

DIGITAL MAPPING TECHNIQUES 2023

The following was presented at DMT'23

May 21 - 24, 2023

The contents of this document are provisional

See Presentations and Proceedings
from the DMT Meetings (1997-2023)

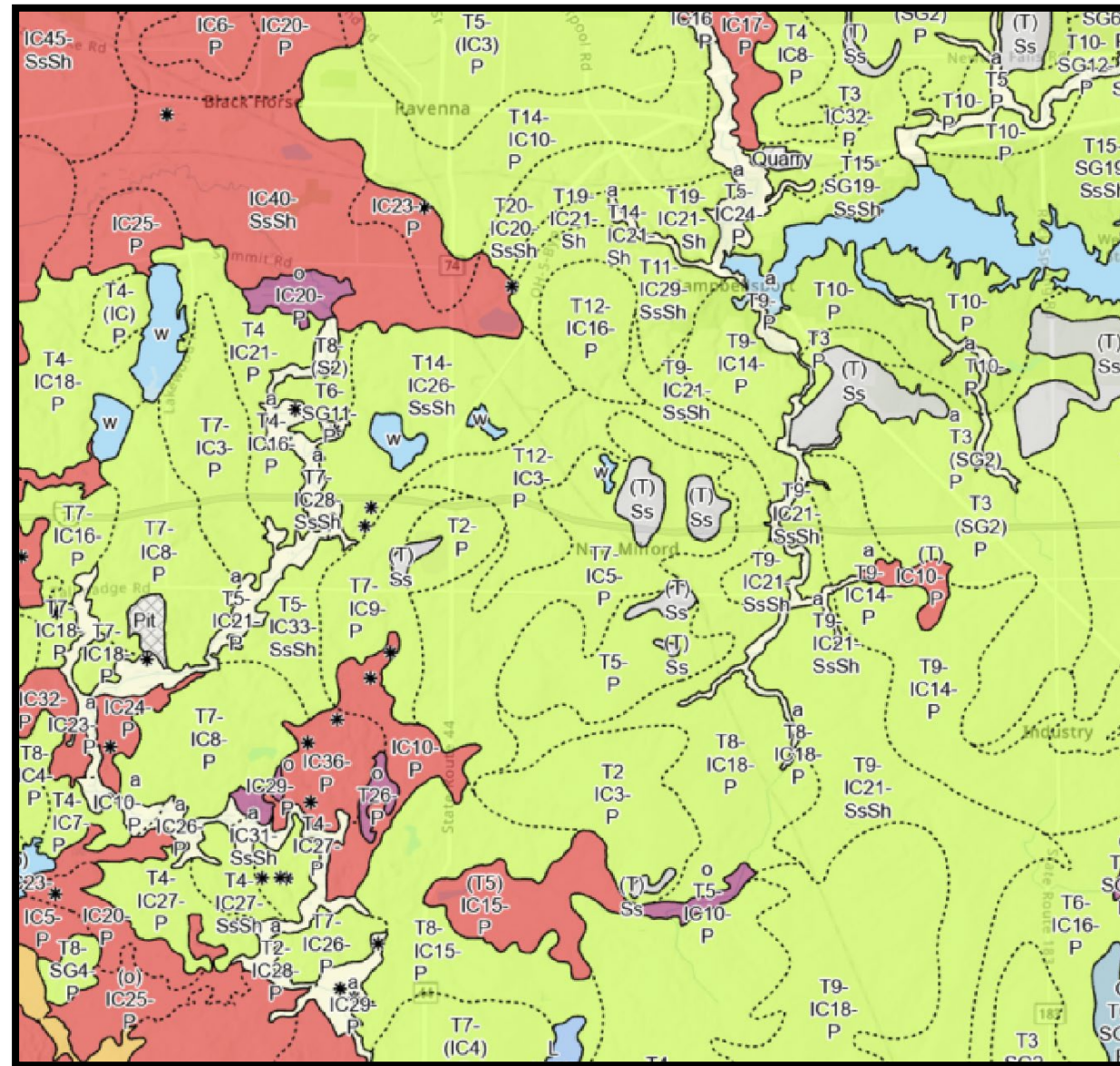
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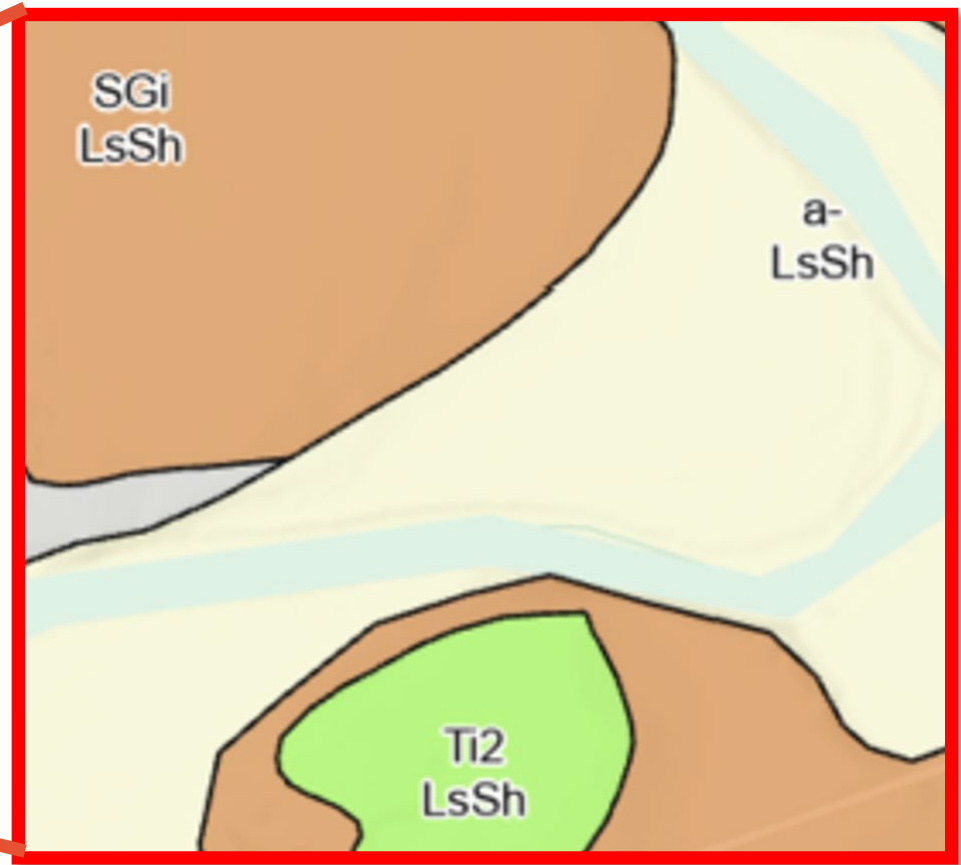
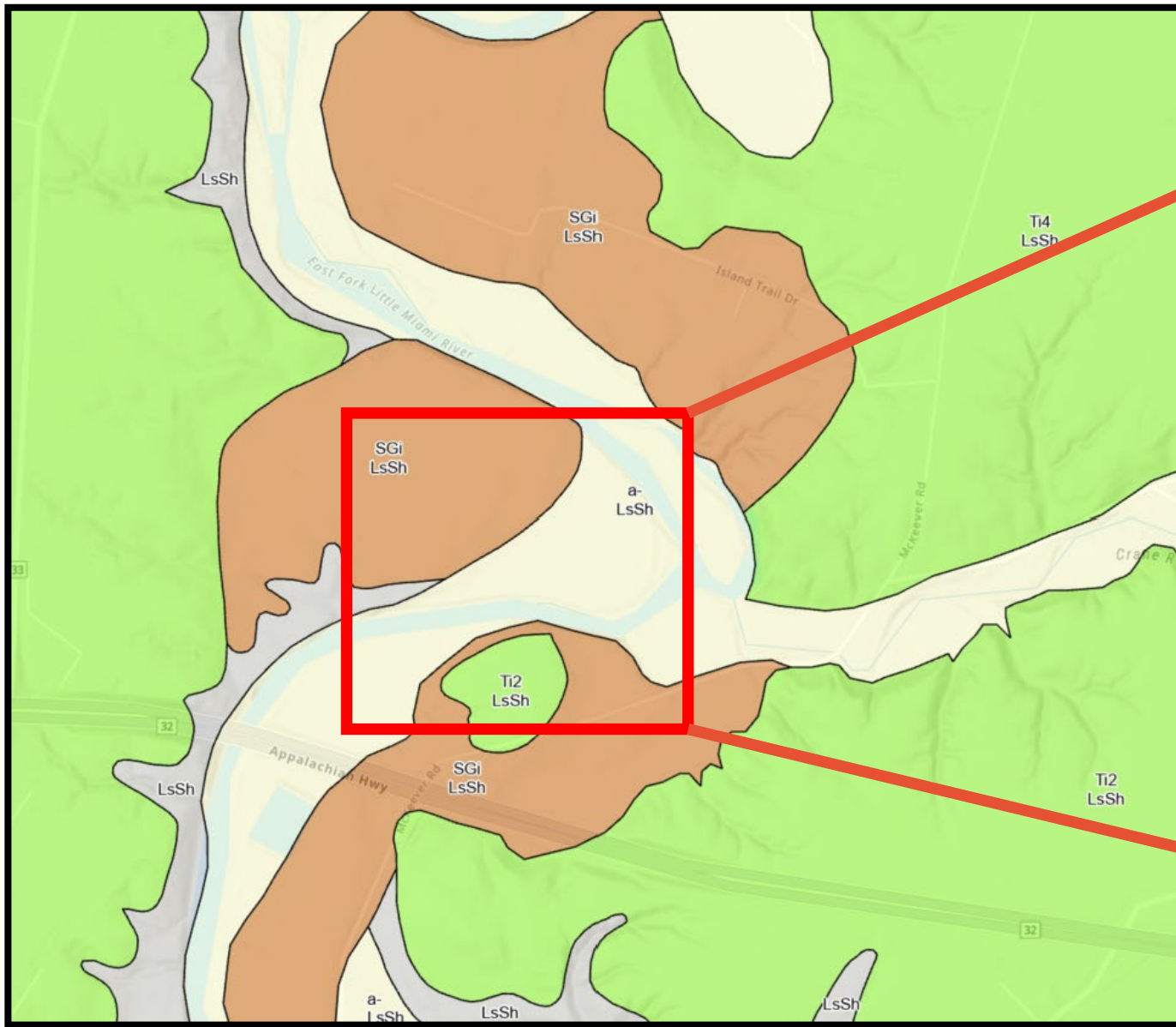


