Mapping and Forecasting the Agricultural Footprint

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Agriculture Workgroup Meeting
April 15, 2021

U.S. Department of the Interior
U.S. Geological Survey

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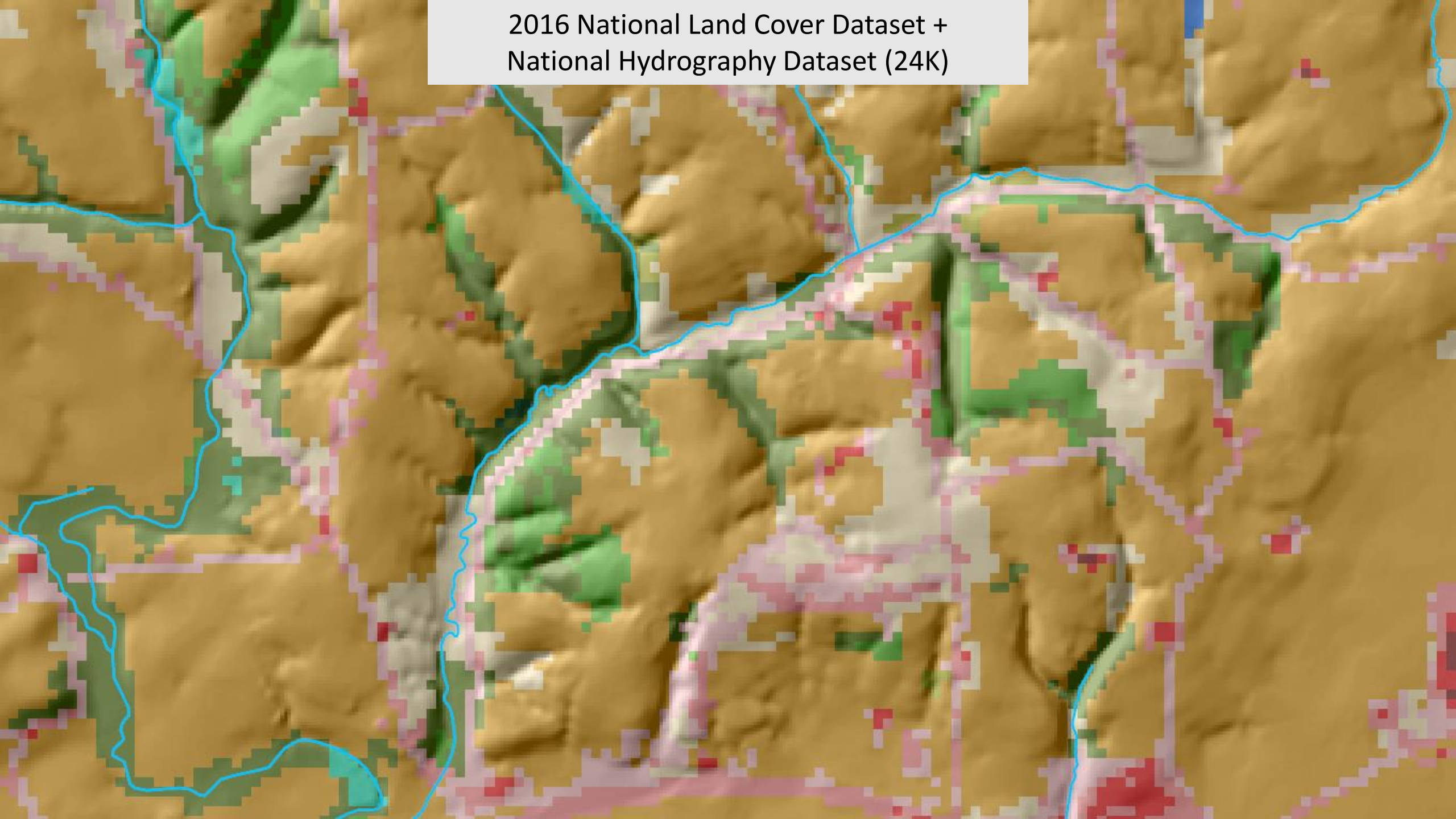
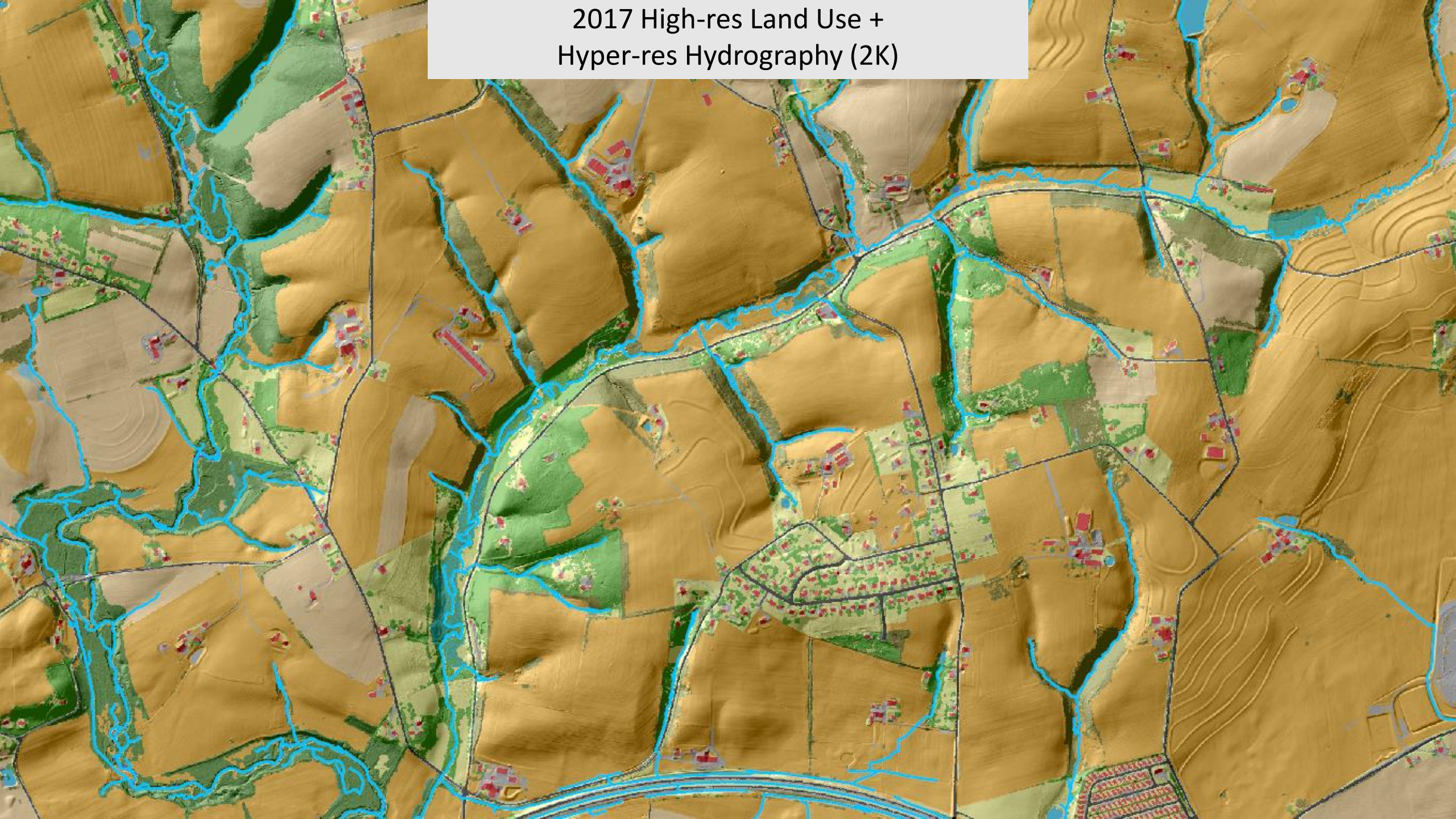
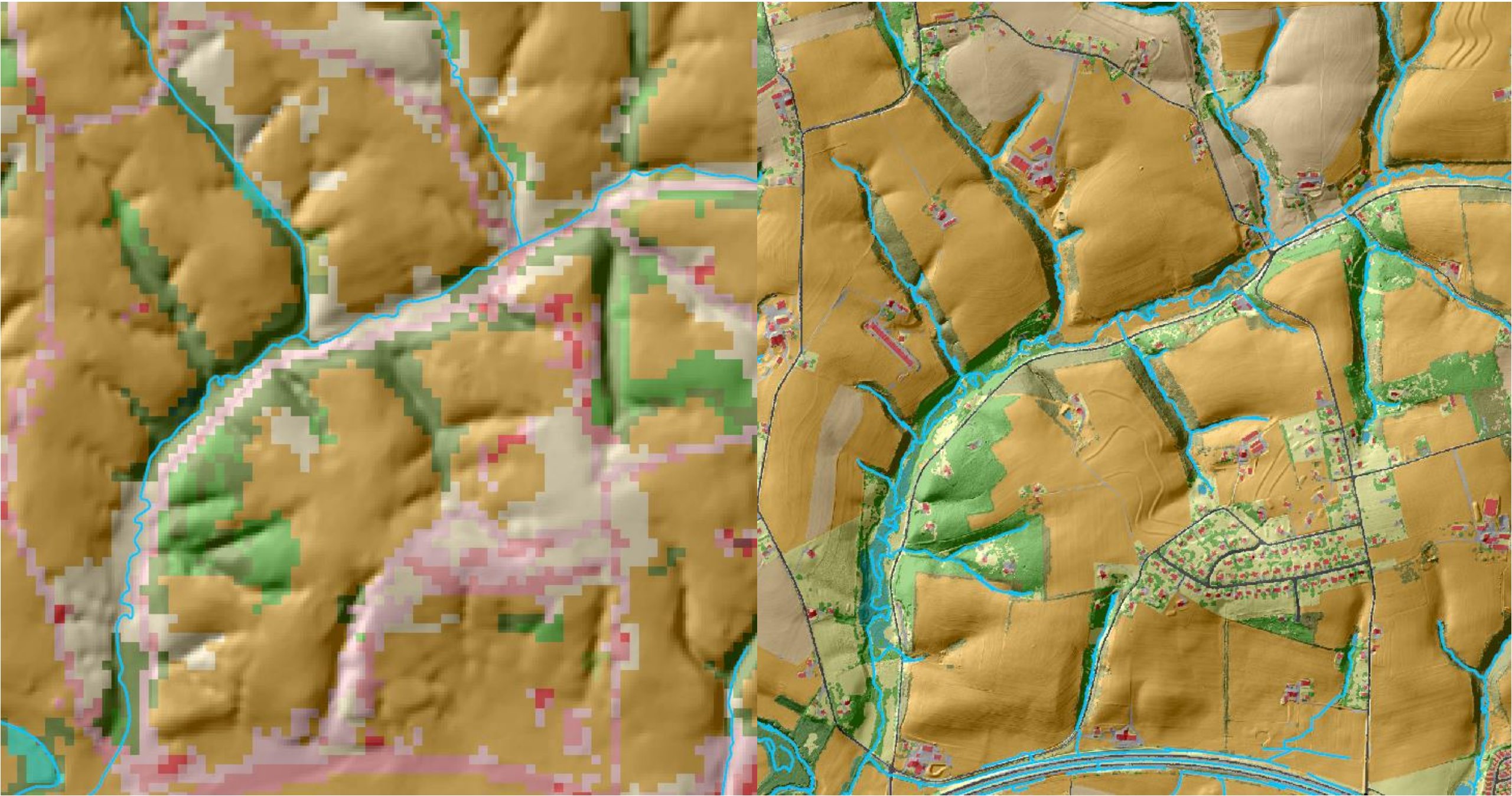

