









How and Where Land Use is Changing?... and related stuff

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Local Leadership Workgroup August 19, 2025 Virtual

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² University of Maryland, Baltimore County

³ University of Vermont Spatial Analysis Laboratory

⁴ Chesapeake Innovation Center, Chesapeake Conservancy

⁵ National Geospatial Program, U.S. Geological Survey

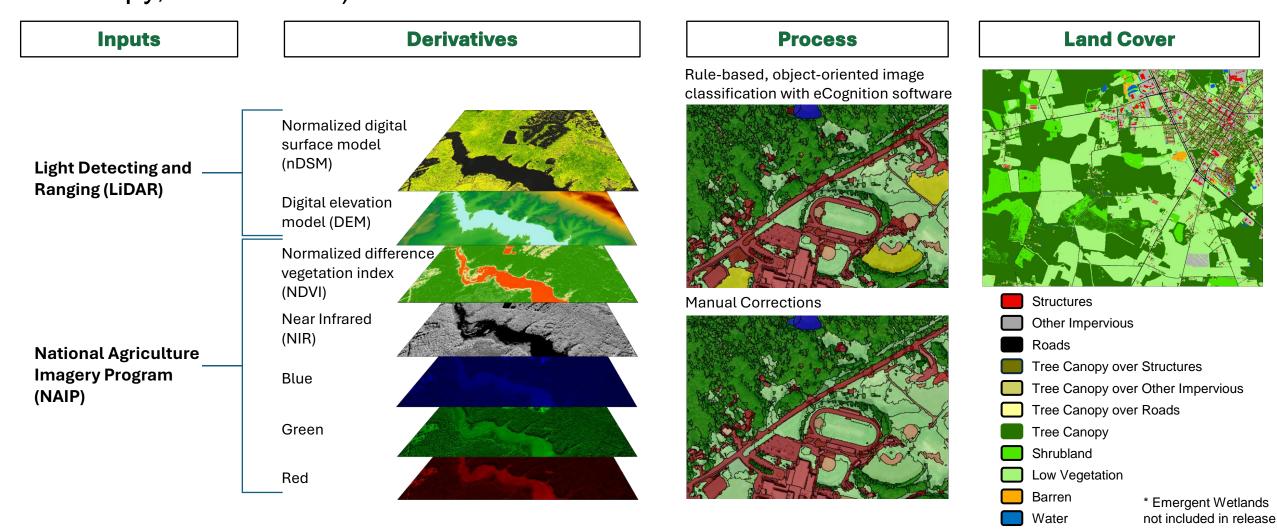
⁶ Washington Water Science Center, U.S. Geological Survey

⁷ Maryland-Delaware-D.C. Water Science Center, U.S. Geological Survey

What is Land Cover?



The physical characteristics of the land surface (e.g., impervious, tree canopy, herbaceous)

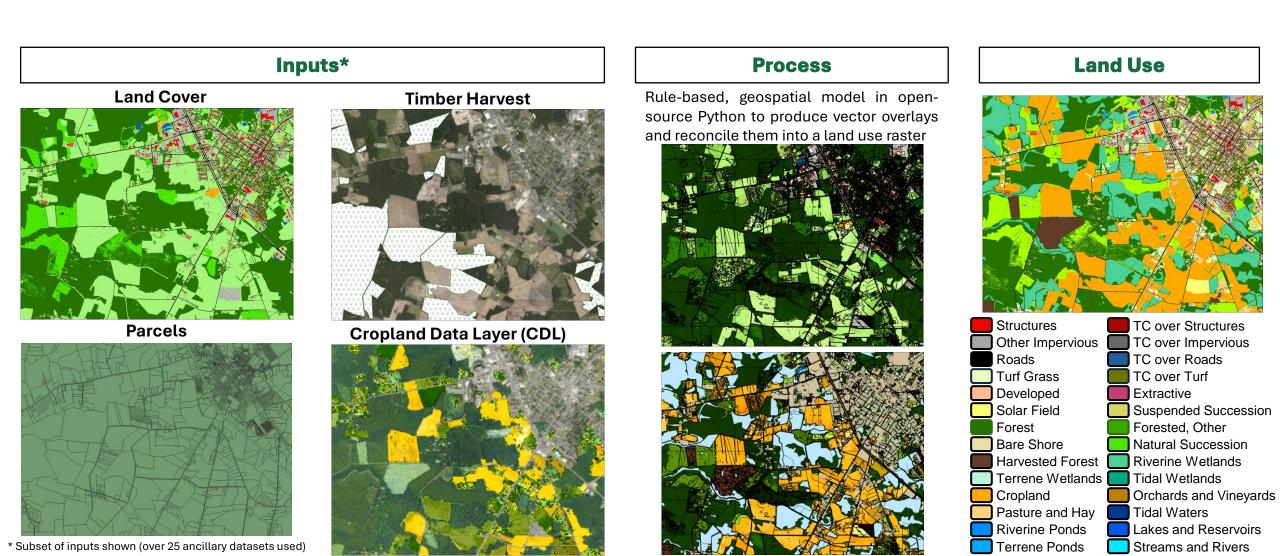


What is Land Use?



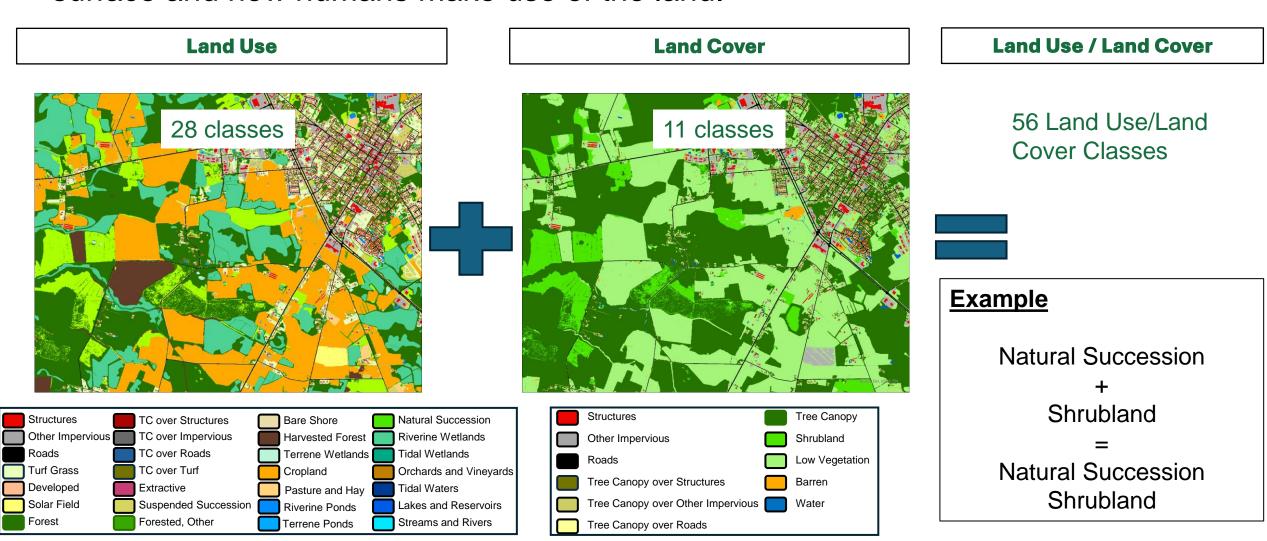


How humans use the land (e.g., residential, agriculture, recreation)



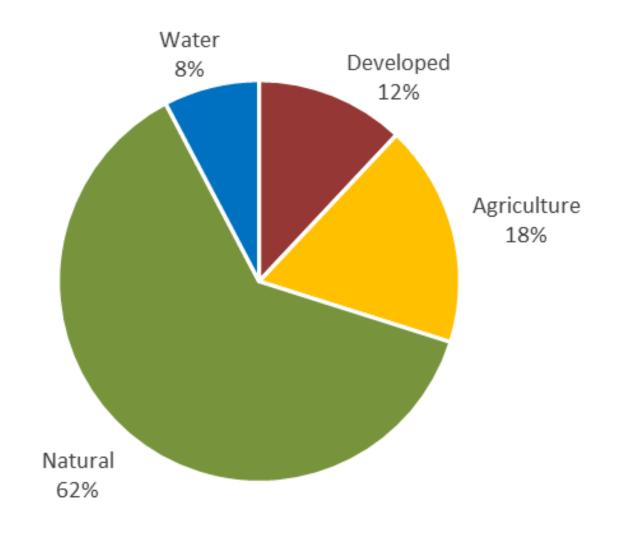
What is Land Use/Land Cover (LULC)?

