Chesapeake Bay High-Resolution Land Cover Project

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Chesapeake Conservancy
EXPLORE. CONSERVE. INNOVATE.

CONSERVATION INNOVATION CENTER
CHESAPEAKE CONSERVANCY

Our Mission


Connect
Innovation
Conserve
Restore
GRAND OPENING
GRAND OPENING

Precision Conservation

"Getting the right practices, in the right places,
at the right scale, and
making sure they are working"

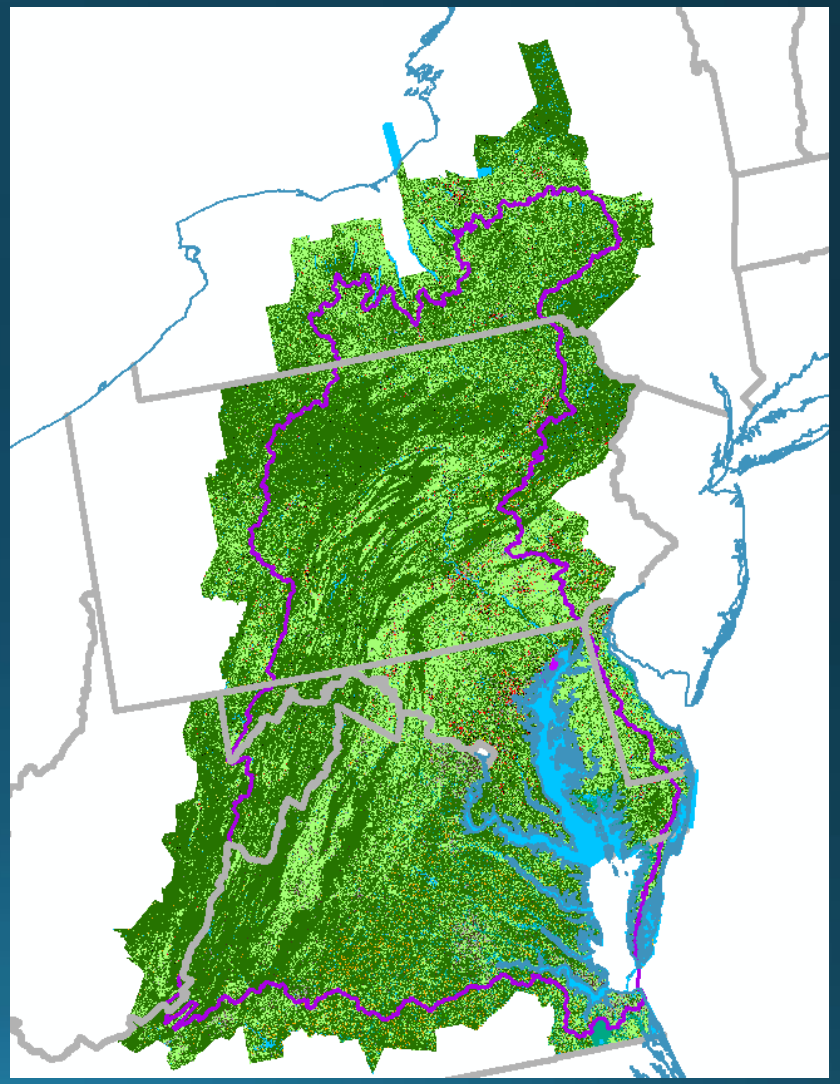
CBP Proposal

Objective 1: Land Cover Updates
- Partnering with University of Vermont

Objective 2: Hydrology & Ditches
- Partnering with UMBC

Objective 3: BMP Mapping & Tracking
- Partnering with Chesapeake Commons and Drexel University