2016 National Land Cover Dataset +
National Hydrography Dataset (24K)

2017 High-res Land Use +
Hyper-res Hydrography (2K)



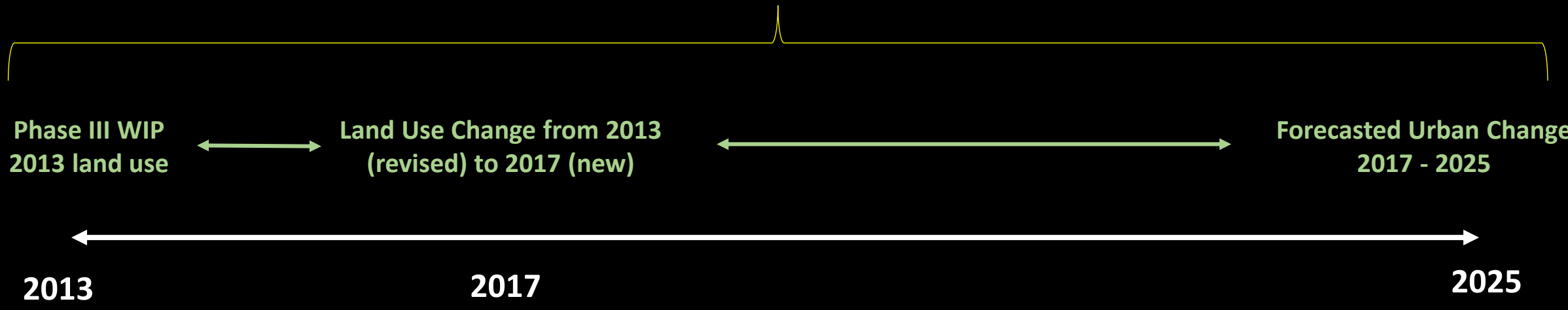
30-meter Resolution

1-meter Resolution



CAST-21

CBPO-estimated annual Feeding Space and Double Crop acres
+
State-reported annual Construction & Timber harvest acres



Agricultural footprint changes as observed in aerial imagery

Agricultural footprint shrinks due to urban development

Questions for AGWG Review of 2017 High-res Land Use:

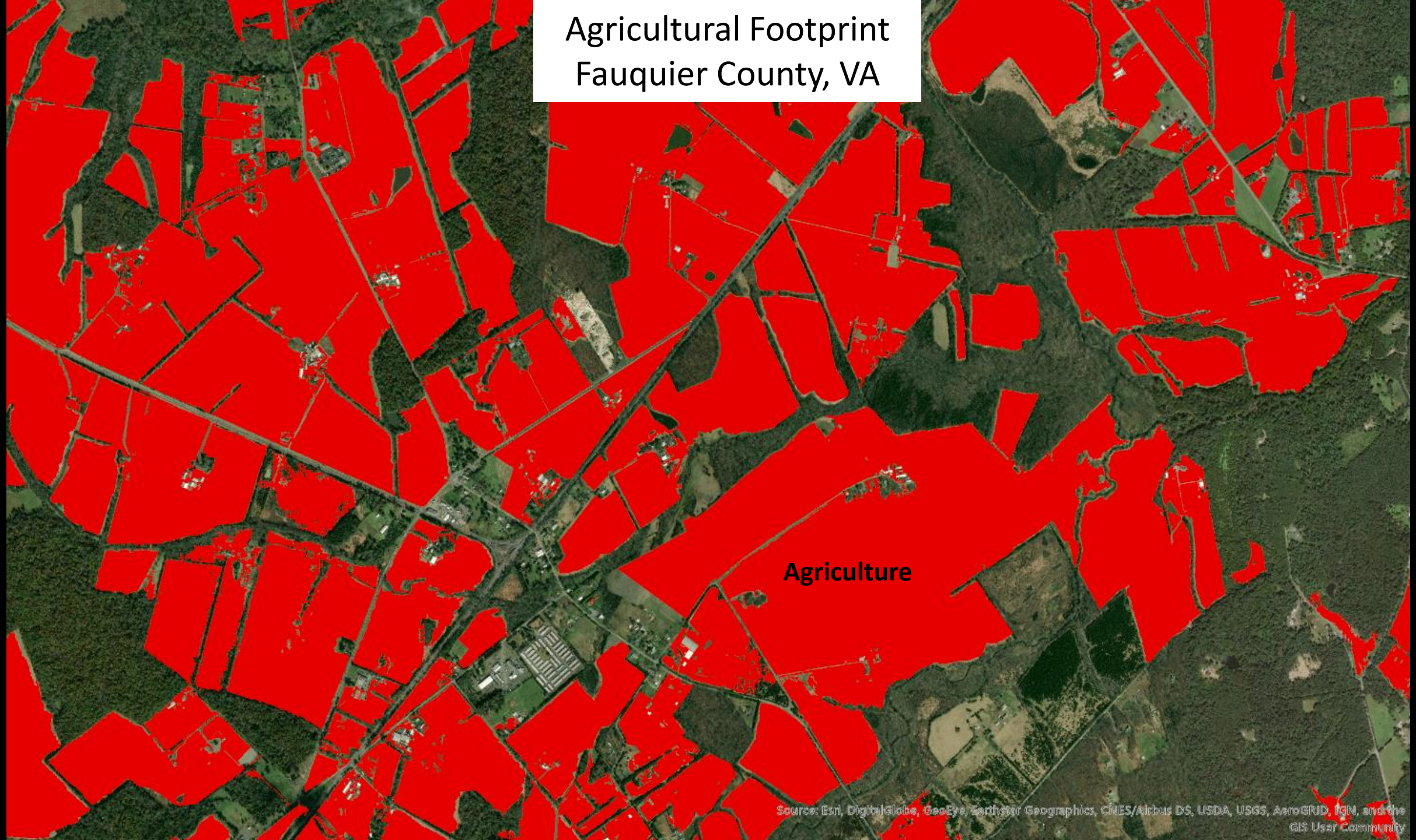
Is the mapped agricultural footprint accurate?
(differentiated from timber harvest, turf grass, suspended succession, and natural succession)

Is the general spatial distribution of cropland and pasture/hay within a county, correct?
(the spatial distribution is used to allocate crop, hay, and pasture types reported in the Census of Agriculture from the County-scale to Land-River Segments)

At the field scale, are cropland and pasture/hay fields mostly classified correctly? If not, where are there errors?

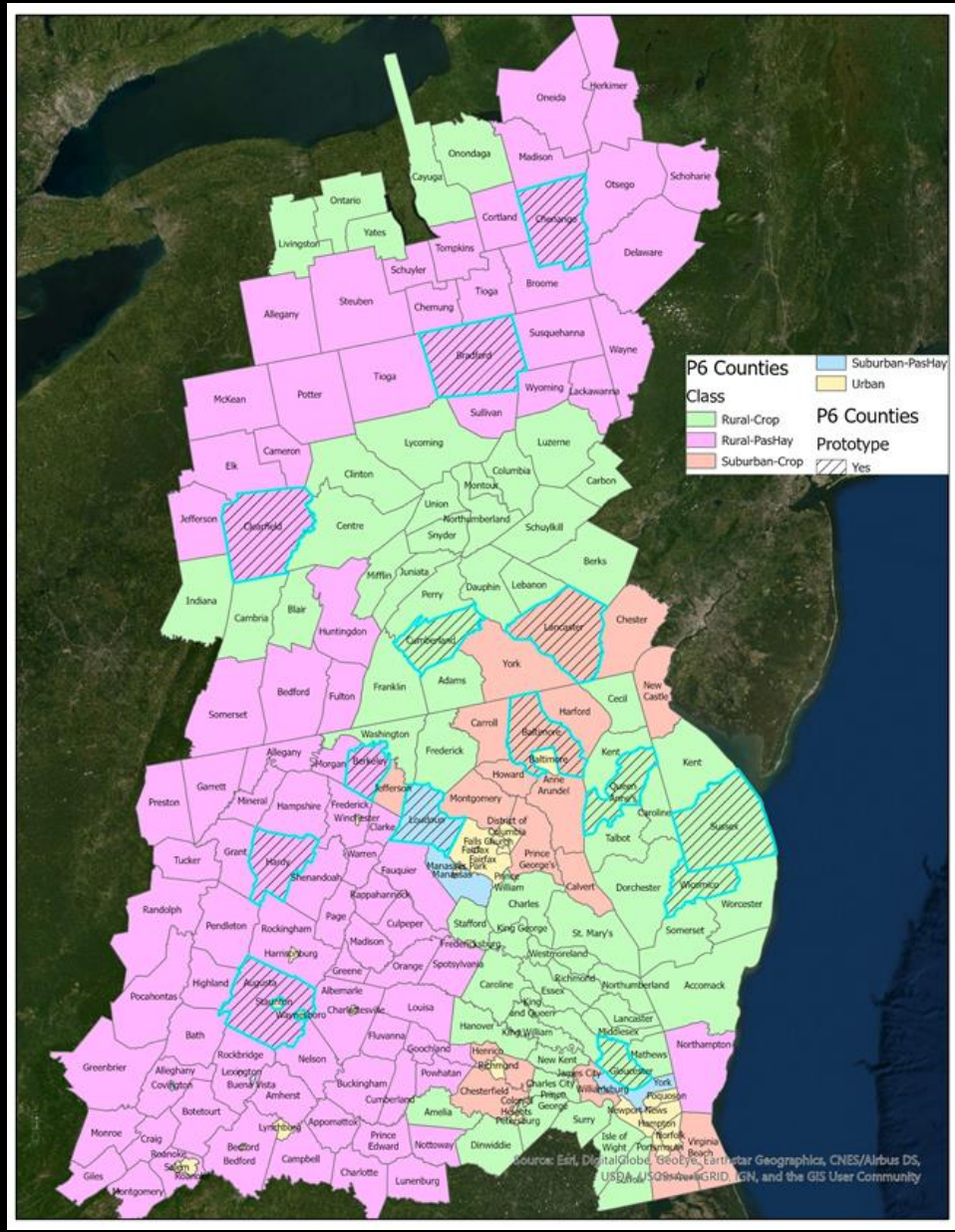
Are the 2017 land use data more accurate than the existing 2013 land use data?

Agricultural Footprint
Fauquier County, VA



Is the mapped agricultural footprint accurate?