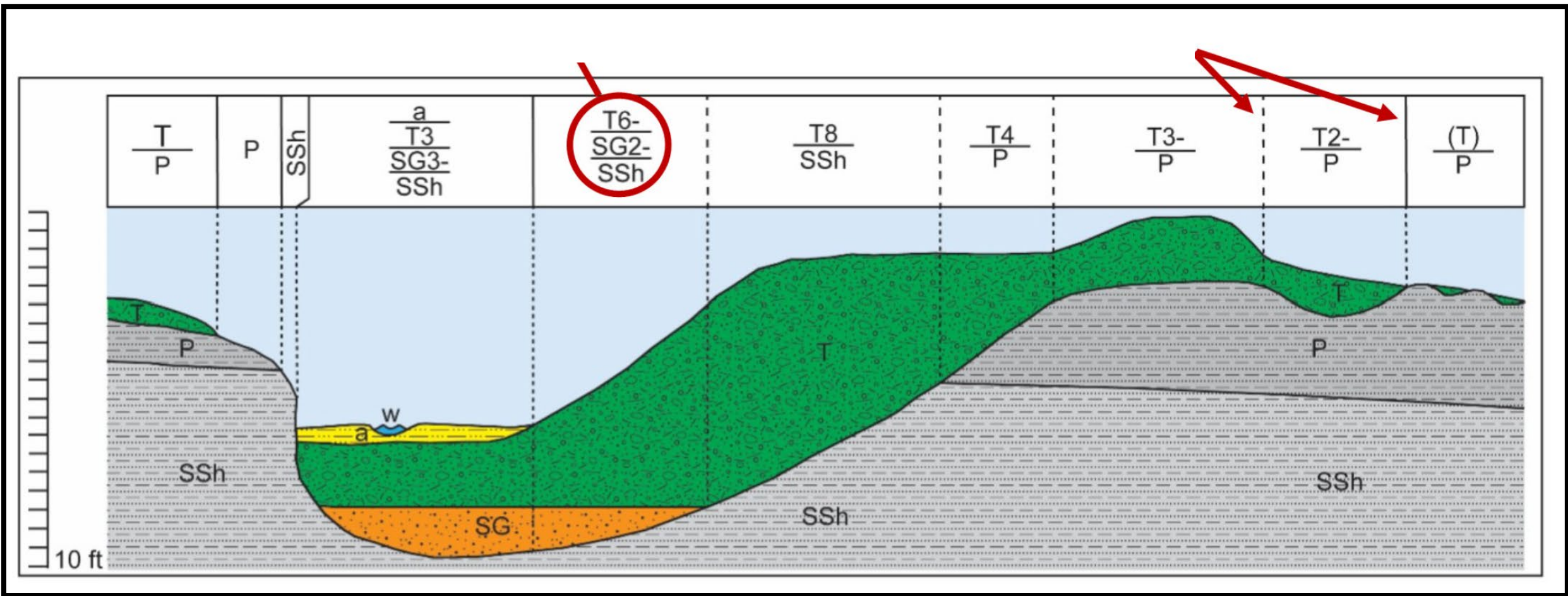
THE SURFICIAL GEOLOGY MAP DATABASE OF OHIO: DIGITAL-ONLY DELIVERY OF EVOLVING DATASETS

