone and dolostone (mudstone to wackestone textures); nodular textures common, fossils rare through most of the interval, typically 60 to 80 ft thick; includes Limberlost Dolomite Member and Louisville Member. In the western half of the study area, reefs up to 400 ft thick originate from near the base of the unit and may be highly fossiliferous, coarse-grained, and porous. Homerian in age.

Ss — ***Salamonie Dolomite***
Yellowish to whitish medium- to light-gray, occasionally white, fine- to coarse-grained limestone and dolostone (mudstone to grainstone textures); the upper half displays very little argillaceous content, 60 to 70 ft thick. Near the base, this map unit includes strata laterally equivalent to the Stroh Member of the Cataract Formation and other strata assigned to the upper Cataract Formation elsewhere. Lower Homerian to upper Aeronian in age. (Included only in cross section.)

Ssc — ***Sexton Creek Limestone***
Brownish medium- to light-gray, cherty, nodular, fine- to medium-grained limestone and dolostone (mudstone to wackestone textures) with argillaceous partings and laminations; fossils often include small brachiopods, crinoids, and corals. Basal part of unit is often argillaceous with decreasing chert downward (similar to Wilhelmi Formation in northeastern Illinois). Typically 30 to 40 ft thick, but may locally thicken to 80 ft. Lower Aeronian to late Hirnantian in age. (Included only in cross section.)

Ordovician

Om — ***Maquoketa Group***
Shale and skeletal limestones and dolostones (wackestone to grainstone textures). Shale ranges from pale greenish-gray to dark-gray in color. Ranges from 390 to 520 ft thick. Lower Hirnantian to middle Katian in age. (Included only in cross section.)

- Contact—Identity and existence certain, location concealed.
- Fault—Identity and existence certain, location approximate. Ball and bar on downthrown block (IGS, 2013).
- Inferred bedrock surface elevation contour (interval 100 ft).
- Inferred bedrock surface elevation contour (interval 20 ft).
- Data point for top of rock surface.
- Data point for bedrock units. (Project-funded drill hole labeled with IGWS ID (167924). Red circle used to show data-interpreted reef locality.)
  - *Drill core*
  - *Geophysical log*
  - *Drill cuttings*
- Silurian reef (IGS, 2003).

REFERENCES

Indiana Geological Survey (IGS), 2003, SILURIAN_REEF_POINTS_MM54_IN–Silurian reef locations in Indiana, 2003 [point shapefile], scale 1:500,000.

Indiana Geological Survey (IGS), 2013, STRUCTURAL_FEATURES_IN–Structural features of Indiana, 2013 [line shapefile].

CORRELATION OF MAP UNITS

- Qtu — QUATERNARY TERTIARY
- *unconformity*
- Mnp, Mr — MISSISSIPPIAN
- *unconformity*
- MDna — DEVONIAN - MISSISSIPPIAN
- Dm — DEVONIAN
- *unconformity*
- Suw, Slw, Spm, Ss, Ssc — SILURIAN
- *unconformity*
- Om — ORDOVICIAN

UNCONSOLIDATED SEDIMENT THICKNESS

ACKNOWLEDGMENTS AND DISCLAIMER

This geologic map was funded in part by the USGS National Cooperative Geologic Mapping Program, 2018–G18AS00006. The cooperative agreement requires the following statements: "this map and explanatory information is submitted for publication with the understanding that the United States Government is authorized to reproduce and distribute reprints for governmental use," and "the views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government."

BASE MAP INFORMATION

Digital cartography by Matthew R. Johnson.

Topographic shading based on 2011–2013 Indiana LiDAR data.

Transportation network from OpenStreetMap.org (© OpenStreetMap contributors).

Hydrography from U.S. Geological Survey National Hydrography Dataset (local resolution).

Projection: Universal Transverse Mercator (UTM), Zone 16N.

Horizontal Datum: North American Datum of 1983 (NAD83).

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