Objective 4: General Geospatial Support

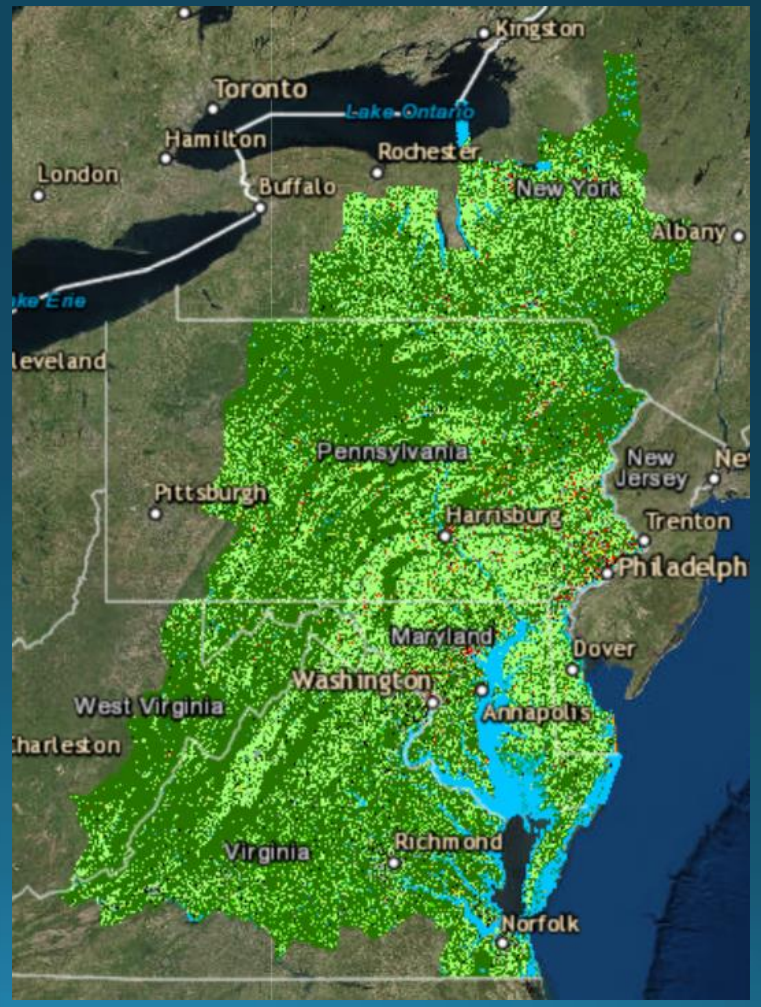


Objective 1: Land Cover Updates

- Stakeholder Outreach
  - Planimetric Data
  - Feedback/Input

bit.ly/LCFeedbackForm

bit.ly/CICLandCoverWebviewer



Data Motivation

TMDL- 2025 Pollution Reduction Goals

- Maryland
- Washington D.C.
- New York
- West Virginia
- Delaware
- Pennsylvania
- Virginia


NASA Satellite Imagery


York County Planning Commission

Partnership

Chesapeake Bay Program

Science. Restoration. Partnership.

