Surficial Geology of Mokena Quadrangle
Will and Cook Counties, Illinois

Prairie Research Institute
ILLINOIS STATE GEOLOGICAL SURVEY

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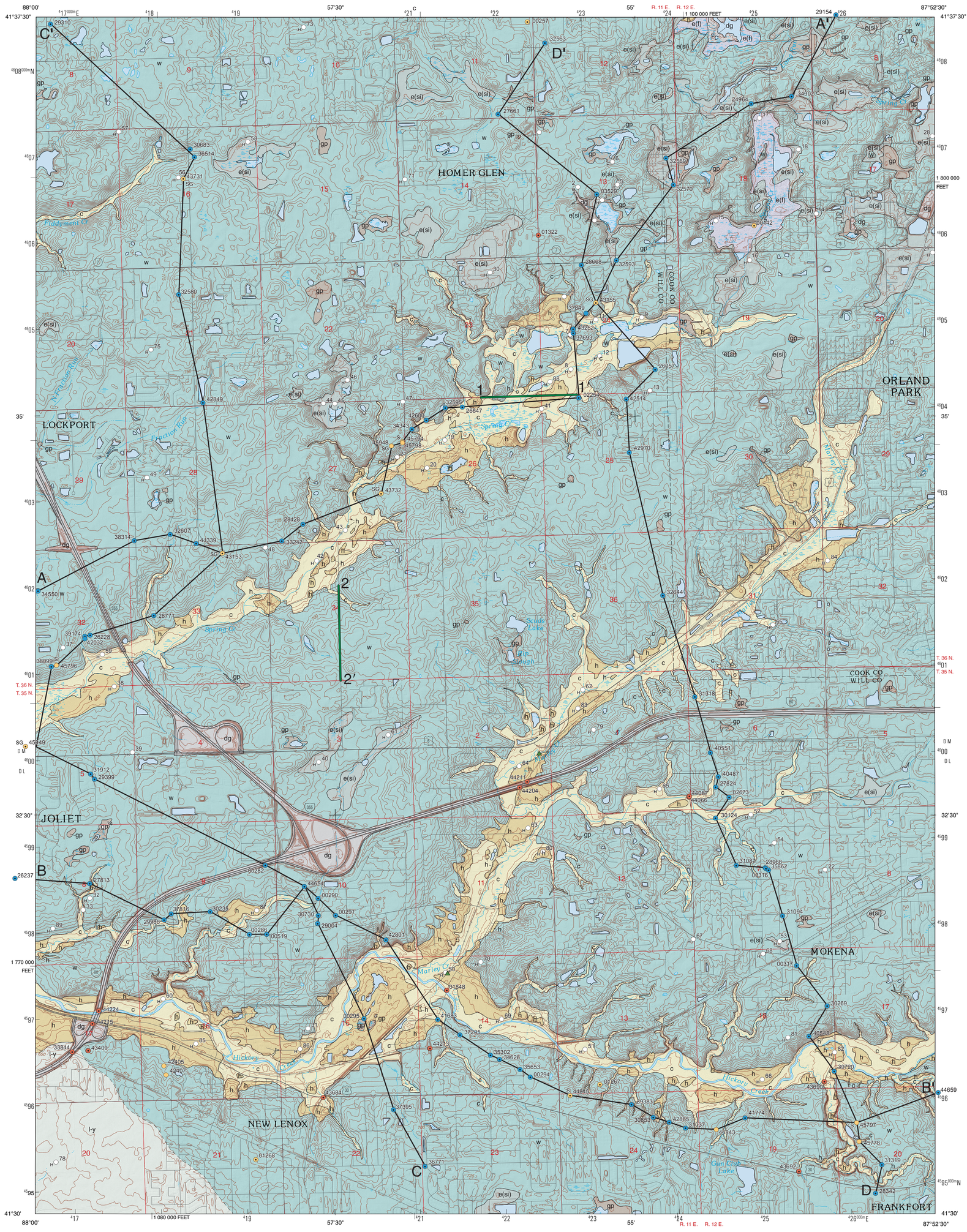
2016

