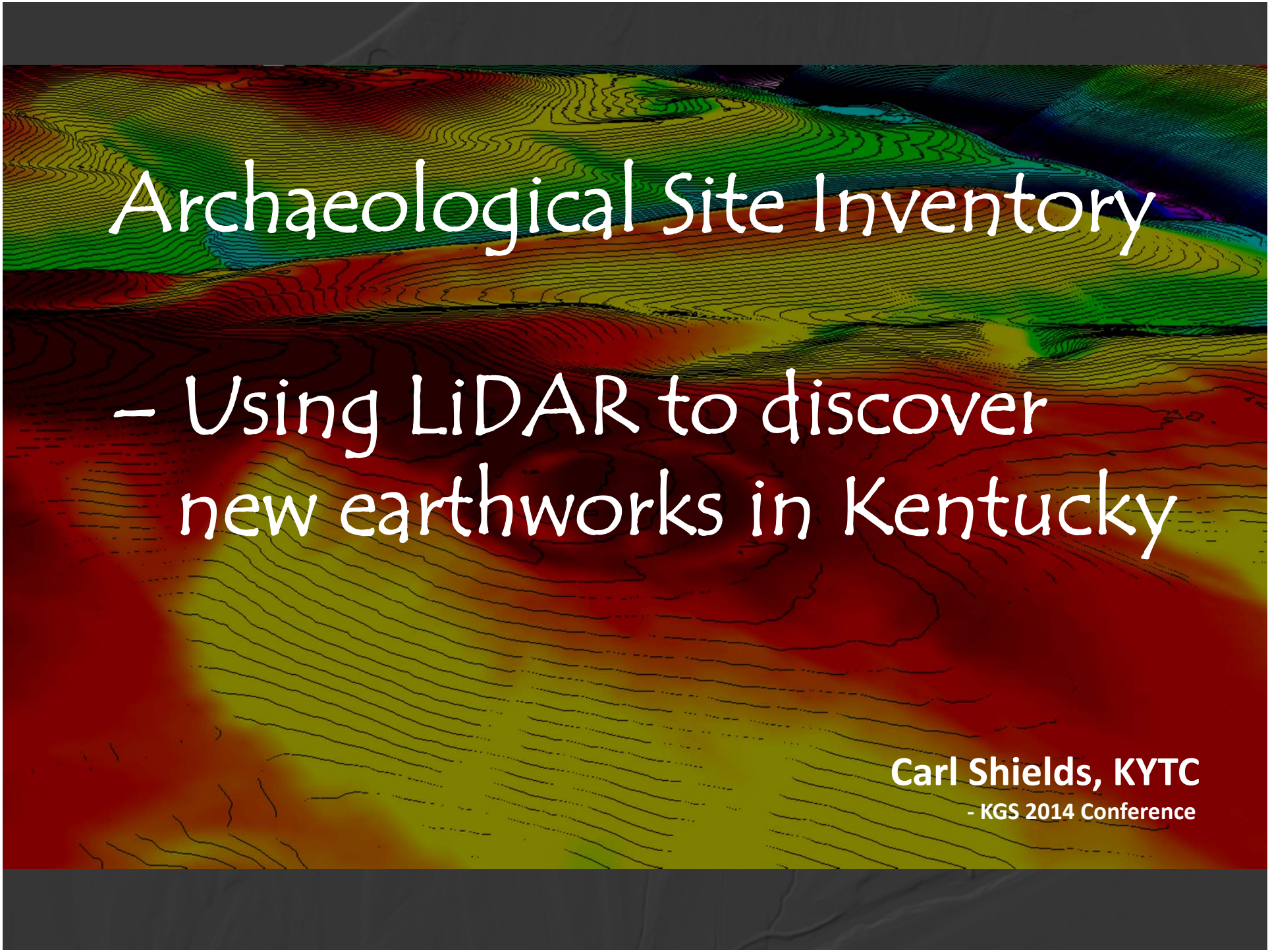

Archaeological Site Inventory
– Using LiDAR to discover new earthworks in Kentucky
Carl Shields, KYTC
- KGS 2014 Conference

No script...

a bazillion slides...

last presentation before lunch.

LiDAR is *fundamentally* changing what we know about prehistory and how we approach archaeology.

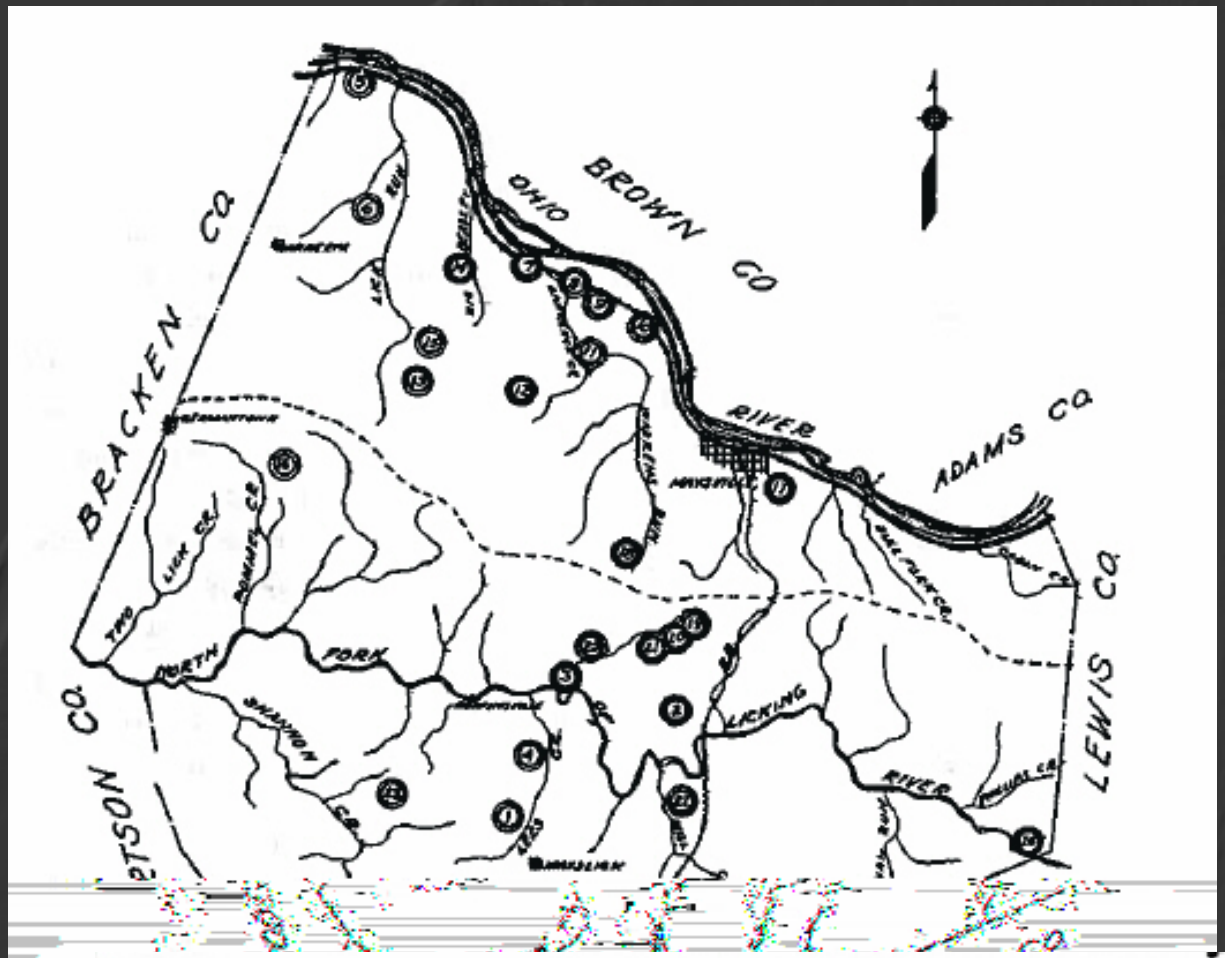
Here's why…

LiDAR survey is *exponentially* faster at finding geographic features.

I won’t go into a lot of detail, but…

…and ill-tempered sea bass.

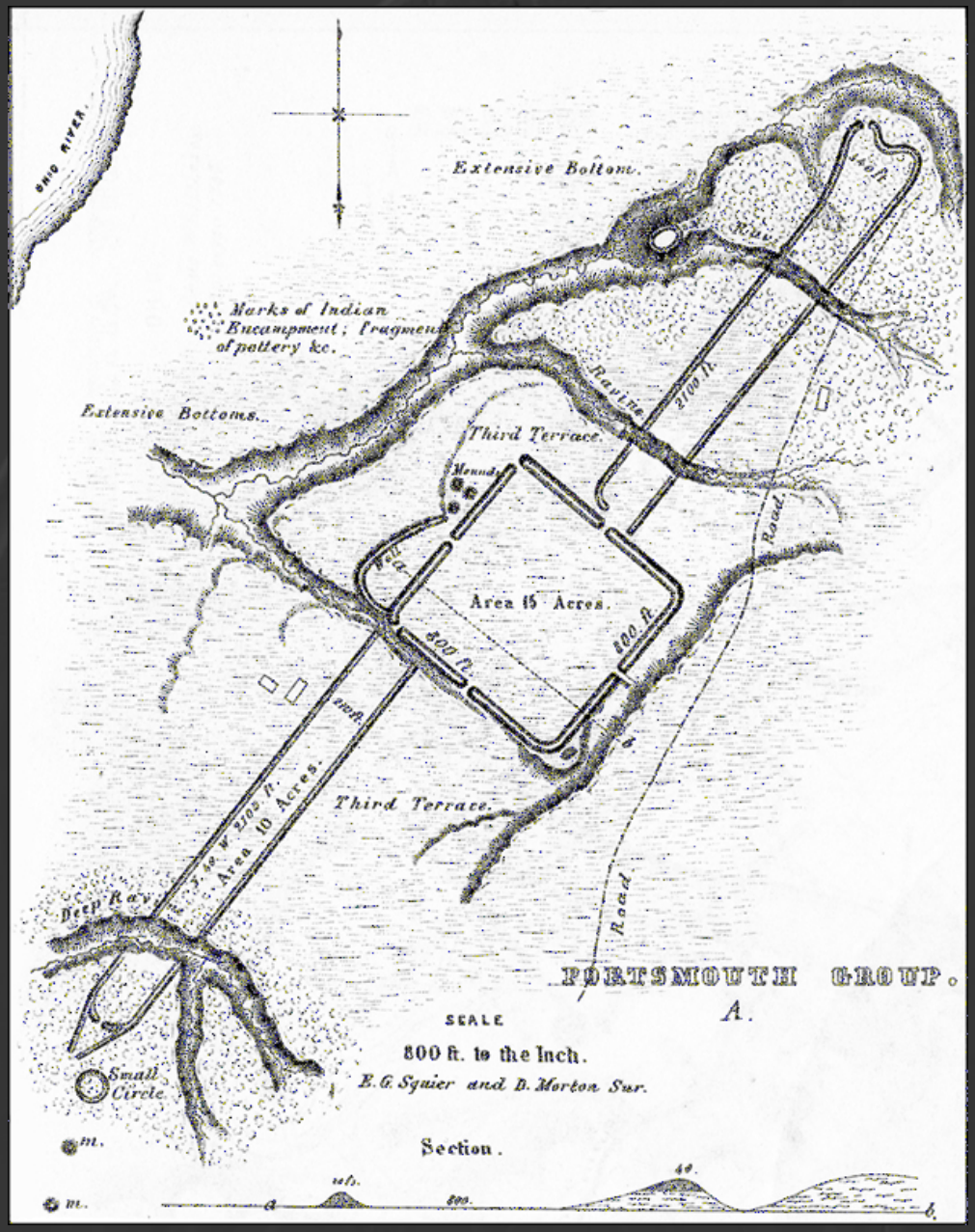
Significant Indian mounds and villages (1928)



6. Mound two and one-half miles south of Dover, one and one-half miles from Minerva and one-half mile from the road. This mound was reported by J. B. Hoeing many years ago.

For some of Kentucky's most important sites, this is the best documentation we have.

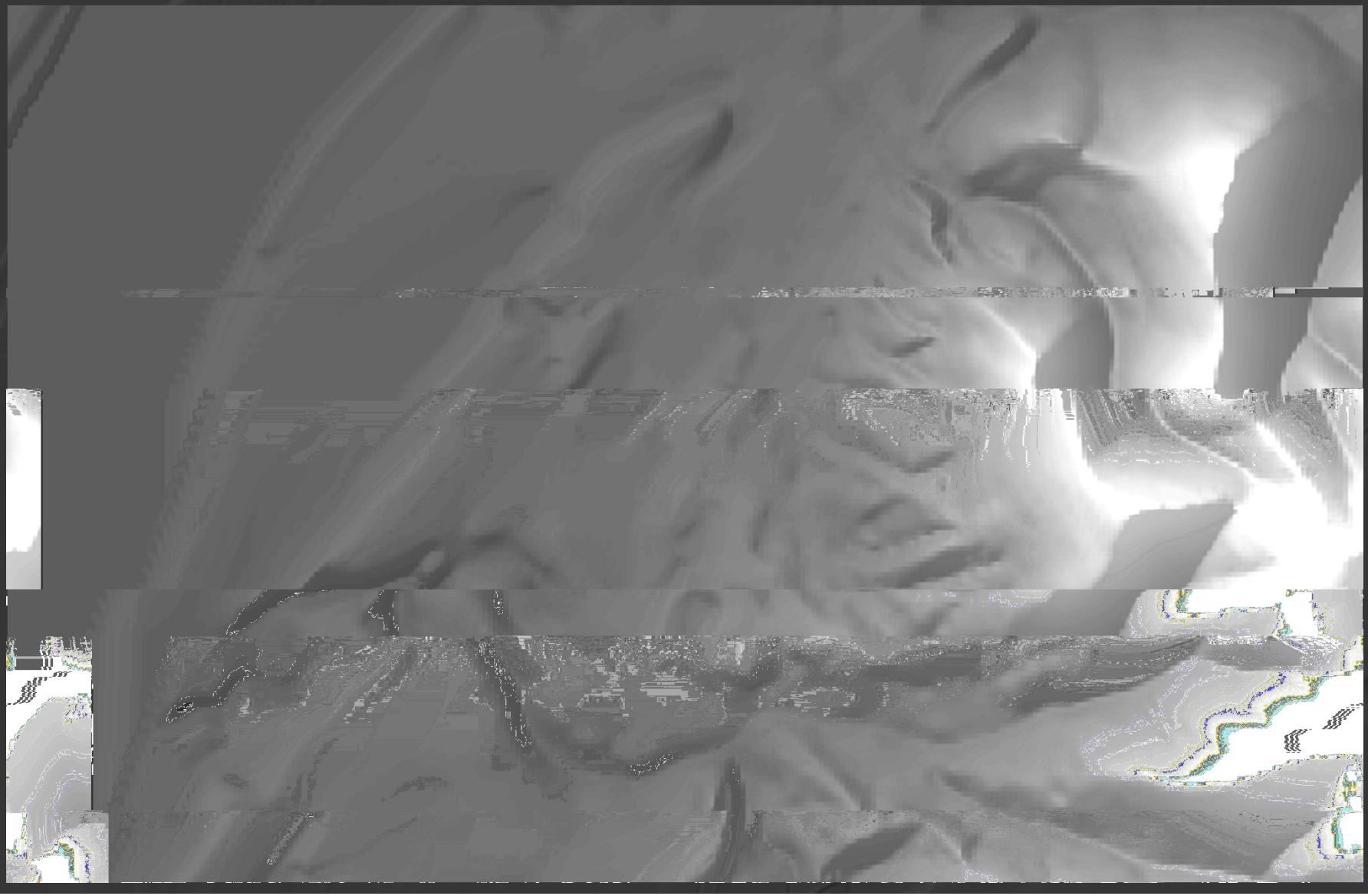
First started examining known sites in 2009.



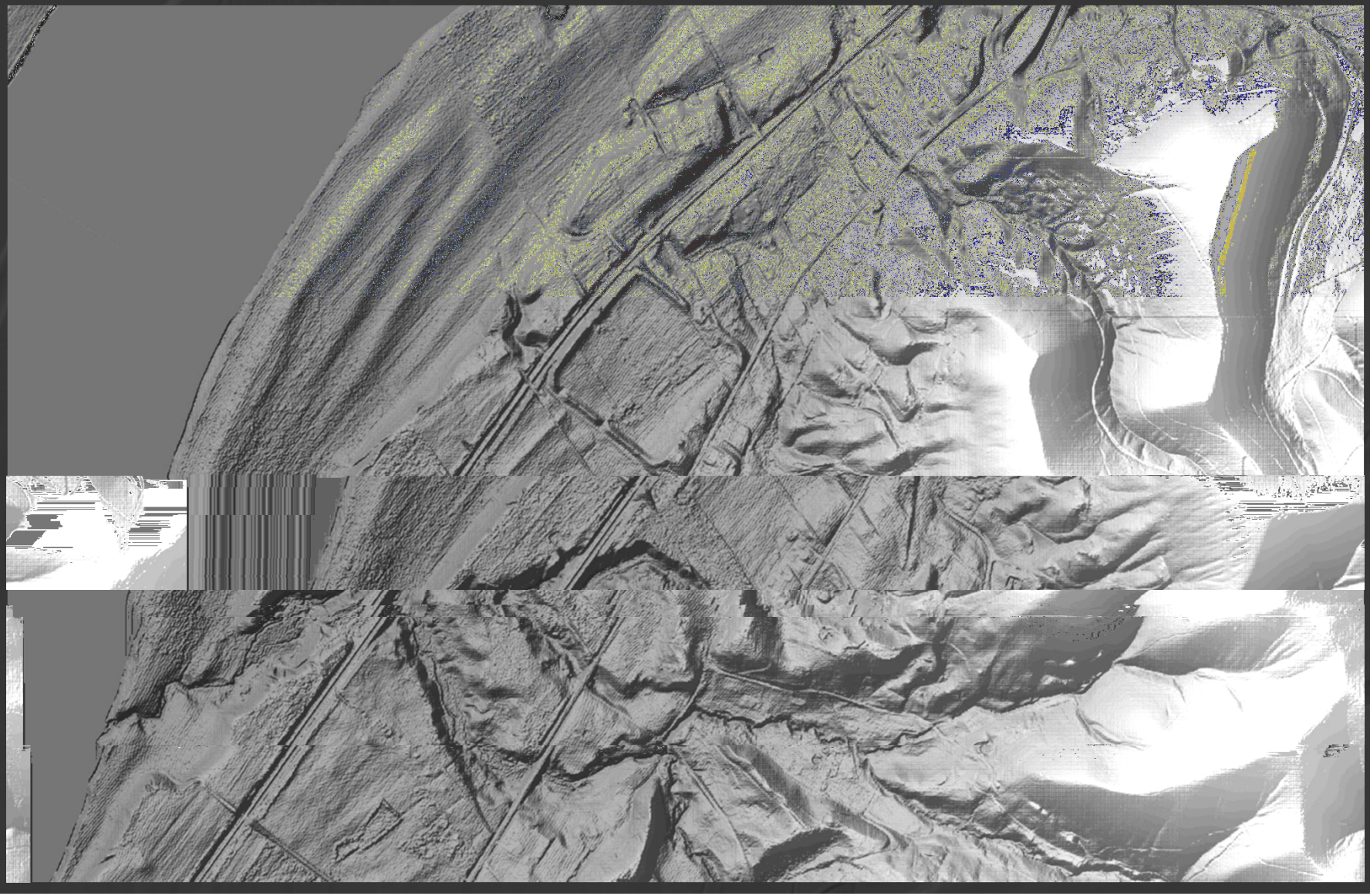
Located in Greenup County, the Old Fort Earthworks were first documented in the 1770's.