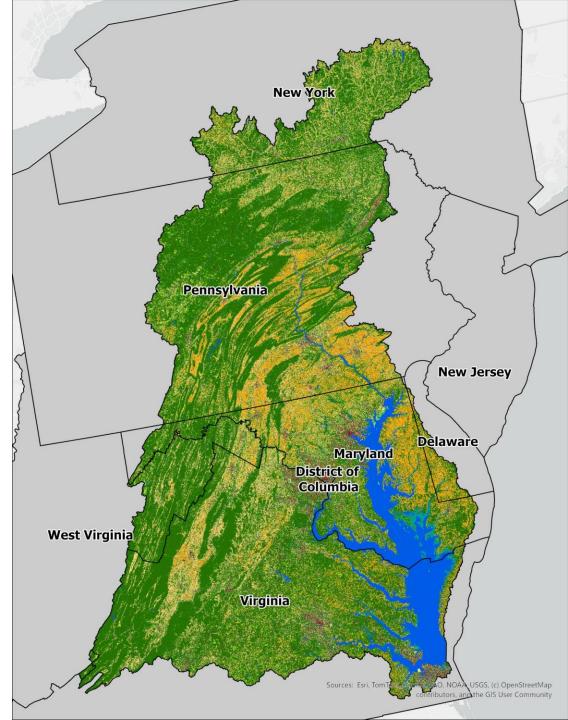
The combination of land use and land cover, reflecting both the physical surface and how humans make use of the land.



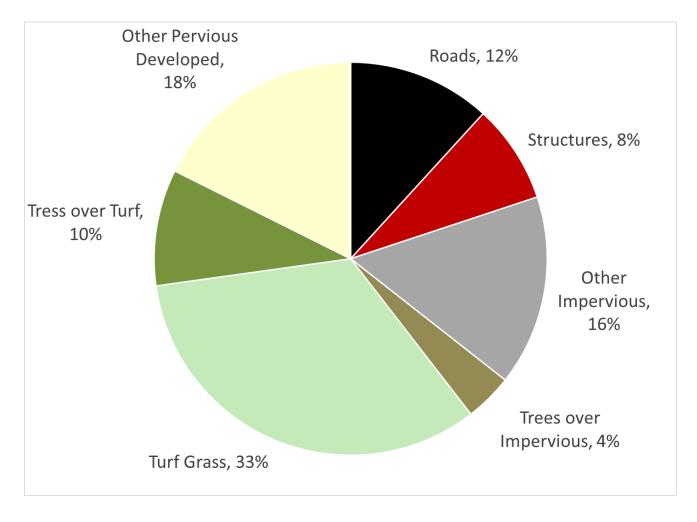
Chesapeake Bay Watershed Land Use

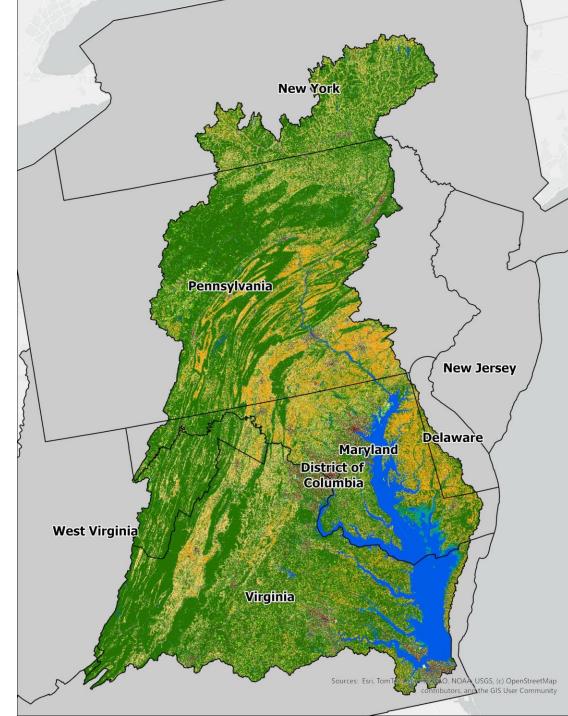
2021/22 1-meter resolution imagery



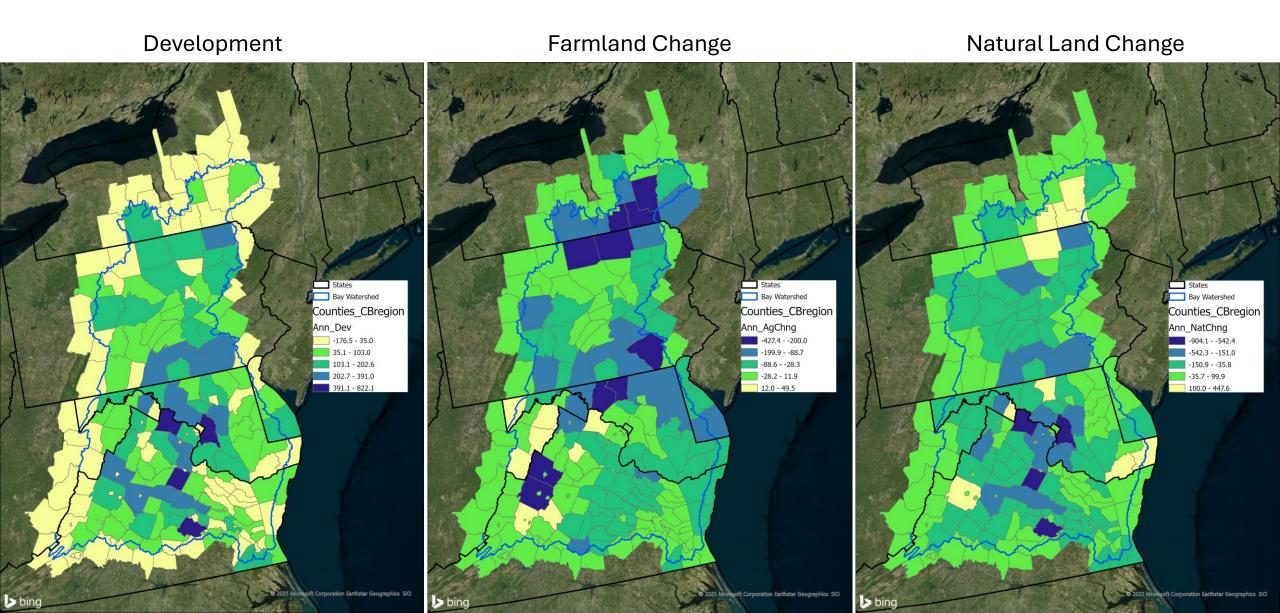


Components of Development

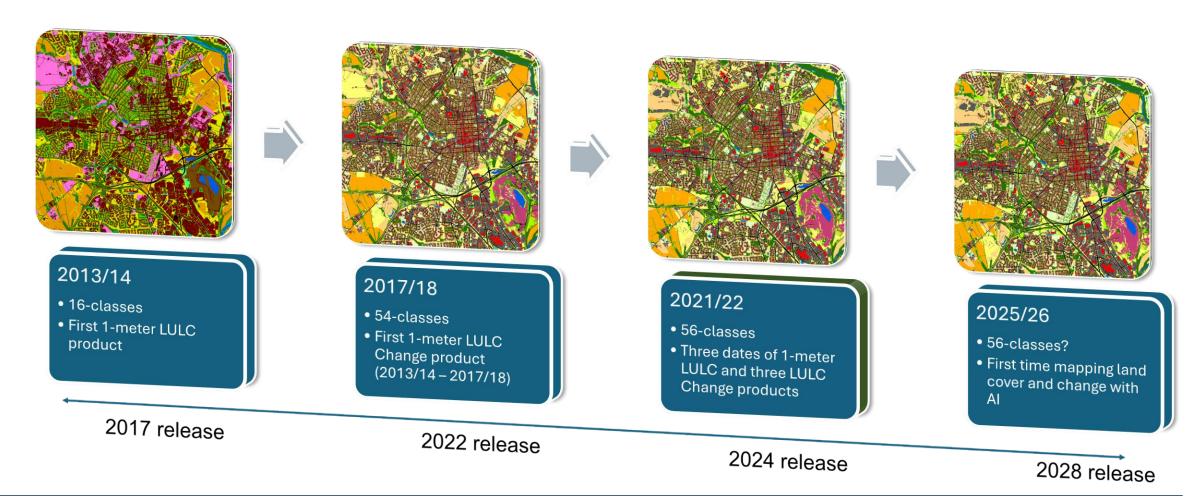




Where Lands have Changed (2013 – 2022)