STATEMAP Mokena-SG



QUATERNARY DEPOSITS

Description	Unit	Interpretation
HUDSON EPISODE (~14,700 years before present (B.P.) to today)[1]		
Diamicton, sand, gravel, silt, and peat; as much as 10 feet thick	Disturbed ground (dg)	**Disturbed land;** includes former gravel pits and major areas of construction
Peat, muck, organic silt and clay; interbedded with sand, silt, and clay in some places; up to about 10 feet thick in most places	Grayslake Peat (gp)	**Organic debris deposited in depressions;** intertongues with the Equality and Cahokia Formations
Sand, silt, and clay; stratified; locally containing beds of sand; as much as 30 feet thick in the Hickory Creek and Spring Creek valleys; generally less than 10 feet thick in smaller upland valleys	Cahokia Formation (c)	**Alluvium in floodplains and channels of modern rivers and streams;** alluvial fan deposits in some places
Silt, silty sand and sand; mostly uniform; from 5 to 10 feet thick	Equality Formation (silty facies) (e(si))	**Glaciolacustrine nearshore sediments;** few deposits are slackwater; intertongues with alluvium of Cahokia Formation or Henry Formation
Clay, silt, silty-clayey rhythmites; uniform and laminated; likely no more than 20 feet thick	(fine grained facies) (e(f))	**Glaciolacustrine deep water sediments;** offshore sediments; deposited in ice-dammed lakes during late-glacial ice retreat and stagnation.
WISCONSIN EPISODE: Michigan Subepisode (~29,000–14,700 years B.P.)[1]		
Sand, typically with little gravel, interbedded with uncommon beds of silt or diamicton; typically less than 35 feet thick	Henry Formation, undifferentiated (h)	**Proglacial Outwash** along Spring, Marley and Hickory Creeks; deposited in glacial meltwater channels and in alluvial fans
Diamicton, loam to silty clay loam; uniform; stratified in places, gray (fresh) to brown, yellowish brown, and light gray (weathered); may include patches of surficial silt, clay and sand (Equality Formation) with lenses of sand and gravel and laminations; as much as about 125 feet thick	Wadsworth Formation (w)	**Till and debris flow deposits** associated with the Tinley Moraine and Valparaiso Morainic System
Diamicton, loam and silt loam as much as 40 feet thick (upper facies); sandy loam; yellowish brown; as much as 25 feet thick (lower facies); attaining about 65 feet maximum thickness	Lemont Formation, Haeger Member (cross sections only) (l-h)	**Till and debris flow deposits**
Sand and gravel; yellowish brown; stratified in places; includes large boulders; as much as 110 feet thick	Beverly Tongue, Henry Formation (cross sections only) (h-b)	**Proglacial outwash** deposited primarily in alluvial fans; underlies deposits of the Haeger Member
Diamicton; silty clay, silty clay loam, and clay; gray, oxidizing to yellowish brown; includes layers of sand and gravel, silt, and silty clay; as much as 75 feet thick	Yorkville Member, Lemont Formation (l-y)	**Till, debris flow deposits, and lake sediment**
Sand and gravel with interbeds of silt and clay; gray; stratified to laminated; as much as 40 feet thick	unnamed tongue, Henry Formation (cross sections only) (h(l-y))	**Proglacial outwash** and deltaic (?) deposits; underlies deposits of the Yorkville Member

PRE-QUATERNARY DEPOSITS

SILURIAN SYSTEM (440-410 million years B.P.)		
Dolomite; upper 30 feet may include layers of diamicton about 1 to 3 inches thick along bedding planes	Silurian Bedrock (cross sections only) (S)	**Dolomitized carbonate bank deposits;** diamicton was likely injected by glacier

[1] The time periods for the Wisconsin Episode and the Hudson Episode are reported as calibrated radiocarbon years and can be directly compared to calendar years before 1950.

Data Type

- Hand auger station
- Stratigraphic boring
- Water-well boring
- Engineering boring
- Outcrop

SG 26211 — Labels indicate samples (s) or geophysical log (g). Boring labels indicate the county number. Outcrop labels indicate geologist's field number. Dot indicates boring or outcrop is to bedrock.

- Contact
- Inferred contact
- 1 — 1′ Electrical resistivity profile line
- A — A′ Line of cross section

Note: The county number is a portion of the 12-digit API number on file at the ISGS Geological Records Unit. Most well and boring records are available online from the ISGS Web site.

Base map compiled by Illinois State Geological Survey from digital data (2015 US Topo) provided by the United States Geological Survey. Wetlands are from U.S. Fish and Wildlife Service (NWI). Shaded relief and contours derived from LiDAR elevation data provided by Will County (2014) and Cook County (2008).

North American Datum of 1983 (NAD 83)
Projection: Transverse Mercator
10,000-foot ticks: Illinois Coordinate System of 1983, east zone
1,000-meter ticks: Universal Transverse Mercator grid system, zone 16

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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 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1988

Geology based on field work by O. Caron, 2015–2016.