Houses, farming, roads, and railroads have all impacted this important site.

Old Fort Earthworks (15Gp1) on 10 meter DEM.

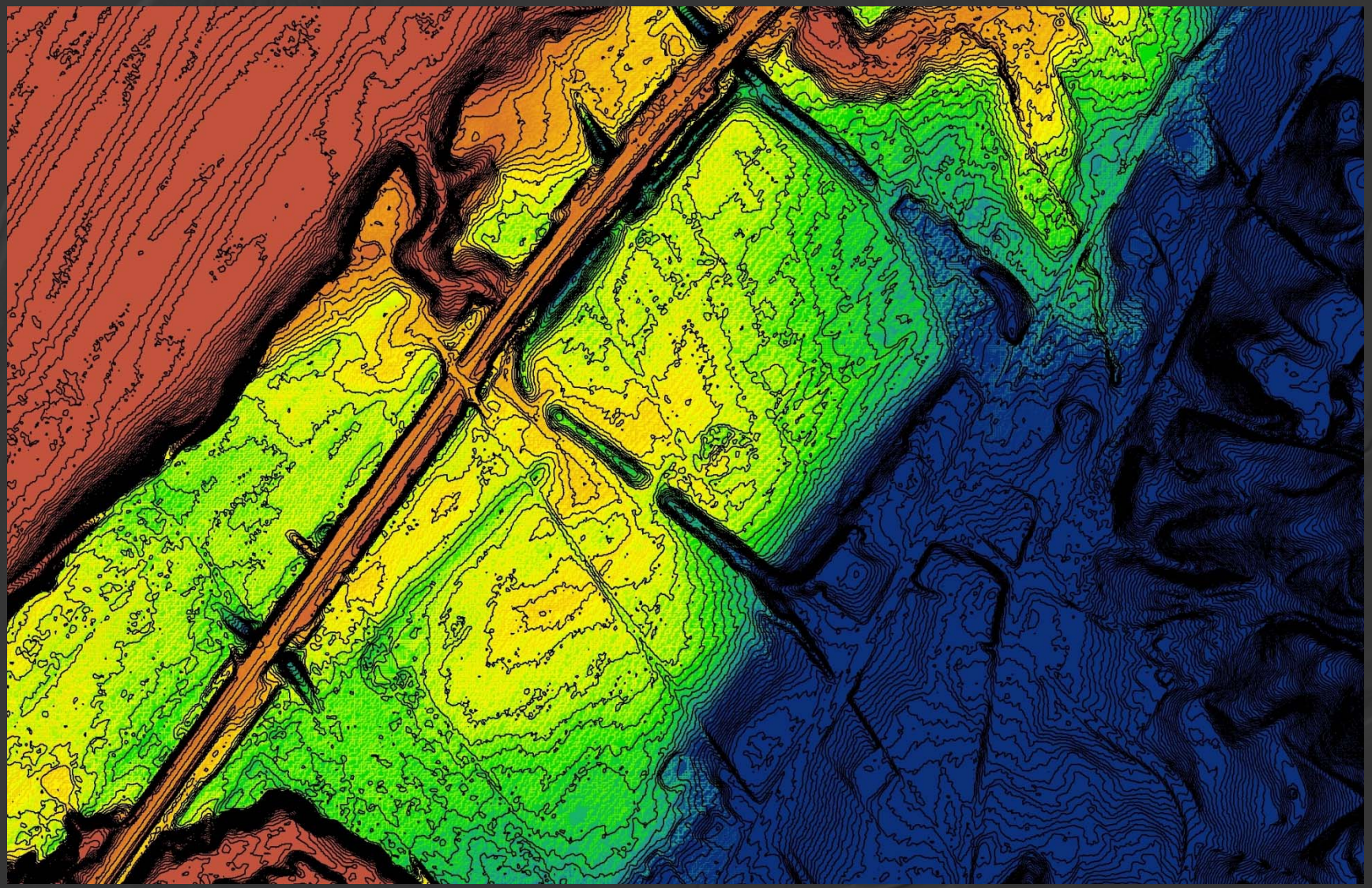


Old Fort Earthworks (15Gp1) on 5 foot DEM.

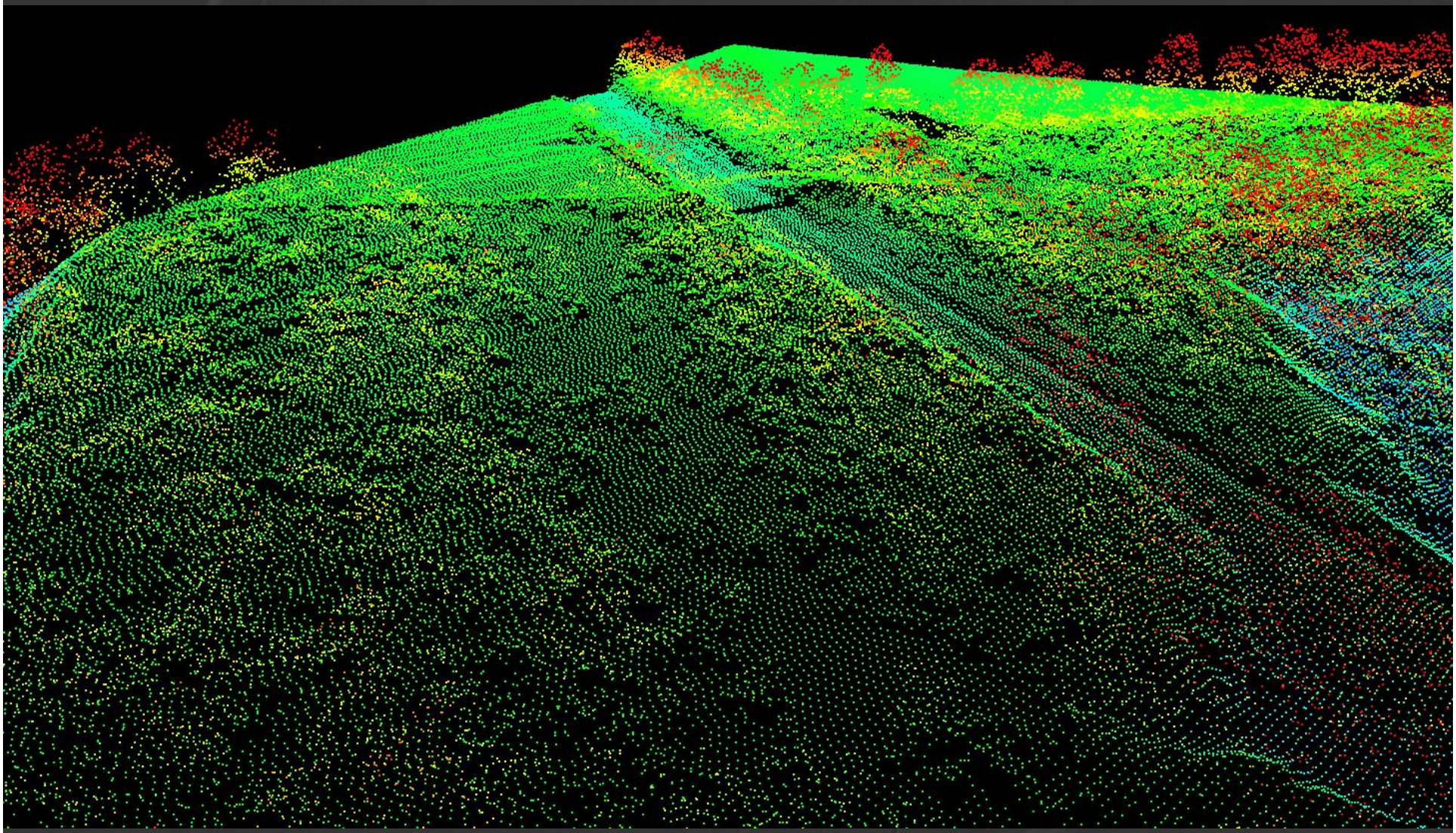


Needs more cowbell! ! !

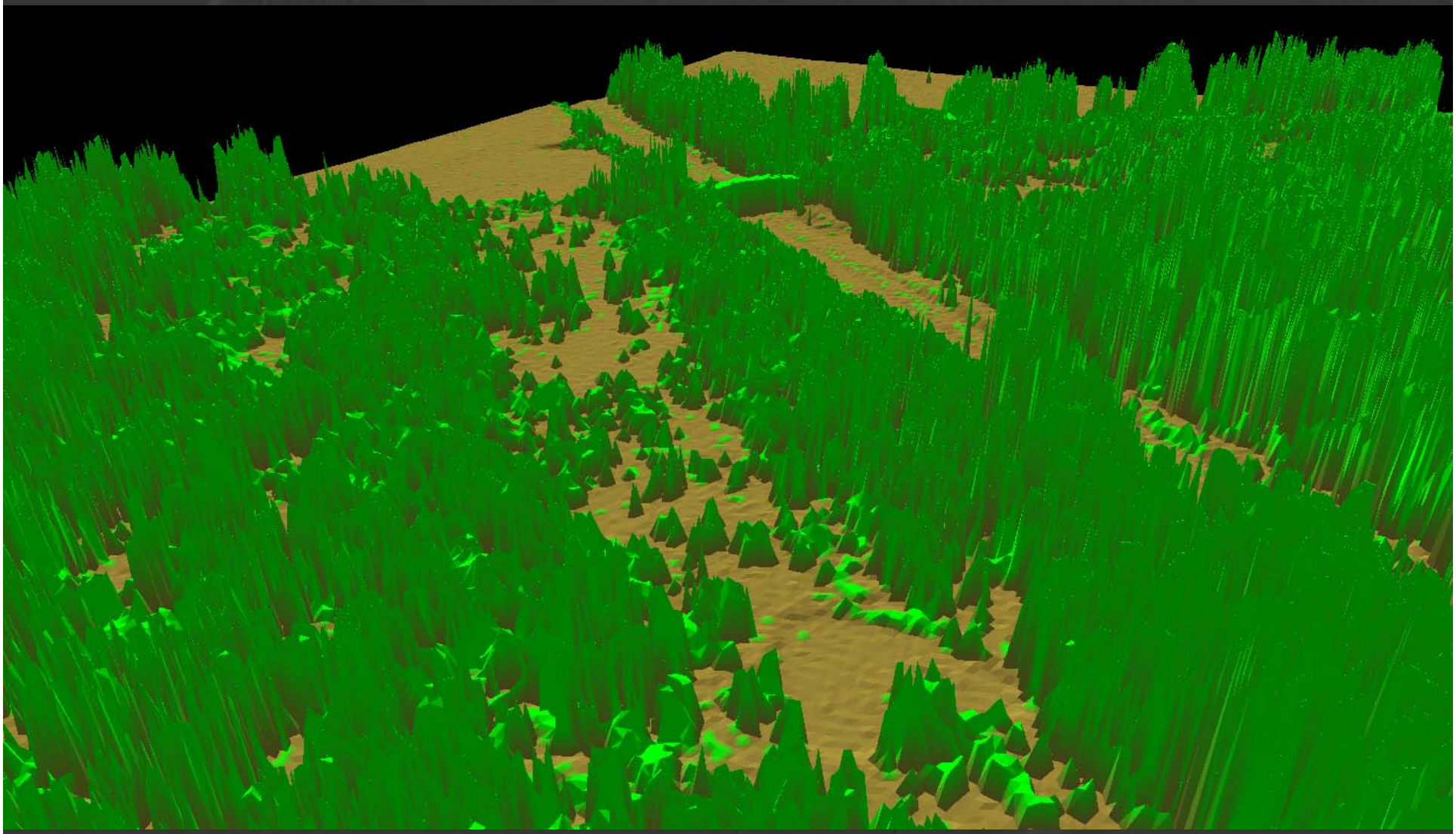
1-foot contours over color version of the 5 ft DEM.



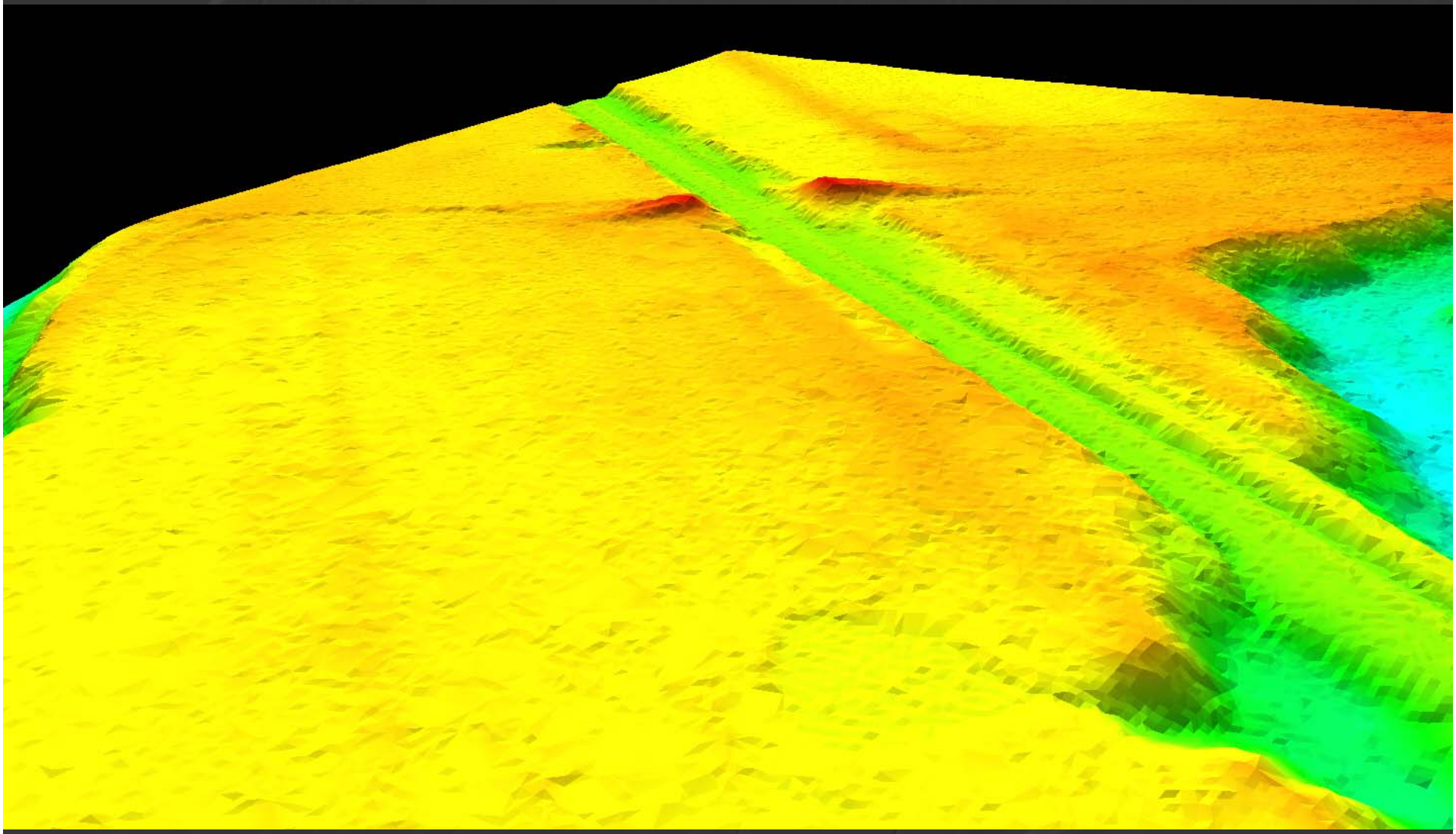
LiDAR Classified Points (15Gp1)



LiDAR Derived TINs (15Gp1)



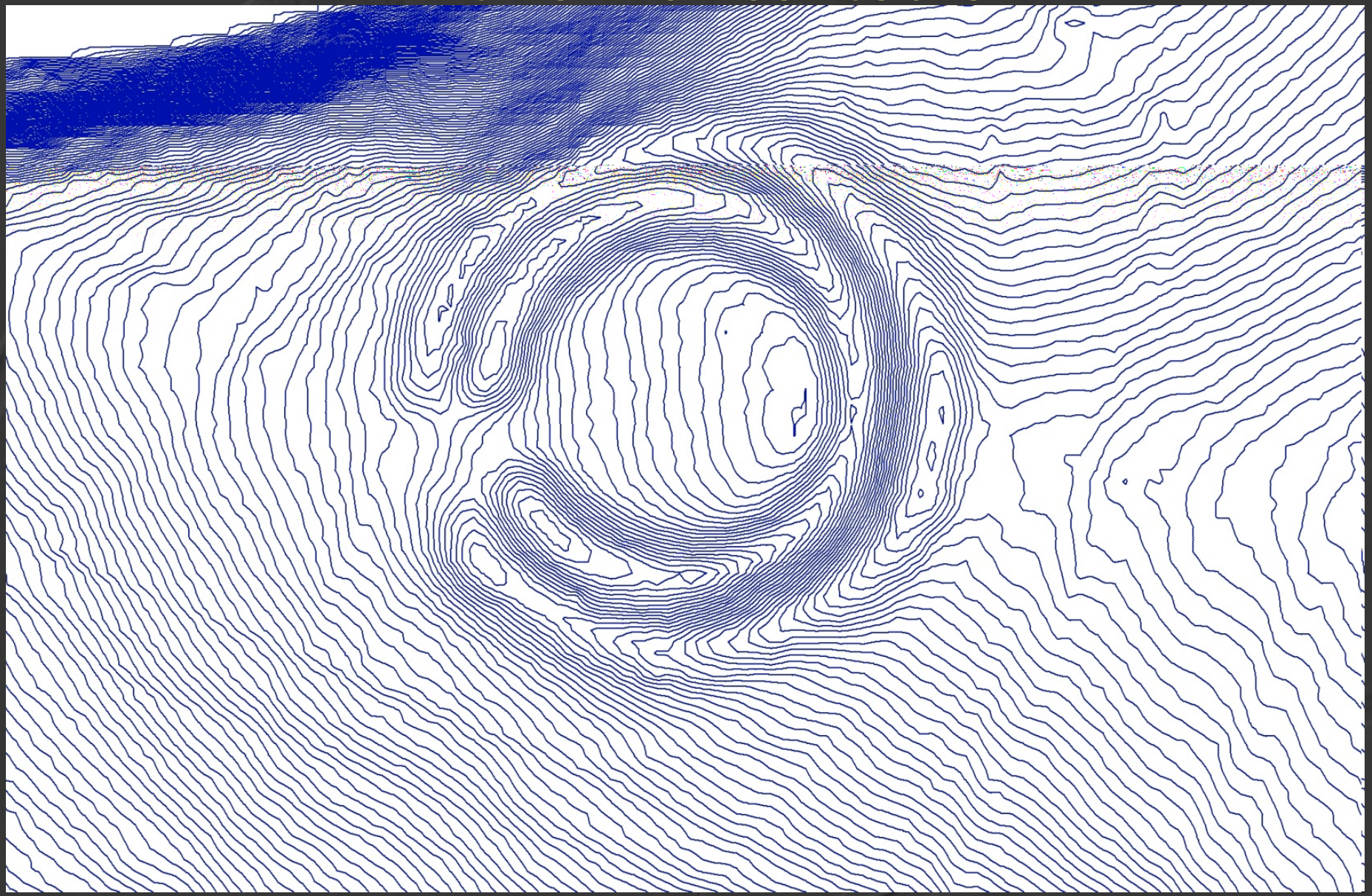
LiDAR Derived Bare Earth (15Gp1)



Mt. Horeb/North Elkhorn earthworks in Fayette County. First documented by Rafinesque in the 1820's.