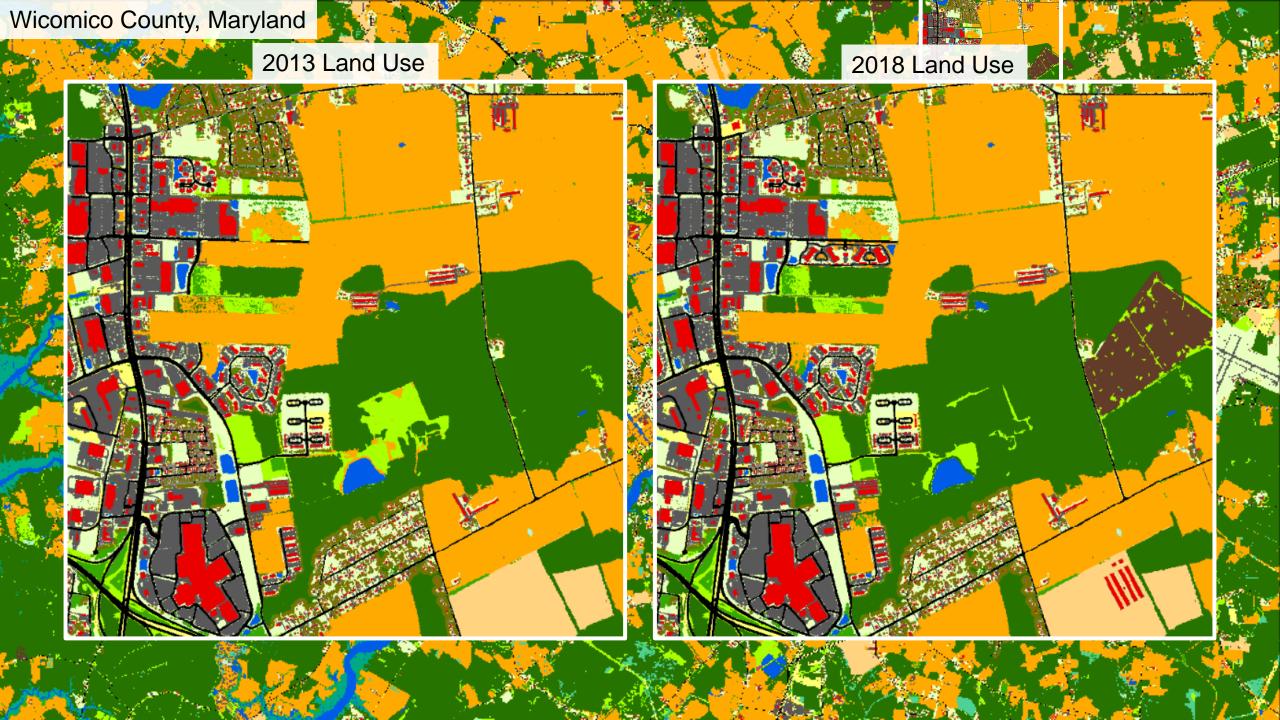


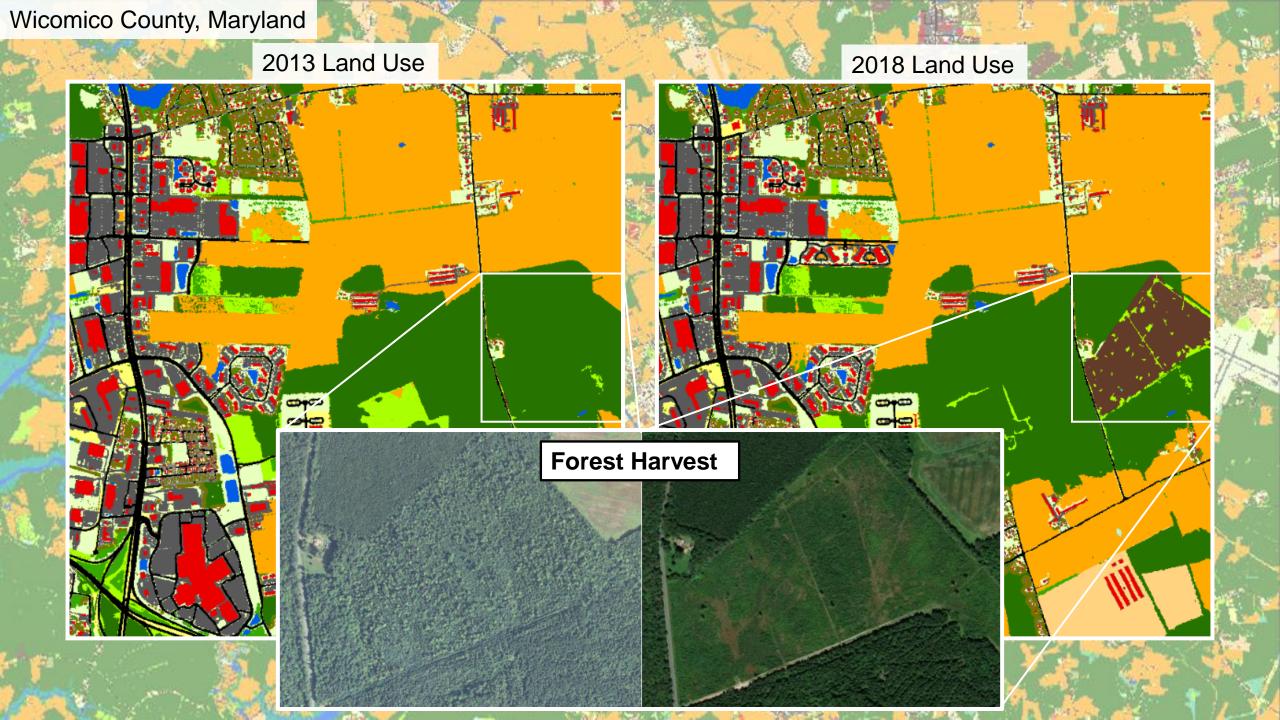
Chesapeake Bay Program Land Use/Land Cover (LULC) Project: A Brief History

