Illinois Department of Natural Resources
ILLINOIS STATE GEOLOGICAL SURVEY
William W. Shilts, Chief

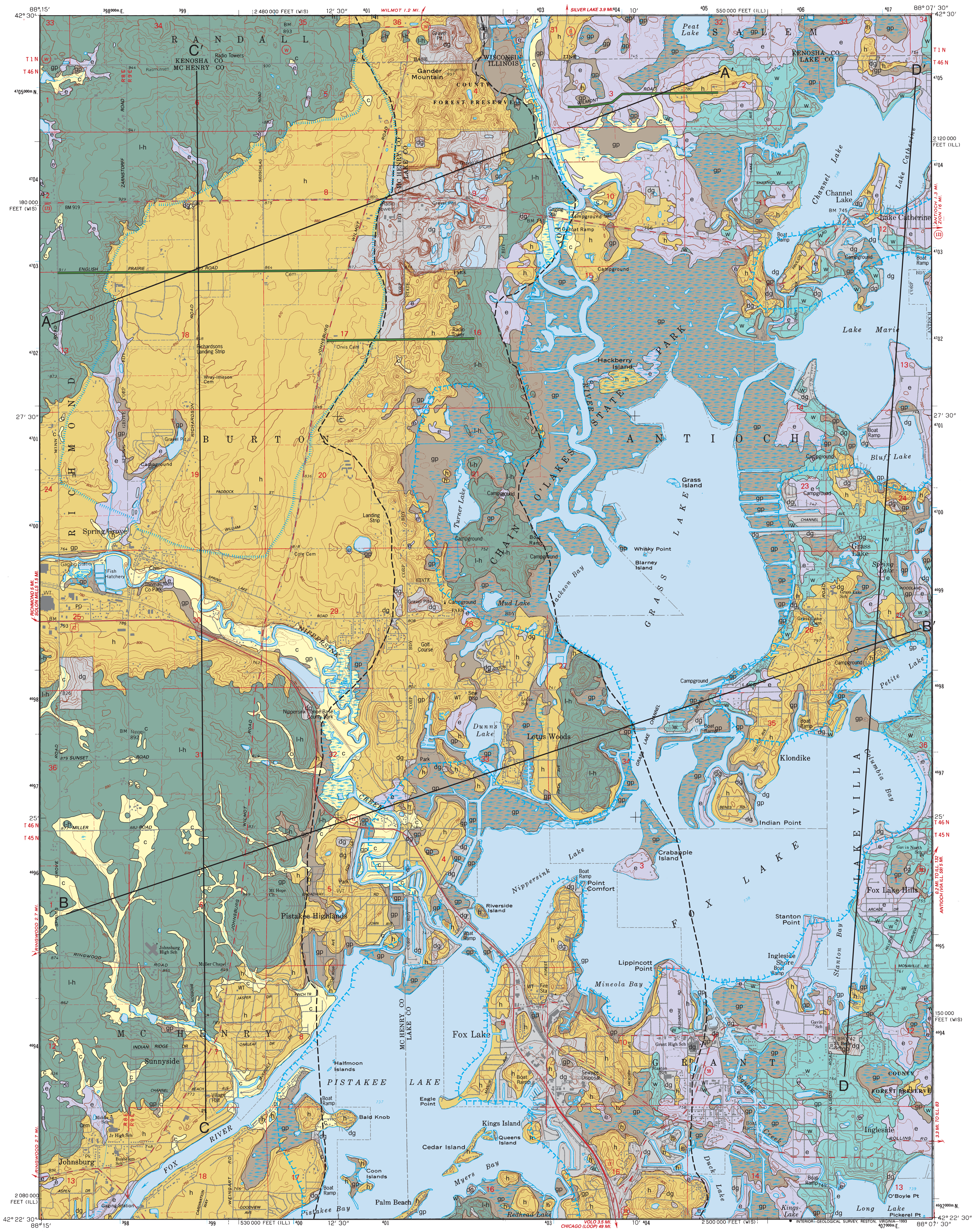
Surficial Geology of Fox Lake Quadrangle

McHenry and Lake Counties, Illinois, and Kenosha County, Wisconsin

Central Great Lakes Geologic Mapping
Coalition contract report
CGLGMC Fox Lake-SG