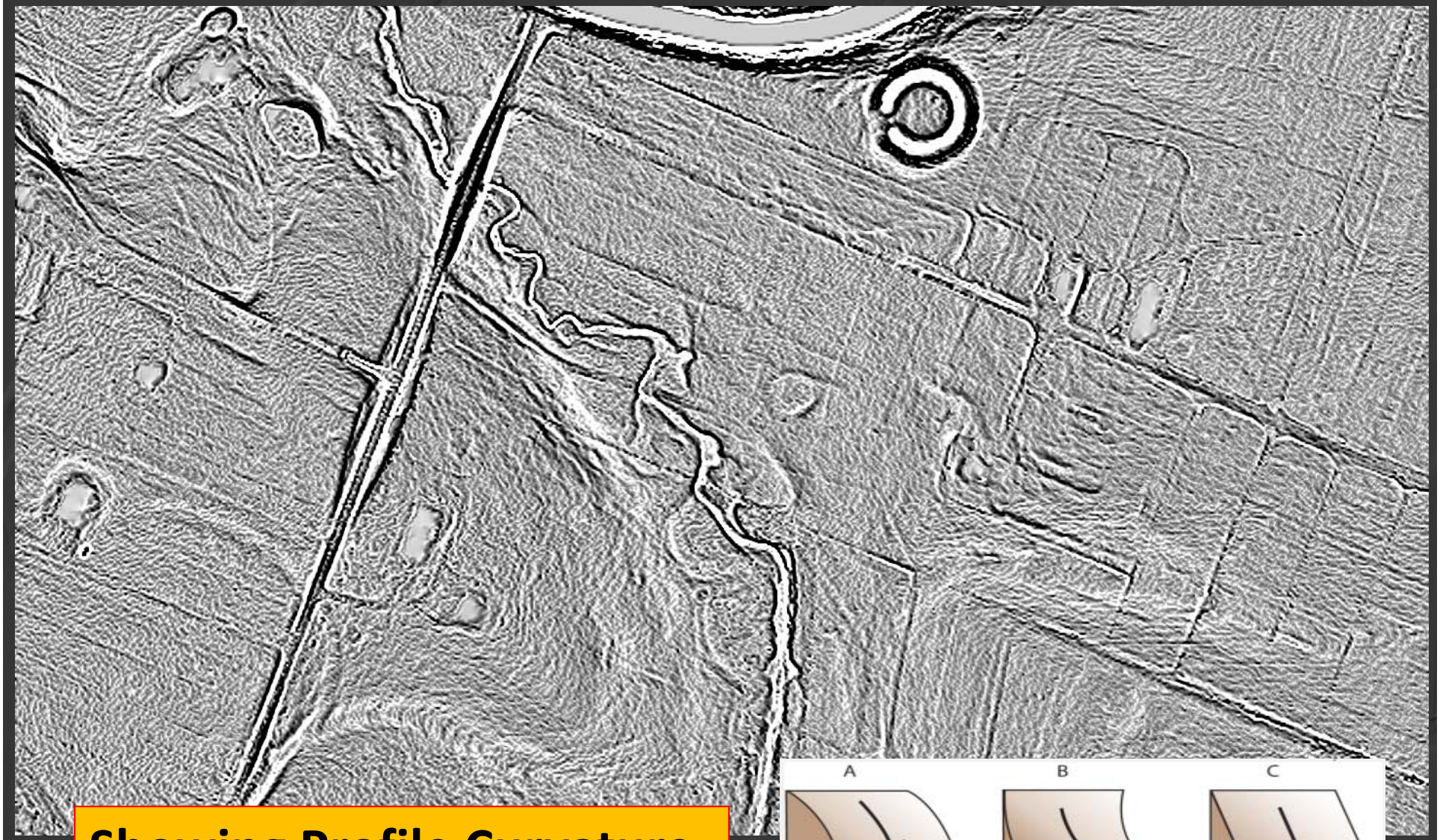
Mt. Horeb/North Elkhorn Earthworks on 5 foot DEM.

Mt. Horeb Earthwork with 6-inch contours.

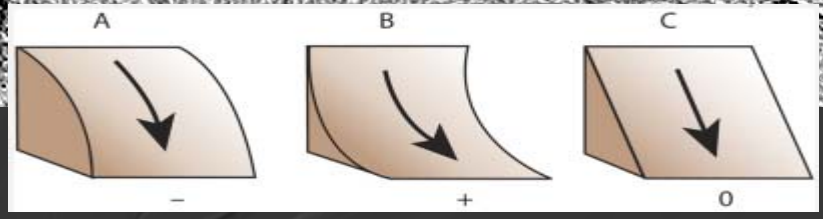


Courtesy of the KY Heritage Council.
Painting by Jim Railey.

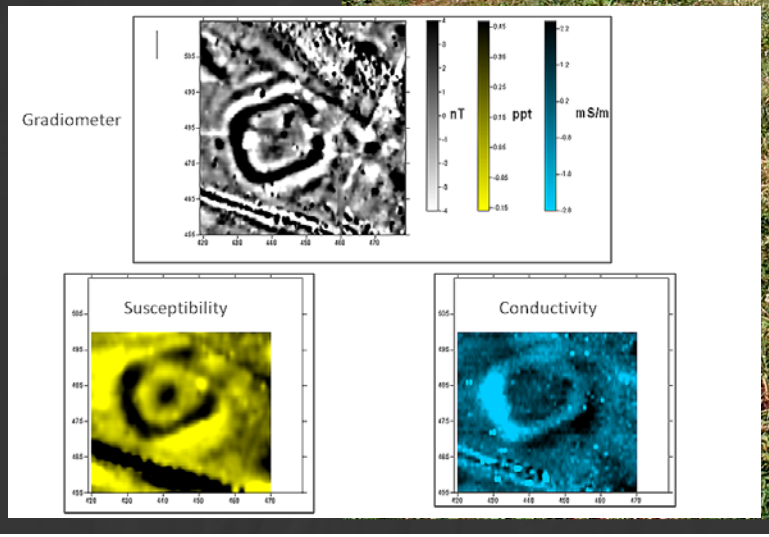
Mt. Horeb and Winchester Farm Enclosures.



Showing Profile Curvature.

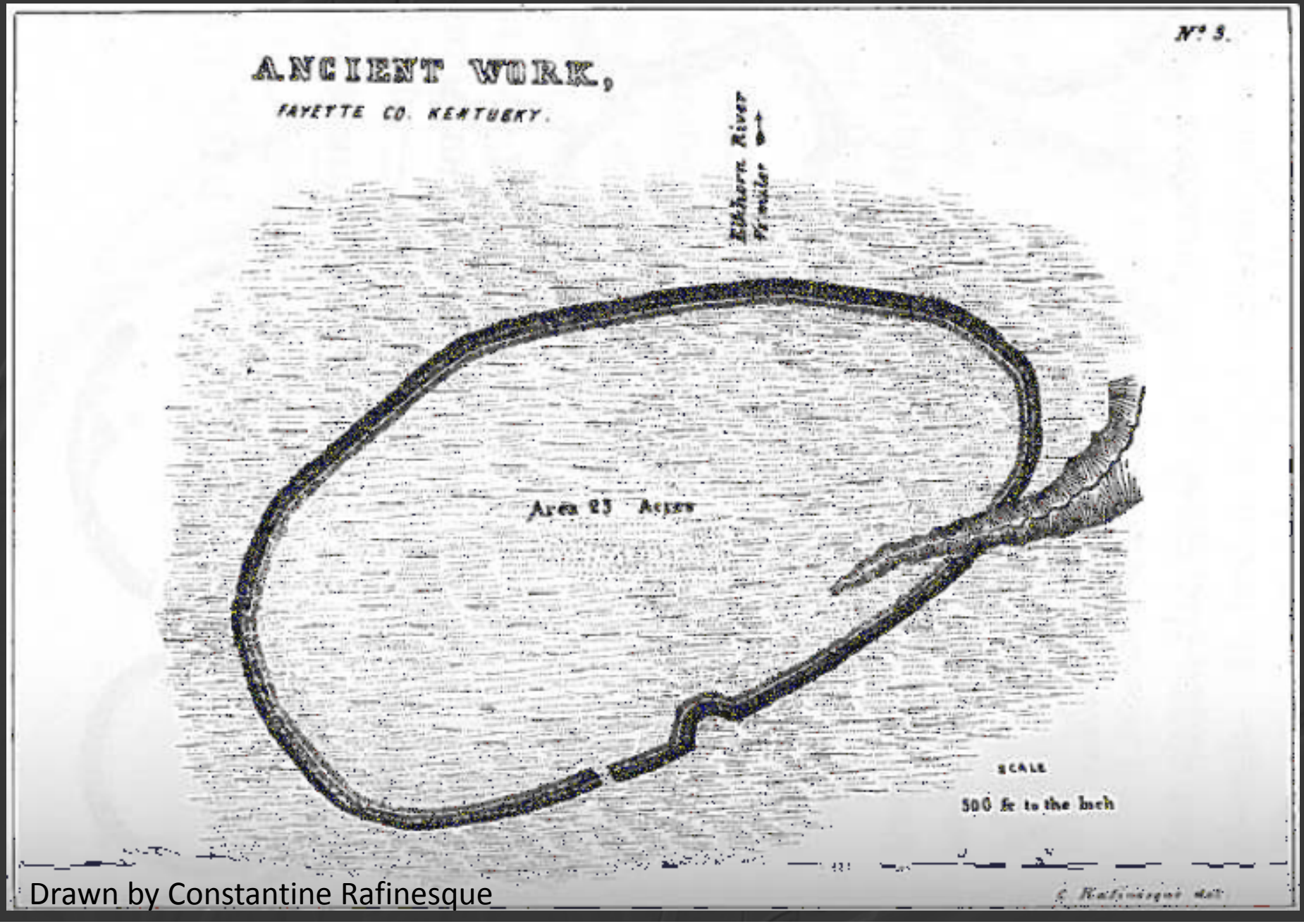


Geophysical Survey of the Winchester Farm Enclosure.




University of Kentucky's
2013 archaeological
fieldschool.

Nearby is Peter Village, drawn in the 1820's.



Drawn by Constantine Rafinesque

Peter Village with 6 inch contours.

So into the wild I went!

Looking for other vaguely described mounds in the region.

3. A mound near the mouth of Otter Creek, five and one-half miles south of Boonesboro. This site was listed by Rafinesque and was definitely located by J. B. Hoeing.

4. Another mound near the mouth of Otter Creek within a half mile of Number 3 and six miles due south of Boonesboro. This mound was also listed by Rafinesque, mentioned by Marshall, located by Hoeing and shown on the Proctor map.

5. A small mound one mile east of Paint Lick and one-third of a mile north of Adams Branch of Paint Lick Creek. Located by J. B. Hoeing.

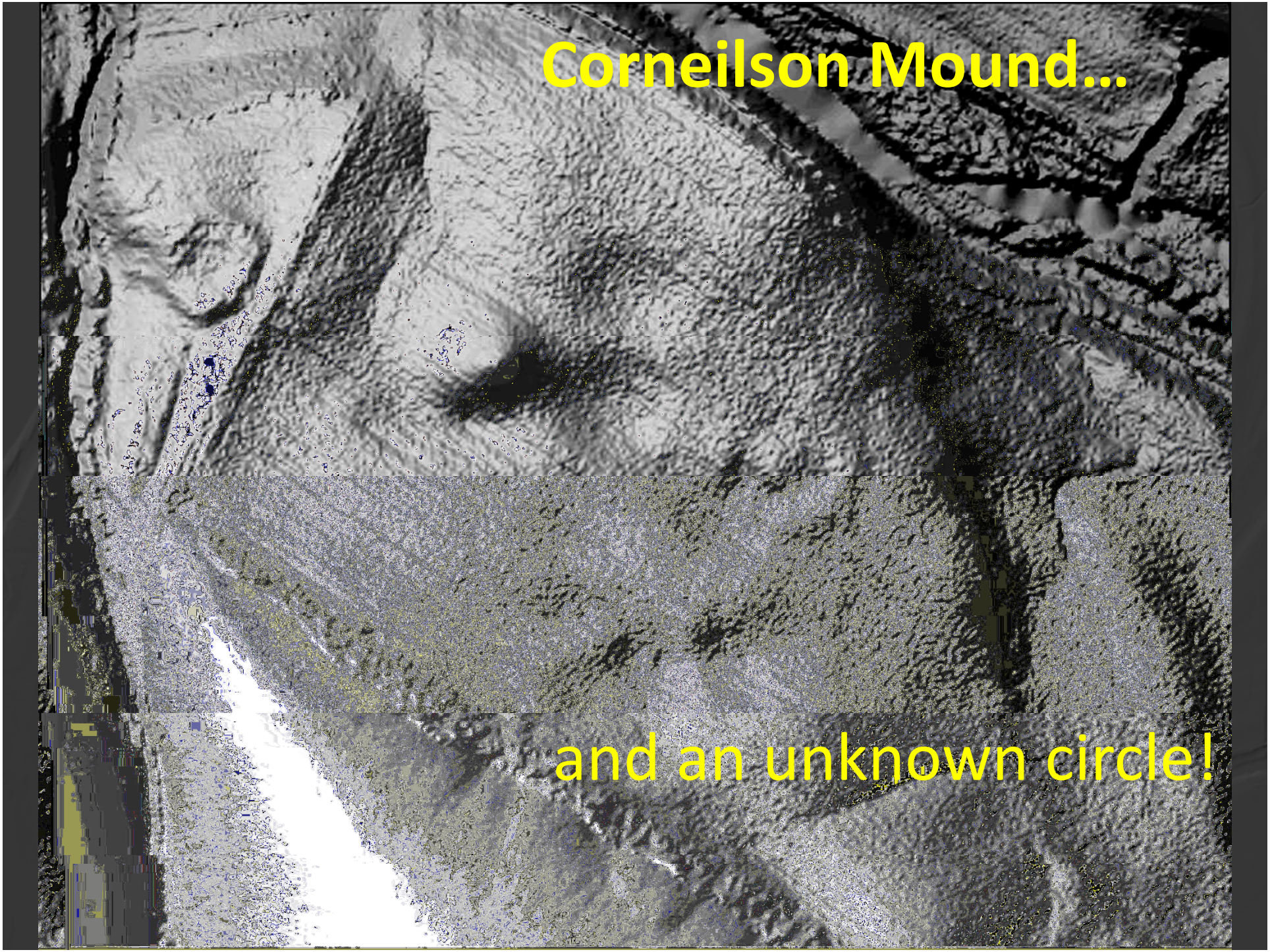
6. A mound just outside the city limits of Richmond on the south and one-eighth of a mile west of the Kentucky Central Railroad tracks. Recorded by J. B. Hoeing but now obliterated.

7. Mound one and three-quarters miles southeast of Silver Creek Post Office and one-quarter of a mile north of Silver Creek. Recorded by J. B. Hoeing.