		Census	Map	Map
FIPS	CNTY_NAME	AG_17	AG_13	AG_17
10005	SUSSEX	245,523	206,810	234,831
24005	BALTIMORE	60,469	60,416	60,696
24035	QUEEN ANNES	137,939	105,568	118,952
24045	WICOMICO	67,242	58,956	59,732
36017	CHENANGO	94,664	170,330	109,915
42015	BRADFORD	214,089	236,327	231,889
42033	CLEARFIELD	36,661	115,343	104,169
42041	CUMBERLAND	152,928	110,131	116,748
42071	LANCASTER	347,906	272,655	304,277
51015	AUGUSTA	234,308	171,437	145,181
51073	GLOUCESTER	15,195	14,036	13,027
51107	LOUDOUN	92,937	90,317	55,791
54003	BERKELEY	51,763	44,175	32,009
54031	HARDY	87,069	45,008	37,251



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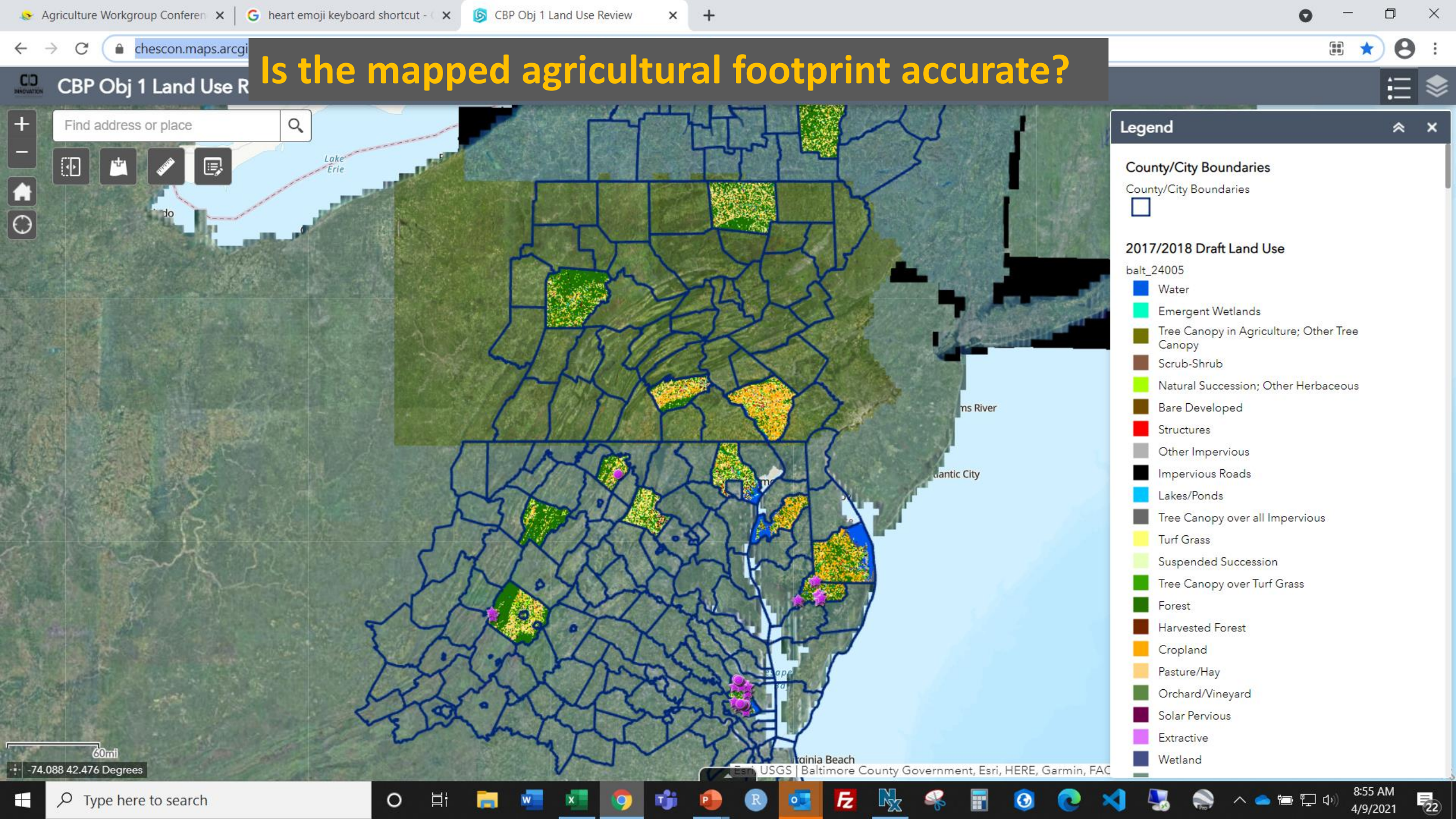

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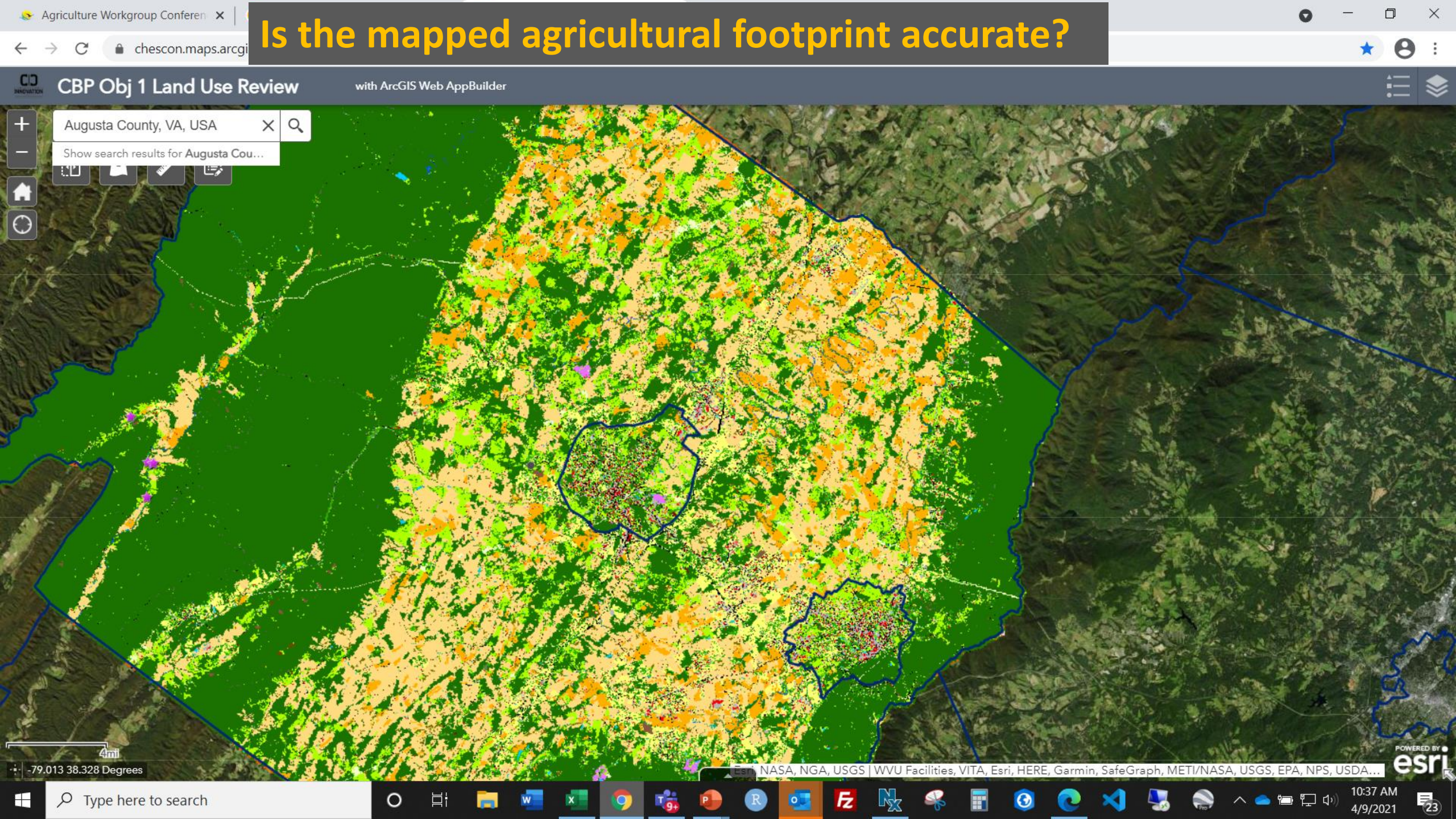

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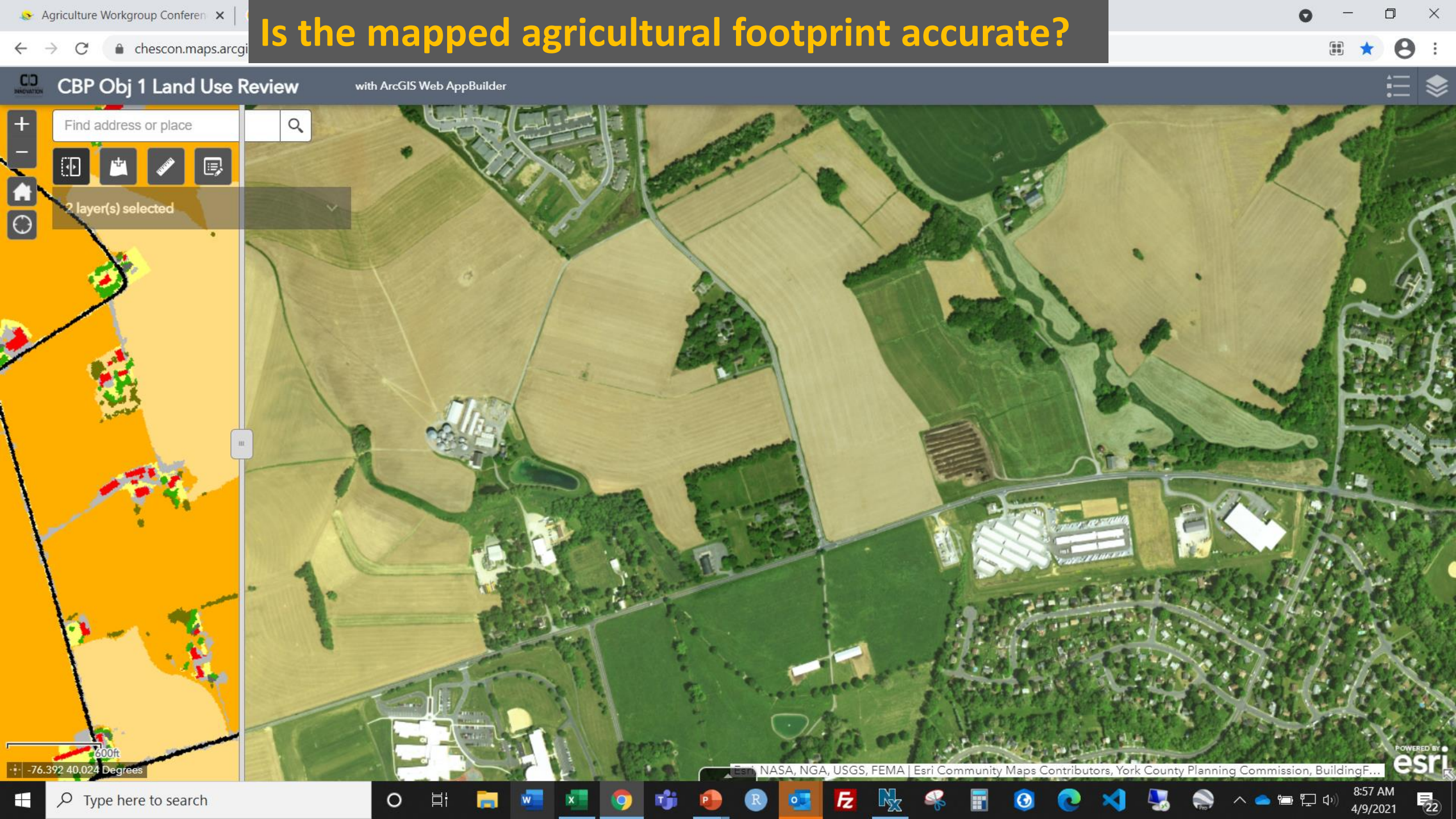