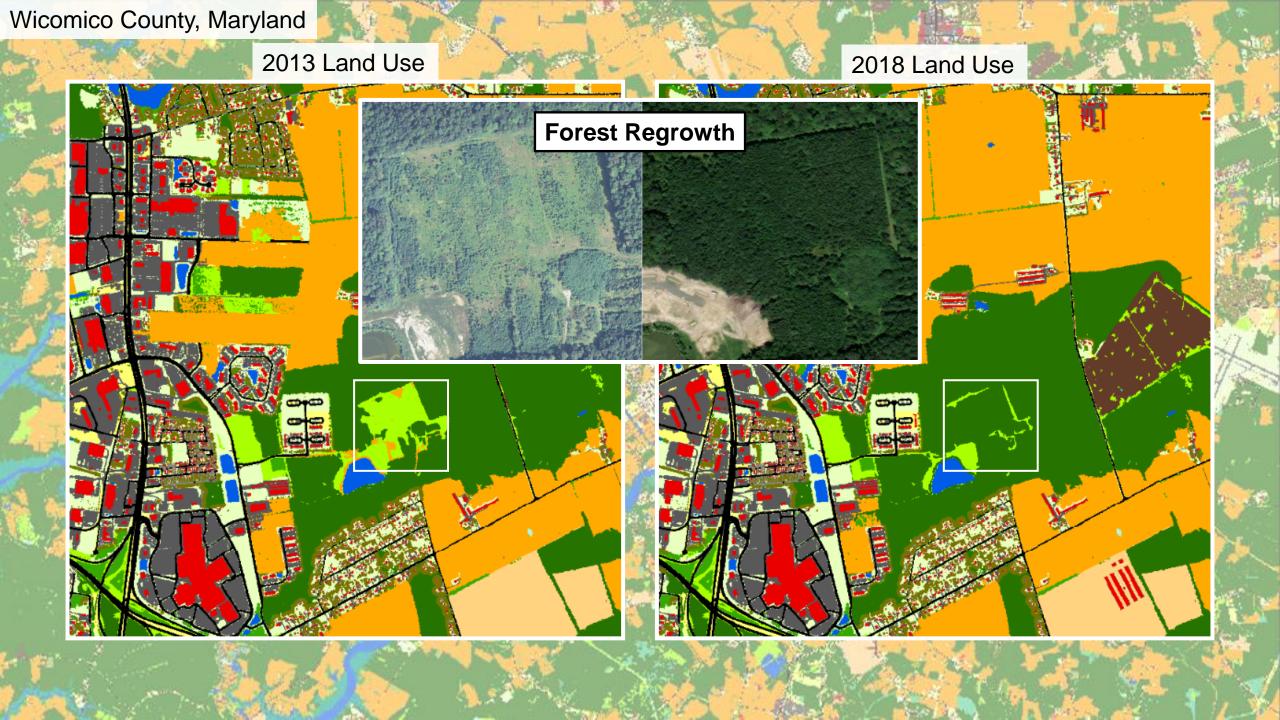


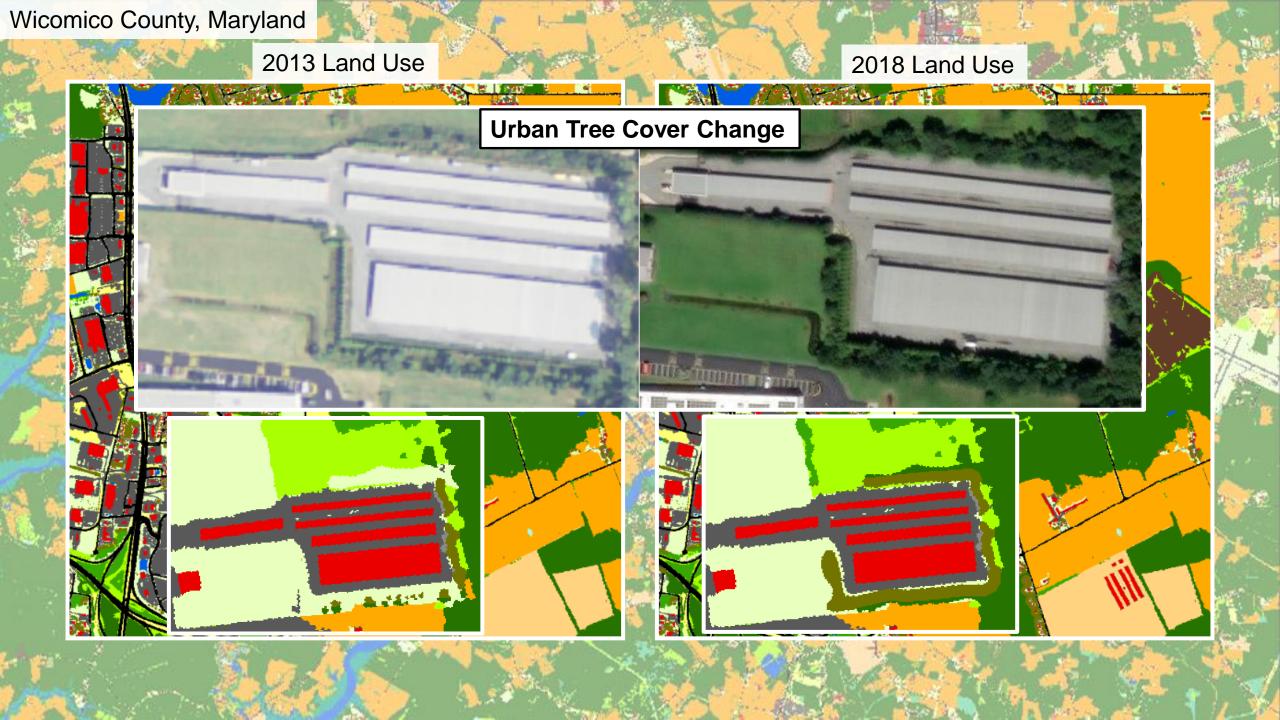
Land Use/Land Cover Monitoring

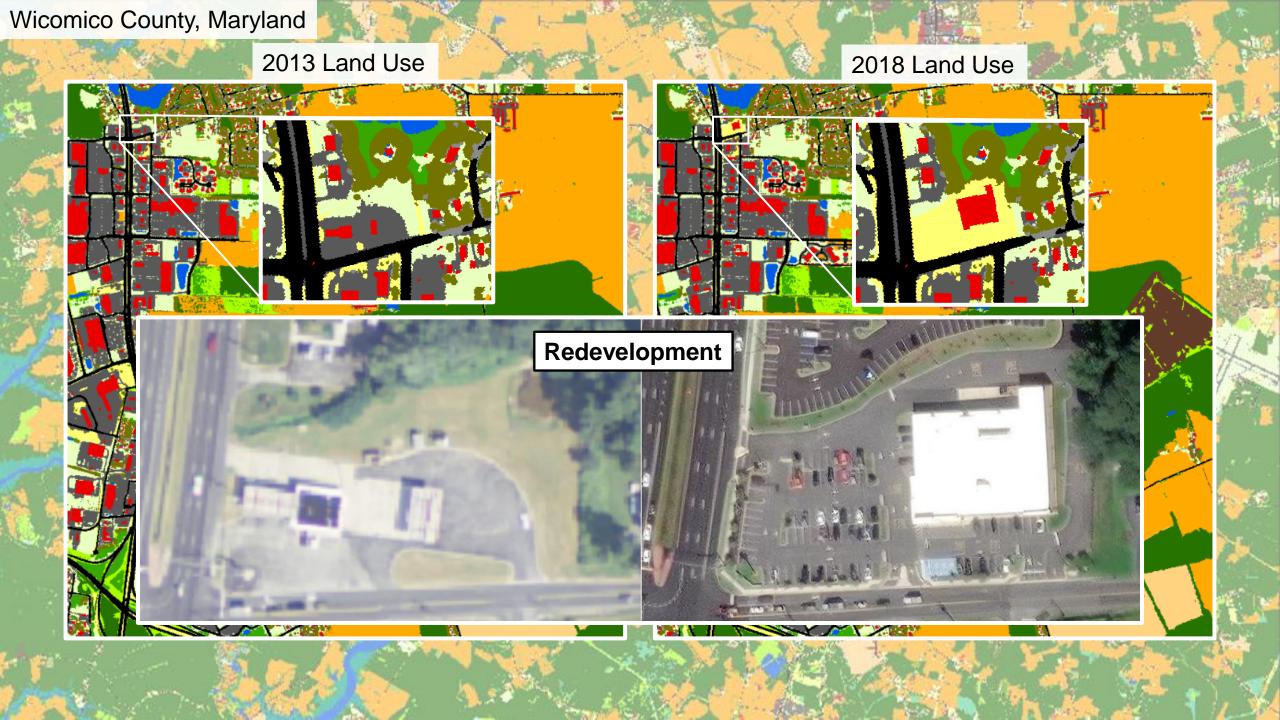
With each newly mapped year, the previous year(s) are remapped using the same methods for consistent change detection