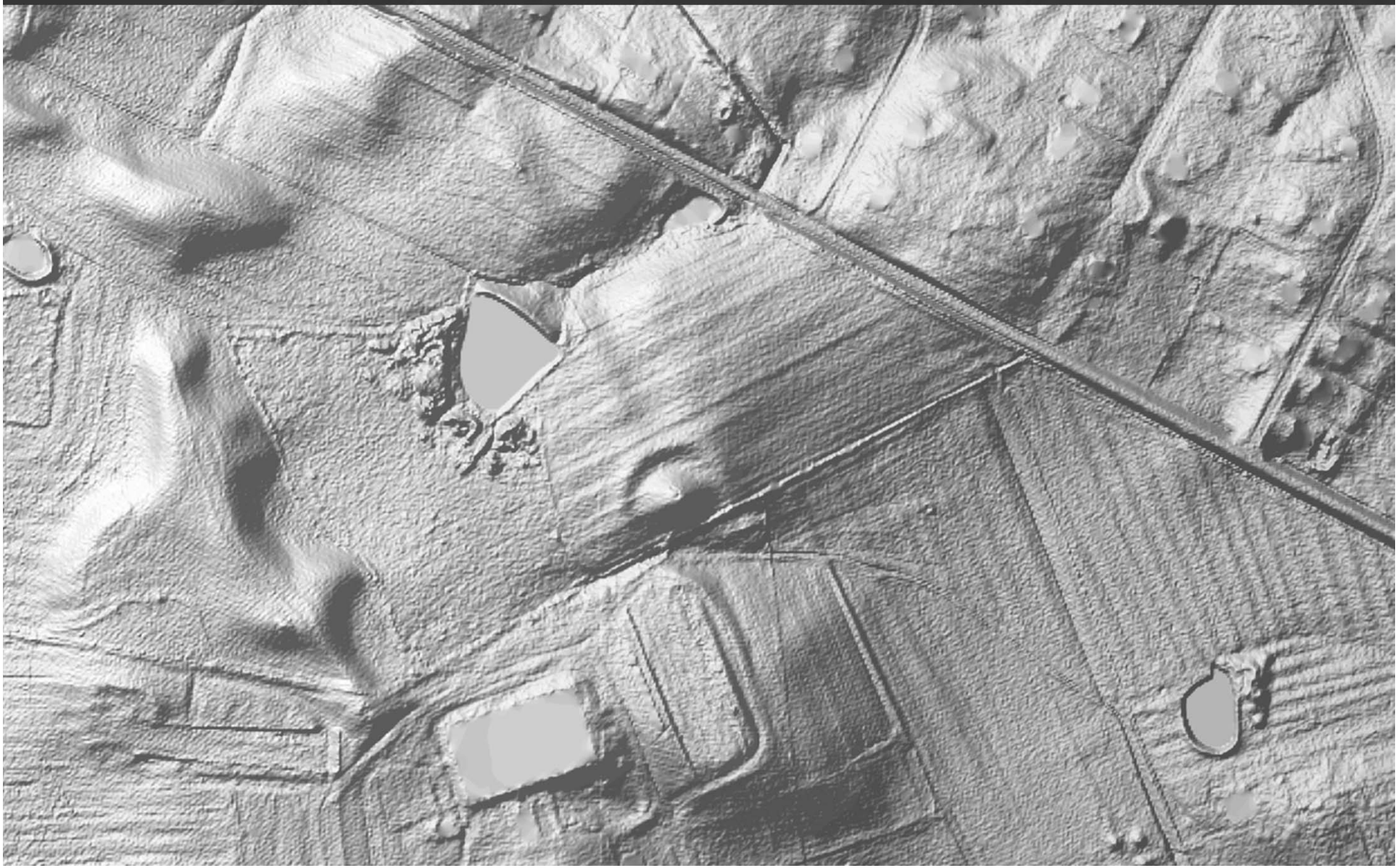
8. Mound one and one-quarter miles northeast of Silver Creek Post Office and one-half mile from the Kentucky Central Railroad tracks in the road junction. Recorded by J. B. Hoeing.

9. Mound one and one-half miles due east of Silver Creek Post Office and one-quarter of a mile southeast of Number 8. Recorded by J. B. Hoeing.

10. Mound one and three-quarter miles northeast of Silver Creek Post Office and one-half mile due east of Number 8. Recorded by J. B. Hoeing.


Corneilson Mound…
and an unknown circle!

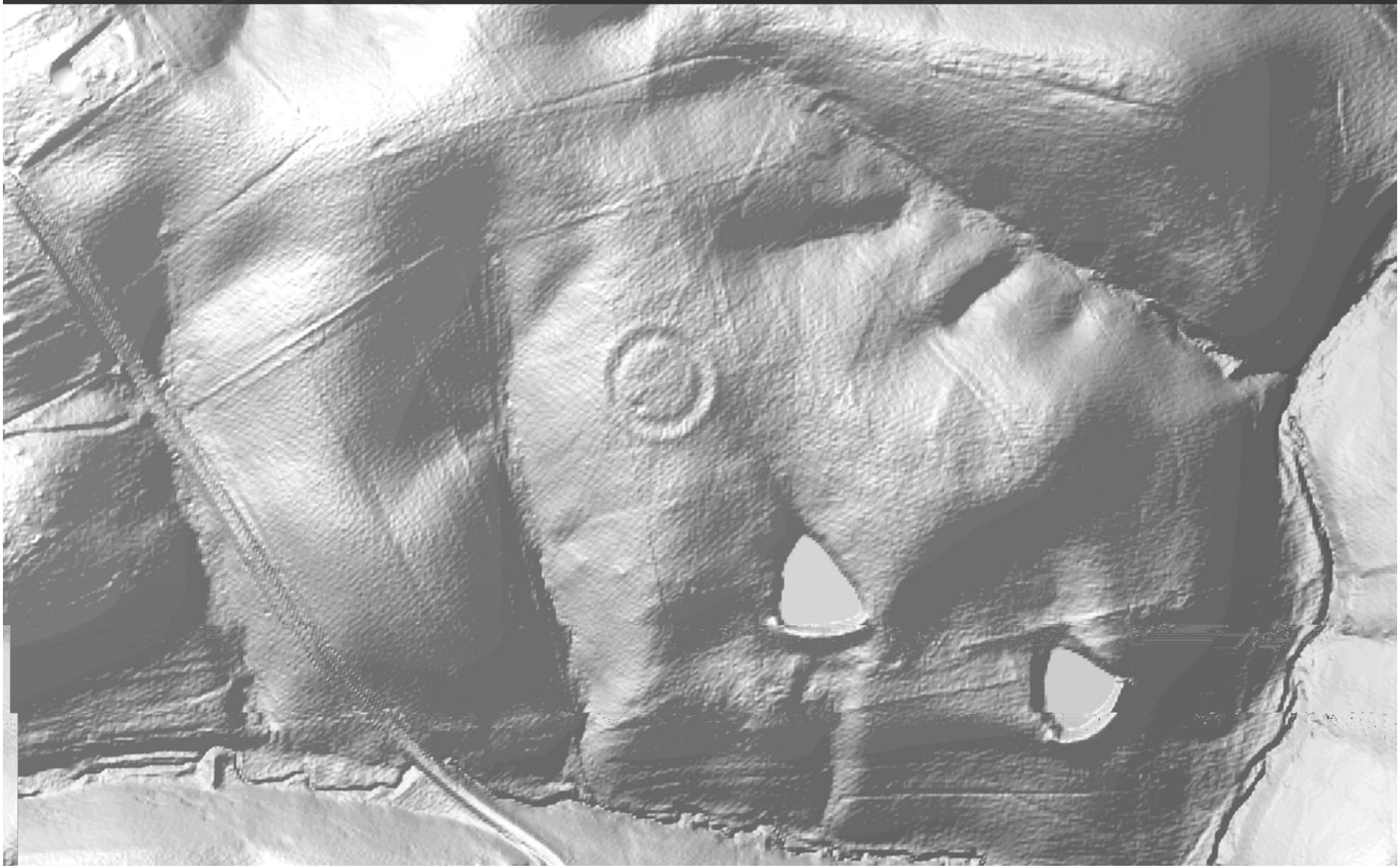
Moberly Mound: a known site…
but we missed that arm.

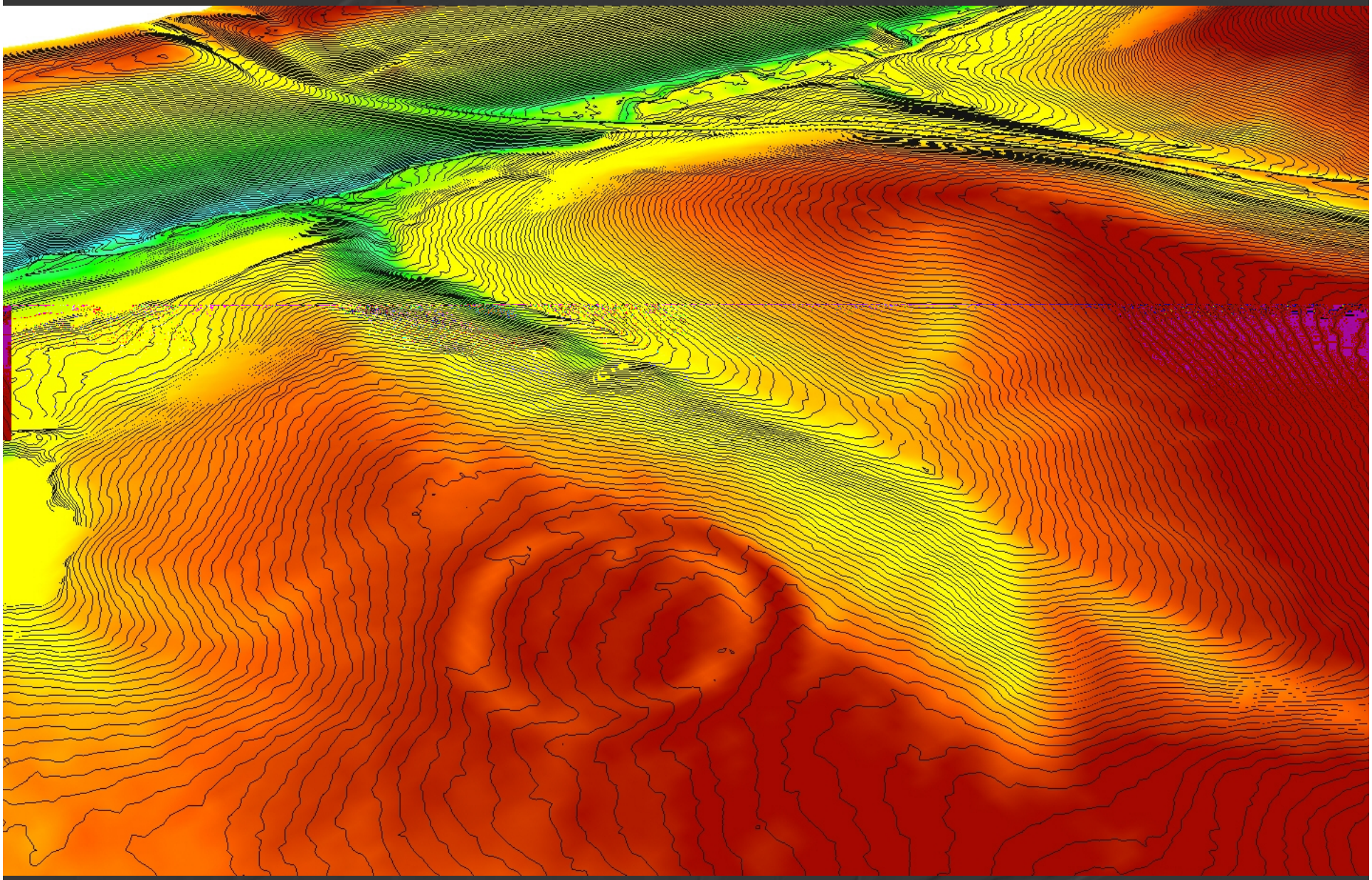


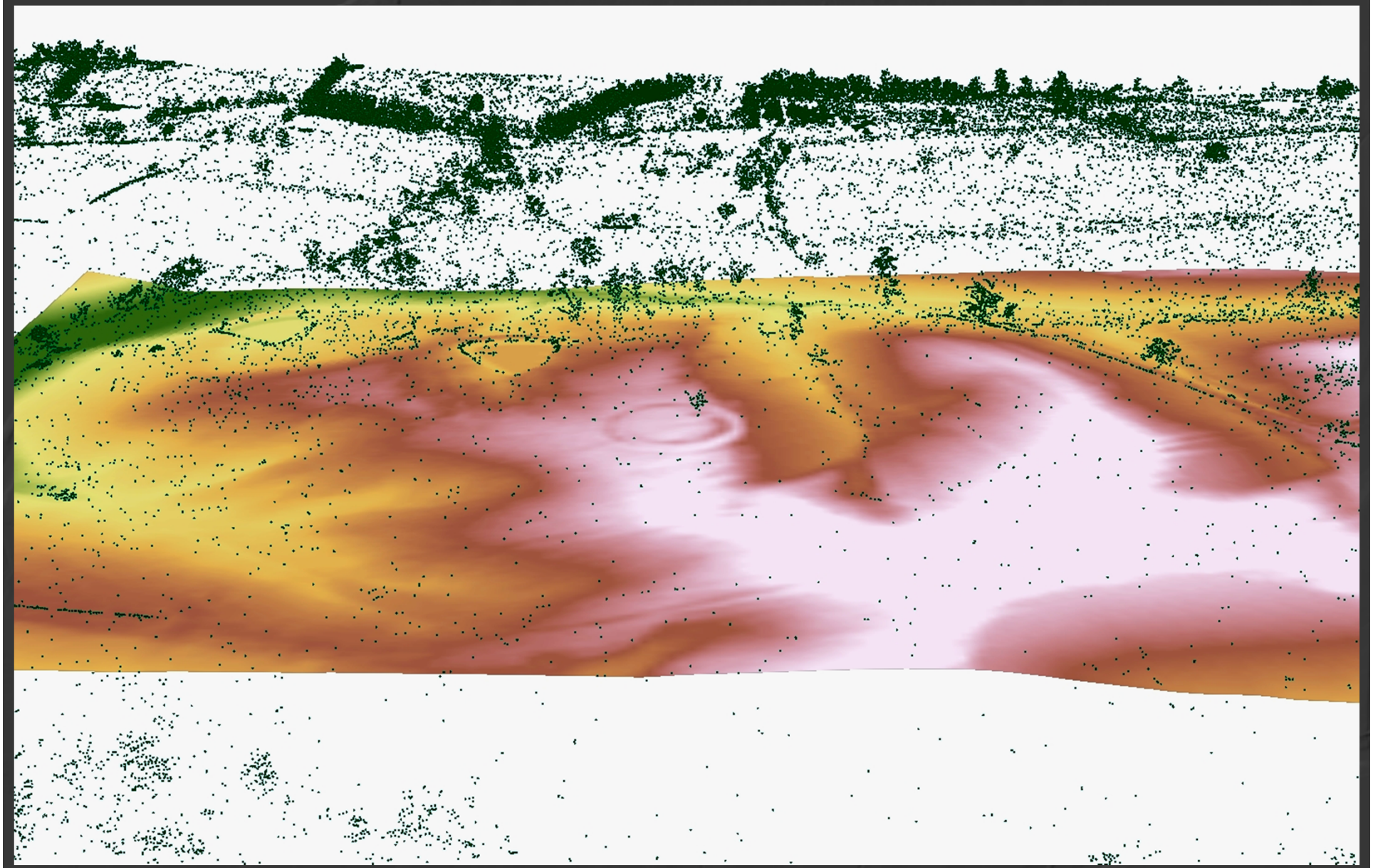
And then…..

Breathe!!!!

First totally new discovery - a circular earthwork!