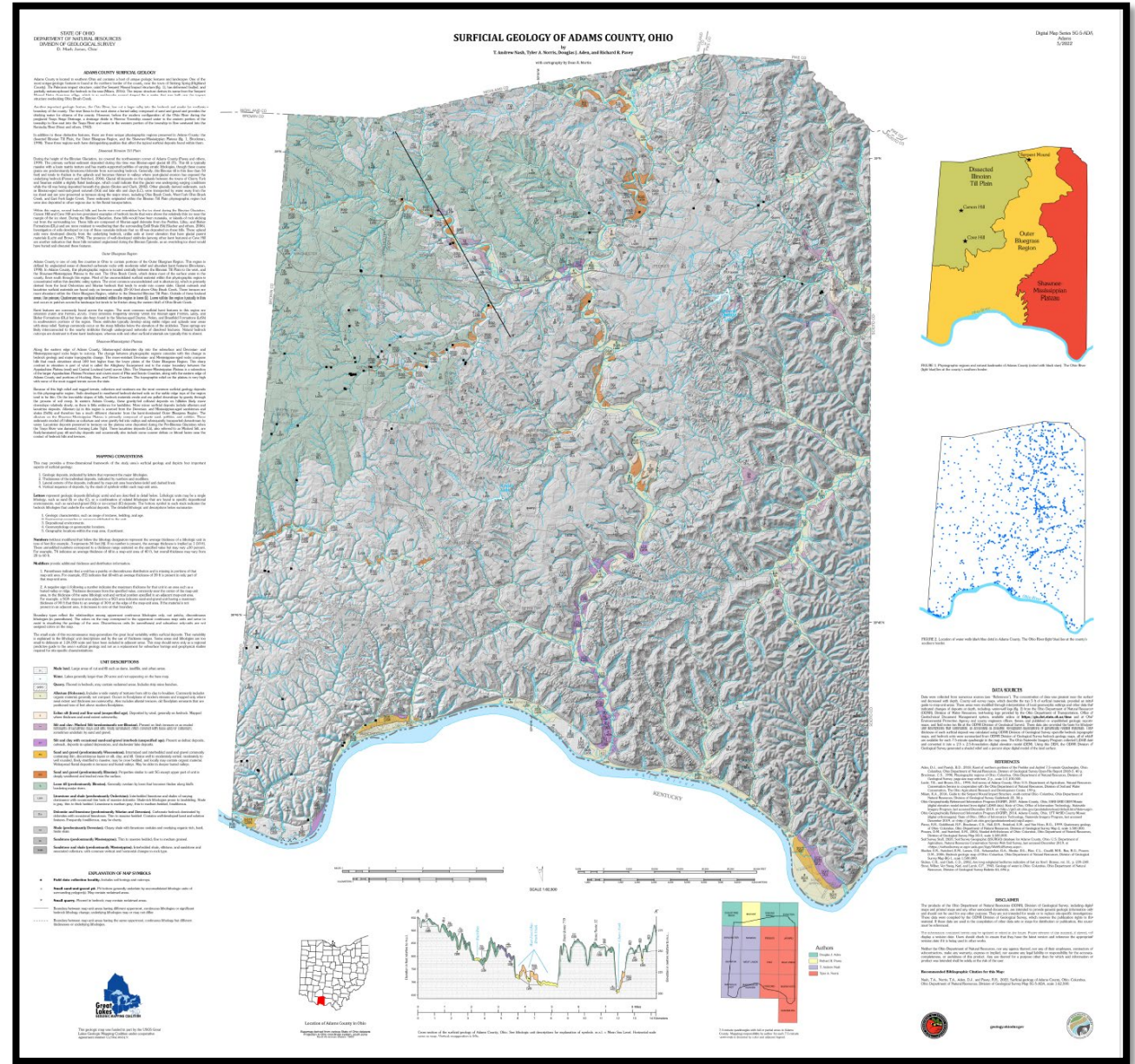
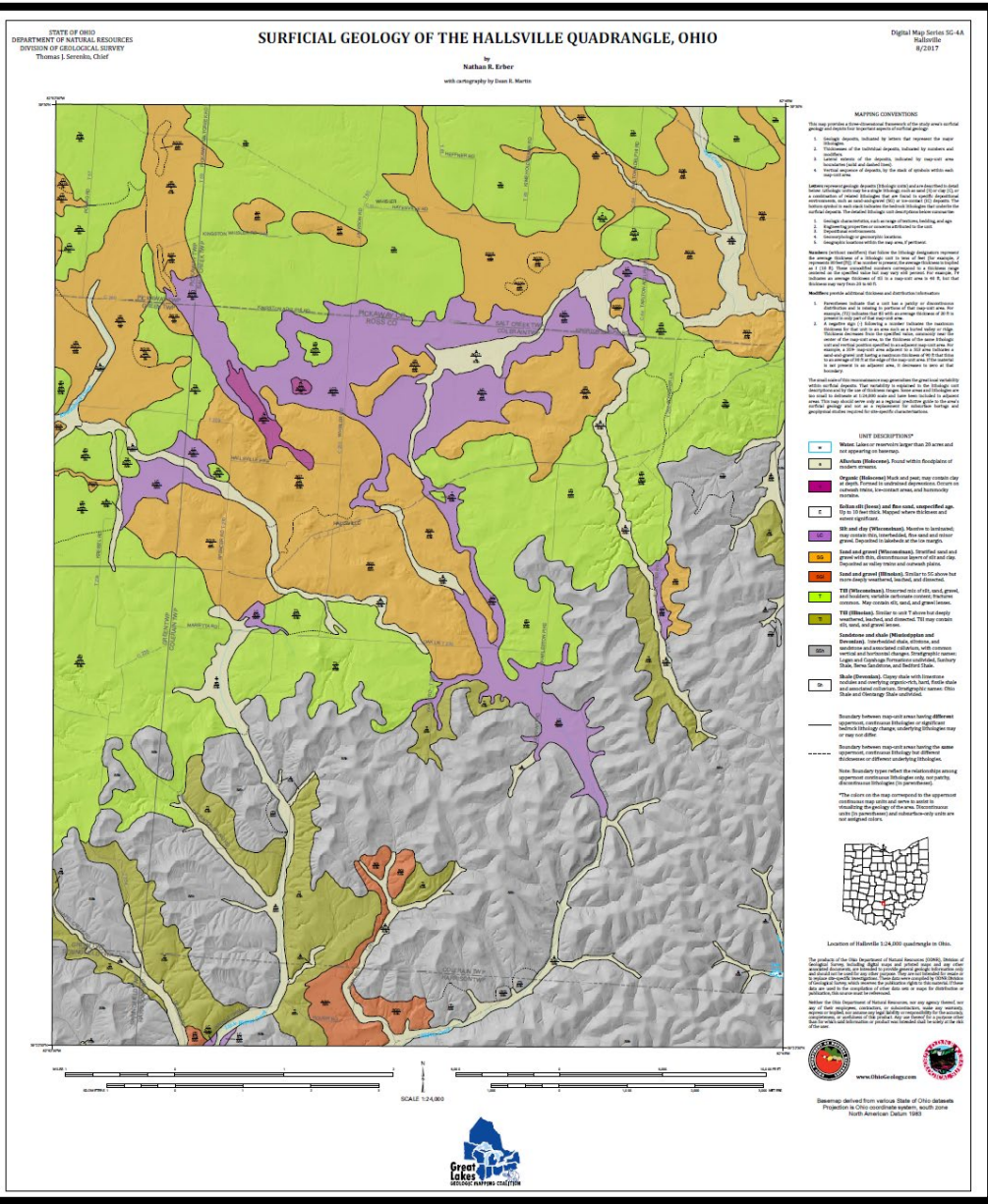
J.D. STUCKER