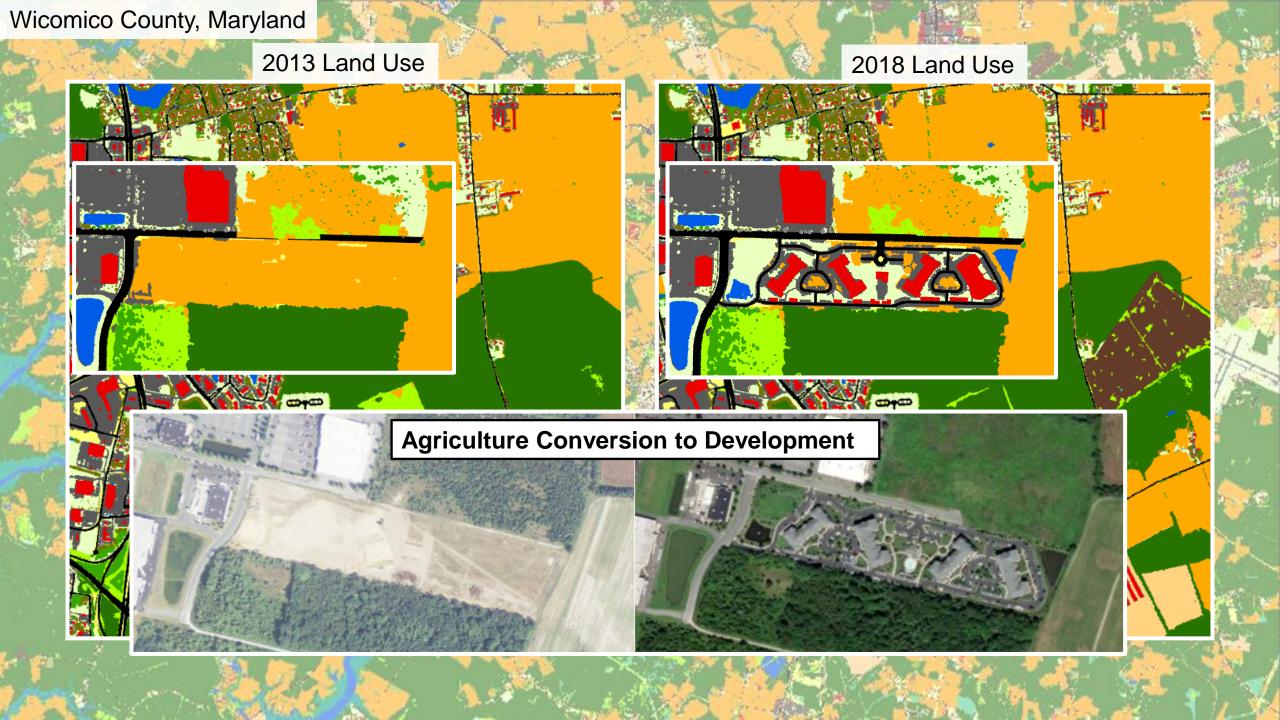


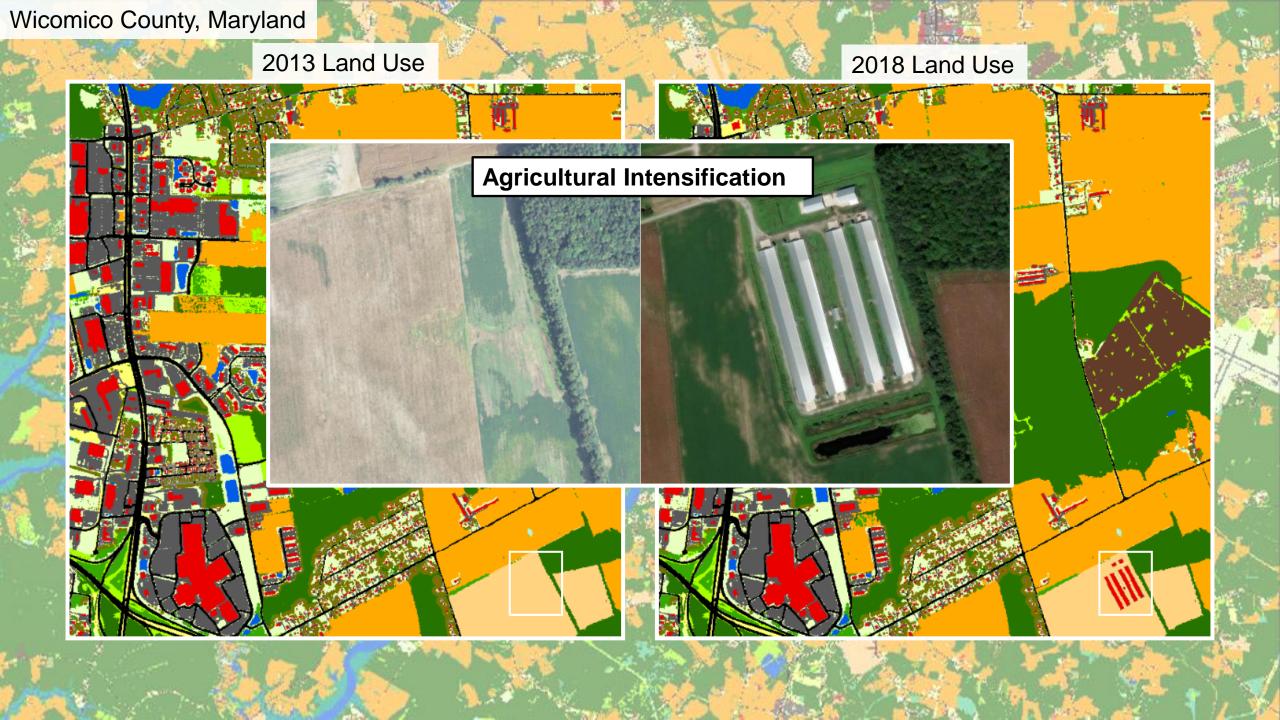










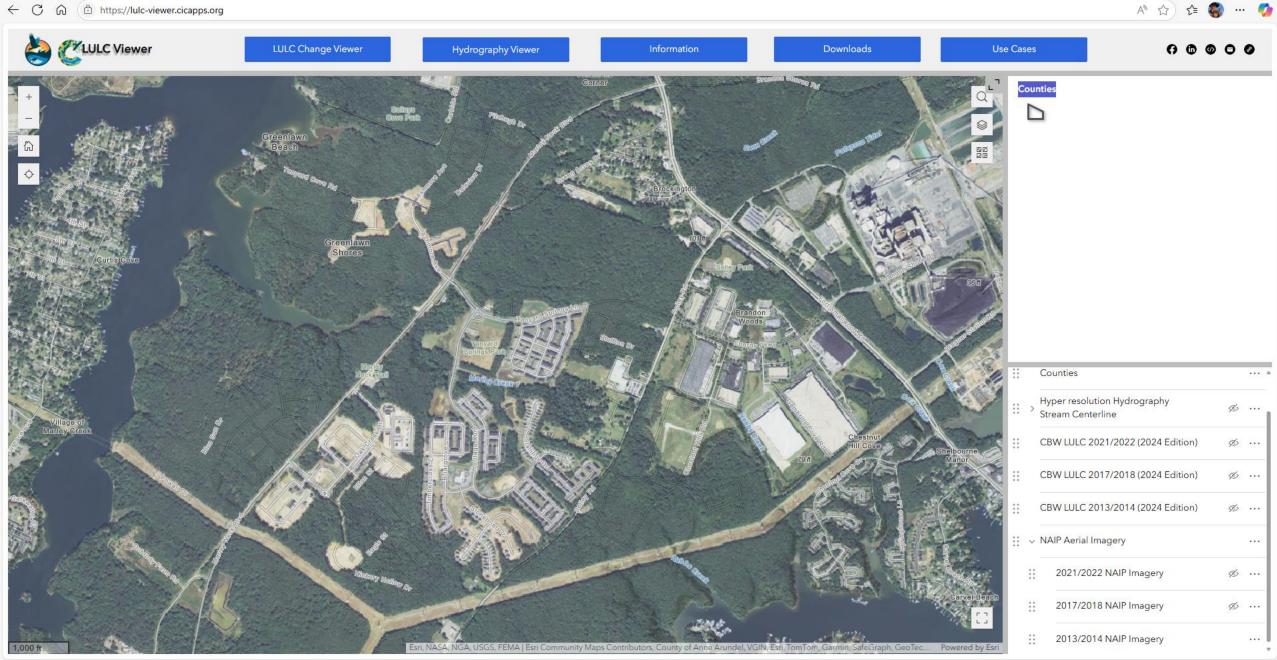


Land Use Change Matrices

(for full states, counties, and their portions in the Chesapeake Bay Watershed)

27,220 acres of forest in 2013/14 transitioned to impervious surfaces (roads, structures, parking lots, etc.) in 2021/22

2013-2021	ROAD	IMPS	IMPO	TCIS	TURF	TCTG	PDEV
ROAD	-	35.8	474.7	1,321.7	65.6	19.3	116.1
IMPS	15.7	1	1,374.6	819.9	420.3	56.9	584.1
IMPO	702.9	4,382.1	1	2,753.6	5,732.0	369.3	3,654.4
TCIS	2,108.1	3,338.2	3,081.4	•	2,341.0	25.4	759.0
TURF	169.4	1,504.3	15,565.5	12.9	-	12,374.3	6,141.8
TCTG	22.8	921.5	4,414.0	61.6	16,517.4	-	1,079.5
PDEV	2,152 5	6,401.8	10,022 /	24.1	18,712.5	1,620.1	-
FORE	2,335.9	5,410.9	19,473.5	36.5	19,967.4	14,427.4	27,813.0
FORO	522.5	1,117.5	1,068.6	43.1	14,694.5	9,952.2	7,128.8
HARF	92.4	274.4	1,589.1	0.9	41.6	58.1	611.7
NATS	1,005.8	3,300.3	14,536.7	11.4	12,173.5	2,450.4	8,519.8
CROP	448.5	3,625.5	10,413.9	1.3	399.1	214.0	1,722.4
PAST	269.7	1,725.9	7,577.9	1.9	296.5	368.2	1,123.6
EXTR	11.1	42.8	4.5	6.1	9.3	0.3	2,832.3
TDLW	3.0	8.7	82.9	0.1	-	-	-
RIVW	12.2	44.7	268.0	0.2	151.8	-	0.0
TERW	3.5	22.9	72.4	0.1	39.2	-	0.3
WATR	5.8	14.5	286.9	0.0	148.0	7.4	563.5
Increase	9,891.8	32,171.7	104,016.9	5,095.4	91,709.7	41,943.2	62,650.2
Decrease	2,566.1	3,852.2	24,525.5	15,040.4	52,599.8	29,968.0	95,441.5
Net Change	7,325.6	28,319.5	79,491.4	(9,945.0)	39,110.0	11,975.2	(32,791.3)