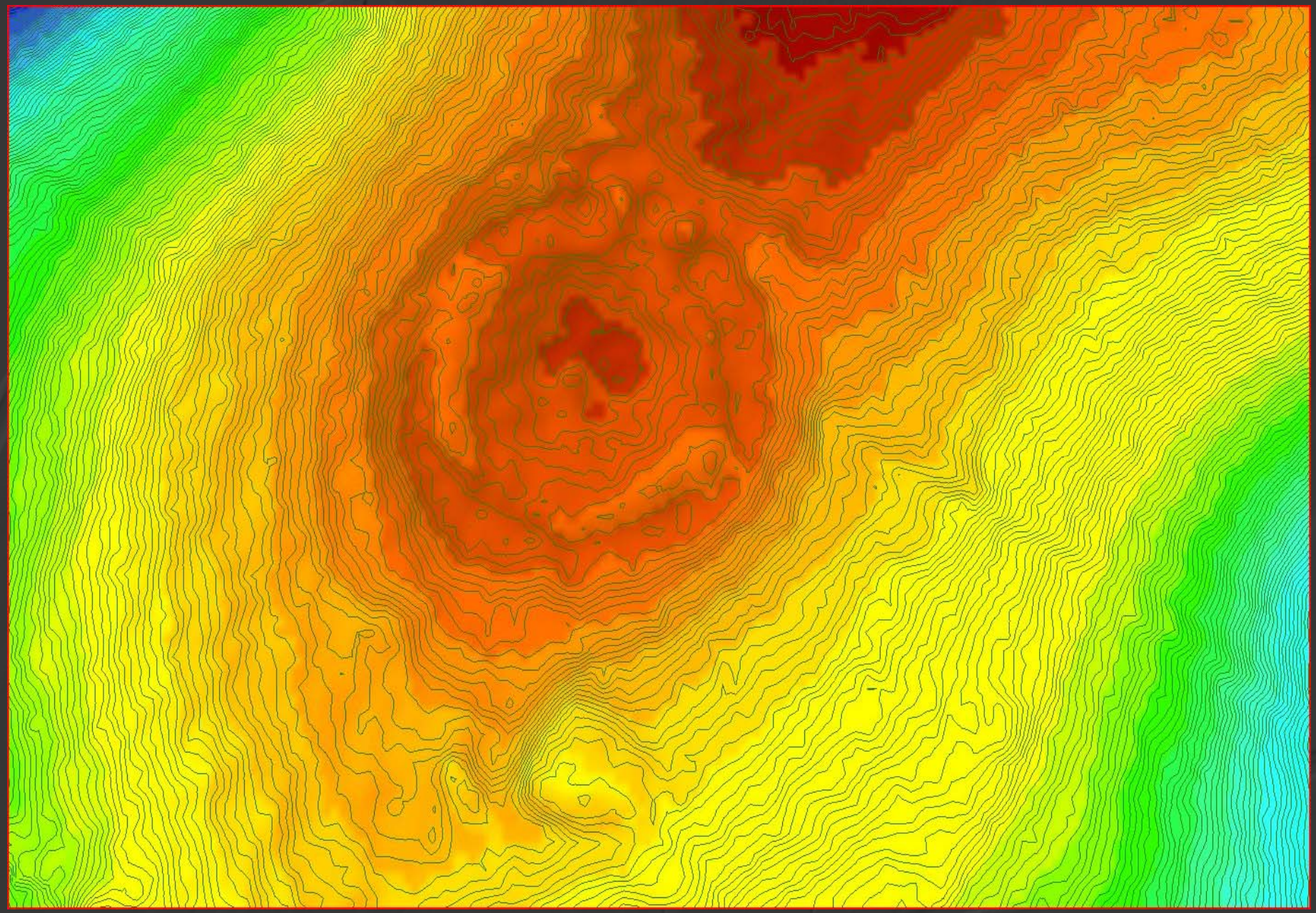


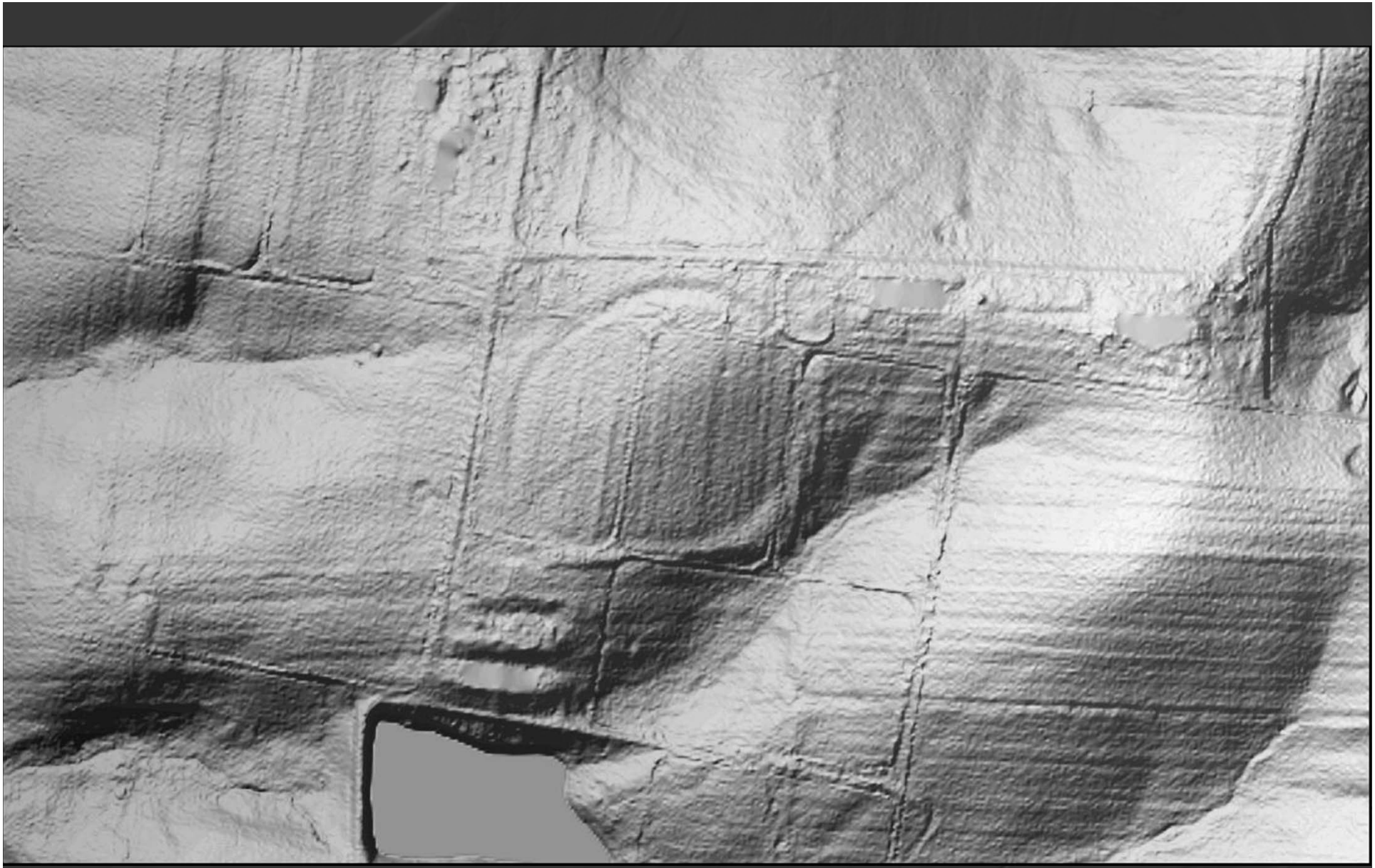




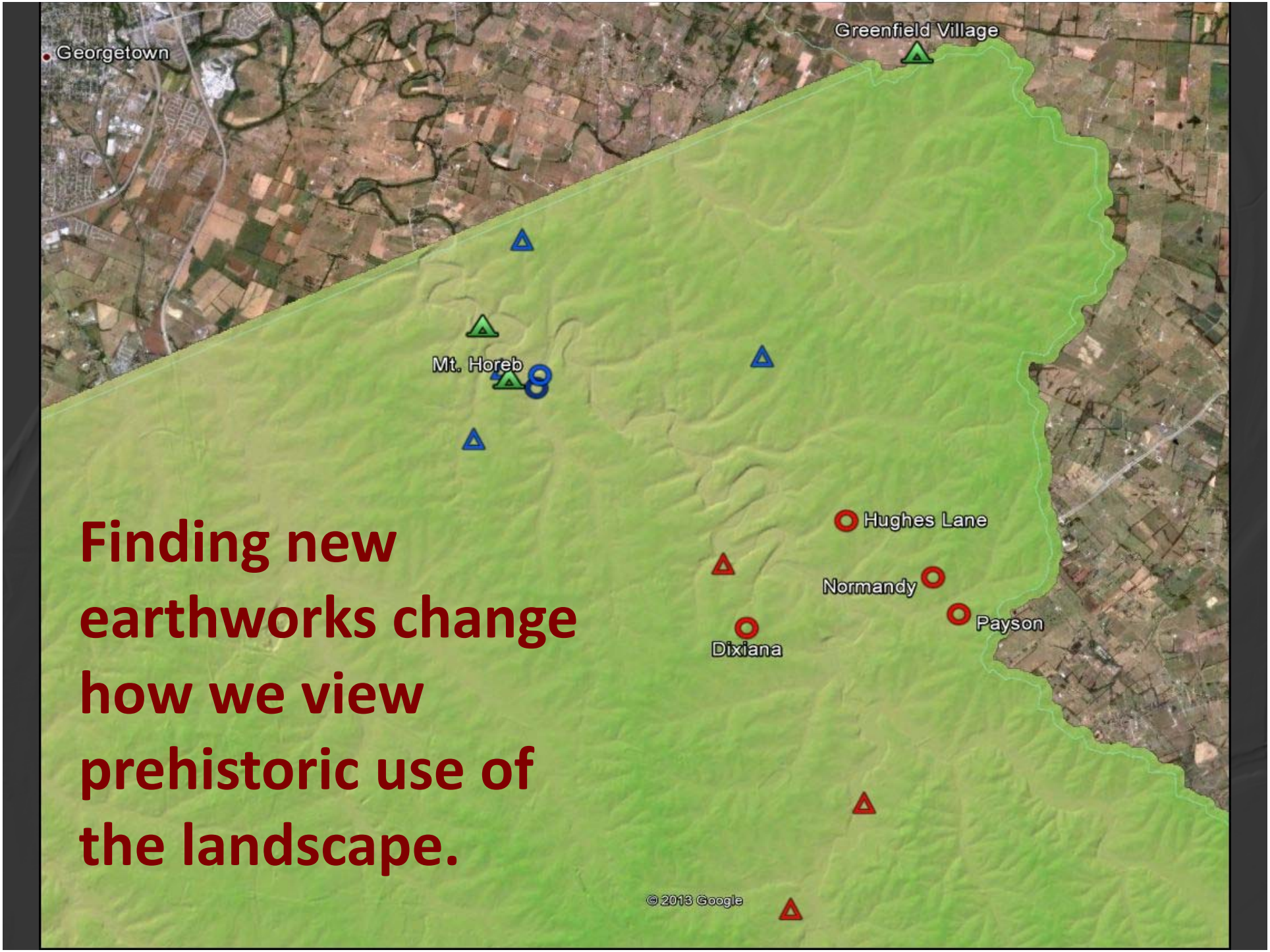
Practical Applications


Then I started looking and found more…



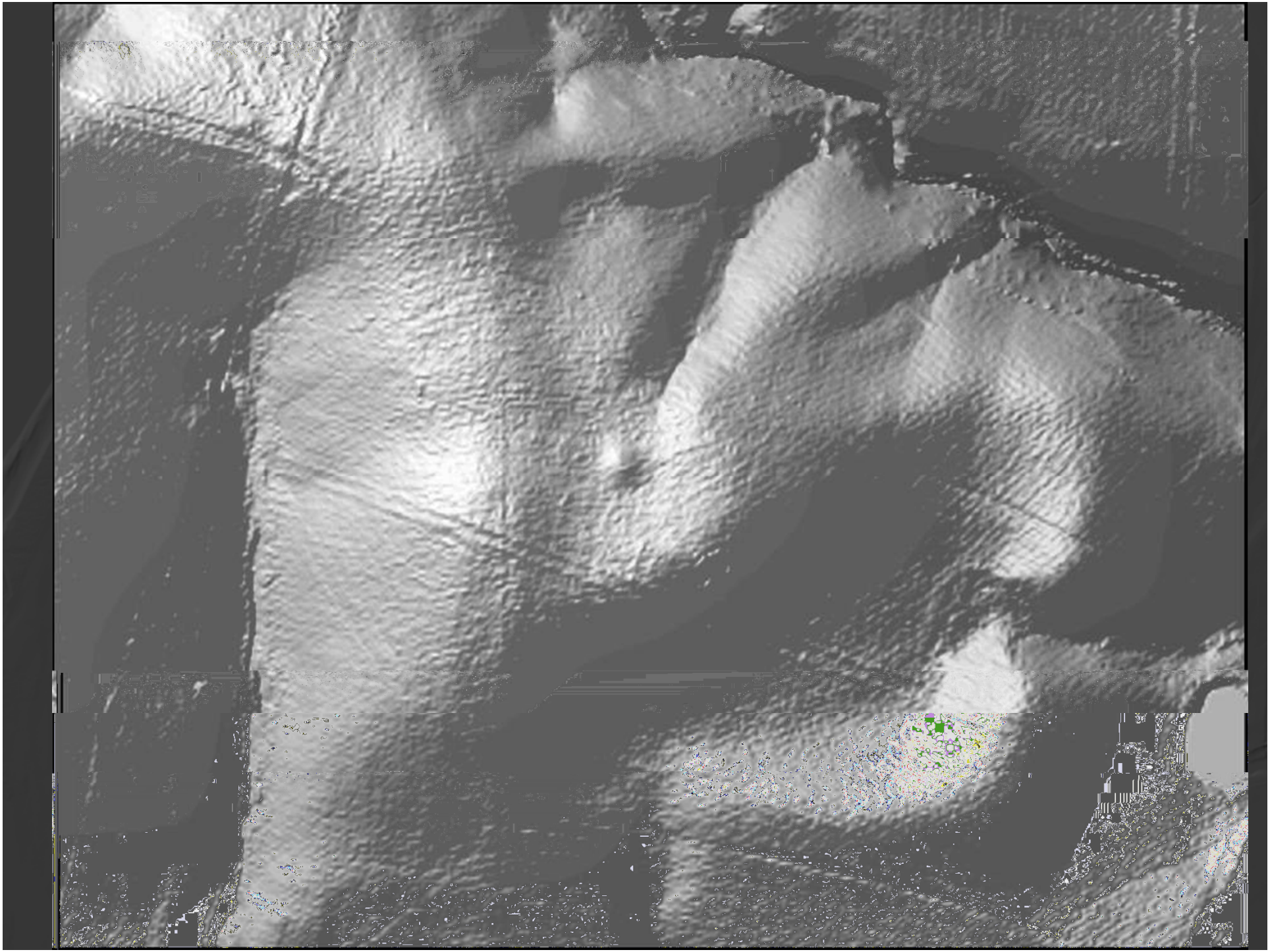


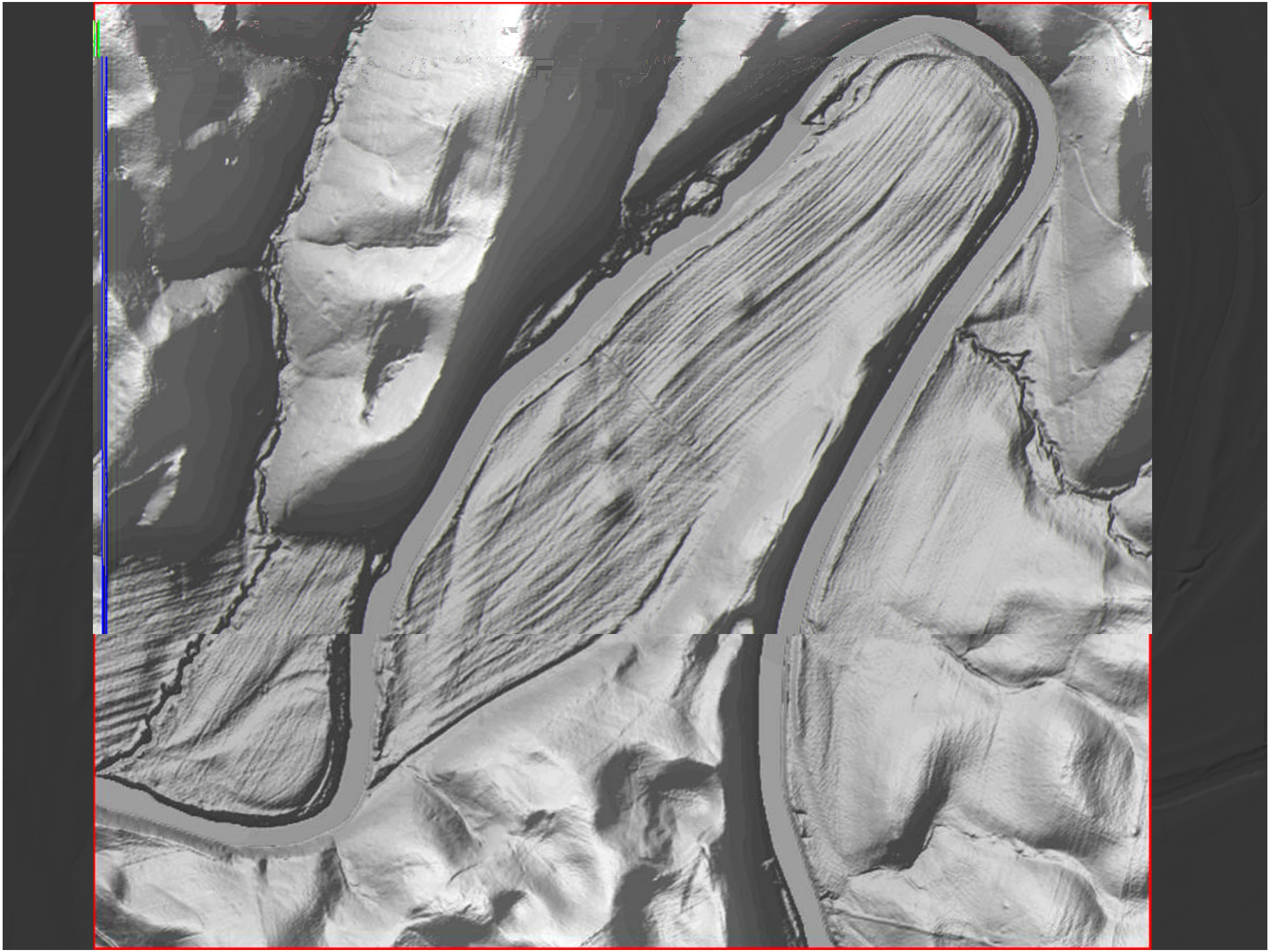
Remember Peter Village ?



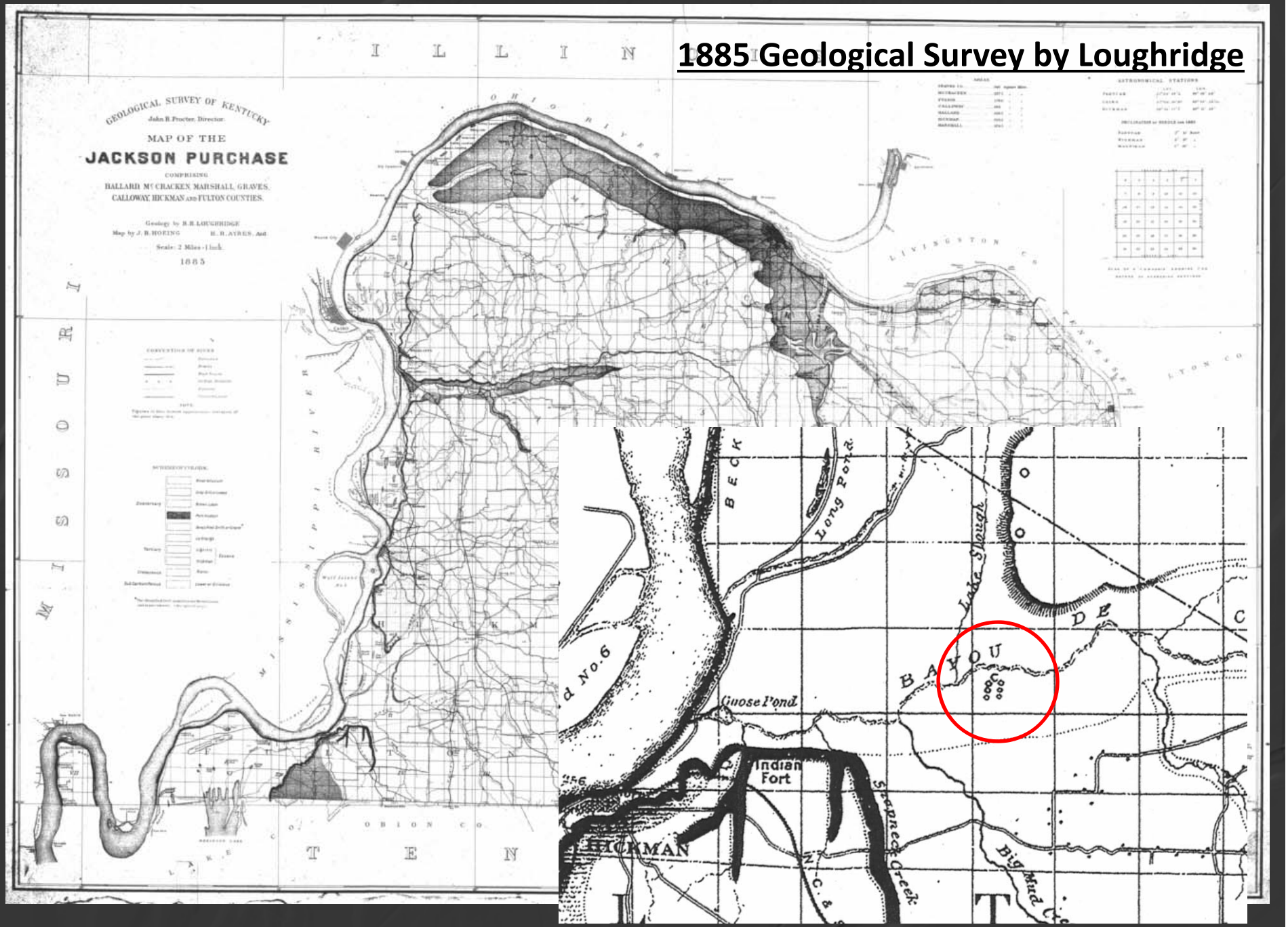
Finding new earthworks change how we view prehistoric use of the landscape.