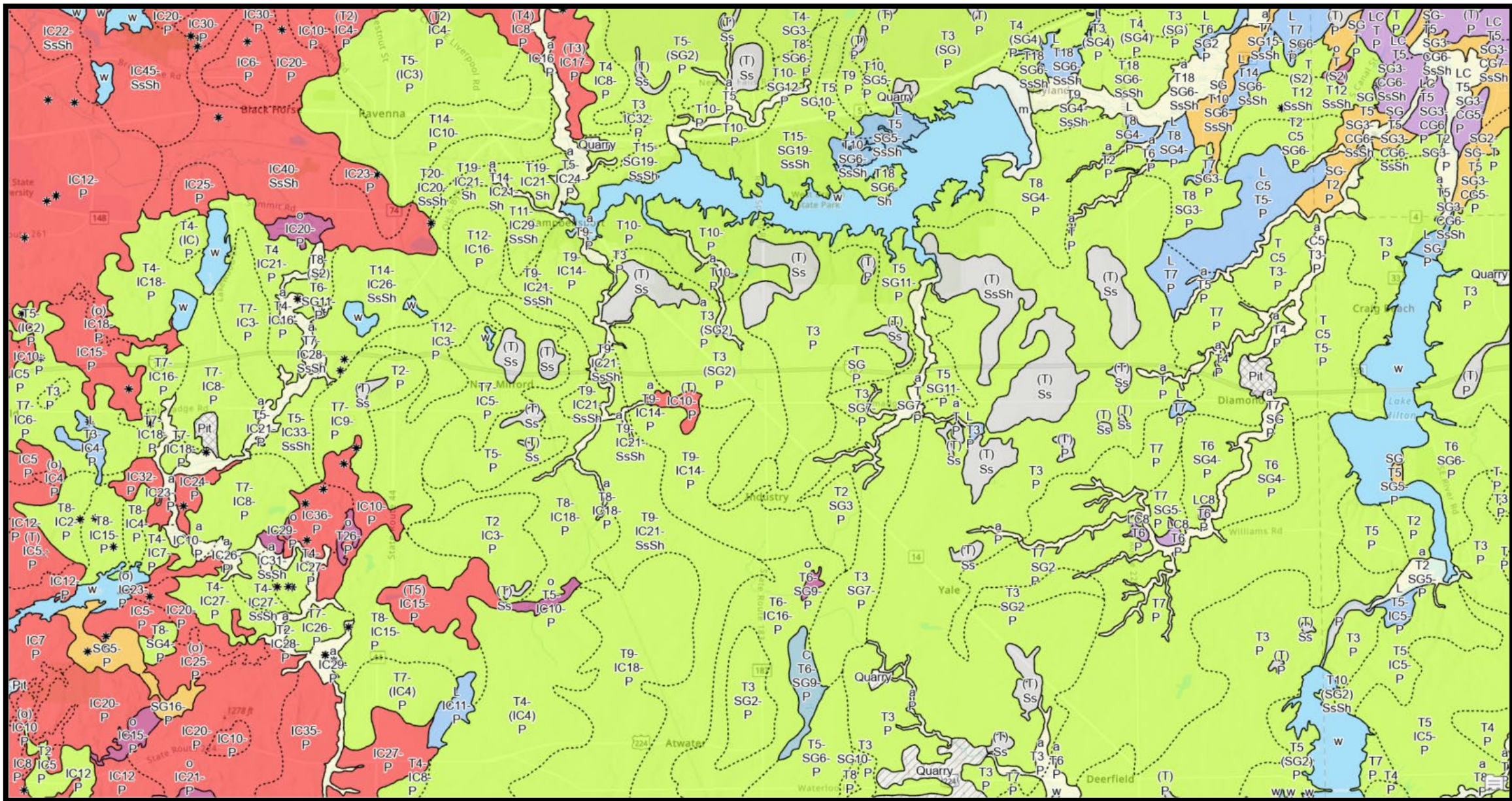
Douglas Aden & Andy Nash
Digital Mapping Techniques 2023
May 23, 2023











QuaternaryGeologyDataForSDE - SG_Polys - ArcGIS Pro

Project | Map | Insert | Analysis | View | Edit | Imagery | Share | Add-In | View | Appearance | Labeling | Data

Clipboard | Navigate | Layer | Selection | Inquiry | Labeling | Offline

Contents

- DDF-8
 - SG_Points
 - SG_Labels
 - SG_Lines
 - SG_Polys
 - World Topographic Map
 - World Hillshade

1:53,705 | 1,713,736.17E 944,865.31N ftUS | Selected Features: 0

SG_Polys

Field: Add Calculate | Selection: Select By Attributes | Zoom To | Switch | Clear | Delete | Copy

OBJECTID*	Shape*	label	LITH	L1	L2	L3	L4	L5	L6	L7	L1G	L2G	L3G	L4G	L5G	L6G	L7G	L1T	L2T	L3T	L4T	L5T	L6T	L7T	L1S	L2S	L3S	L4S	L5S	L6S	L7S	TotalThickness	BedrockLith	Shape_Length	Shape_Area
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6777	6777	Polygon Ti3/LsSh	Ti	Ti3	LsSh						Ti	LsSh					3	1	0	0	0	0	0	0	0	0	0	0	0	0	30	LsSh	23218.806942	8867704.408907	
6778	6778	Polygon (E)/SGi3-/SsSh	SGi	(E)	SGi3-	SsSh					E	SGi	SsSh				1	3	1	0	0	0	0	0	0	0	0	0	0	0	40	SsSh	10887.785841	6051511.851284	
6779	6779	Polygon LC/SG9-/SsSh	LC	LC	SG9-	SsSh					LC	SG	SsSh				1	9	1	0	0	0	0	0	0	0	0	0	0	0	100	SsSh	7258.051735	1269908.708074	
6780	6780	Polygon a/SsSh	a	a	SsSh						a	SsSh					1	1	0	0	0	0	0	0	0	0	0	0	0	0	10	SsSh	153950.070752	17047395.123266	
6781	6781	Polygon E/Pd	E	E	Pd						E	Pd					1	1	0	0	0	0	0	0	0	0	0	0	0	0	10	Pd	3184.74688	291687.84674	
6782	6782	Polygon SG/Pd	SG	SG	Pd						SG	Pd					1	1	0	0	0	0	0	0	0	0	0	0	0	0	10	Pd	2703.044342	245843.066952	
6783	6783	Polygon SsSh	SsSh	SsSh							SsSh						1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	SsSh	5593.822295	385699.891145
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6785	6785	Polygon a/Ti2/LsSh	a	a	Ti2	LsSh					a	Ti	LsSh				1	2	1	0	0	0	0	0	0	0	0	0	0	0	30	LsSh	94787.057444	11920143.386447	
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0 of 39,422 selected | Filters: 100%





SG_Polys X

Field: Add Calculate Selection Select By Attributes Zoom To Switch Clear Delete Copy