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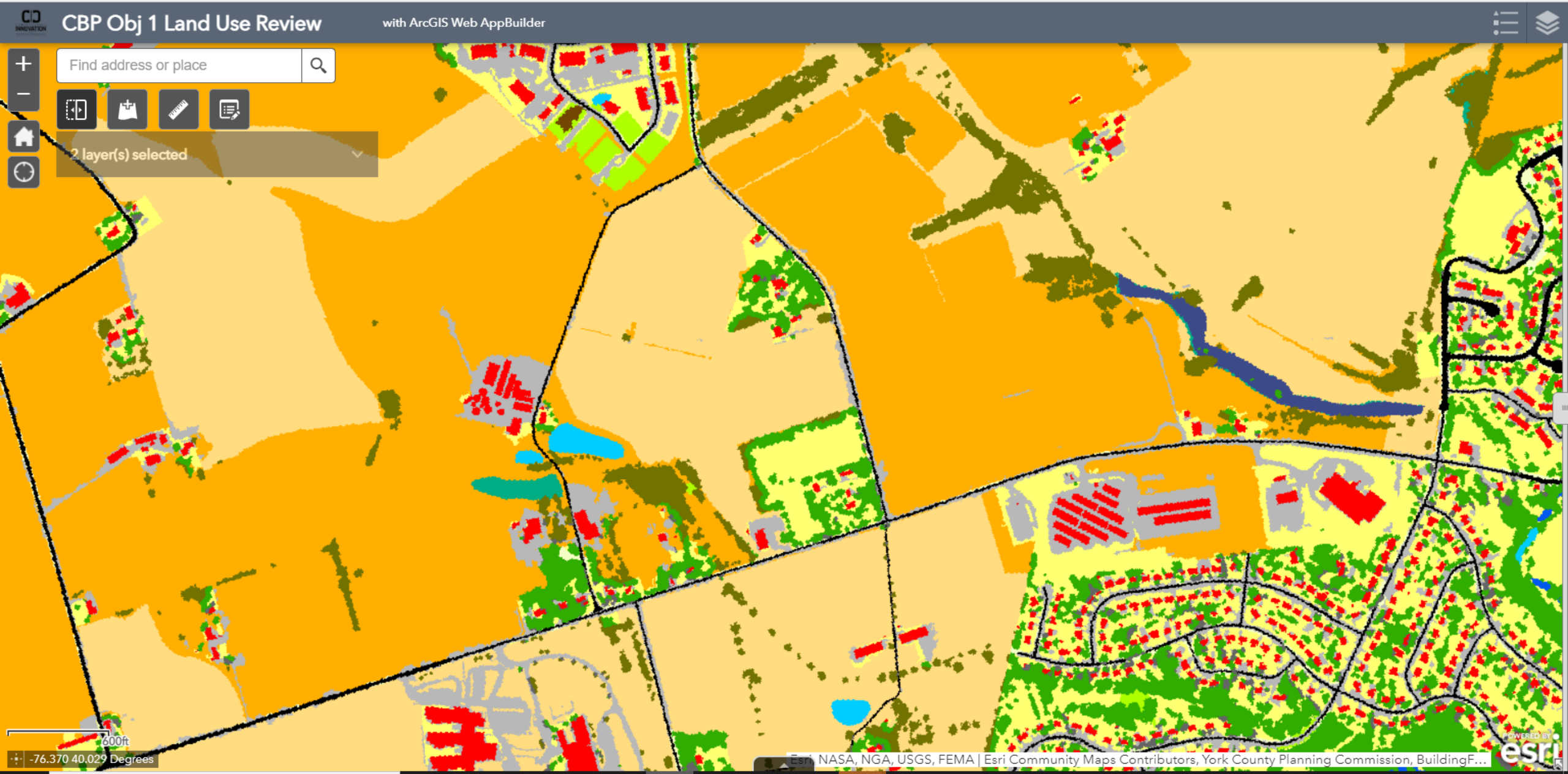

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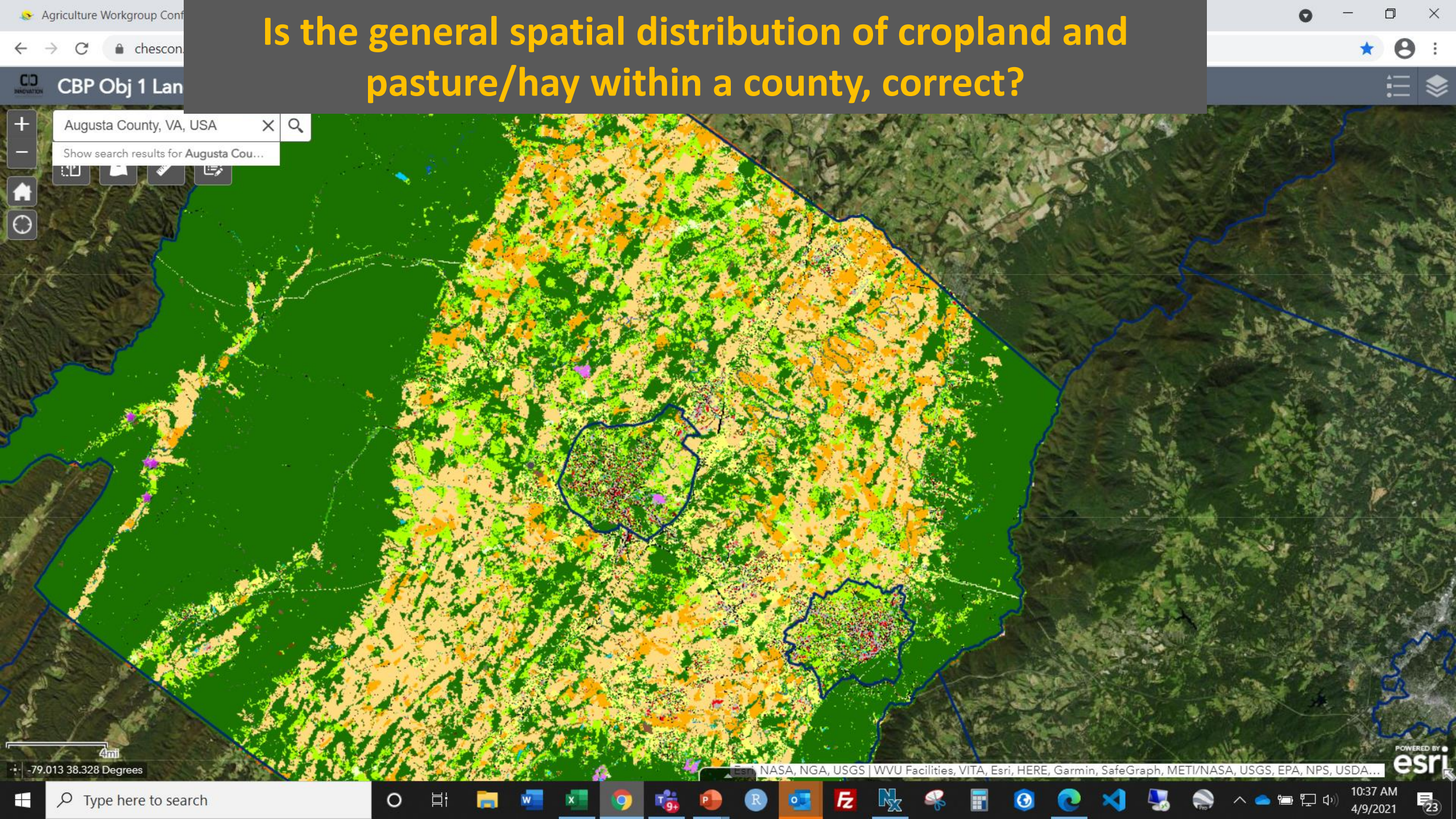