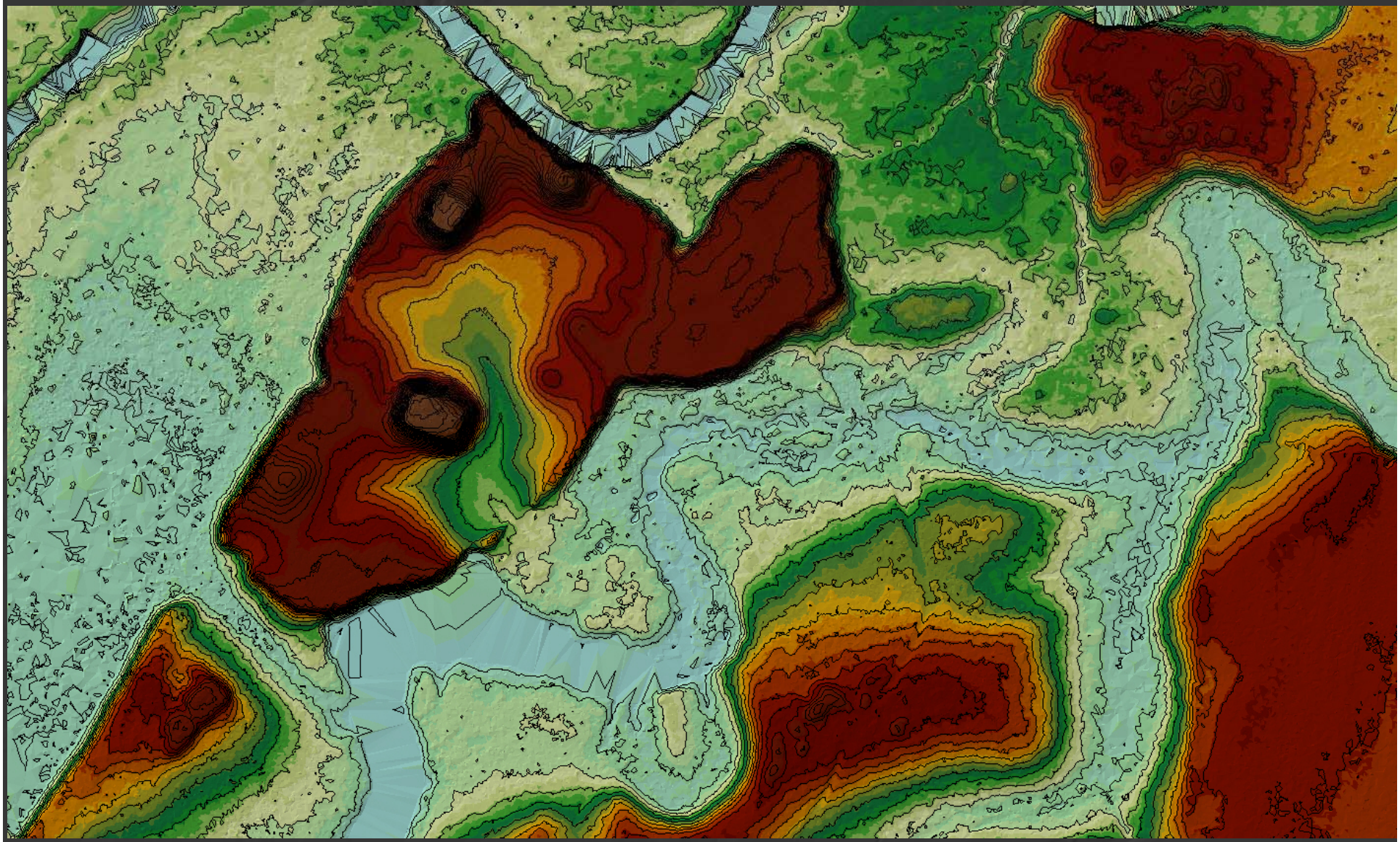
So does finding new mounds.