	OBJECTID *	Shape	label	L1	L2	L3	L4	L5	L6	L7	L1G	L2G	L3G	L4G	L5G	L6G	L7G	L1T	L2T	L3T	L4T	L5T	L6T	L7T	L1S	L2S	L3S	L4S	L5S	L6S	L7S	TotalThickness
1	23294	Polygon	T10/(SG)/T23-/(SG)/Ck30-/LsSh	T	T10	(SG)	T23-	(SG)	Ck30-	LsSh		T	SG	T	SG	Ck	LsSh	10	1	23	1	30	1	0		0	-	0	-		650	
2	23392	Polygon	SG3/T7/(SG)/T23-/(SG)/Ck30-/LsSh	SG	SG3	T7	(SG)	T23-	(SG)	Ck30-	LsSh	SG	T	SG	T	SG	Ck	LsSh	3	7	1	23	1	30	1		0	-	0	-	650	
3	23492	Polygon	T10/(SG)/T23-/(SG)/Ck30-/LsSh	T	T10	(SG)	T23-	(SG)	Ck30-	LsSh		T	SG	T	SG	Ck	LsSh	10	1	23	1	30	1	0		0	-	0	-		650	
4	23566	Polygon	SG4-/T4/(SG)/T25-/(SG)/Ck30-/LsSh	SG	SG4-	T4	(SG)	T25-	(SG)	Ck30-	LsSh	SG	T	SG	T	SG	Ck	LsSh	4	4	1	25	1	30	1	-		0	-	0	-	650
5	23807	Polygon	T10/(SG)/T23-/(SG)/Ck30-/LsSh	T	T10	(SG)	T23-	(SG)	Ck30-	LsSh		T	SG	T	SG	Ck	LsSh	10	1	23	1	30	1	0		0	-	0	-		650	
6	23904	Polygon	T8/(SG)/T30-/(SG)/Ck25-/LsSh	T	T8	(SG)	T30-	(SG)	Ck25-	LsSh		T	SG	T	SG	Ck	LsSh	8	1	30	1	25	1	0		0	-	0	-		650	
7	23910	Polygon	IC4-/T4/(SG)/T30-/(SG)/Ck25-/LsSh	IC	IC4-	T4	(SG)	T30-	(SG)	Ck25-	LsSh	IC	T	SG	T	SG	Ck	LsSh	4	4	1	30	1	25	1	-		0	-	0	-	650
8	24678	Polygon	T6/(SG4)/T25-/(SG5)/Ck25-/LsSh	T	T6	(SG4)	T25-	(SG5)	Ck25-	LsSh		T	SG	T	SG	Ck	LsSh	6	4	25	5	25	1	0		0	-	0	-		650	
9	16662	Polygon	T38-/Ck26-/LsSh	T	T38-	Ck26-	LsSh					T	Ck	LsSh				38	26	1	0	0	0	0	-	-				640		
10	16700	Polygon	L-/SG-/T36-/Ck26-/LsSh	L	L-	SG-	T36-	Ck26-	LsSh			L	SG	T	Ck	LsSh		1	1	36	26	1	0	0	-	-	-	-		640		
11	21698	Polygon	T34-/Ck30-/LsSh	T	T34-	Ck30-	LsSh					T	Ck	LsSh				34	30	1	0	0	0	0	-	-				640		
12	23416	Polygon	a/SG2/T30-/Ck30-/LsSh	a	a	SG2	T30-	Ck30-	LsSh			a	SG	T	Ck	LsSh		1	2	30	30	1	0	0		-	-			640		
13	23487	Polygon	a/SG-/T31-/Ck30-/LsSh	a	a	SG-	T31-	Ck30-	LsSh			a	SG	T	Ck	LsSh		1	1	31	30	1	0	0		-	-	-		640		

0 of 39,422 selected

Filters:



OHIO GEOLOGY INTERACTIVE MAP

Ohio Geology Interactive Map
ODNR Division of Geological Survey

About the Geology Viewer ?

Basemaps ▾

Legend & Layers

- Topo Quad Boundaries
- Land Base
- Elevation (in feet)
- Geology Data Points
- Geology
 - Bedrock Geology
 - Surficial Geology
 - Glacial Boundary
 - Quaternary Geology 500K
 - Surficial Stack Map 24K
 - Point Features
 - Boundaries
 - Polygons
 - Drift Thickness (in feet)
 - Geologic Hazards
 - Economic/Coal Geology
 - Groundwater

Download Geology Data

County Bookmarks

Map controls: +, -, Home, Refresh, Scale (100km/60mi), Coordinates (1:4622324 42.189132 -87.621296)





**How Do I
Cite This?**

**Recent
Updates?**

**Latest
Version?**

**Found An
Error**

**What
Does This
Mean?**





PUBLICATION SERIES

Key to Publications Series Abbreviations

Geology Publications

AR = Annual Report

DDF = Digital Data File

EGSP = Eastern Gas Shales Project

EL = Educational Leaflet

GN = Geological Note

GB = Guidebook

GF = GeoFacts

HO = Hands-On Earth Science

IC = Information Circular

M = Map Series

MR = Miscellaneous Report

OF = Open-File Map

OFR = Open-File Report

RI = Report of Investigations

RP = Report of Progress

RS = Reprint Series

Vol = Volume

Groundwater Publications

MWIR = Monthly Water Inventory Report

WB = Water Bulletin

WFS = Water Fact Sheet

WGWR = Groundwater Resources County Map

WGWP = Groundwater Pollution Potential Map

WGWPS = Groundwater Potentiometric Surface Map

WIC = Water Information Circular

WIR = Water Inventory Report

WMR = Water Miscellaneous Report

WNPSP = Water Non-point Source Pollution Report

WRBGR = River Basin Groundwater Resource Map

WTR = Water Technical Report

WTRI = Technical Report of Groundwater Investigations

Digital Map Series

BG = Bedrock Geology, Topography, & Structure

CEA = Coastal Erosion Area

EG = Environmental Geology

IM = Industrial Minerals

LE = Lake Erie

MG = Miscellaneous Geology

PG = Petroleum Geology

SG = Surficial Geology








THE SURFICIAL GEOLOGY MAP DATABASE (1:24,000 SCALE) OF OHIO





DIGITAL DATA FILE 8
DDF-8
Columbus 2023


 Layer Files


 Metadata

 Shapefiles

 SurficialGeologyOhio(DDF-8).gdb

 DDF-8 (ReadMe)

 Guide to Understanding Stack Map Revisions (OFR 2023-01)

 Surficial Stack Map 24K Legend_rev 1-21-21





ABSTRACT

Surficial “stack” maps depict the texture and thickness of unconsolidated geologic materials. These geologic maps are intended to display the three-dimensional layers of glacial and post-glacial sediments, and their contact with the top of bedrock. Between 1997 and 2022, surficial geology maps were published by the Ohio Department of Natural Resources, Division of Geological Survey (Survey). These maps were incorporated into a digital GIS database during the final five years of new map production (Aden and others, 2023). This Digital Data File (DDF) and release of statewide, seamless 1:24,000-scale data produced by this mapping program marks the transition from publishing static paper geologic maps to maintaining a living digital dataset. The surficial geology database is comprised of four ArcGIS® feature classes and one layer file. It can be viewed and downloaded through the Ohio Geology Interactive Map on the Survey’s website at ohiodnr.gov/ogim. The surficial geology database also can be downloaded directly from the Survey’s surficial geology webpage: ohiodnr.gov/surficialgeology.



VERSION HISTORY

As new data are collected or become available, updates made to the surficial geology database are documented here. Users are encouraged to use the latest version of the surficial geology database. To ensure the use of up-to-date data, the current version number in table 1 should match the version number in the database metadata documentation. The most current version of the surficial geology database can always be accessed on the Ohio Geology Interactive Map (ohiodnr.gov/ogim).

TABLE 1. *Ohio surficial geology map database version information*

Version Number	Revision Date (Month & Year)	Principal Compiler	Database Revisions	Affected Areas	Recommended Citation
1.0	August 2022	Aden, D.J.	See Aden and others, 2023	Statewide	Ohio Geological Survey, and Aden, D.J., principal compiler, 2023, The surficial geology map database (1:24,000 scale) of Ohio: Columbus, Ohio Department of Natural Resources, Division of Geological Survey Digital Data File 8, ver. 1.0, 3 p. text.





GUIDE TO DATABASE FIELDS

Table 2 below contains an explanation of the data contained in the fields within the four feature classes (Polygons, Points, Labels, and Lines) that make up the surficial geology database. Fields in **bold** are used to display or label the data. Some fields, such as OBJECTIDs, are generated automatically within the GIS and are excluded from this table. These fields are useful as unique identifiers for querying data within a GIS environment. More specific information about the structure of each field can be found in the metadata documentation.