Digital cartography by Deette M. Lund and Jennifer E. Carrell, Illinois State Geological Survey.

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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.

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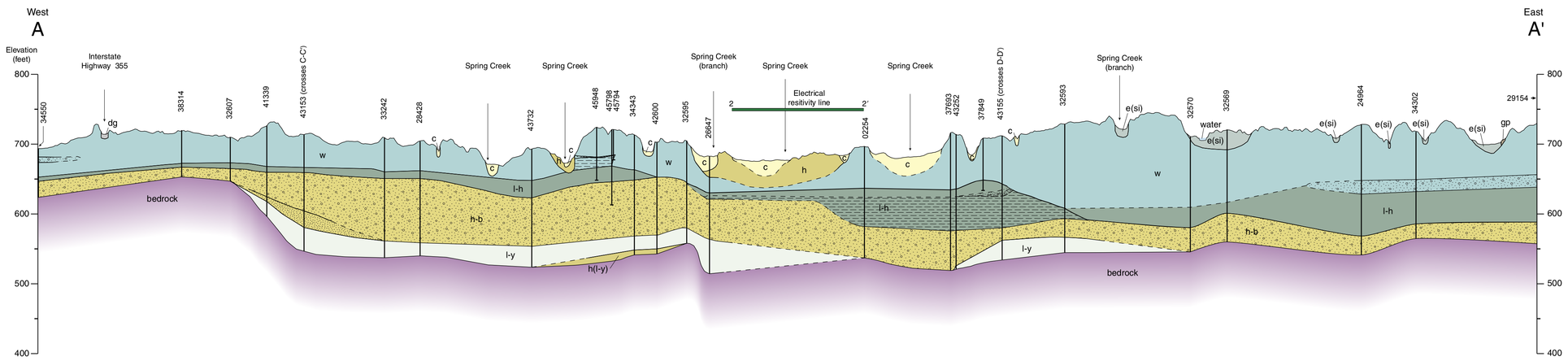
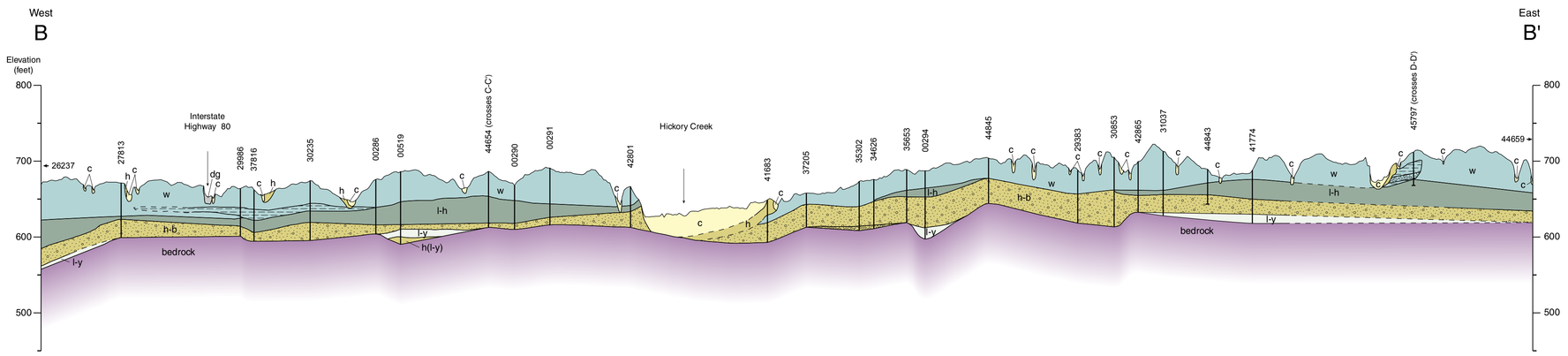
1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES
1 Romeoville
2 Sag Bridge
3 Palos Park
4 Joliet
5 Tinley Park
6 Elwood
7 Manhattan
8 Frankfort