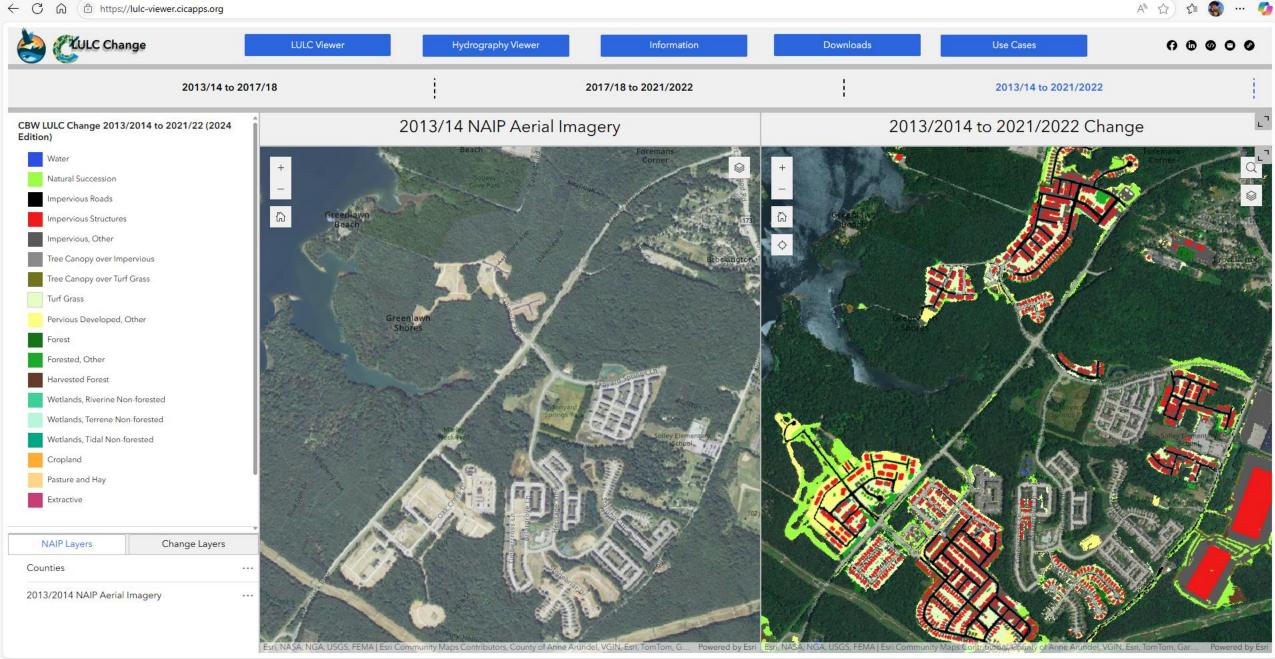


Ches Bay Land Use Viewer (https://lulc-viewer.cicapps.org/)

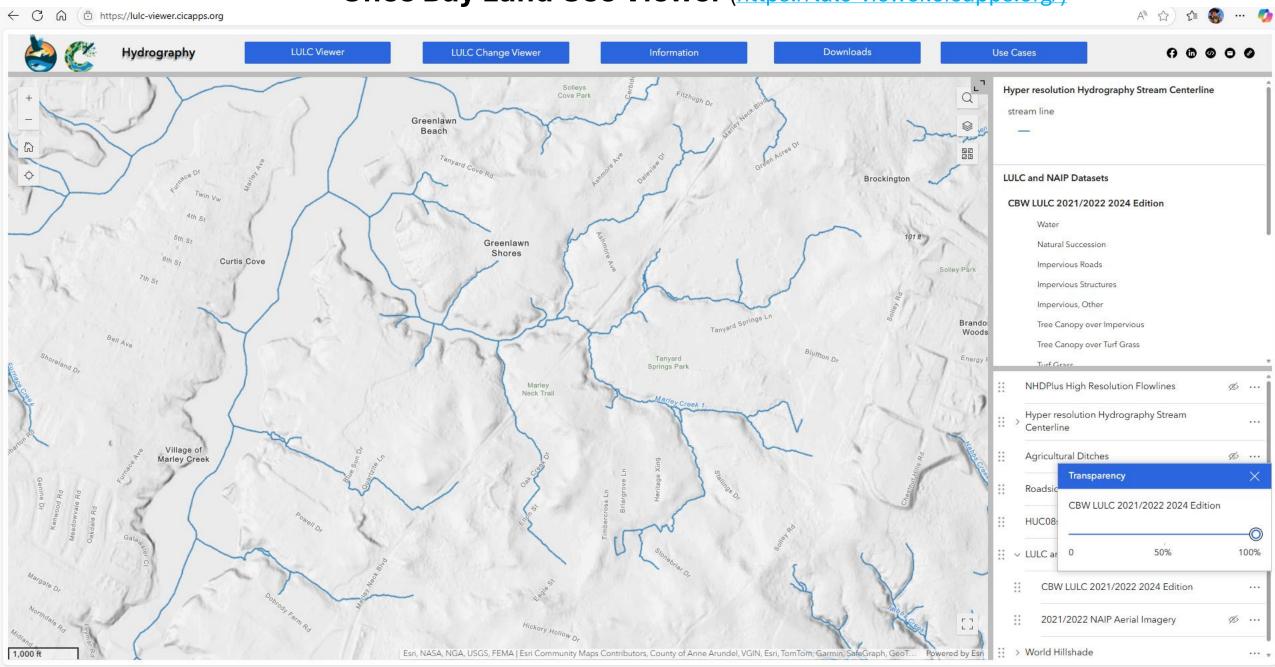








Ches Bay Land Use Viewer (https://lulc-viewer.cicapps.org/)



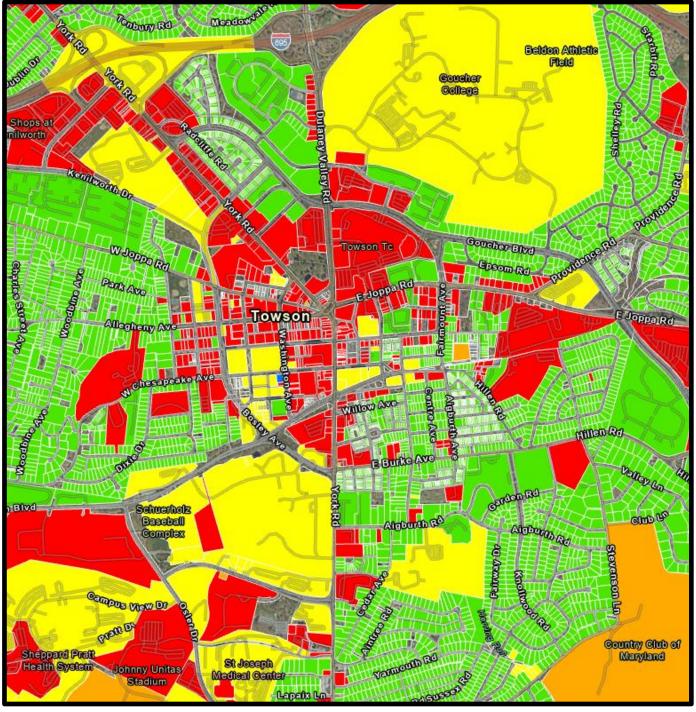
Ches Bay Land Use Viewer (https://lulc-viewer.cicapps.org/)