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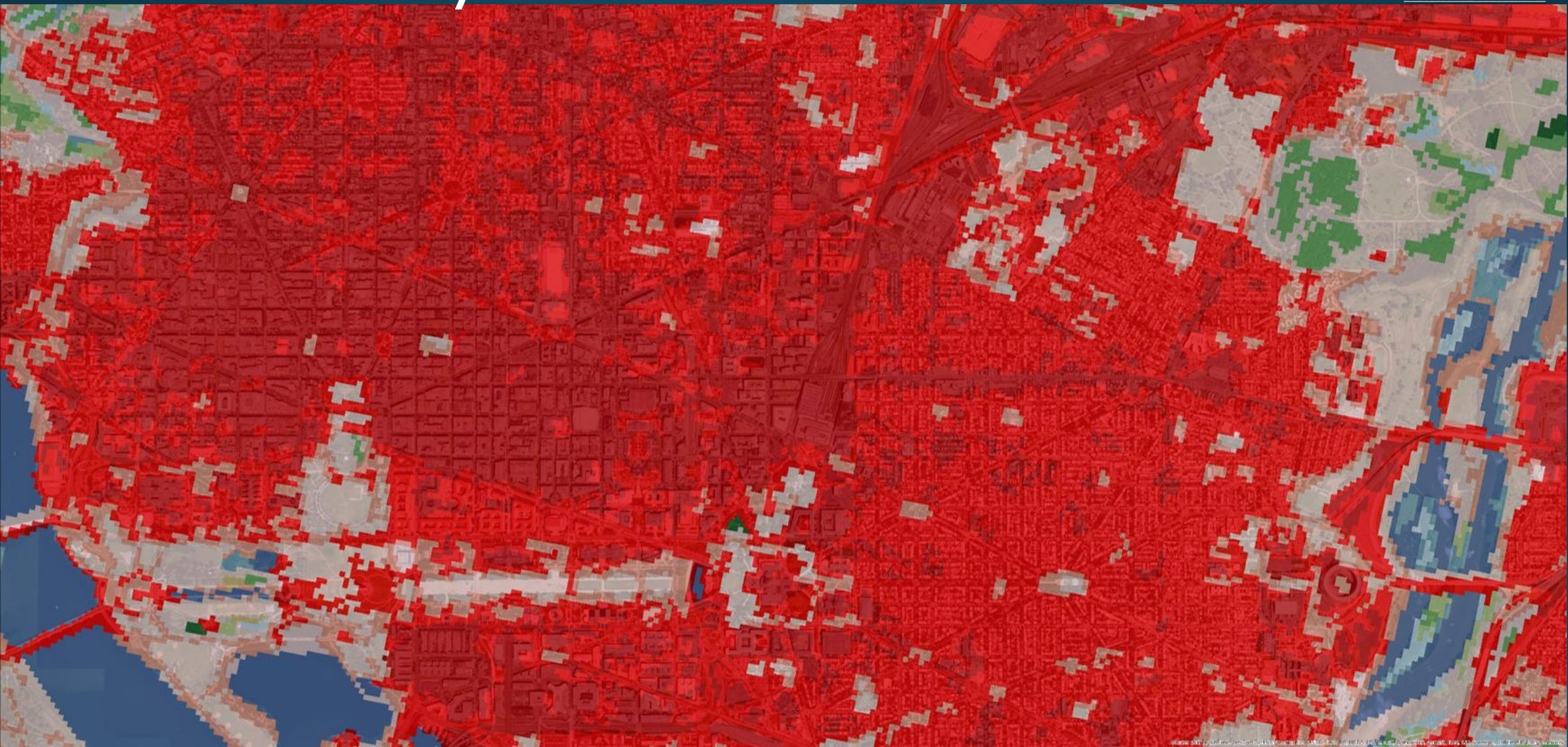
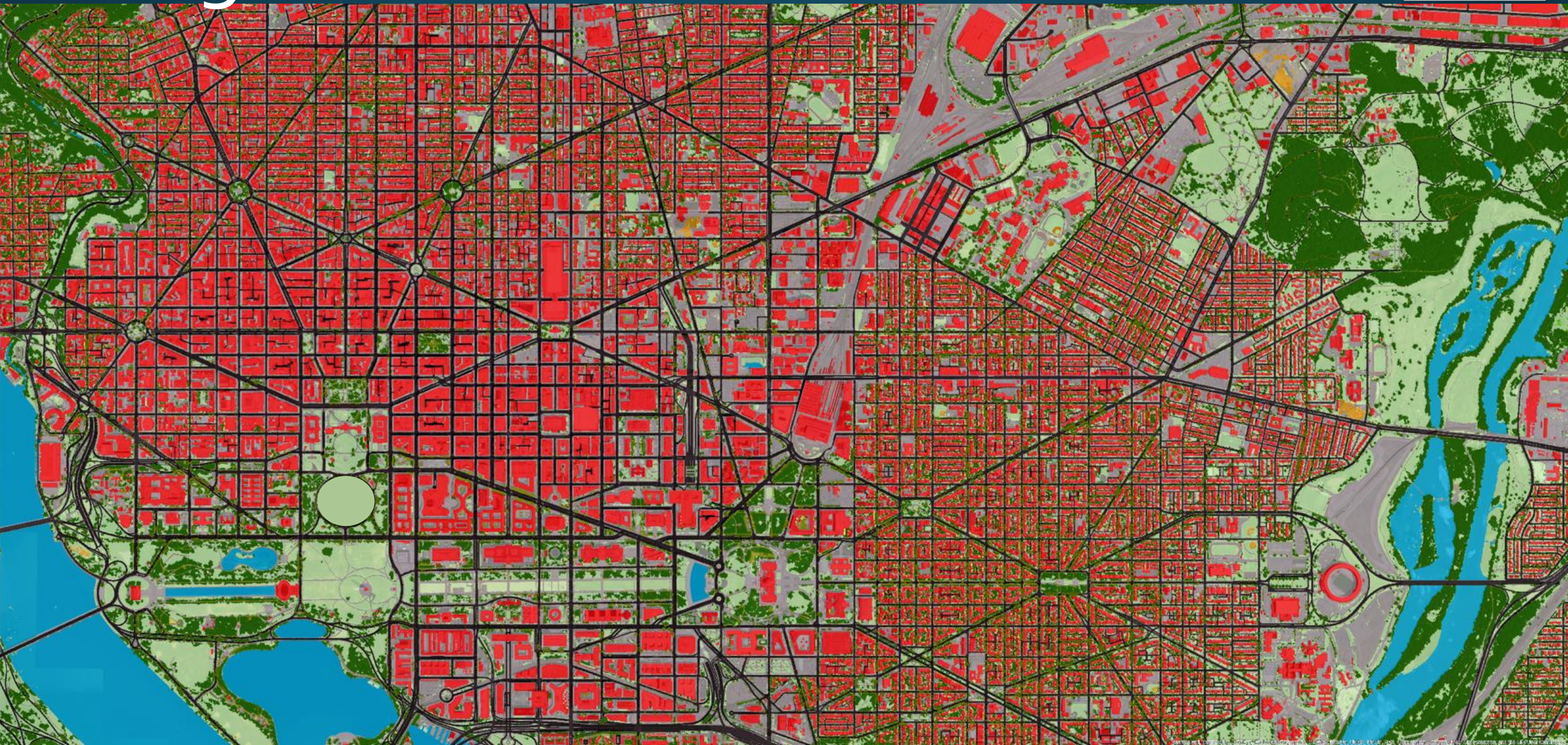
University of Vermont