TABLE 2. Explanation of Ohio surficial geology map database fields

Feature Class	Field	Description
Polygons	Label	Stack label describing the polygon's geology, pulled from the Labels feature class.
	Lith	Top, non-patchy stack unit. Used to symbolize the polygons.
	L1-L7	Layer 1 up to layer 7 (where present) for each respective part of the label with geology, thickness, and modifier appended to each other.
	L1G-L7G	Layer 1 up to layer 7 (where present) for each respective part of the label with only the geology unit (lithology).
	L1T-L7T	Layer 1 up to layer 7 (where present) for each respective part of the label with only the thickness unit.
	L1S-L7S	Layer 1 up to layer 7 (where present) for each respective part of the label with only the modifiers. Symbols include '()' and '-'.
	TotalThickness	Total stack thickness representing sediment thickness for the polygon.
	BedrockLith	Bedrock lithology of the bottom stack unit. Thickness is not provided.
Points	Type	Pit, Quarry, or Organic points that are too small to draw polygons.
Labels	Label	Stack label describing the vertical sequence of geologic units. Added to the Polygons feature class.
Lines	LineType	Solid or Dashed. Indicates lateral changes in geology based on first non-parenthetical (non-patchy) stack lithology.





ACKNOWLEDGEMENTS

Funding of original surficial geology stack mapping was provided in part by the U.S. Geological Survey (USGS) through the National Cooperative Geologic Mapping Program's STATEMAP and Great Lakes Geologic Mapping Coalition (GLGMC) programs and by the U.S. Environmental Protection Agency. Final database compilation (version 1.0) was funded by USGS GLGMC cooperative agreement G21AC10694. Authors, mappers, reviewers, cartographers, database administrators, and compilers who have made significant contributions to the creation of this digital map database include:

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D. Mark Jones	Richard J. Wynkoop
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OHIO GEO SURVEY WEBSITE CATALOG

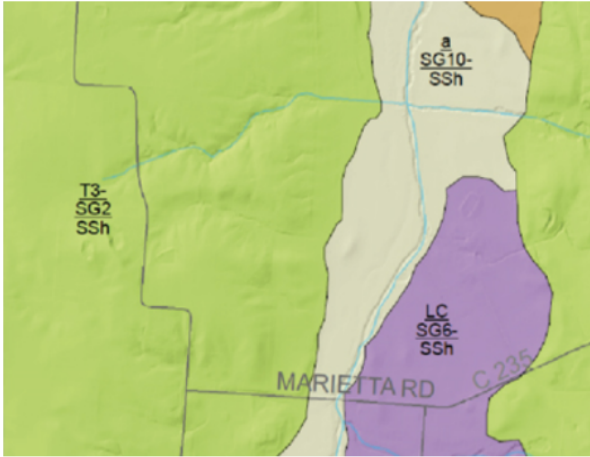
Enter Keywords Search

Showing 1 to 25 of 2,521 entries Show 25 entries

Download	Title	Year	Topic	Location	Author	Publication Series	Available for Purchase
Download	Bedrock Geologic map of Ohio. Scale 1:500,000 (Bedrick Geology 1)	2006	bedrock geology		Slucher, E. R., Swinford, E. M., Larsen, G. E., Schumacher, G. A., Shrake, D. L., Rice, C. L., Caudill, M. R., Rea, R. G.	BG-1	\$15.00 folded; \$18.50 rolled
Download	High-Resolution subsurface correlation of Late Ordovician-Wenlock (Silurian) strata in Southeastern Ohio (Geologic Note 14)	2018	strtigraphy, Ordovician, Silurian, Oil and gas		Waid, Christopher	GN-14	
	"Newburg" (Silurian) carbonate zones: wells producing or havng shows of 100 MCFG or 1 BO or more. Scale 1:250,000 (Open File Map 59)	1996	oil and gas, Silurian, Newburg		ODNR Division of Geological Survey	OF-59	
Download	1950 Investigations of Lake Erie sediments, vicinity of Sanudusky, Ohio (Report of Investigations 9)	1951	Lake Erie	Erie Co.	Pincus, Howard, Roseboom, Marjorie, Humphris, Curtis	RI-9	Out of print
Download	1951 investigations of Lake Erie shore erosion (Report of Investigations 18)	1953	erosion, Lake Erie	Lake Erie	Pincus, Howard	RI-18	Out of print
Download	1953 Oil and gas well drilling statistics (Report of Investigations 20)	1954	oil and gas, history		Alkire, Robert	RI-20	Out of print



Surficial Geology Mapping



Modern surficial geology maps provide a more detailed view of Ohio's glacial geology. Currently, surficial geology maps are available at three published scales: 1:24,000, 1:62,500, and 1:100,000. These maps identify and describe the nature and thickness of Ohio's glacial deposits. Derivative products of this dataset, such as sand-and-gravel resource maps and mineable bedrock maps, are also available.

In 2022, the ODNR Division of Geological Survey completed a statewide, three-dimensional, 1:24,000-scale map of Ohio's unconsolidated materials. GIS data (DDF-8) is available for download and is also accessible online via the Ohio Geology Interactive Map. Previously published, and now superseded, static paper maps are also available through our Geologic Records Center Publications Catalog.

[Download Current GIS Data](#)

[View Surficial Geology Data on Interactive Map](#)

[Download Historical Surficial Geology Maps](#)

[Download Current GIS Data](#)

[View Surficial Geology Data on Interactive Map](#)

[Download Historical Surficial Geology Maps](#)



The screenshot shows the USGS AASG National Geologic Map Database search results page. At the top, there are logos for USGS (science for a changing world) and AASG (Association of American State Geologists). Navigation links include USGS HOME, CONTACT USGS, and SEARCH USGS. A menu bar contains Home, Catalog, Lexicon, MapView, New Mapping, Standards, and Comments. The main heading is "National Geologic Map Database" with a sub-heading "Search Results". Below this, there are "Sort Options" for Scale (selected), Author, Title, Year, Publisher, and Series. There are also icons for "Share Link", "Refine Search", "Downloads", and "GIS Data". The results are displayed as "Records 1 - 100 (of 5113)" with navigation links "<Back Next>" and a list of scale filters: ">24K || 24K || 25 - 99K || 100K || 101K - 499K || 500K || <500K || No Scale". A highlighted section is titled "Scale larger (more detail) than 1:24,000". The list of records includes:

- Benson, D.J., 1978, [Lake Erie shore erosion and flooding, Lucas County, Ohio](#): Ohio Division of Geological Survey, Report of Investigations 107, scale 1:4,800.
- Carter, C.H., 1976, [Lake Erie shore erosion, Lake County, Ohio: setting, processes, and recession rates from 1876 to 1973](#): Ohio Division of Geological Survey, Report of Investigations 99, scale 1:4,800.
- Carter, C.H., and Guy, D.E., Jr., 1980, [Lake Erie shore erosion and flooding, Erie and Sandusky Counties, Ohio: setting, processes, and recession rates from 1877 to 1973](#): Ohio Division of Geological Survey, Report of Investigations 115, scale 1:4,800.
- Carter, C.H., and Guy, D.E., Jr., 1983, [Lake Erie shore erosion, Ashtabula County, Ohio: setting, processes, and recession rates from 1876 to 1973](#): Ohio Division of Geological Survey, Report of Investigations 122, scale 1:4,800.
- Parrick, Brittany, 2019, [Miller Sanctuary State Nature Preserve trail map](#): Ohio Division of Geological Survey, scale 1:5,000.
- Fox, Jeff, 2018, [Geology of Lake Katherine State Nature Preserve](#): Ohio Division of Geological Survey, scale 1:10,000.
- Hansen, M.C., 2018, [Geology of Chestnut Ridge MetroPark](#): Ohio Division of Geological Survey, scale 1:10,436.
- Aden, D.J., 2015, [Karst of the Hillsboro, New Market, New Vienna, and Leesburg Quadrangles, Ohio](#): Ohio Division of Geological Survey, Open-File Report OFR 2015-1, scale 1:12,000.
- Aden, D.J., 2016, [Karst of the Belfast and Sugar Tree Ridge 7.5 Minute Quadrangles](#)





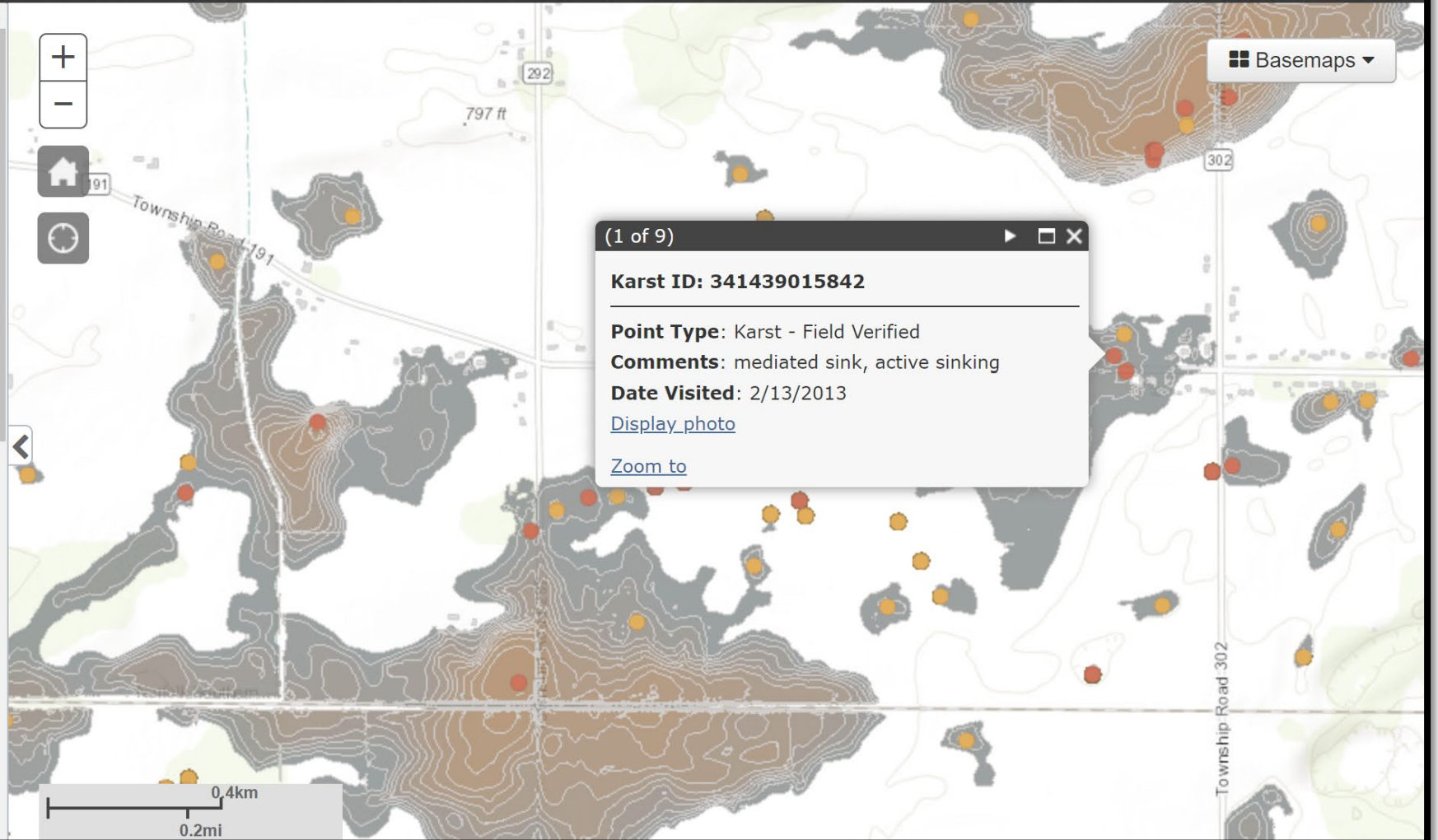
Legend & Layers

- Karst Layers
 - Karst Points
 - Karst - Field Verified
 - Karst - Suspect - Field Visited
 - Karst - Suspect - Not Visited
 - Spring
 - Karst Depressions Depth in Feet
 - Karst Geology of Ohio
 - Karst Detailed Mapping Completed Areas
- Bedrock Geology
- Drift Thickness
- Land Base

▶  Address/Coordinate Search

▶  Print

▶  Download Karst Data



**LAKE ERIE COASTAL EROSION AREA
OHIO COASTAL MANAGEMENT PROGRAM**

OHIO DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGICAL SURVEY
2018

Ashtabula County
Frame: 280 [Page 1 of 2]



FINAL COASTAL EROSION AREA MAPS

This map represents the FINAL IDENTIFICATION of coastal erosion areas as defined in Section 1501-6-10 through 1501-6-13 of the Ohio Administrative Code. The information is portrayed on a 2015 digital, orthophotographic base map. This map does not show changes or shoreline modifications made after April 2015. Please refer to the instructions when using coastal erosion area maps. Neither the Ohio Department of Natural Resources nor any division thereof, nor any of their employees, contractors, or subcontractors, make any warranty, express or implied, nor assume any legal liability or responsibility for the accuracy, completeness, or reliability of this map.

Legend

- - - - 2004 Recession Line
- + + + Base (2015) Recession Line
- Landward extent of CEA
- Transects





Ohio Earthquake Epicenters

ODNR



Legend & Layers

Earthquake Epicenters

OhioSeis Seismic Stations

OhioSeis Seismic Stations (closed)