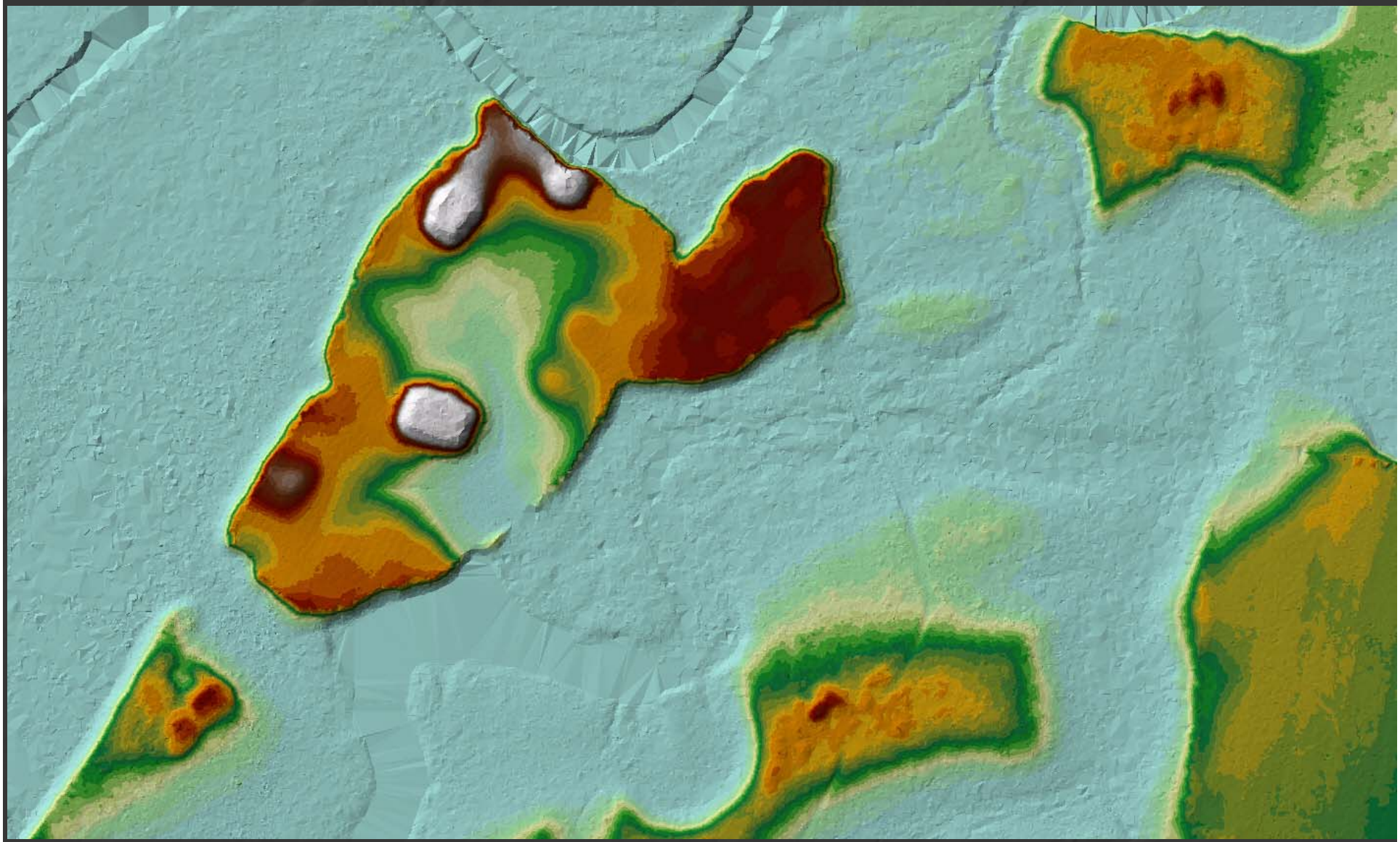


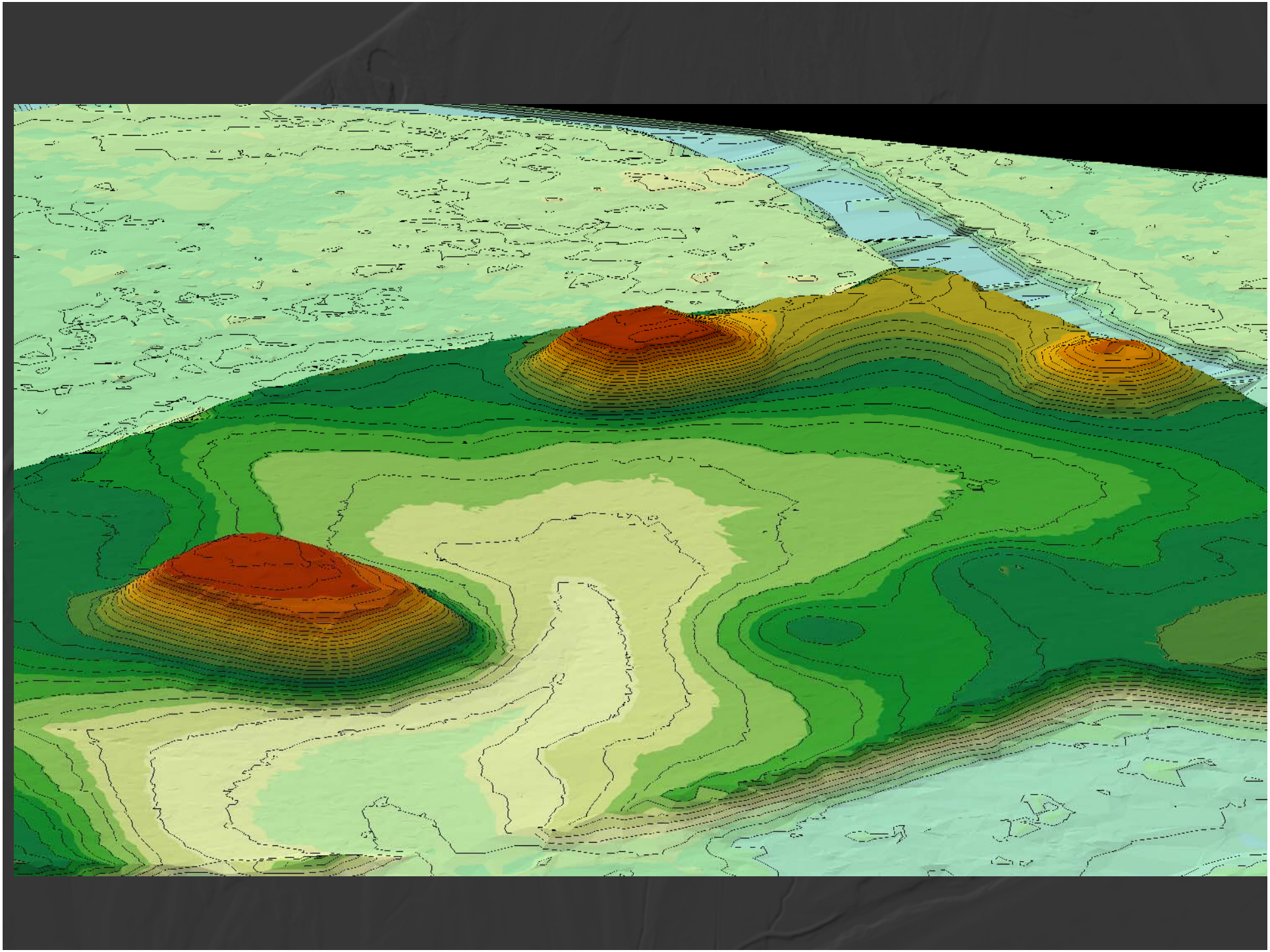


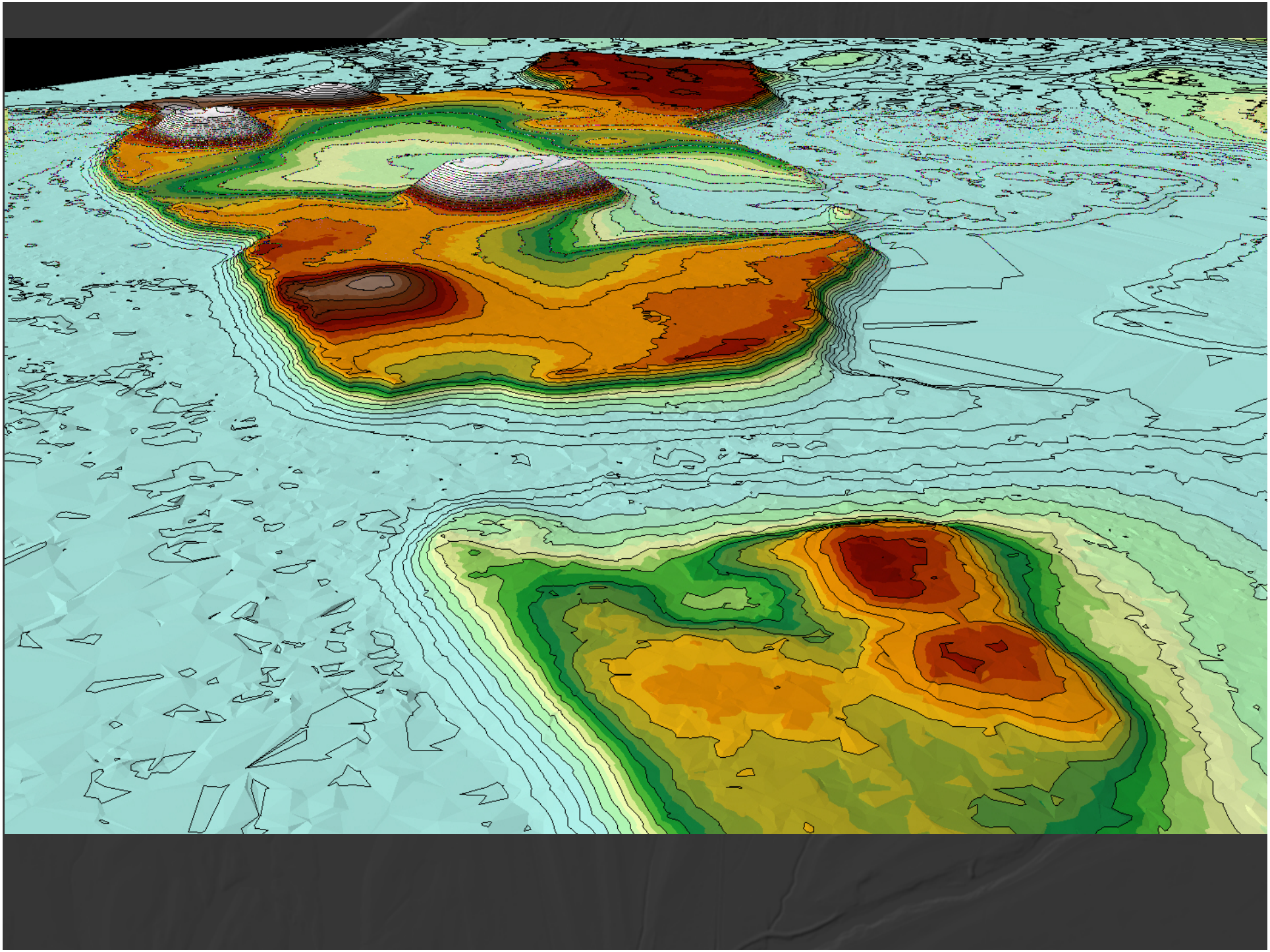
1885 Geological Survey by Loughridge

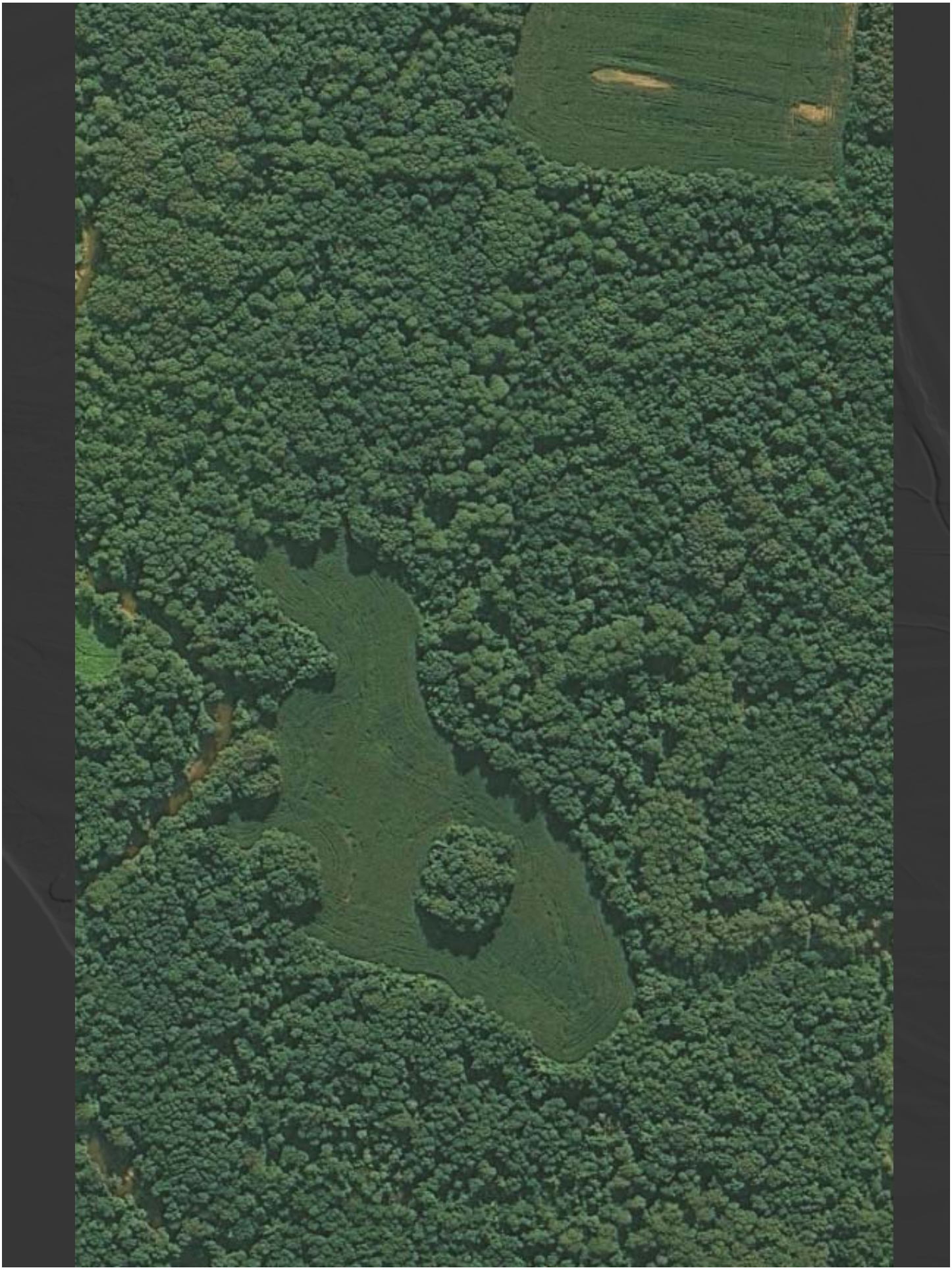




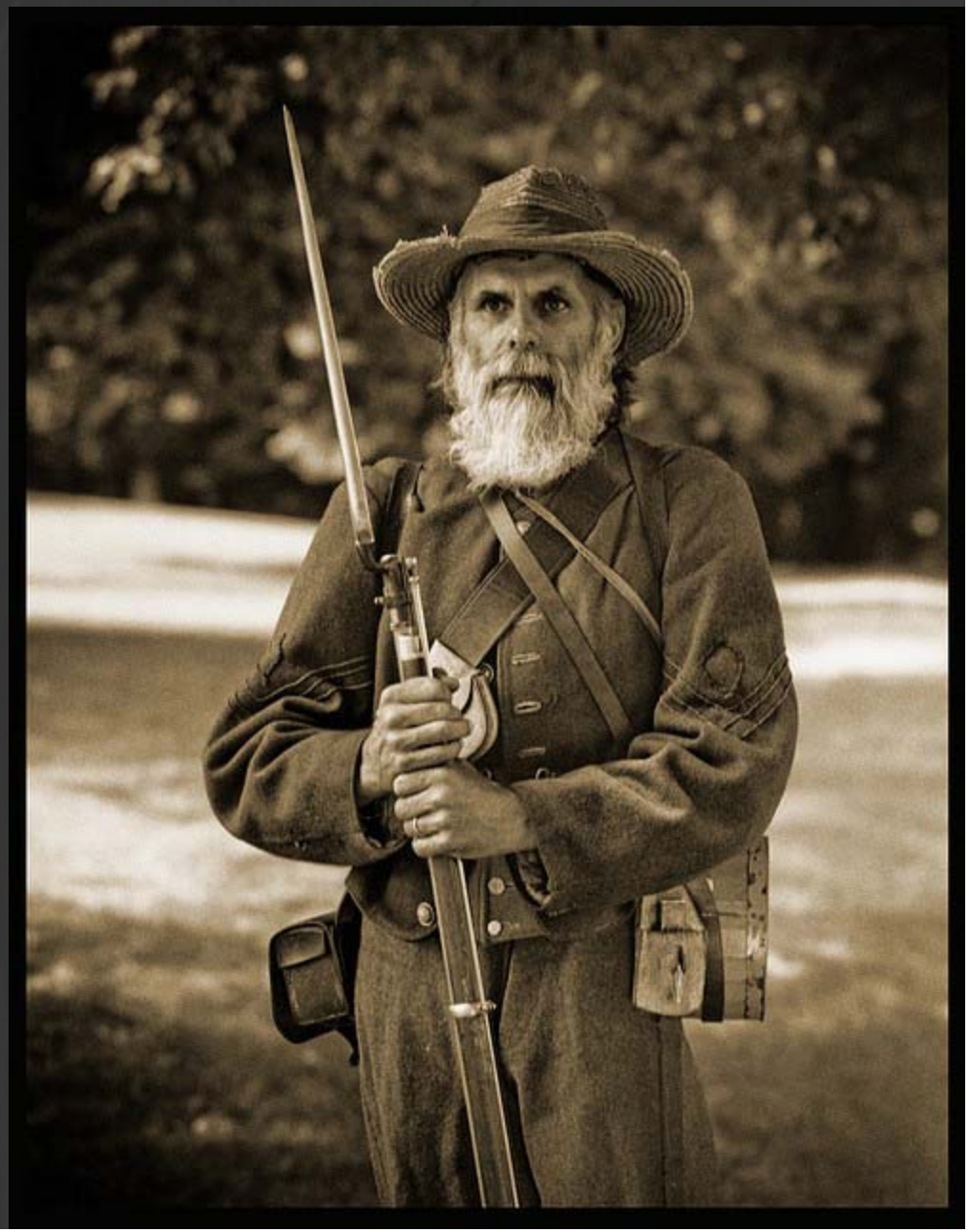




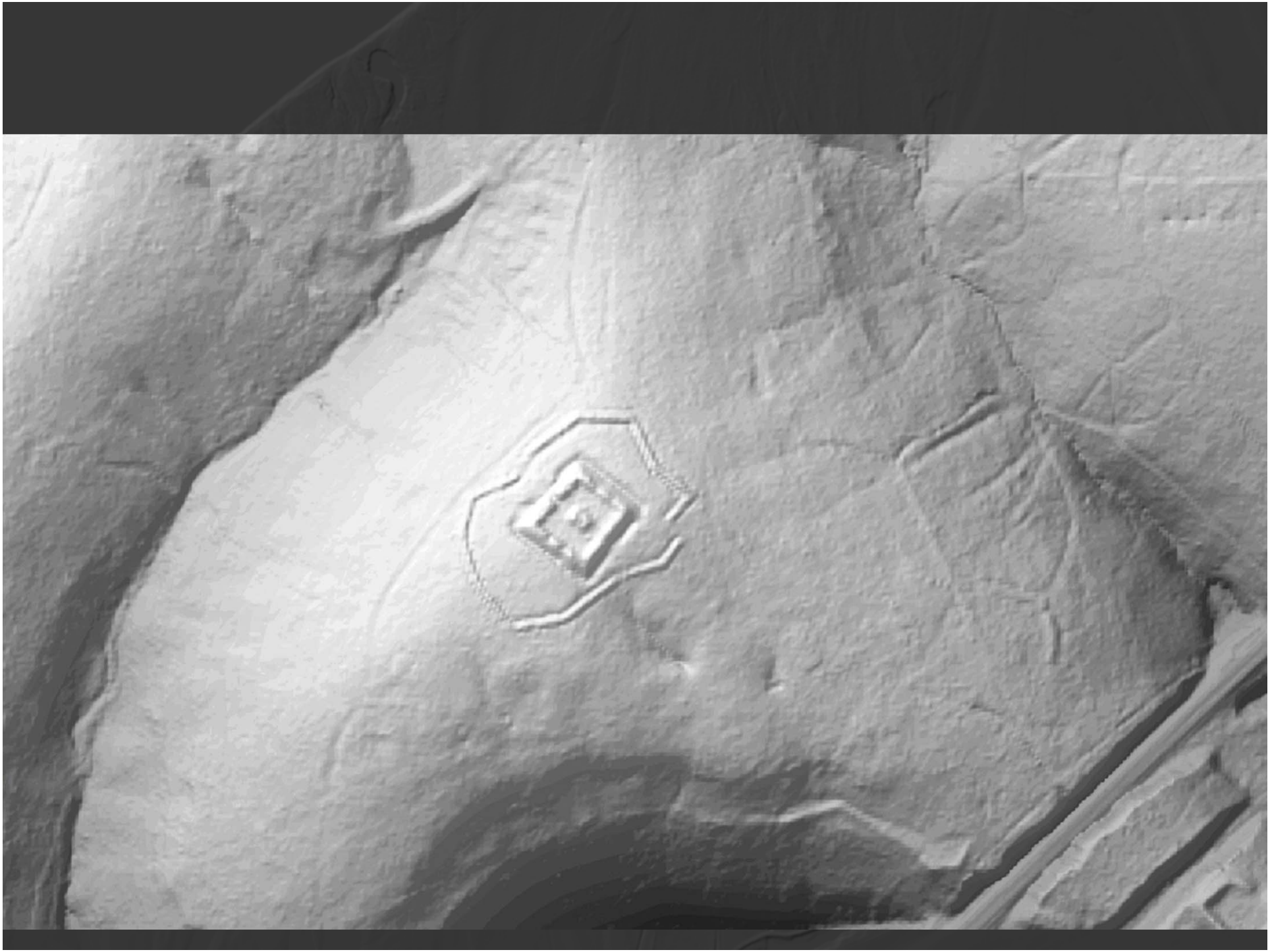




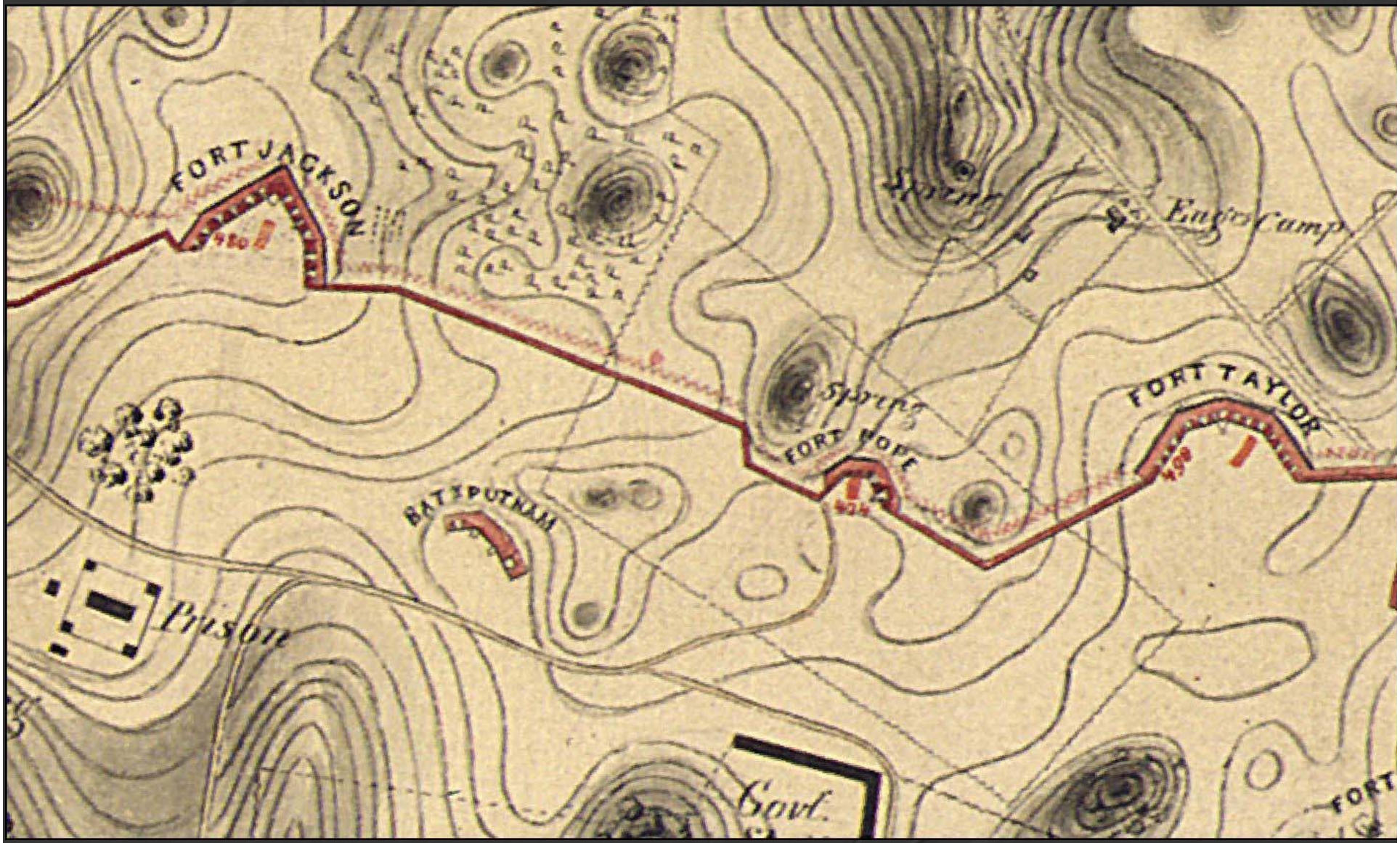
This prehistoric stuff is nice, but what have you done for historic sites lately?