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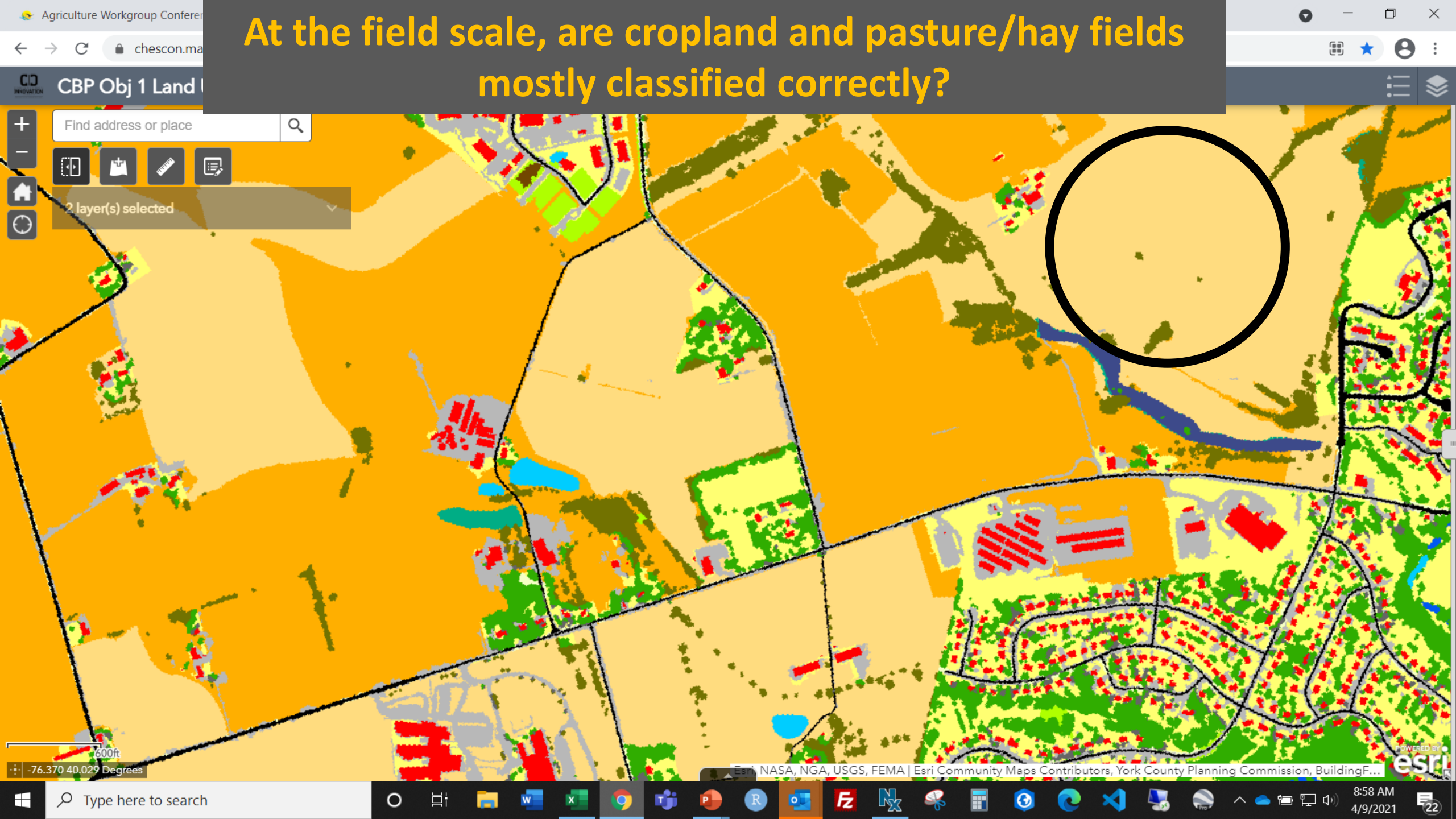

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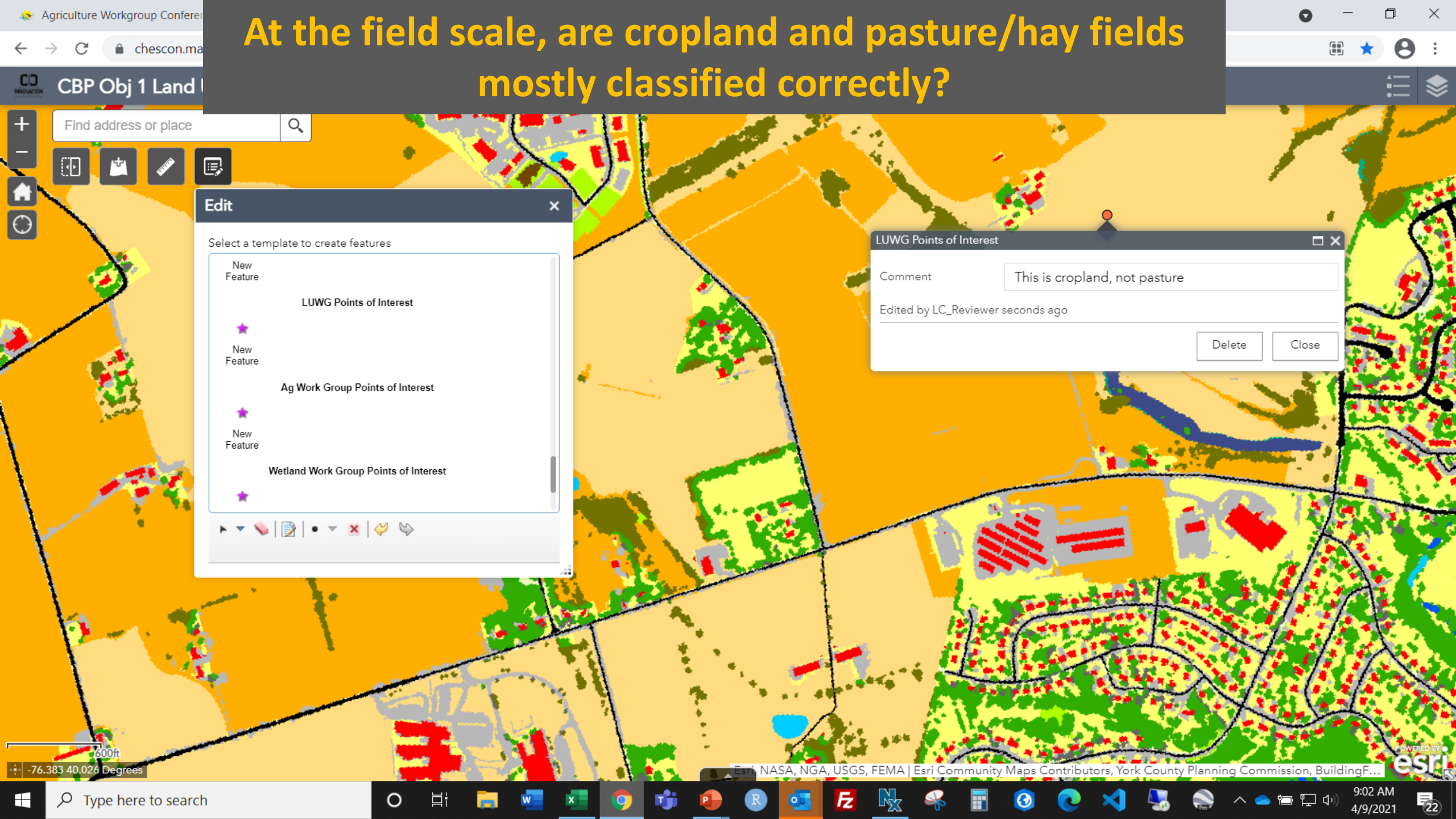
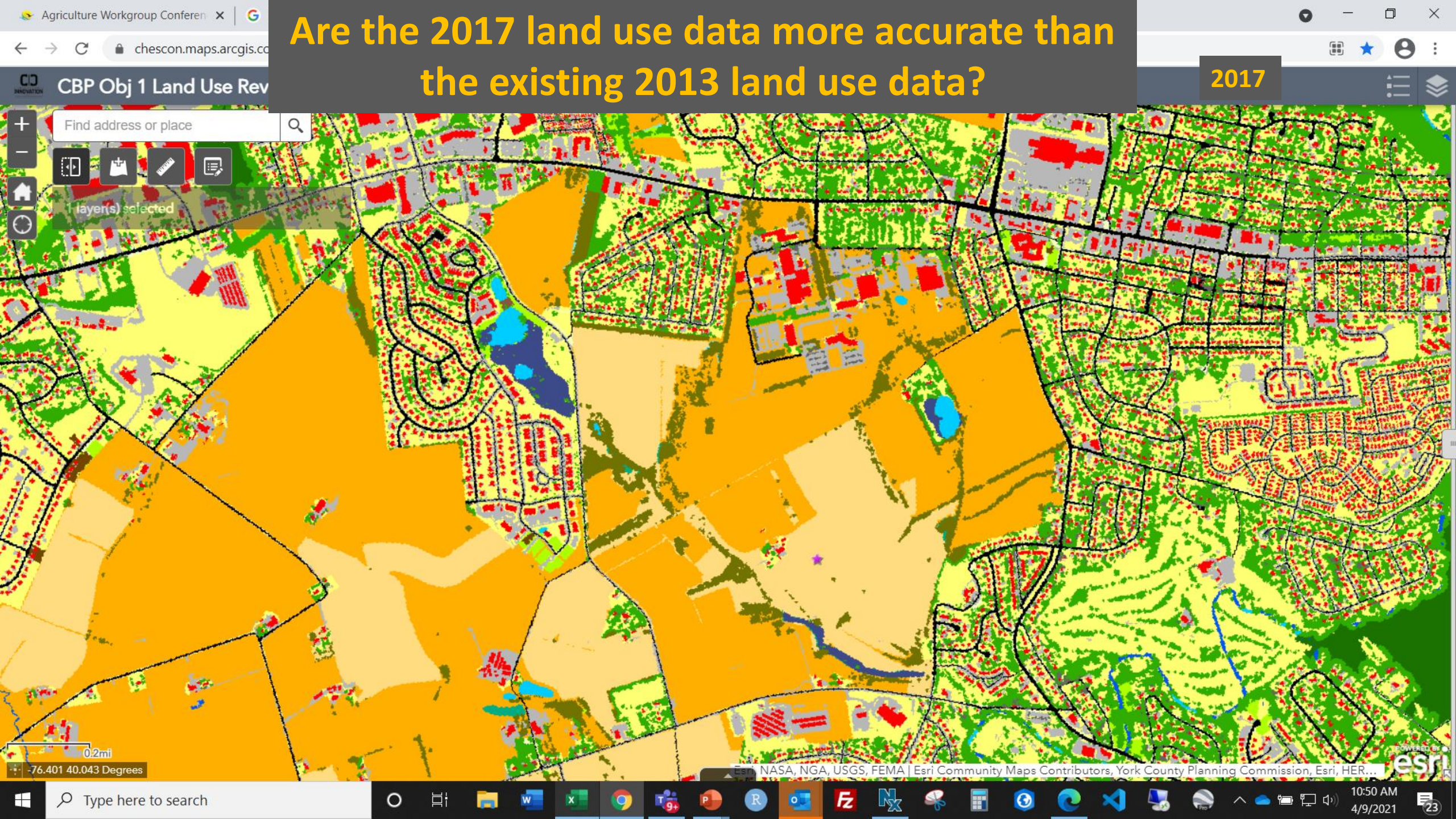


Are the 2017 land use data more accurate than the existing 2013 land use data?