Jason F. Thomason and Michael L. Barnhardt

2008



QUATERNARY DEPOSITS

Description	Unit	Interpretation
HUDSON EPISODE (~12,500 years before present (B.P.) to today)		
Fill or disturbed earth material; grain sizes range from clay to gravel, usually less than 20 feet thick	Disturbed ground (dg)	**Human-disturbed deposits** found in gravel pits and quarries, retention ponds, embankments and mounds
Silt, clay, sand and gravel; well sorted sand and bedded silt and clay; brown to yellowish brown, may be mottled to gleyed, sometimes organic-rich, up to 40 feet thick in the Fox River valley; generally less than 5 feet thick in upland valleys	Cahokia Formation (c)	**Modern alluvial deposits** found along rivers and streams that include sand and gravel channel deposits as well as floodplain deposits
Peat and muck; silt, clay, and fine sand; black to dark brown; often organic rich with snail shells common; 1 to 10 feet thick	Grayslake Peat (gp)	**Organic wetland sediment** found in low-lying depressions and floodplains that may include areas of open water; commonly found along lakes, marshes and channels connecting larger bodies of water
WISCONSIN EPISODE (Late) (~25,000–12,500 years B.P.)		
Silt, clay, or fine sand; massive to bedded, dark gray to light gray, calcareous, surficial deposits may be as much as 30 feet thick within the Fox River valley	Equality Formation (e)	**Lake deposits** that infill kettles and infill low-lying areas within the Fox River valley and its tributaries; associated with proglacial lake environments and may be overlain by Cahokia Formation sediments
Sand and gravel; fine to coarse; often well stratified; yellowish brown to brown; may contain some silt and clay lenses; generally around 30 feet thick within the Fox River valley	Henry Formation (h)	**Proglacial outwash deposits** exposed at land surface associated with channelized glacial meltwater within the Fox River valley and its tributaries
Diamicton; silty clay loam to silty clay; dark gray to yellowish brown near land surface; calcareous, dense, and pebbly with occasional cobbles and boulders; some thin beds of fine sand and silt; as much as 130 feet thick east of the Fox River	Wadsworth Formation (w)	**Subglacial till and ice marginal sediment** deposited from Wadsworth glacial ice; may have been deposited at the base of the glacier or along the ice margin and reworked by slope processes and water
Diamicton; sandy loam to loam; dolomite rich; usually oxidized yellowish brown; often stratified with lenses of sand and gravel; up to 50 feet thick	Haeger Member, Lemont Formation (l-h)	**Subglacial till and ice marginal sediment;** associated with Woodstock Moraine (sandy loam) and Fox Lake Moraine (stratified with sand and gravel); deposited at base of the glacier or along the ice margin and reworked by slope processes and water
Sand and gravel below the Haeger Member; medium sand to coarse gravel with some lenses of fine sand and silt; well stratified; yellowish brown to brown; typically between 30 and 130 feet thick in the subsurface	Beverly Tongue, Henry Formation (cross sections only) (h-b)	**Proglacial outwash** deposited in front of Haeger glacial ice; likely deposited as alluvial fans and deltas; may be adjacent to or intertongue with Haeger Member till
Silt, clay and fine sand; massive to laminated; dark gray to grayish brown; typically between 5 and 30 feet thick in subsurface	Equality Formation undivided (cross sections only) (e-u)	**Proglacial lake deposits** found in topographic lowlands and kettles in front of advancing or retreating glacial ice
Diamicton; silty clay loam to loam; very pebbly; dense; reddish brown to brown; between 20 and 100 feet thick where present; often locally absent; thickens to the west	Tiskilwa Formation (t)	**Subglacial till** associated with the Tiskilwa glacial advance and deposited beneath active basal ice
Sand and gravel below the Tiskilwa Formation; medium sand to coarse gravel with some lenses of fine sand and silt; less than 10 to 20 feet thick in the subsurface	Ashmore Tongue, Henry Formation (cross sections only) (h-a)	**Proglacial outwash** deposited in front of Tiskilwa glacial ice; likely deposited in channelized glacial meltwater streams or possibly deposited as proglacial fans and deltas
ILLINOIS EPISODE (~200,000–130,000 years B.P.)		
Diamicton; silty clay loam to loam; very pebbly; dense; reddish brown, pinkish brown, or brown; abundant sand and gravel lenses; between 20 and 70 feet thick where present; often locally absent	Glasford Formation (cross sections only) (g)	**Subglacial till, outwash, and debris flow deposits** associated with pre-Wisconsin Episode glacial events

PRE-QUATERNARY DEPOSITS

Description	Unit	Interpretation
Rock; predominately dolomite with some shaly zones; upper surface is often fractured with solution cavities and mineral precipitation; some oil staining locally	Bedrock (cross sections only)	**Bedrock** associated with shallow marine environment of Silurian Period; buried by 100–320 feet of Quaternary sediments

Line Type

- Contact
- Kame terrace
- Fox Lake Moraine boundaries
- Collapse feature
- Geophysical profile transect
- A—A′ Line of cross section

Base map compiled by Illinois State Geological Survey from digital data (Raster Feature Separates) provided by the United States Geological Survey. Topography compiled from aerial photographs taken 1958. Field checked 1960. Revised from aerial photographs taken 1988. Field checked 1992. Base map edited 1993.