Spatial Analysis Lab

Previously Available Data

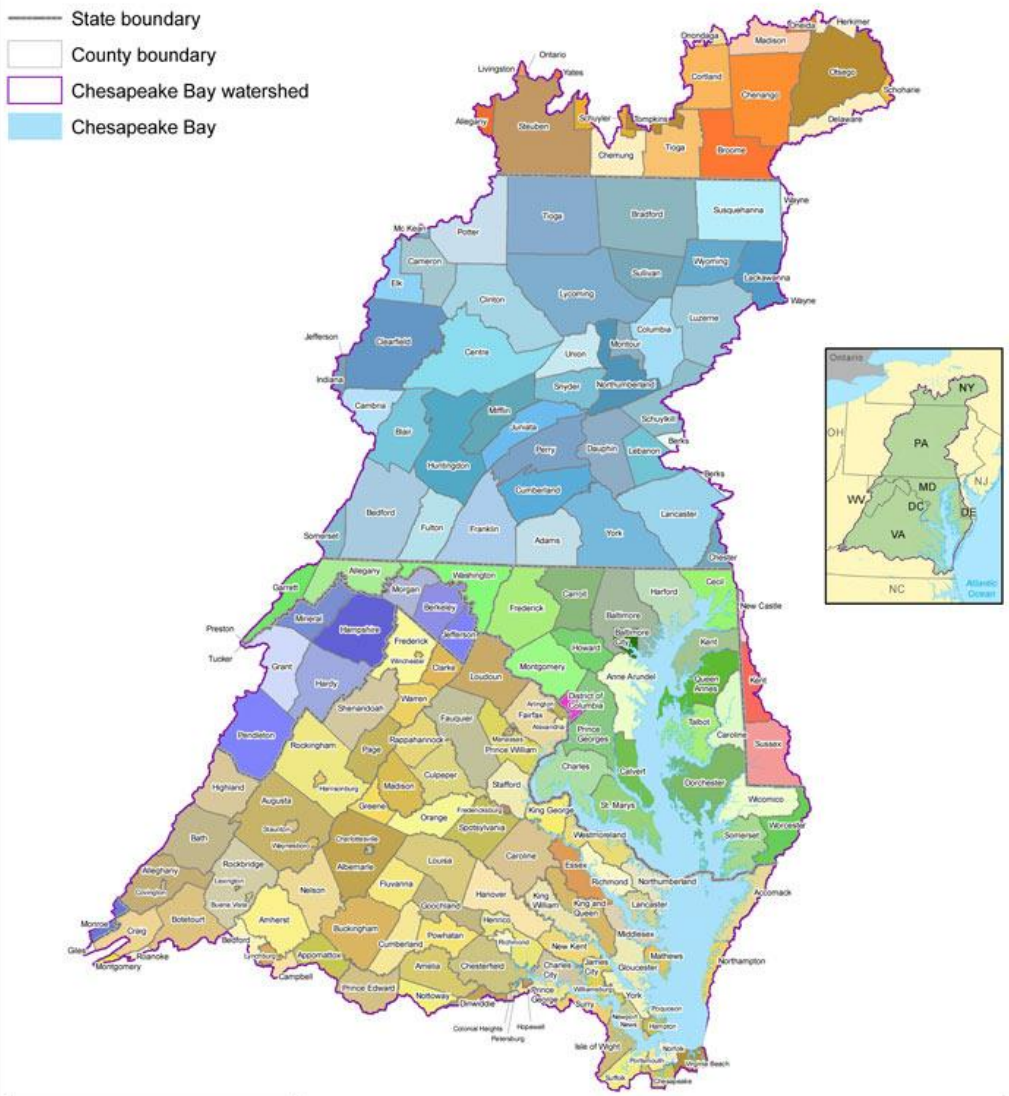


High-resolution Data



Chesapeake Bay Counties

Chesapeake Bay Program
A Watershed Partnership



Data Sources: Chesapeake Bay Program

For more information, visit *www.chesapeakebay.net*
Disclaimer: *www.chesapeakebay.net/termsofuse.htm*