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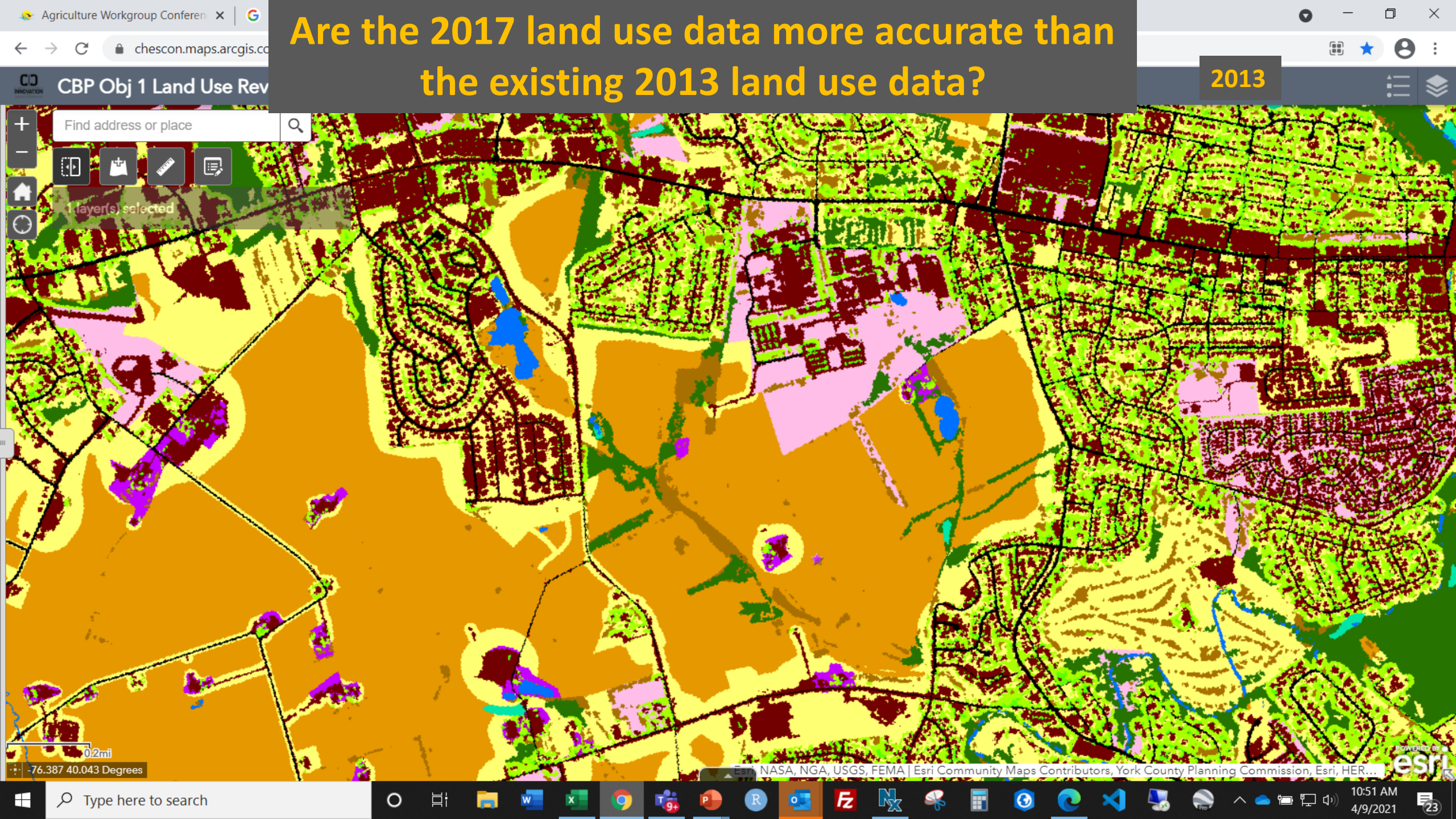

Land Cover Change in Berkeley County
2014 - 2018

2018

Overall Change	1.24%												
	Water	Wetlands	Tree Canopy	Shrub-scrub	Low Vegetation	Barren	Structures	Other Impervious	Roads	TC over Structures	TC over Other Imp	TC over Roads	Total Change
Water	1,782	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands	-	-	-	-	-	-	-	-	-	-	-	-	-
Tree Canopy	-	-	113,145	-	704	106	38	85	8	-	-	-	941
Shrub-scrub	-	-	19	21	-	-	-	-	-	-	-	-	19
Low Vegetation	-	-	227	-	74,510	388	160	427	27	-	-	-	1,228
Barren	-	-	1	-	131	681	0	-	0	-	-	-	132
Structures	-	-	0	-	4	0	2,633	10	-	9	-	-	23
Other Impervious	-	-	1	-	85	9	33	7,248	4	-	23	-	155
Roads	-	-	0	-	1	-	-	1	2,753	-	-	4	6
TC over Structures	-	-	-	-	2	-	0	0	-	105	-	-	2
TC over Other Imp	-	-	-	-	6	0	3	0	0	-	164	-	9
TC over Roads	-	-	-	-	1	0	0	0	0	-	-	397	2
Total Change	-	-	248	-	935	503	234	523	39	9	23	4	2,517

2014

National Hydrography Dataset (NHD-HR, 24K); National Wetlands Inventory (NWI)

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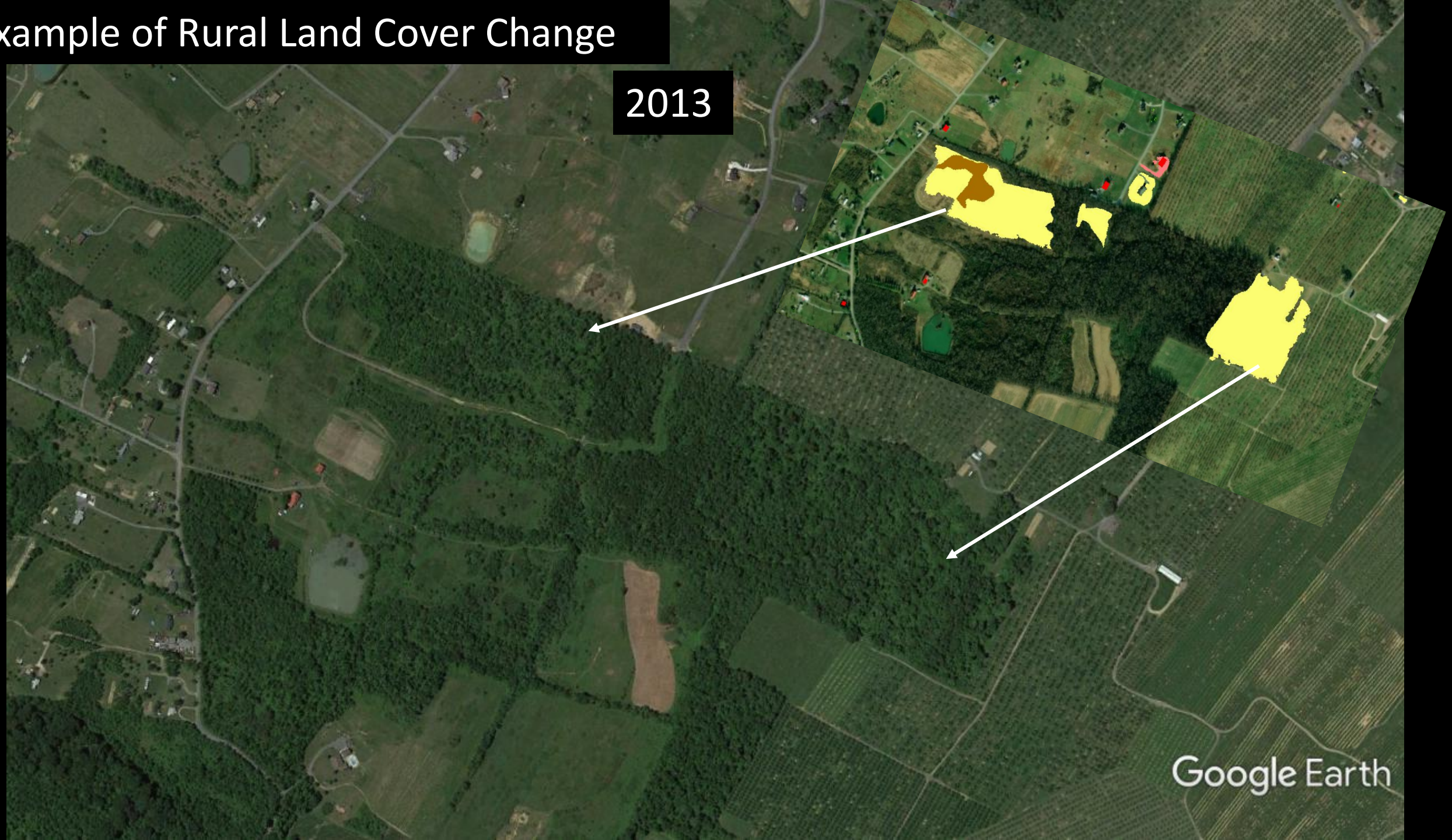
Example of Rural Land Cover Change