North American Datum of 1927 (NAD 27)
Projection: Transverse Mercator
10,000-foot ticks: Illinois State Plane Coordinate System, east zone and Wisconsin State Plane Coordinate System, south zone (Transverse Mercator)
1,000-meter ticks: Universal Transverse Mercator grid system, zone 16

Recommended citation:
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SCALE 1:24,000
1 1/2 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

BASE MAP CONTOUR INTERVAL 10 FEET
SUPPLEMENTARY CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Geology based on field work by M. Barnhardt, J. Thomason, A. Stumpf, and A. Hansel.

Digital cartography by J. Carrell and J. Domier, Illinois State Geological Survey.

This map has not undergone the formal Illinois Geologic Quadrangle map review process. Whether or when this map will be formally reviewed and published depends on the resources and priorities of the ISGS.

Acknowledgments

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Preliminary data compilation and mapping by A. Dixon-Warren has been exceptionally valuable. The reviews of M. Barnhardt, A. Stumpf, and S. Brown have significantly improved the map as well.

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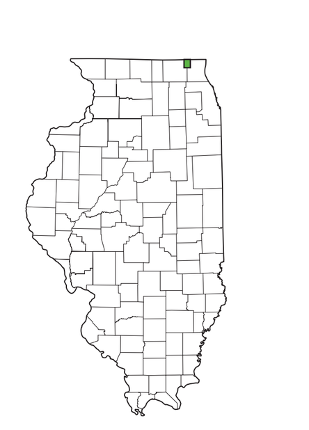


1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES
1 Genoa City
2 Silver Lake
3 Paddock Lake
4 Richmond
5 Antioch
6 McHenry
7 Wauconda
8 Grayslake

3° TRUE NORTH MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 2008

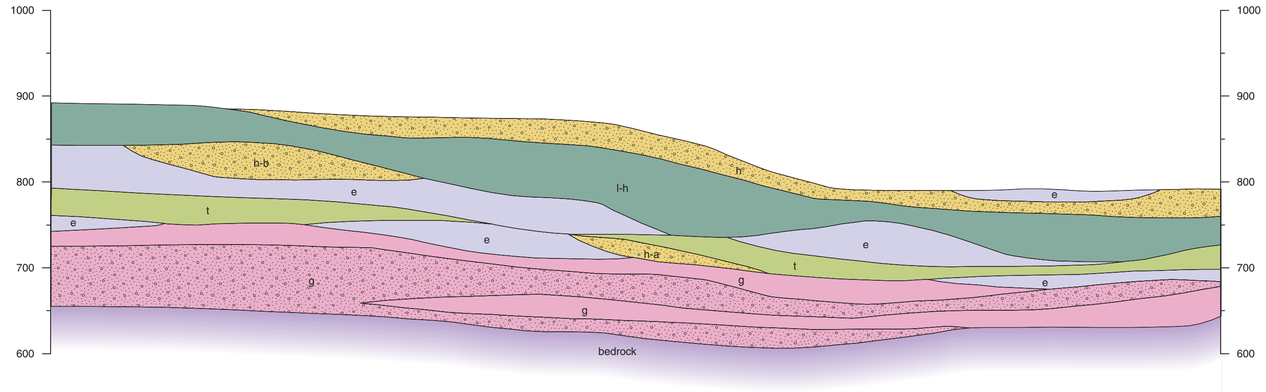
ROAD CLASSIFICATION
- Primary highway, hard surface
- Secondary highway, hard surface
- Light-duty road, hard or improved surface
- Unimproved road
- State Route