Revised by HW, 7/22/08

UTM Zone 18N, NAD 83

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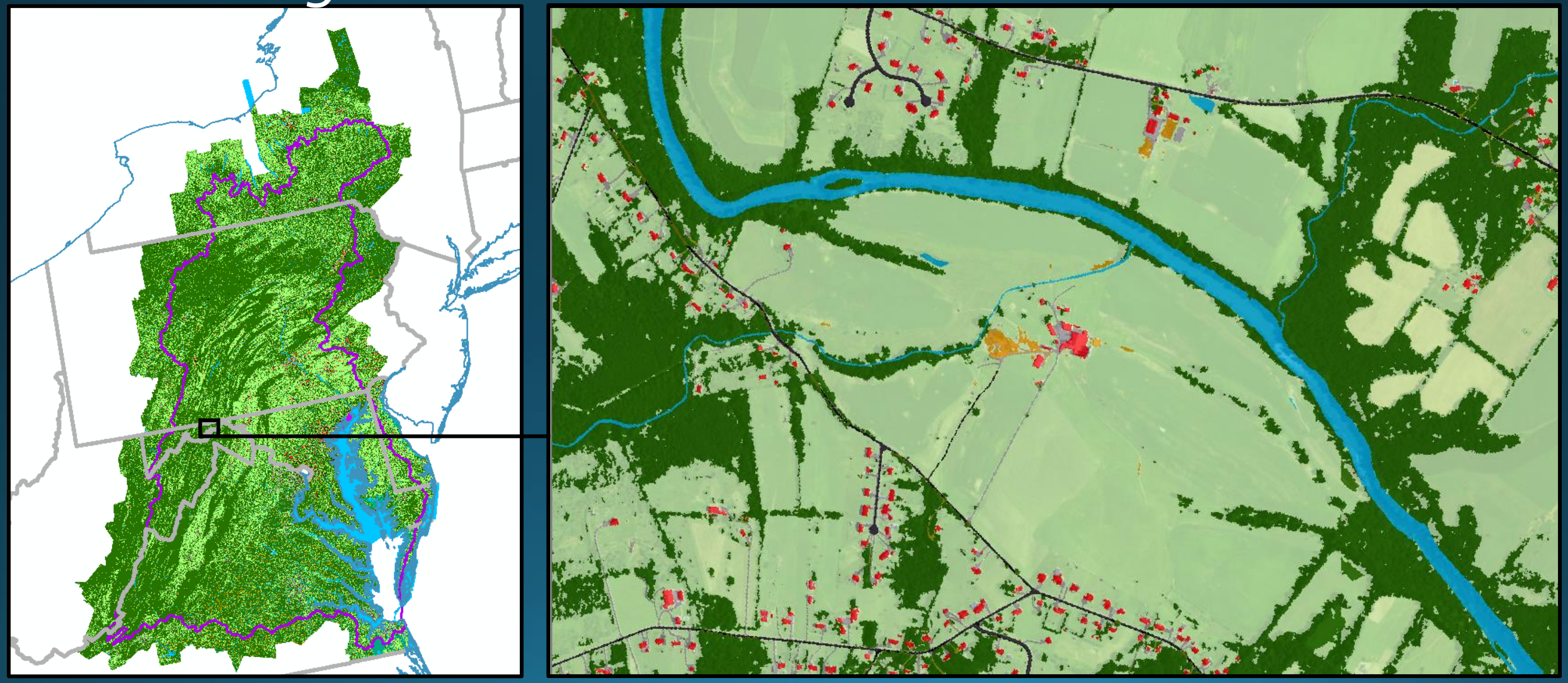
High-resolution Data