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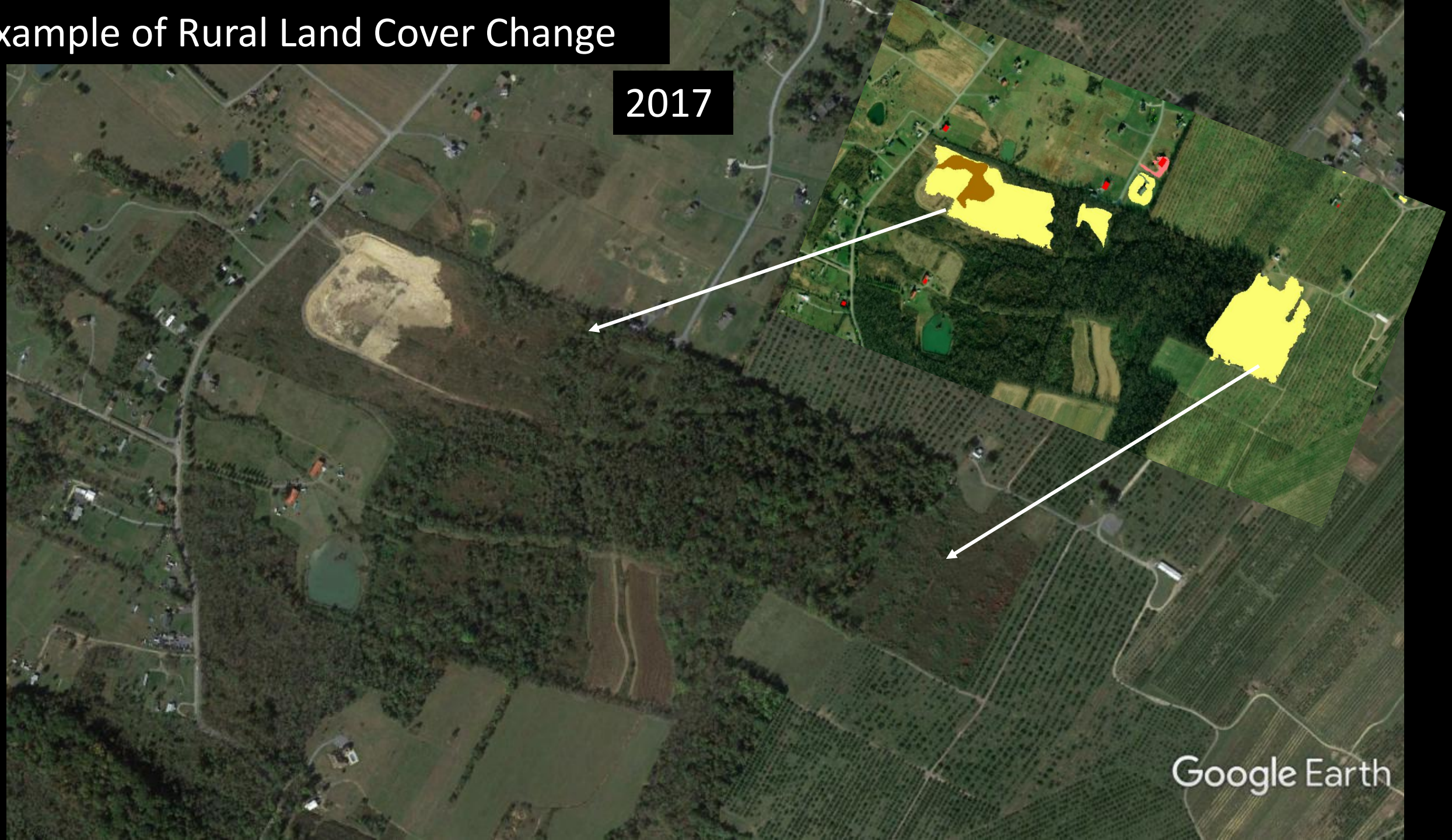
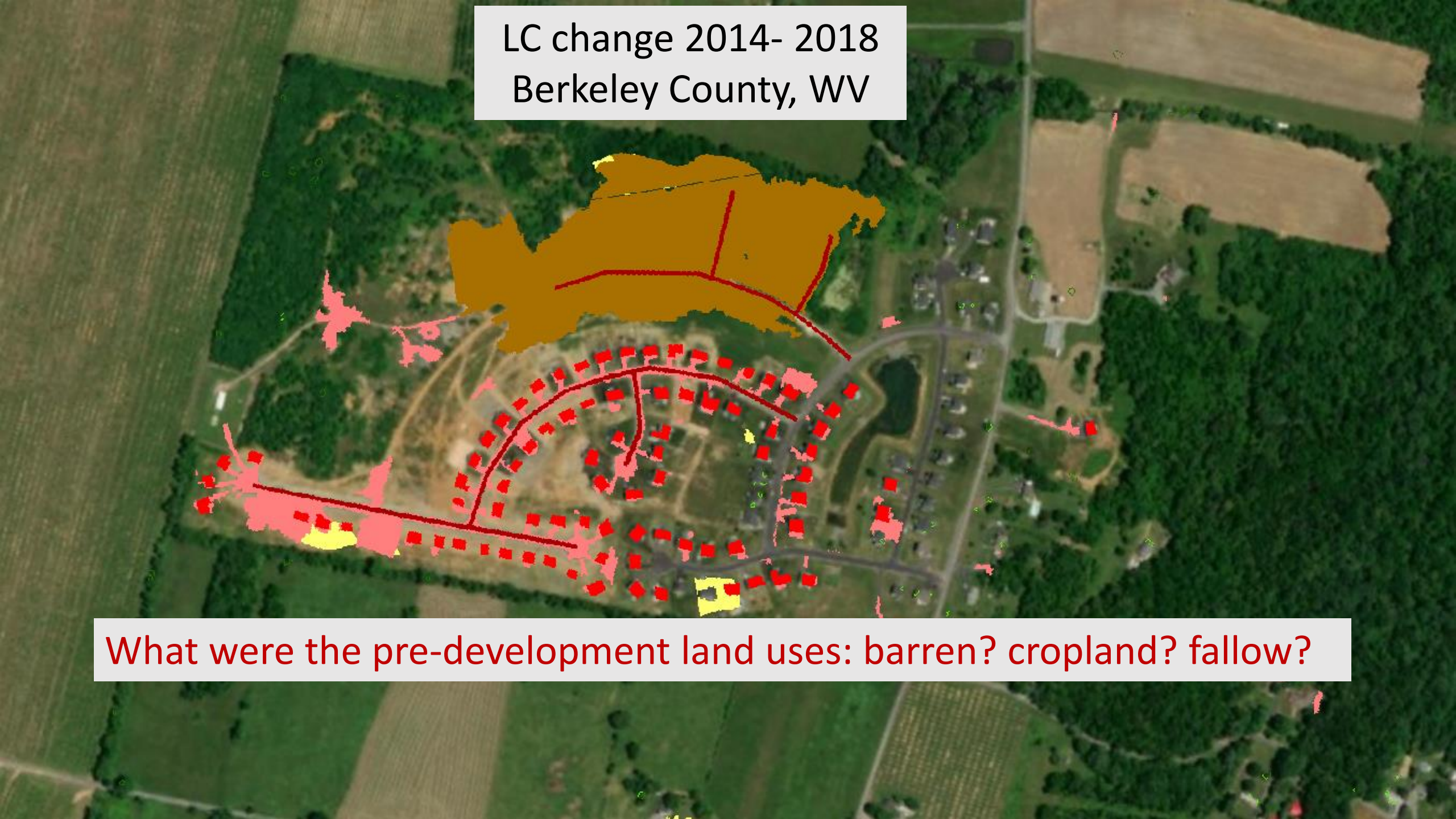


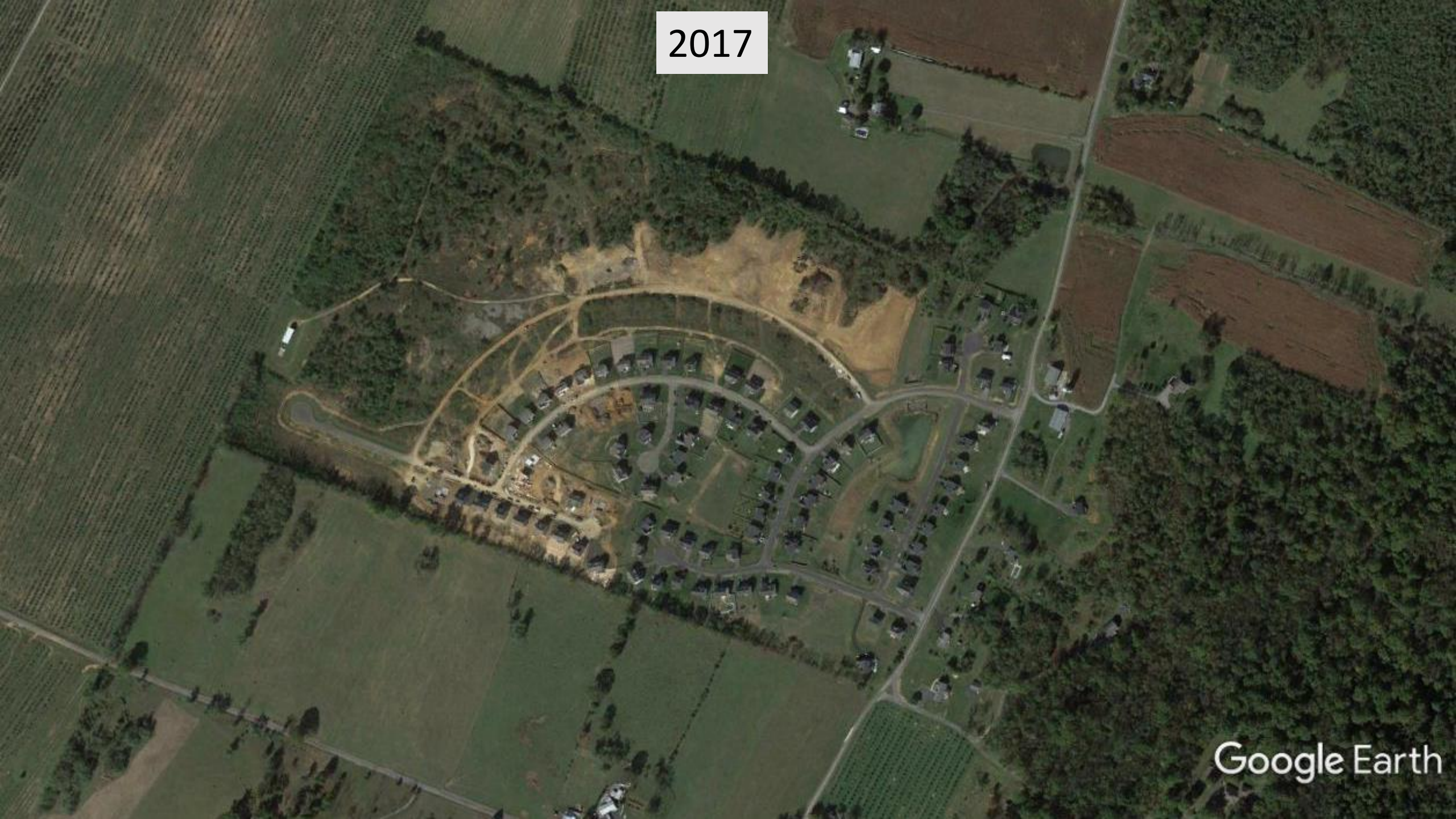

LC change 2014- 2018
Berkeley County, WV
What were the pre-development land uses: barren? cropland? fallow?