West

A

East

A′



Cross Sections

Sand and gravel

Diamicton, massive silt, or other fine-grained sediment

Contact

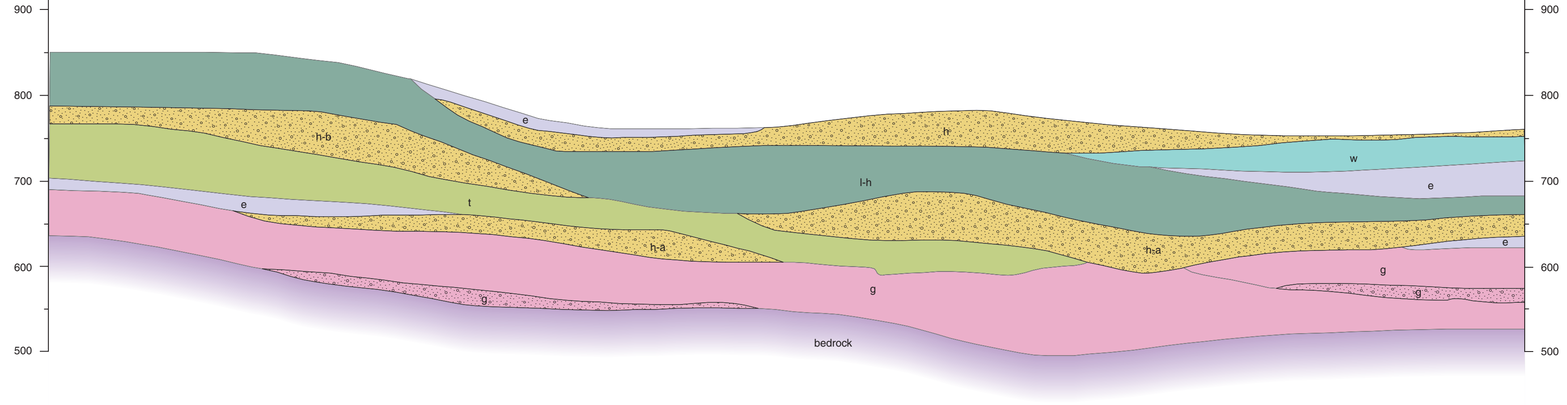
Horizontal scale: 1 inch = 2,000 feet
Vertical scale: 1 inch = 100 feet
Vertical exaggeration: 20×

West

B

East

B′

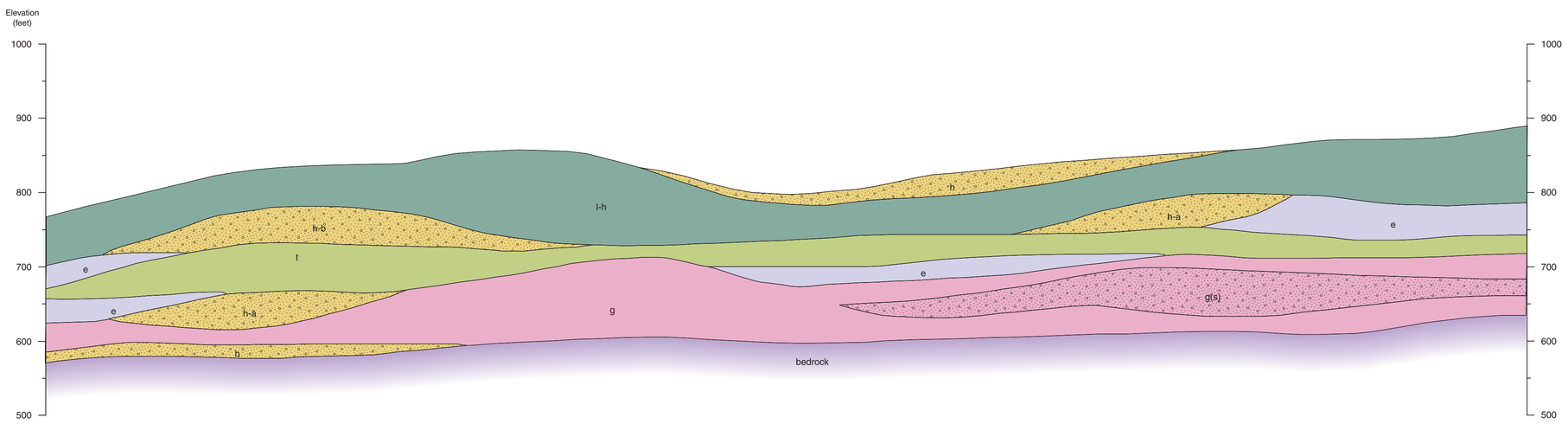


South

C

North

C′



South

D

North

D′