Planning at the Parcel Scale



Change Detection

University of Vermont
Spatial Analysis Lab

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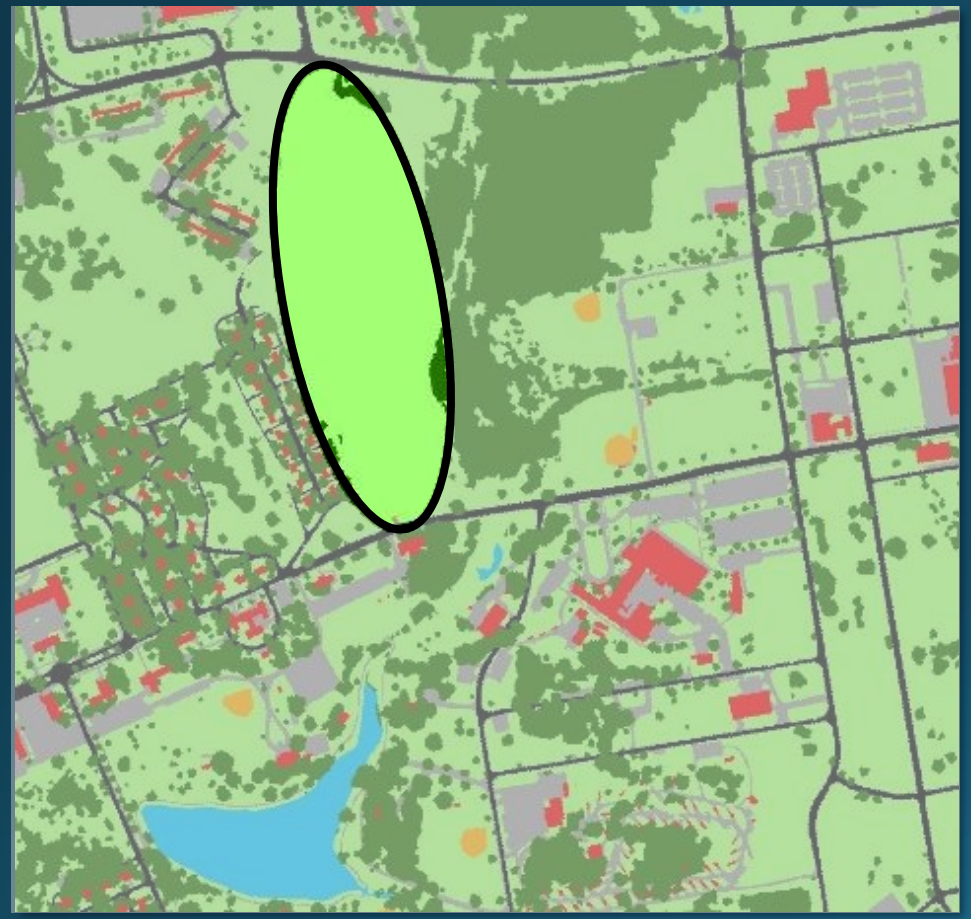
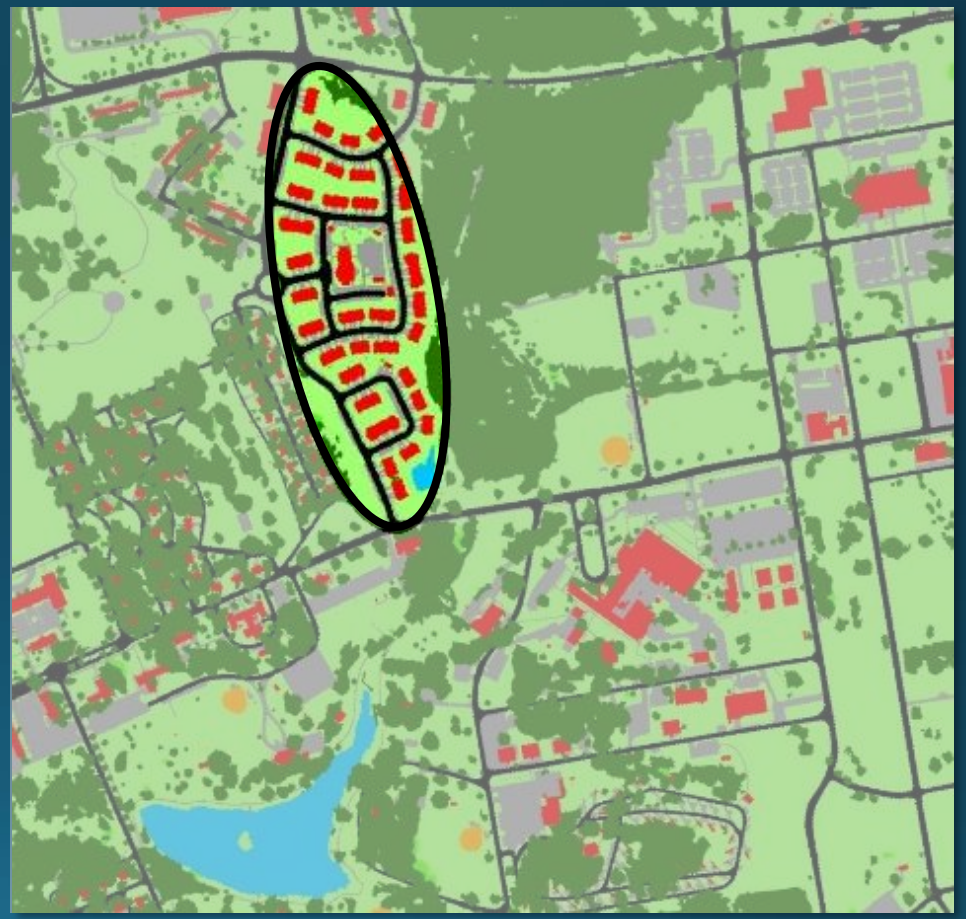