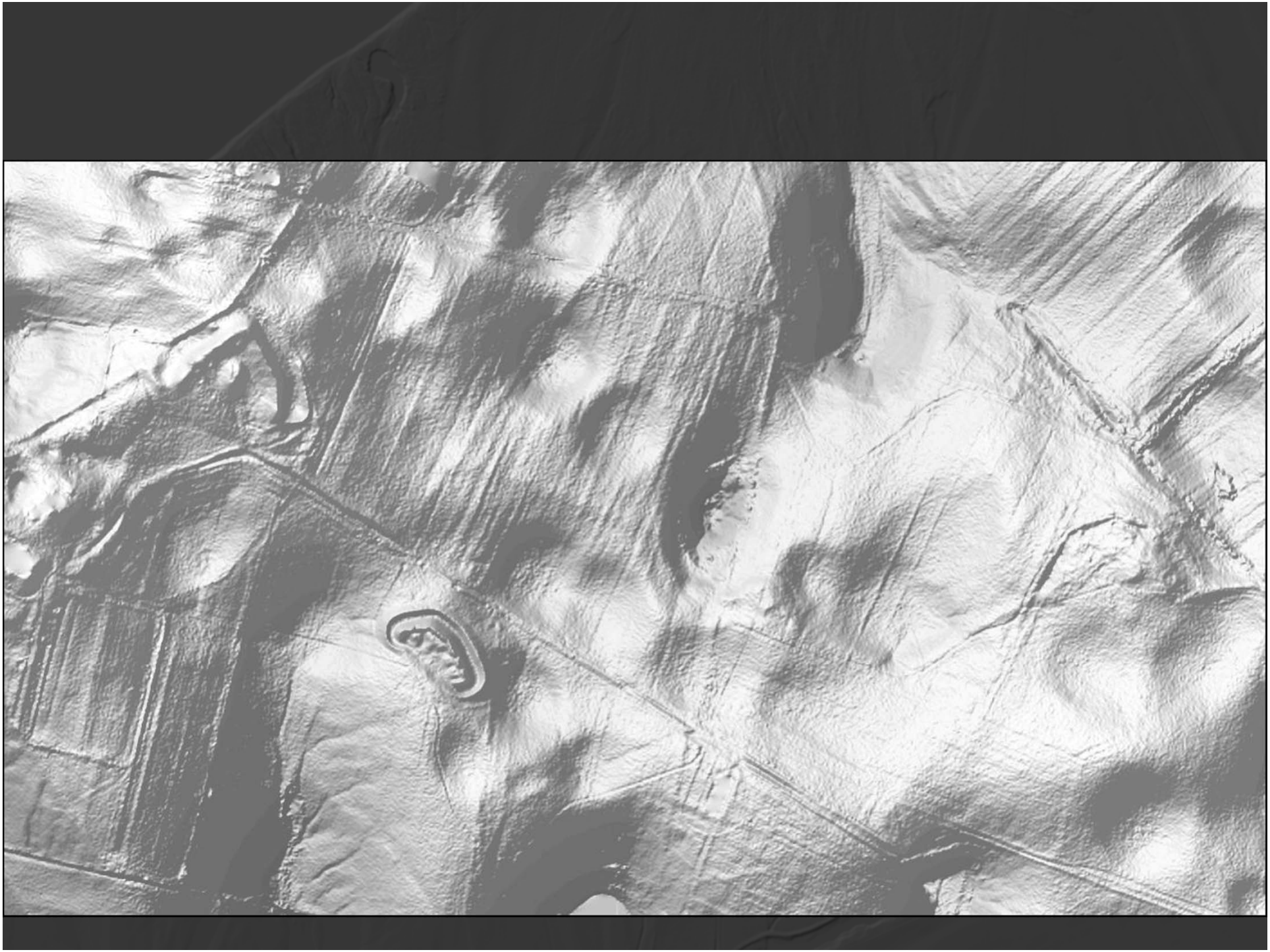


Fort Sands

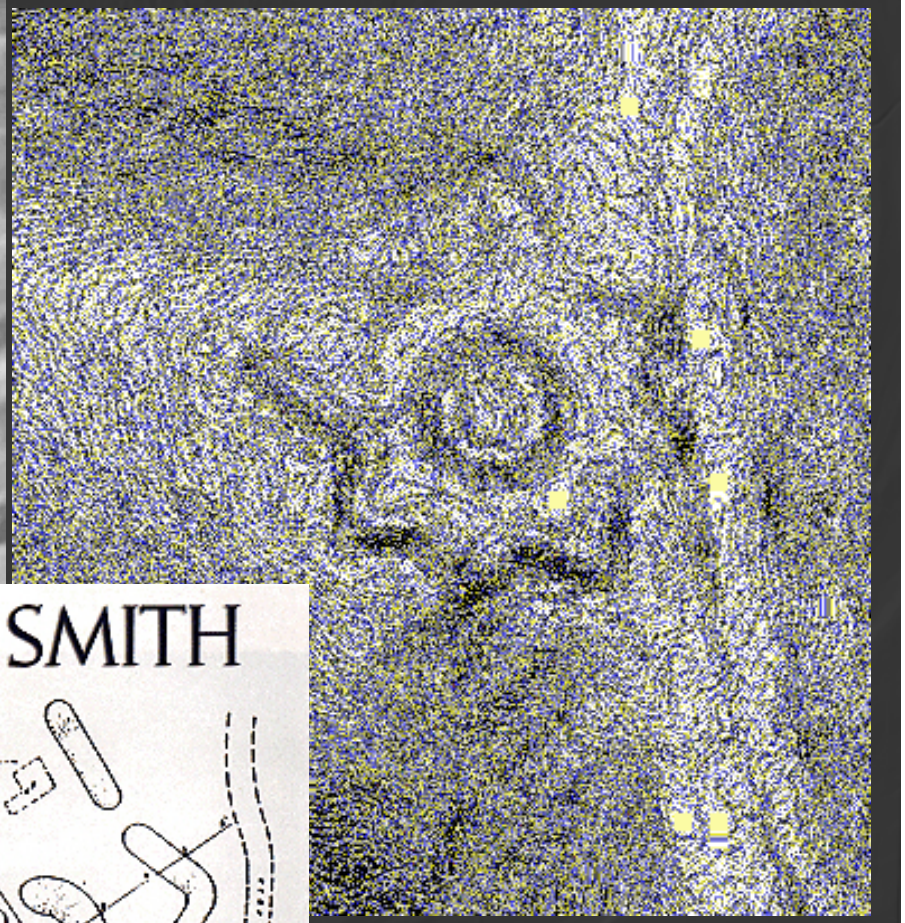


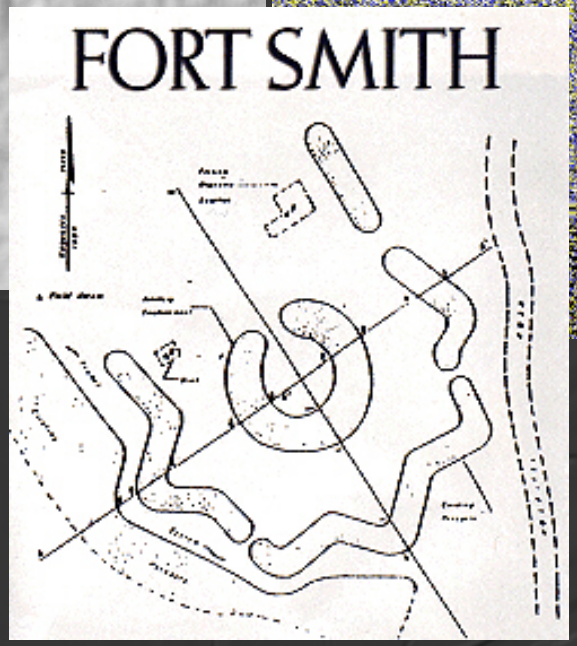
Camp Nelson






FORT JACKSON
FORT TAYLOR



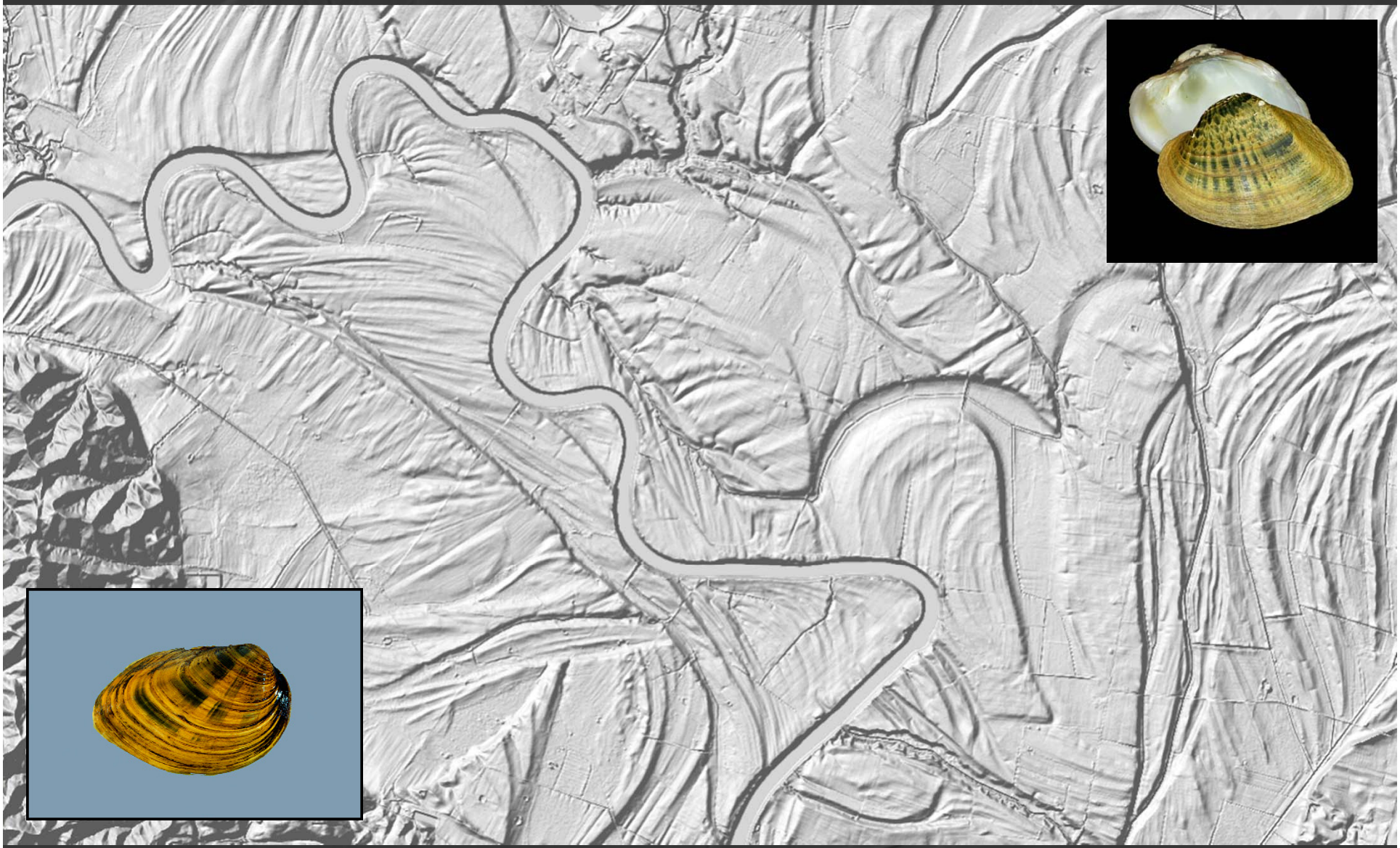

FORT SMITH

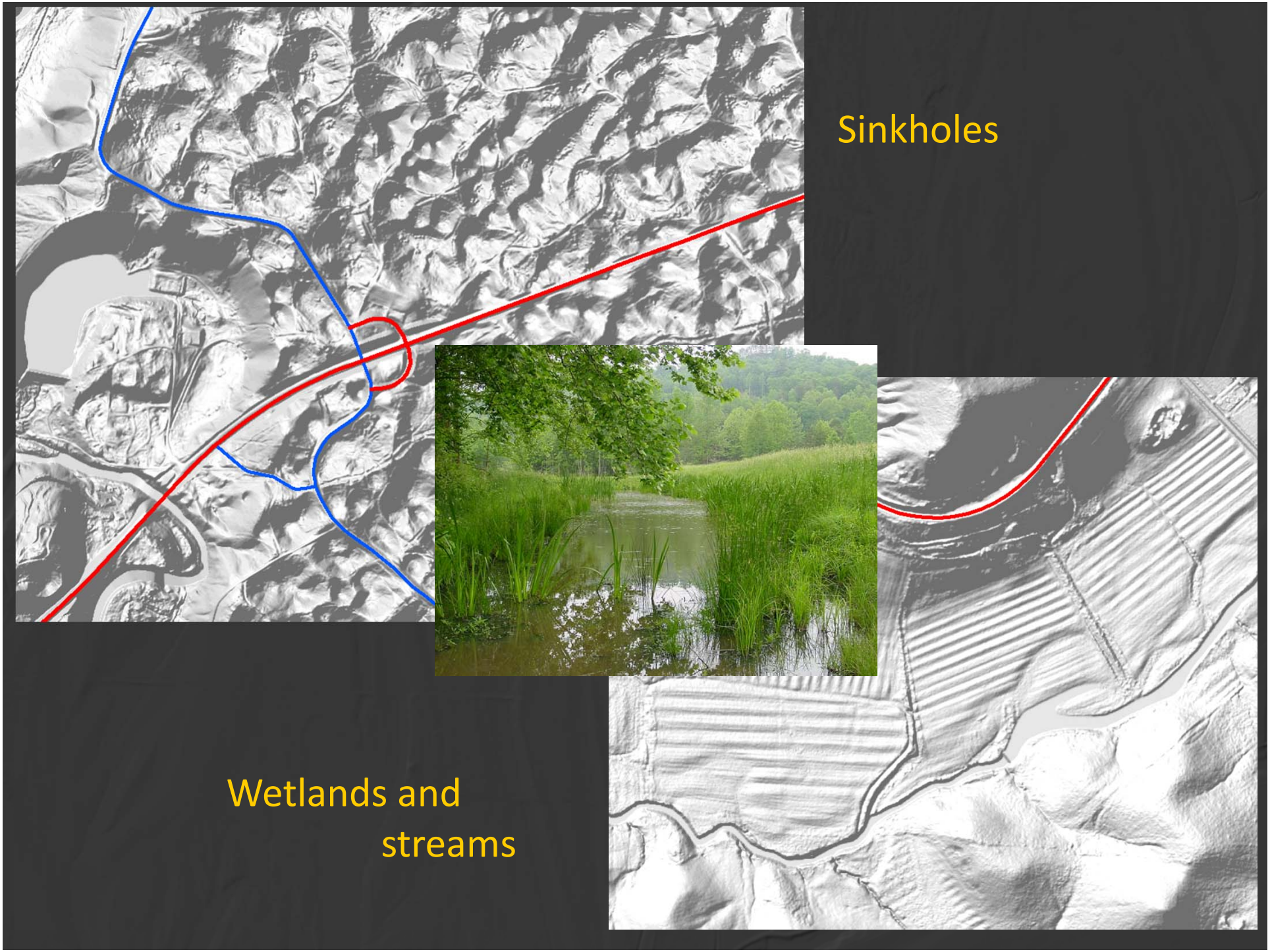
What about the physical landscape?

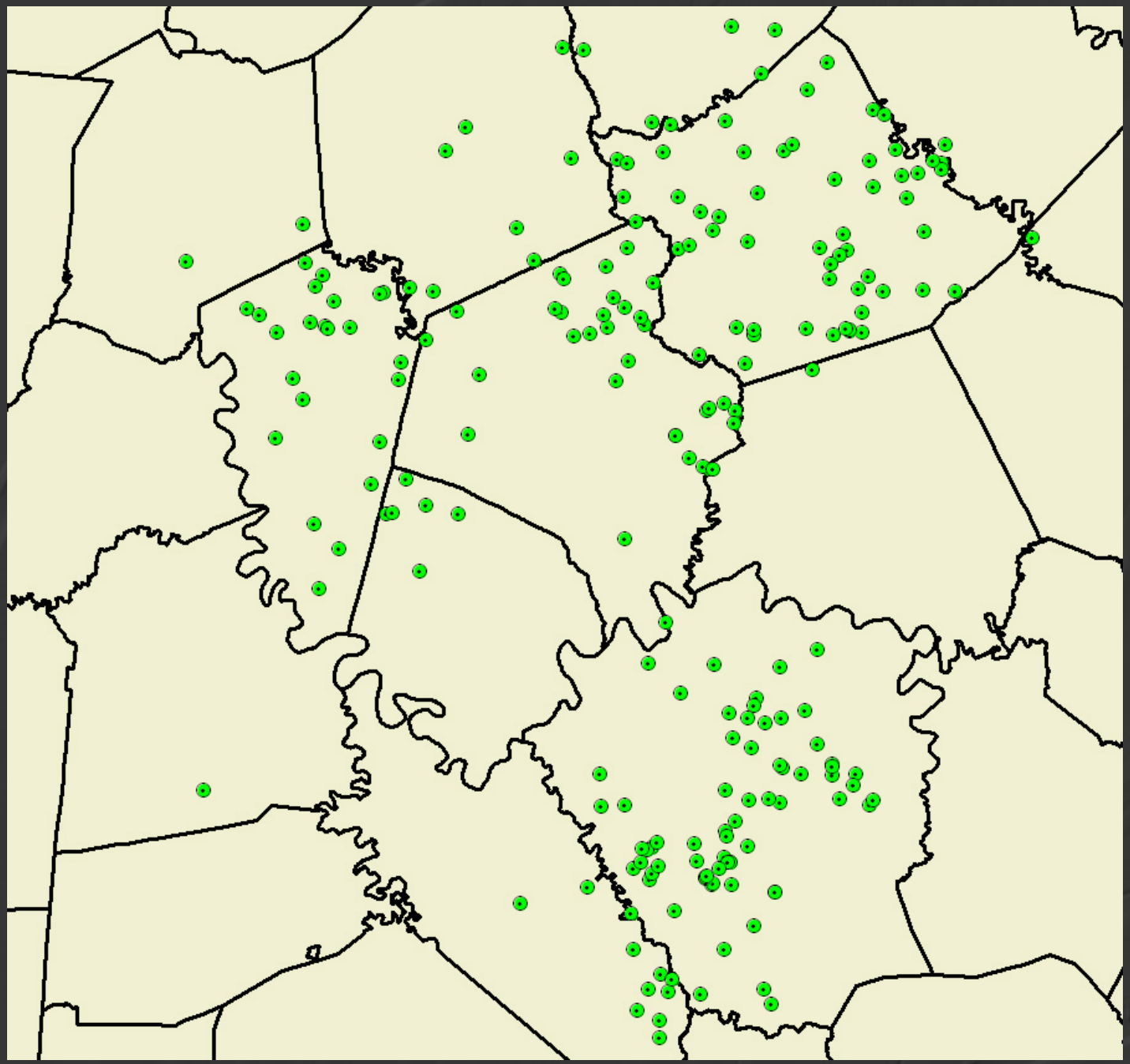
It’s important for archaeologist too.

Predictive model for rockshelters using geology and LiDAR derived slopes.

Green River Floodplain - 5 foot DEM




Sinkholes
Wetlands and
streams

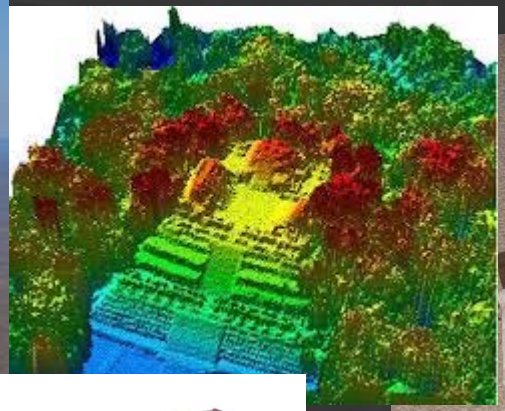


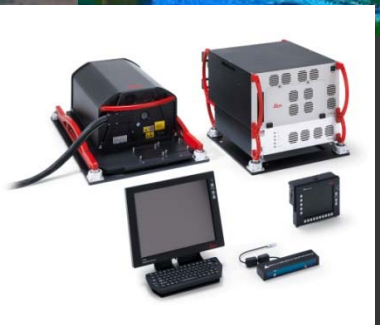
Over 1800 square miles examined.

Over 100 possible new mounds and earthworks.

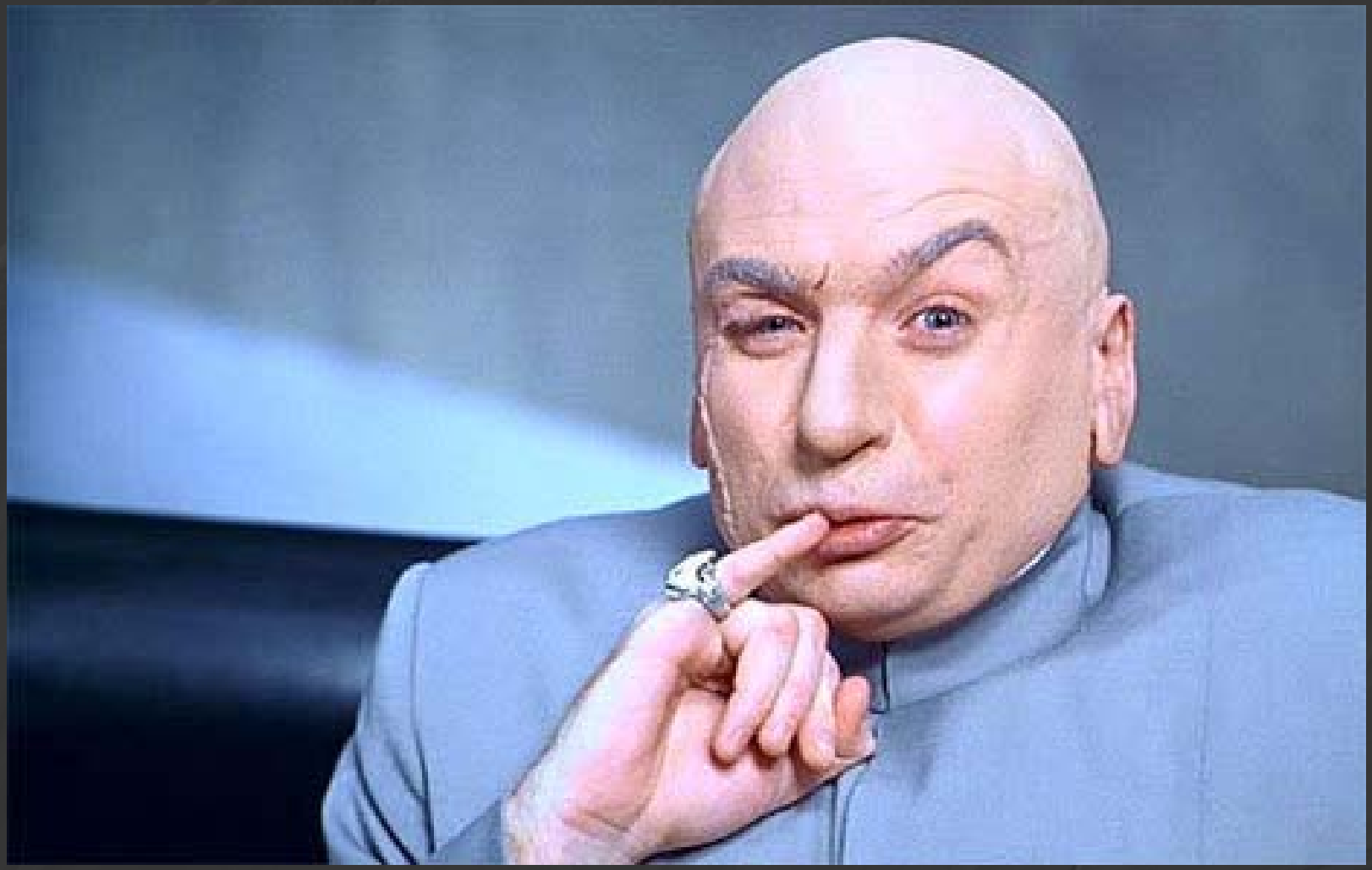
LiDAR's Future in Archaeology

- It's a ***FUNDAMENTAL*** tool in the toolbox for understanding the larger landscape.
- Does ***NOT REPLACE*** ground verification or other traditional archaeological research.
- The ***REAL POWER*** is the blending of the different methods and technologies.





So what ELSE is out there?



THANK YOU!