Parcel Data Attribution

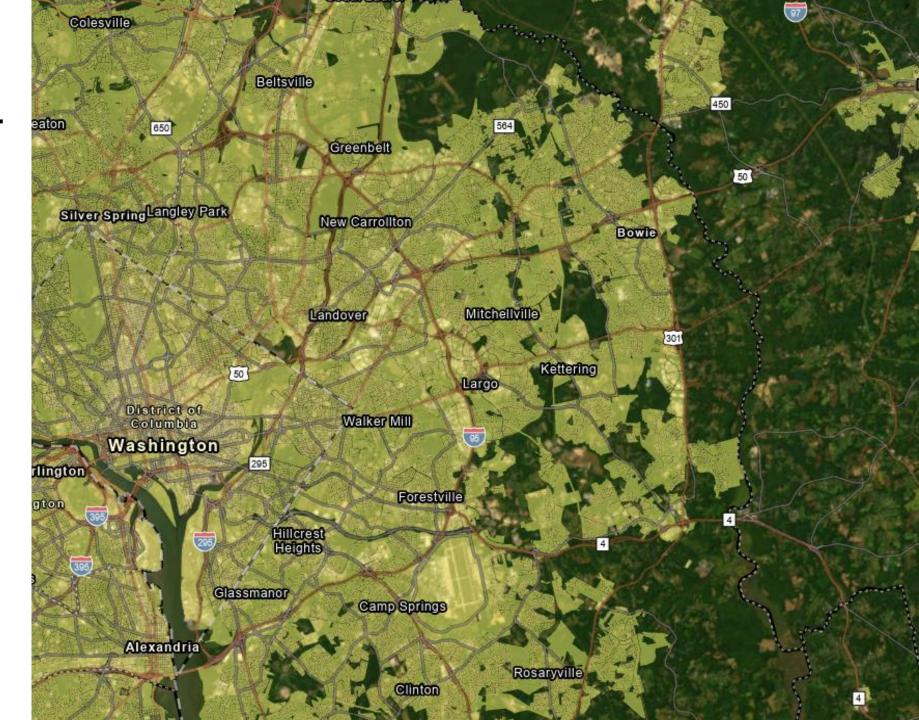
- All property parcels were acquired for CBW
- Areas of all 56 LULC classes were tabulated for all parcels
- Rule based classification was applied to classify parcels into 5 Residential/ Commercial categories
 - USPS Delivery Codes
 - · Commercial land uses from HIFLD and Overture
 - High resolution LULC





Mapping Sanitary Sewer Service Areas

Parcel-scale map of areas connected to sewer for all counties within or adjacent to the Chesapeake Bay watershed



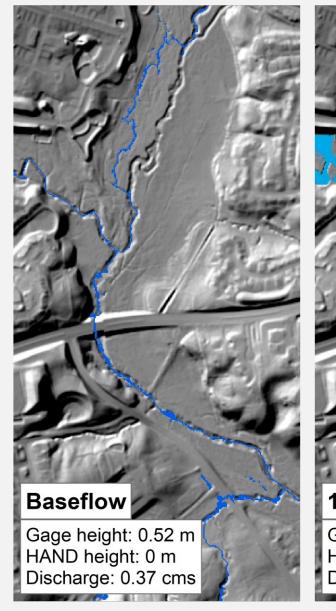
Anne Arundel County, MD

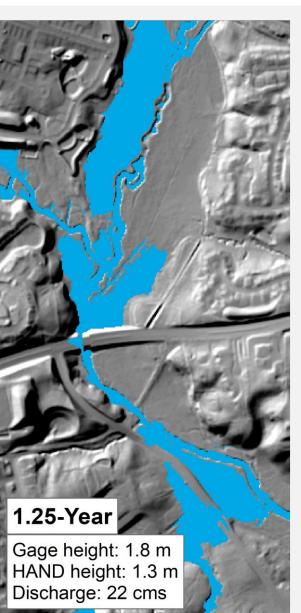
Mapping Septic Systems

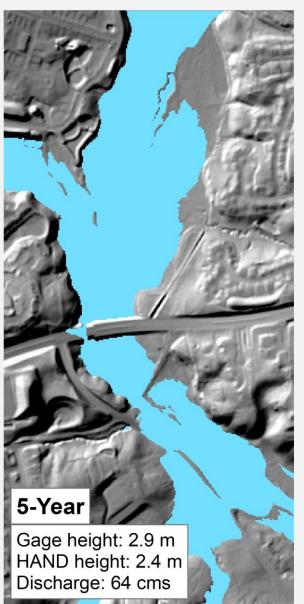
Parcel-scale map of septic footprint and septic point data for all counties within or adjacent to the Chesapeake Bay watershed

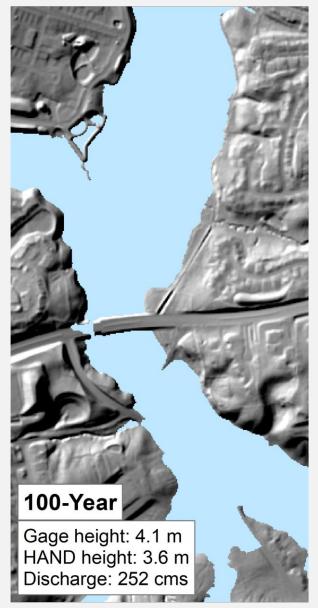
- = sewer service area
- = septic footprint
- = septic systems

Calibrated floodplain extent to various flood recurrence intervals using FACET Pilot Site: Northwest Branch Anacostia at Colesville, MD