2007



2013

Land Cover Update

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Spatial Analysis Lab

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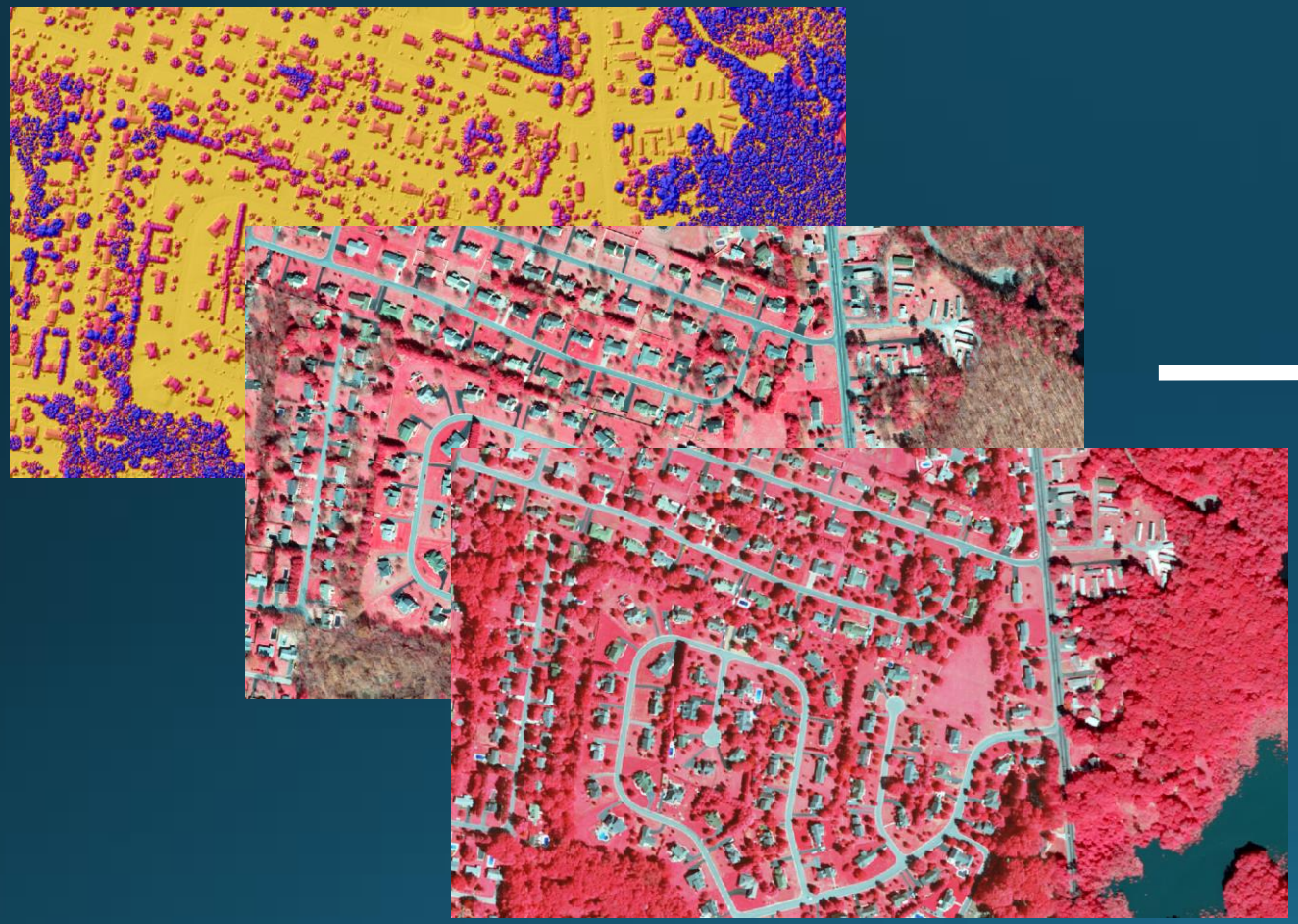

- Background
- Barren
- Low Vegetation
- Other Impervious
- Roads
- Scrub-Shrub
- Structures
- Tree Canopy
- Tree Canopy Over Other Impervious
- Tree Canopy Over Roads
- Tree Canopy Over Structures
- Water
- Wetlands (emergent)

Land Use Conversion

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2013 NAIP Imagery

2013 Land Cover

- Water
- Wetlands
- Forest
- Shrubland
- Herbaceous Vegetation
- Barren
- Structures
- Impervious
- Roads
- Tree Canopy over Structures
- Tree Canopy over Impervious Surfaces
- Tree Canopy over Impervious Roads

2013 Land Use

- Impervious, Road
- Impervious, Non-Road
- Tree Canopy over Impervious
- Water
- Tidal Wetlands
- Floodplain Wetlands
- Other Wetlands
- Forest
- Tree Canopy over Turf
- Mixed Open
- Fractional Turf (small)
- Fractional Turf (med)
- Fractional Turf (large)
- Fractional Impervious
- Turf Grass
- Agriculture

Planimetric Data

Integrate county planning data

- Parcel Data
- Local Land Use Data
- Building Footprints
- Street Centerlines
- Zoning Data
- Etc…

Why planimetric enhancement?