Epicenters

Historical 5.0 and up

Historical 4.0 - 5.0

Historical 3.0 - 4.0

Historical 2.0 - 3.0

Historical less than 2.0

Instrumental 5.0 and up

Instrumental 4.0 - 5.0

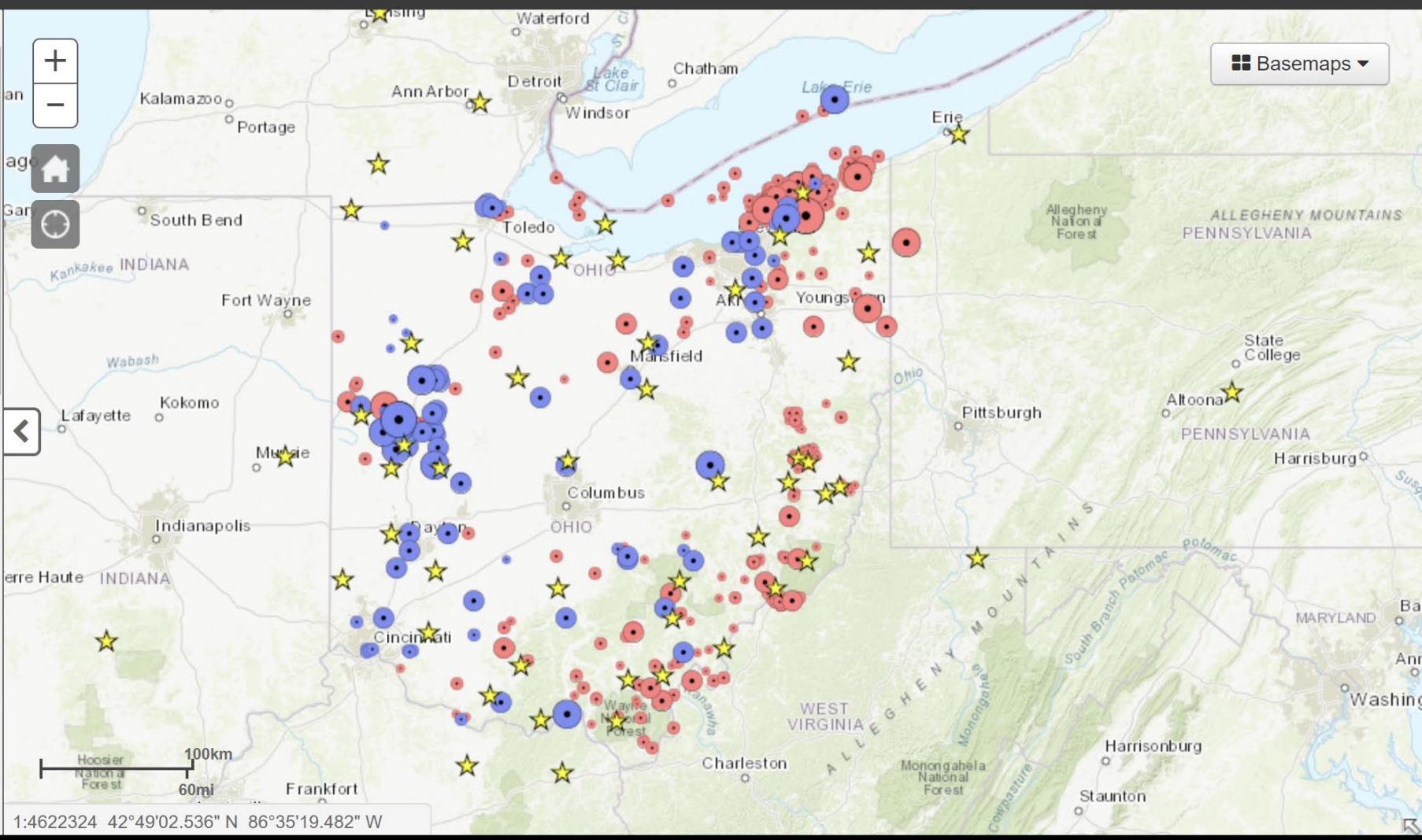
Instrumental 3.0 - 4.0

Instrumental 2.0 - 3.0

Instrumental less than 2.0

Land Base

County Bookmarks





Scale: 1 : 144447.6442
Latitude: 40.003818

Well Logs

Well Logs Unlocated (2)

QUICK SEARCH

ADVANCED SEARCH



Well Log Sealing Report

County

FRANKLIN

Township

Select Township

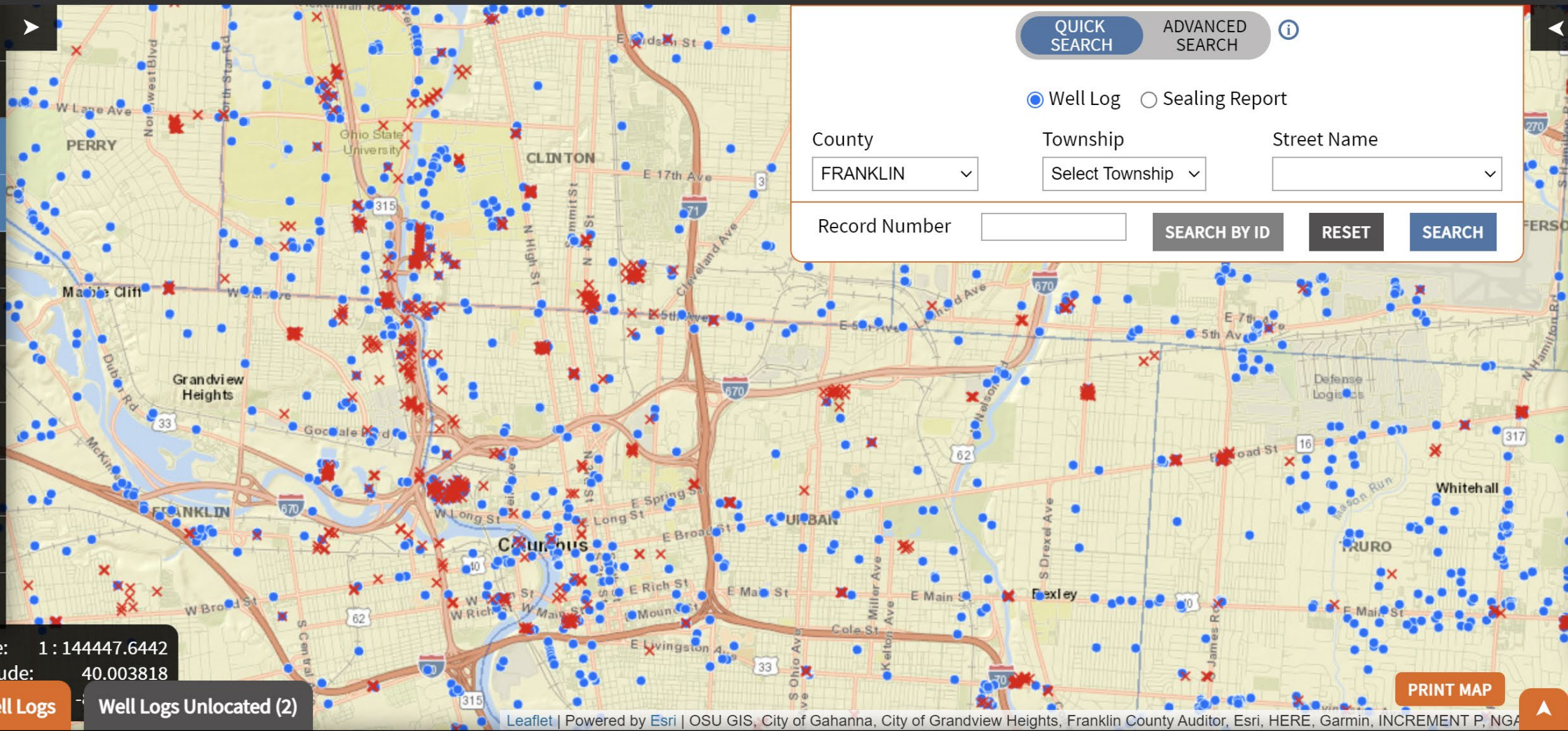
Street Name

Record Number

SEARCH BY ID

RESET

SEARCH



PRINT MAP



QUESTIONS?



**OHIO
GEOLOGICAL
SURVEY**

DEPARTMENT OF NATURAL RESOURCES

geology.ohiodnr.gov