3½° TRUE NORTH MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 2016

ROAD CLASSIFICATION
Interstate Route — State Route
U.S. Route — Local road





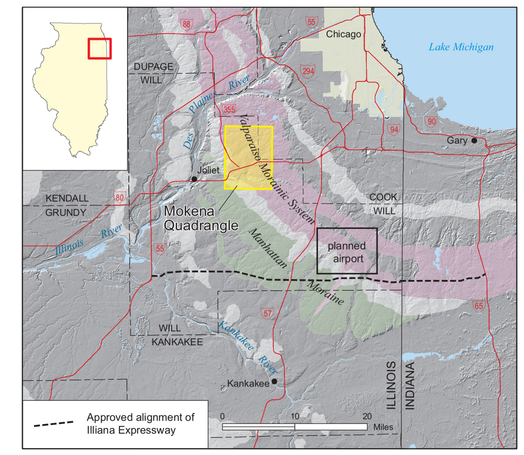
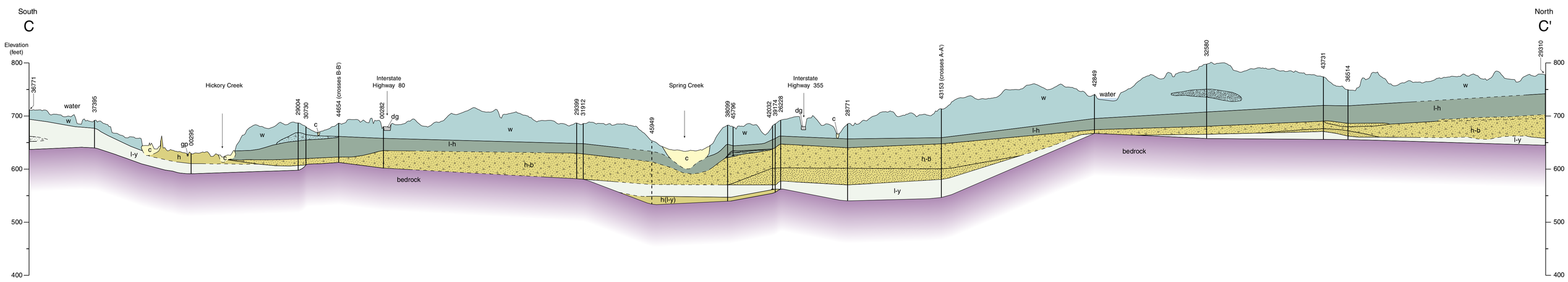
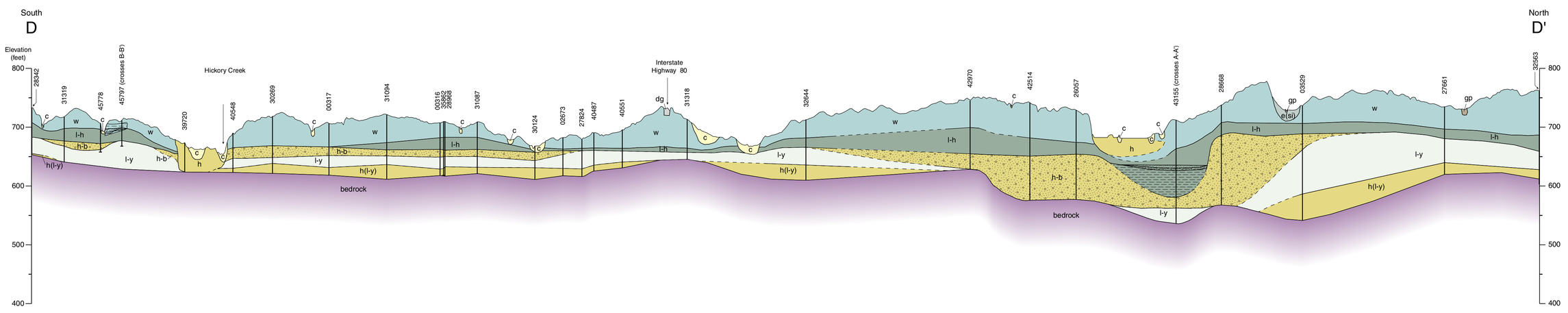


Figure M1 Location map for the Mokena Quadrangle in northeastern Illinois. The map area is shown in relationship to the Valparaiso Morainic System. Moraines modified from Willman and Frye (1970). Dashed lines show approved alignment of the Illiana Expressway corridor, and the proposed South Suburban Airport (black box).





dg disturbed ground
c Cahokia Formation
e(si) Wadsworth Formation
w Wadsworth Formation
h-b Beverly Tongue, Henry Formation
h(l-y) unnamed Tongue, Henry Formation
water
gp Grayslake Peat
e(f) Equality Formation (fine facies)
h Lemont Formation, Haeger Member
l-h Lemont Formation, Haeger Member
l-y Wadsworth Formation
S bedrock (Silurian)

Cross Sections

- Laminated silt and clay
- Fine and very fine sand
- Sand and gravel
- Coarse sand with gravel
- Diamicton, massive silt, or other fine-grained sediment
- Contact
- Inferred contact
- Borehole on line
- Borehole projected

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