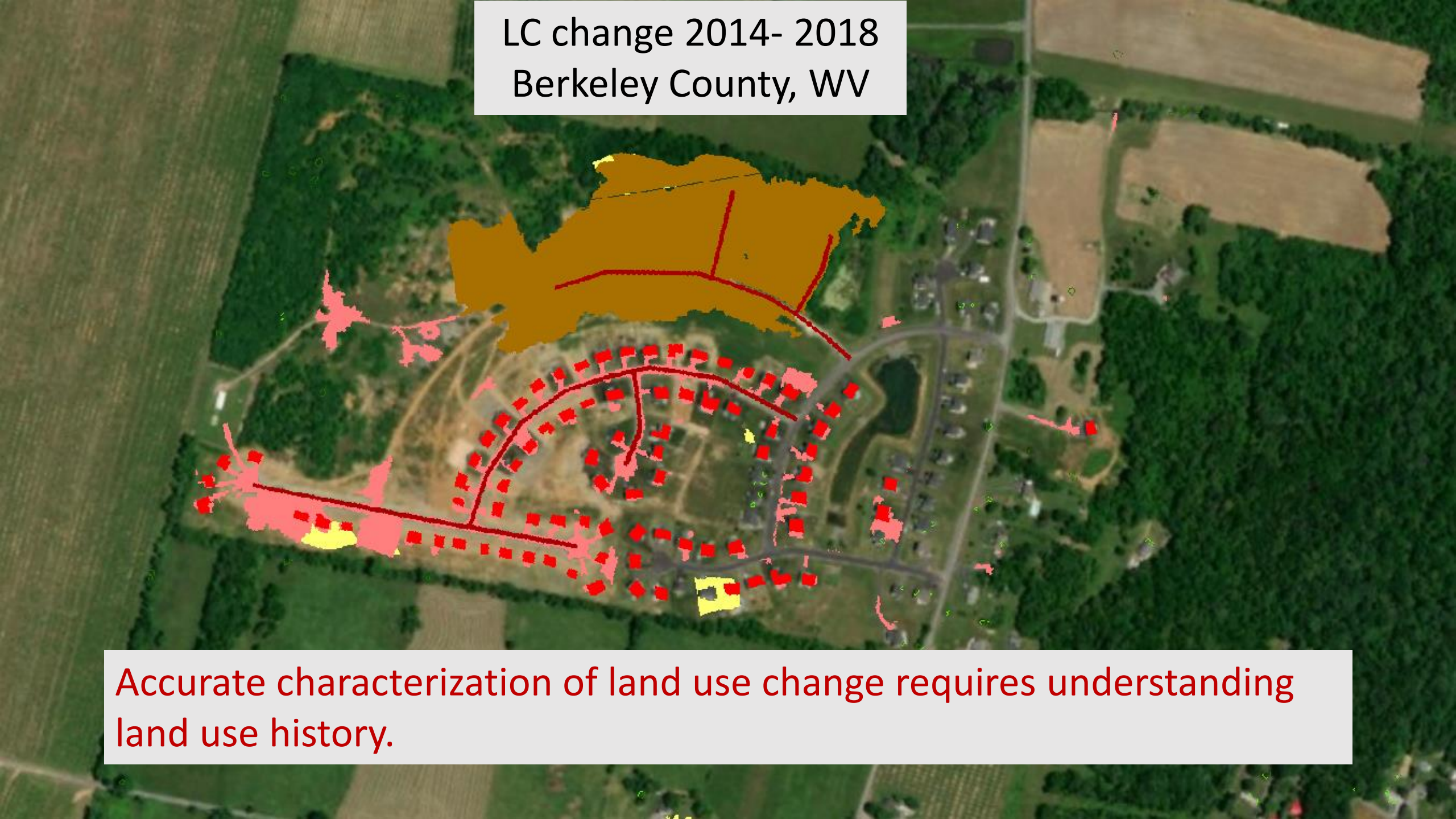

1991
Image U.S. Geological Survey
Google Earth


2006
Google Earth


2007
Image USDA Farm Service Agency
Google Earth

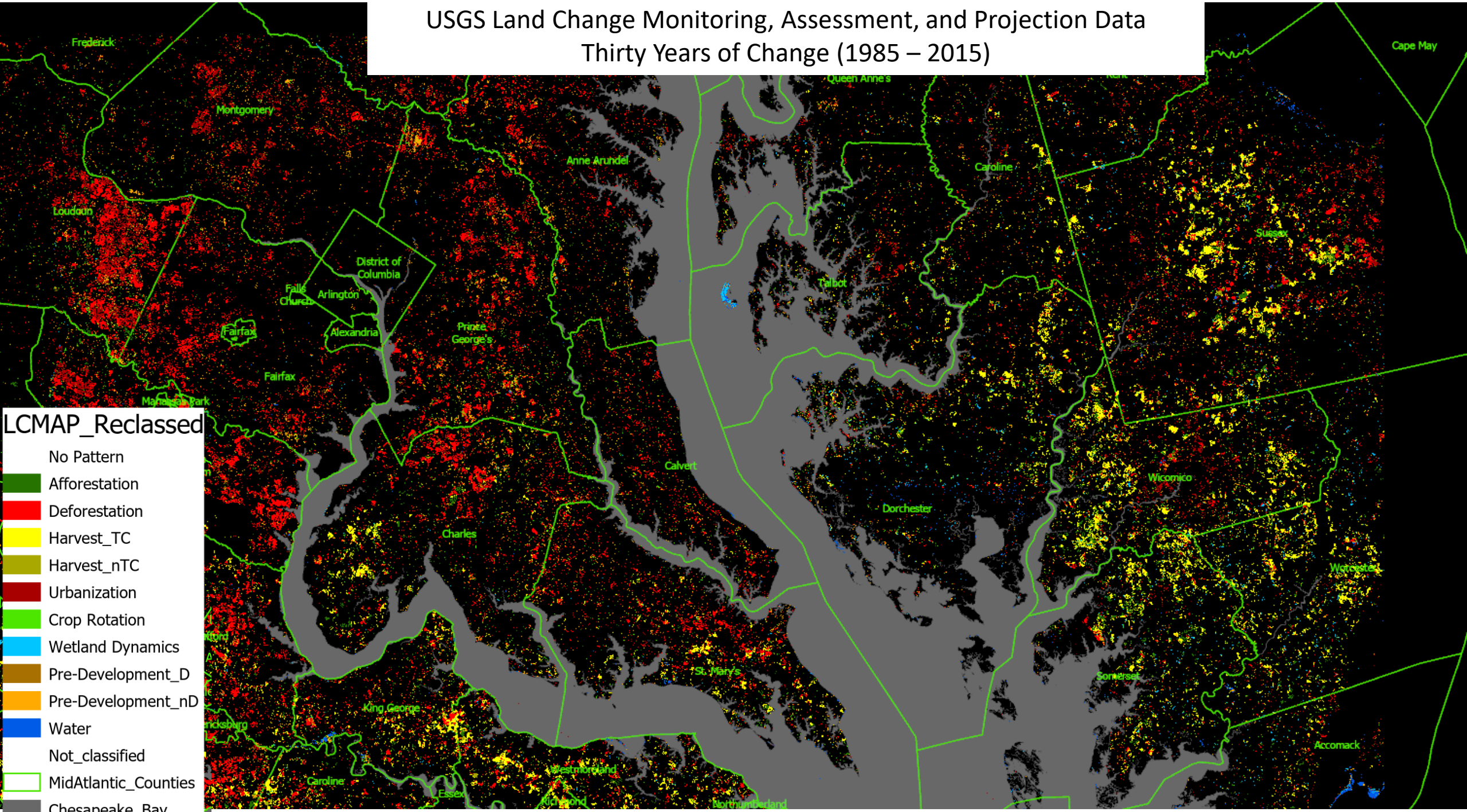

2011
© 2021 Google
Google Earth


2017
Google Earth

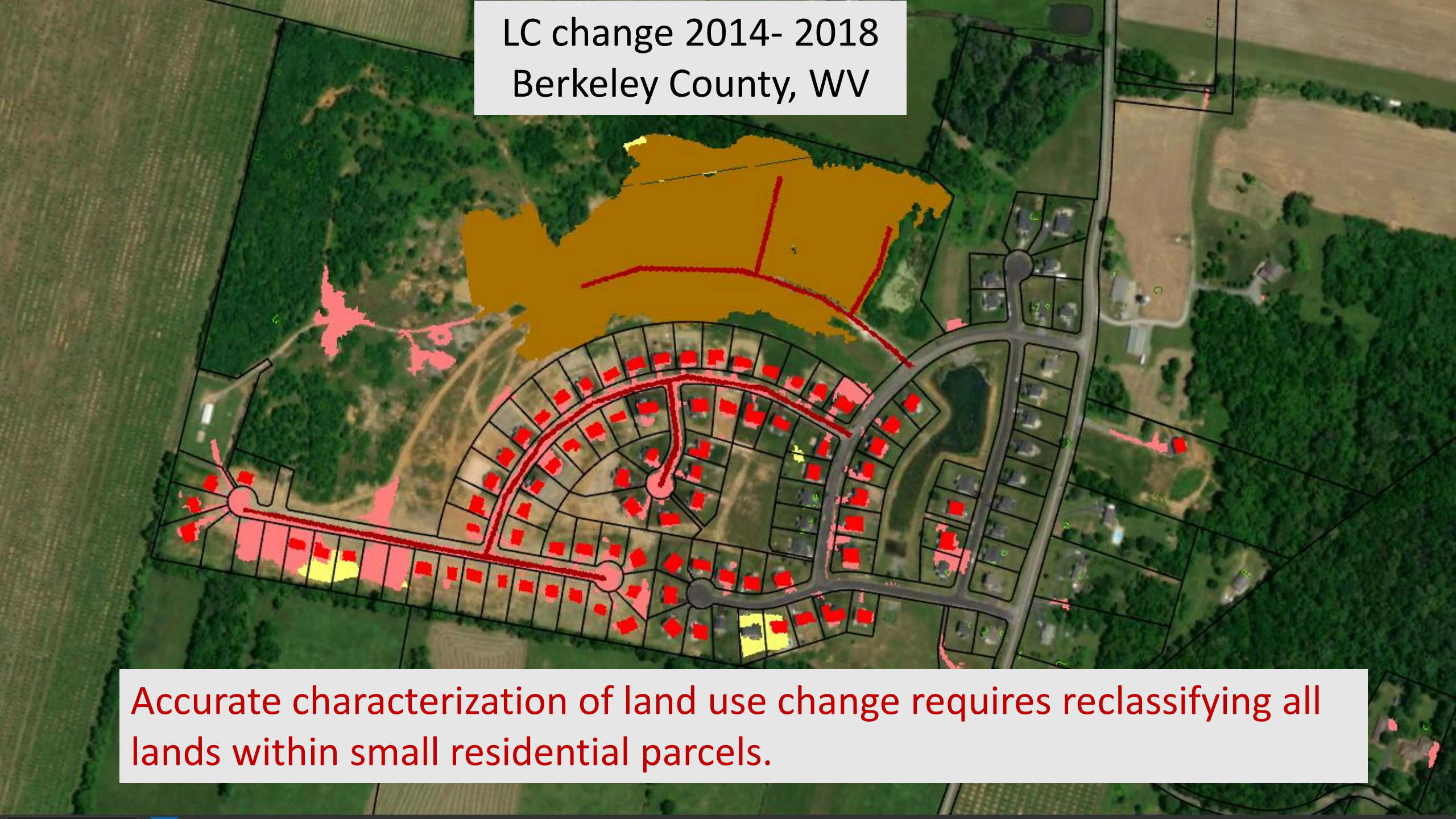


Accurate characterization of land use change requires understanding land use history.

USGS Land Change Monitoring, Assessment, and Projection Data
Thirty Years of Change (1985 – 2015)




LCMAP_Reclassed
No Pattern
Afforestation
Deforestation
Harvest_TC
Harvest_nTC
Urbanization
Crop Rotation
Wetland Dynamics
Pre-Development_D
Pre-Development_nD
Water
Not_classified
MidAtlantic_Counties
Chesapeake_Bay


LC change 2014- 2018
Berkeley County, WV
Accurate characterization of land use change requires reclassifying all lands within small residential parcels.

Timeline for 2013 - 2017 Land Use Change Review for CAST-21

April – June 2021

Apr 26: WQGIT presented with information on the 2013-2017 land use change product, how it can be incorporated into CAST, and an overview of the decision that will be requested of the WQGIT during their May 24 call.

May 5 – May 17: Sector workgroups (AGWG, USWG, FWG) review 2017 land use in prototype of CAST-21 with the 2017 land use currently in CAST-19 for the 14 test counties. The 2013-2017 mapped changes in land use will be available to inspect on Chesapeake Innovation Center's (CIC) web application.

May 5: LUWG discusses 2013-2017 land use change data, methodology, and the comparison between CAST-19 and CAST-21.

May 20: LUWG meets to review comments from sector workgroups on the land use change data in CAST and on the CIC's web application and makes recommendation to the WQGIT on use of the change data in CAST.

May 24: WQGIT decision: approval of method for using 2013 – 2017 land use change data in CAST as implemented in the 14 prototype counties.

Jun 30: CIC completes initial version of the 2013-2017 land use change dataset for all Bay watershed counties.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