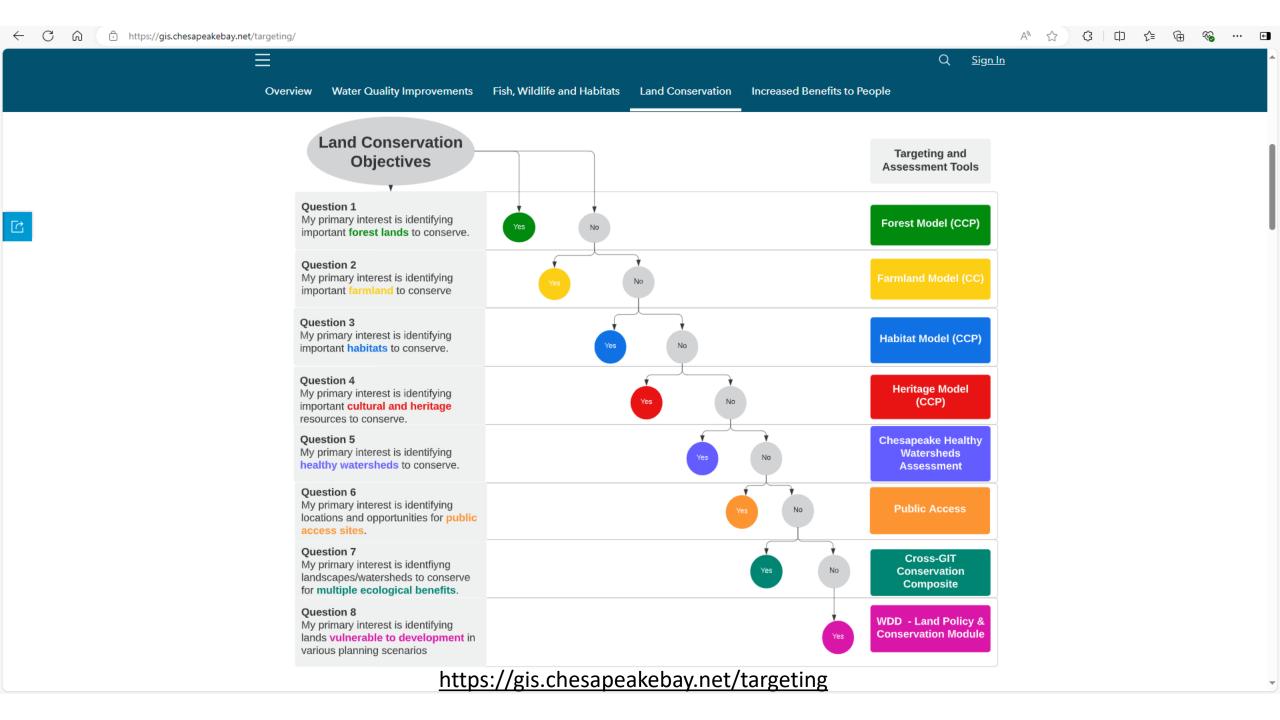


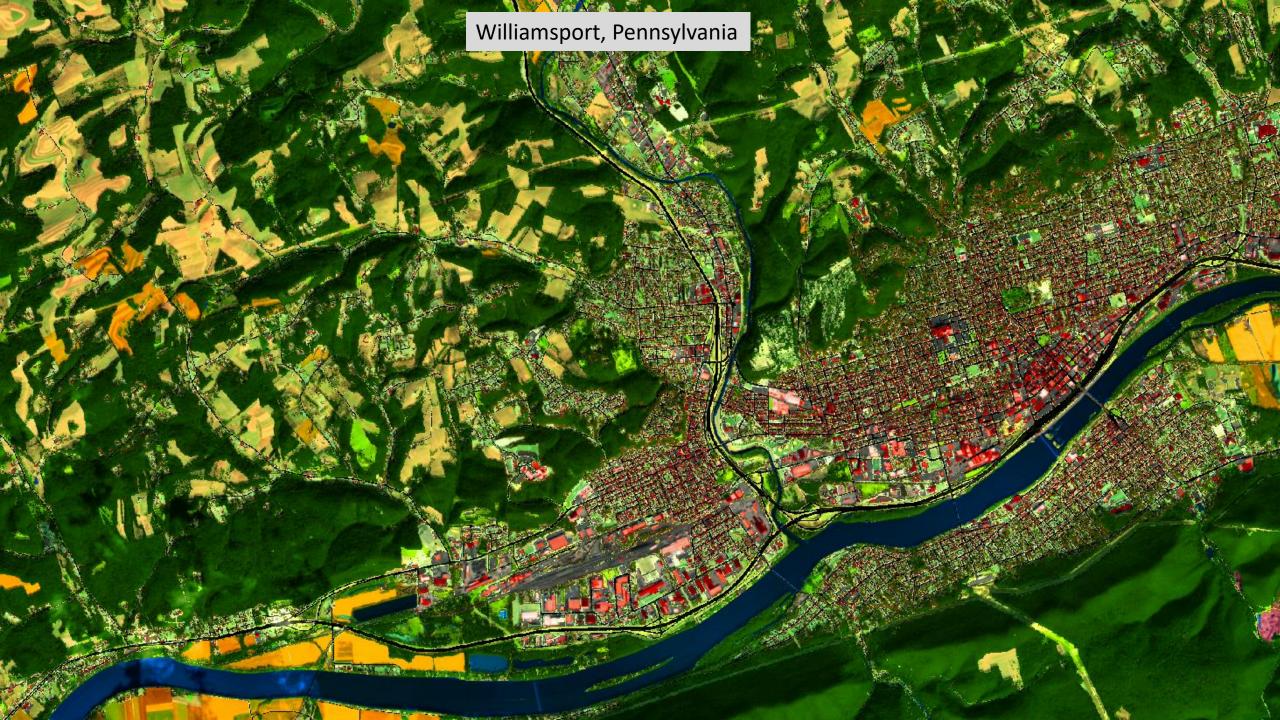


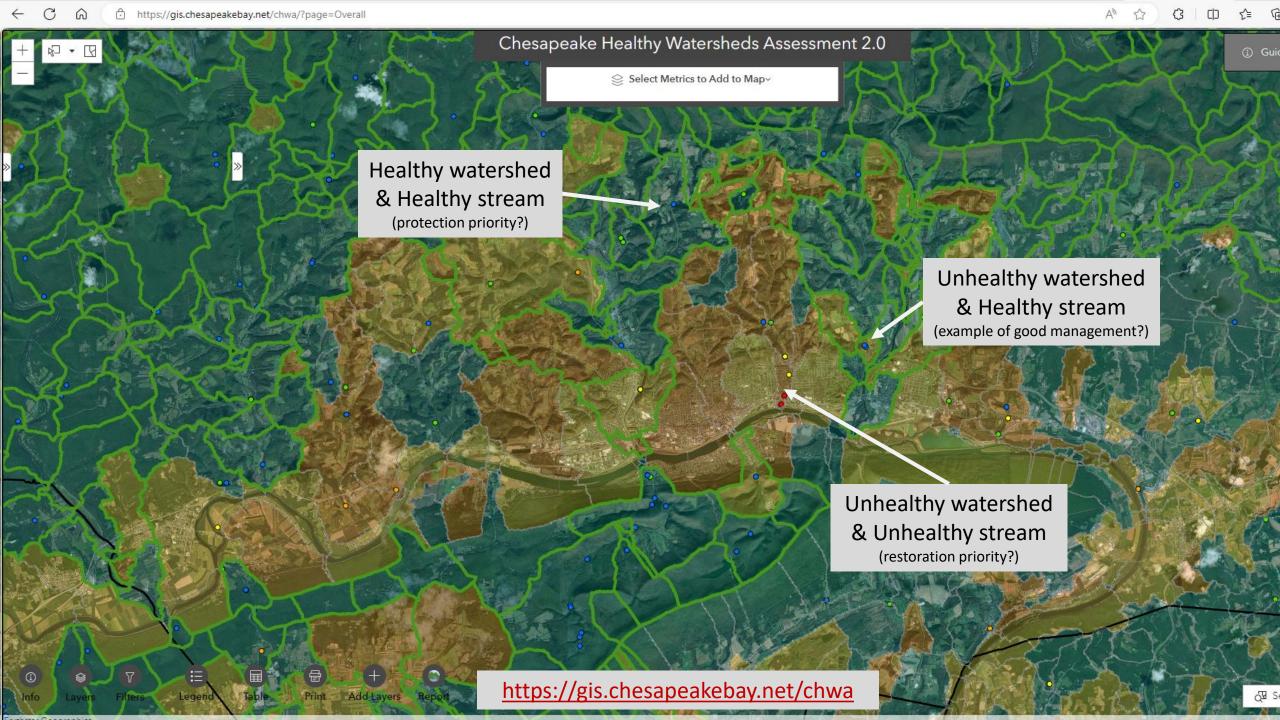






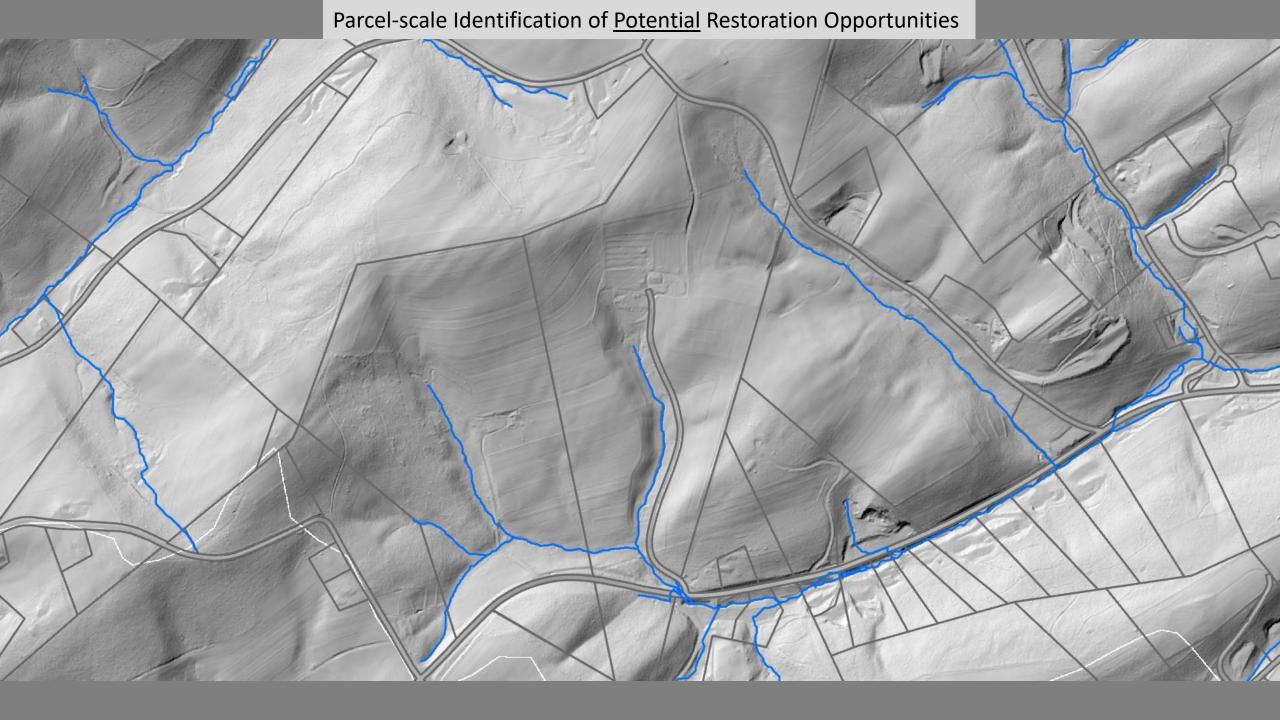






Parcel-scale Identification of <u>Potential</u> Restoration Opportunities





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