Purple: Most updated county buildings dataset
Red: Buildings classified from our remote sensing techniques

Use Cases

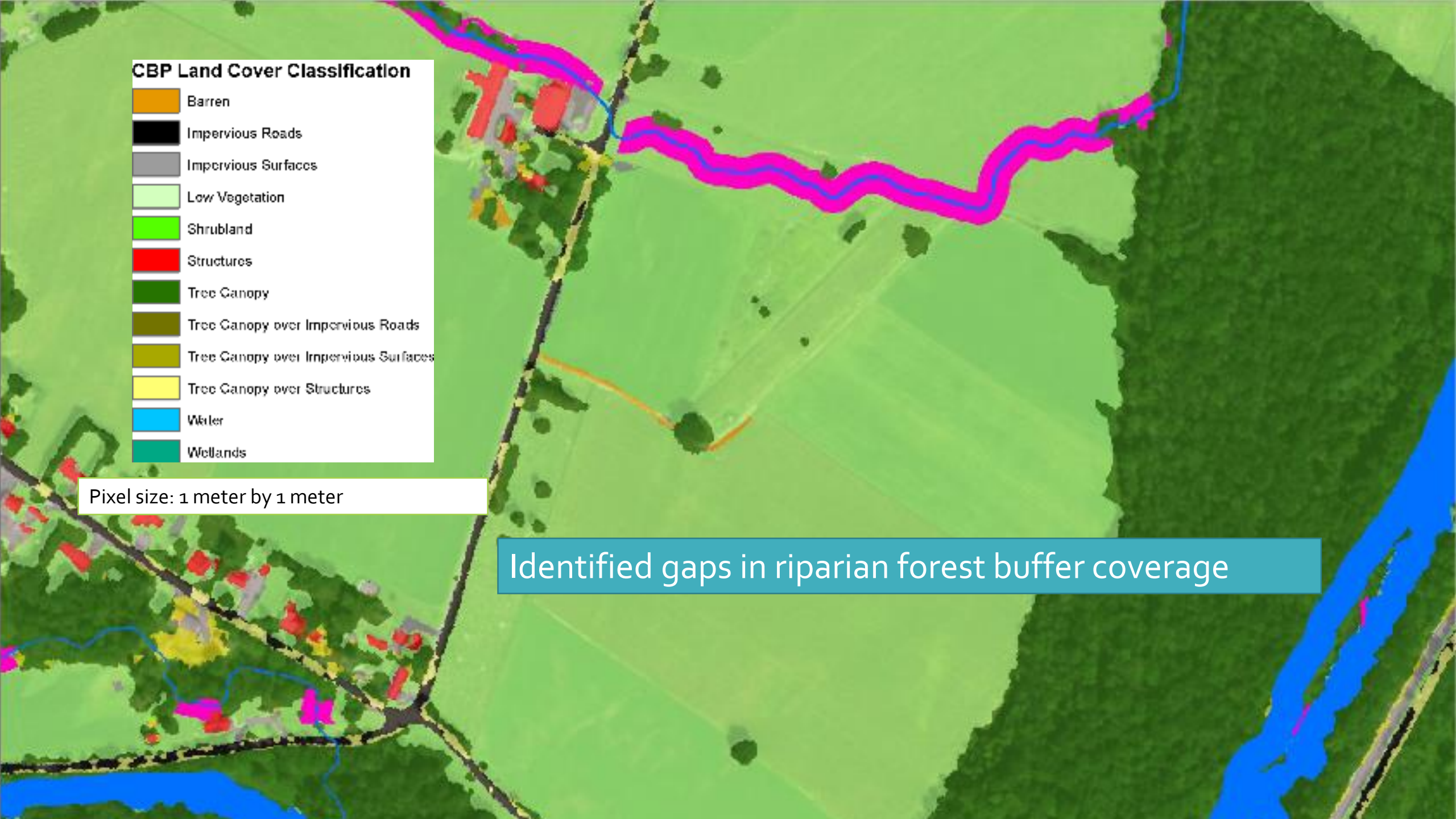
Lidar Flow Path Mapping

Lidar Flow Path Mapping

Better data is only useful if it can be harnessed to inform better projects

Goal: Identify priority locations for BMP implementation

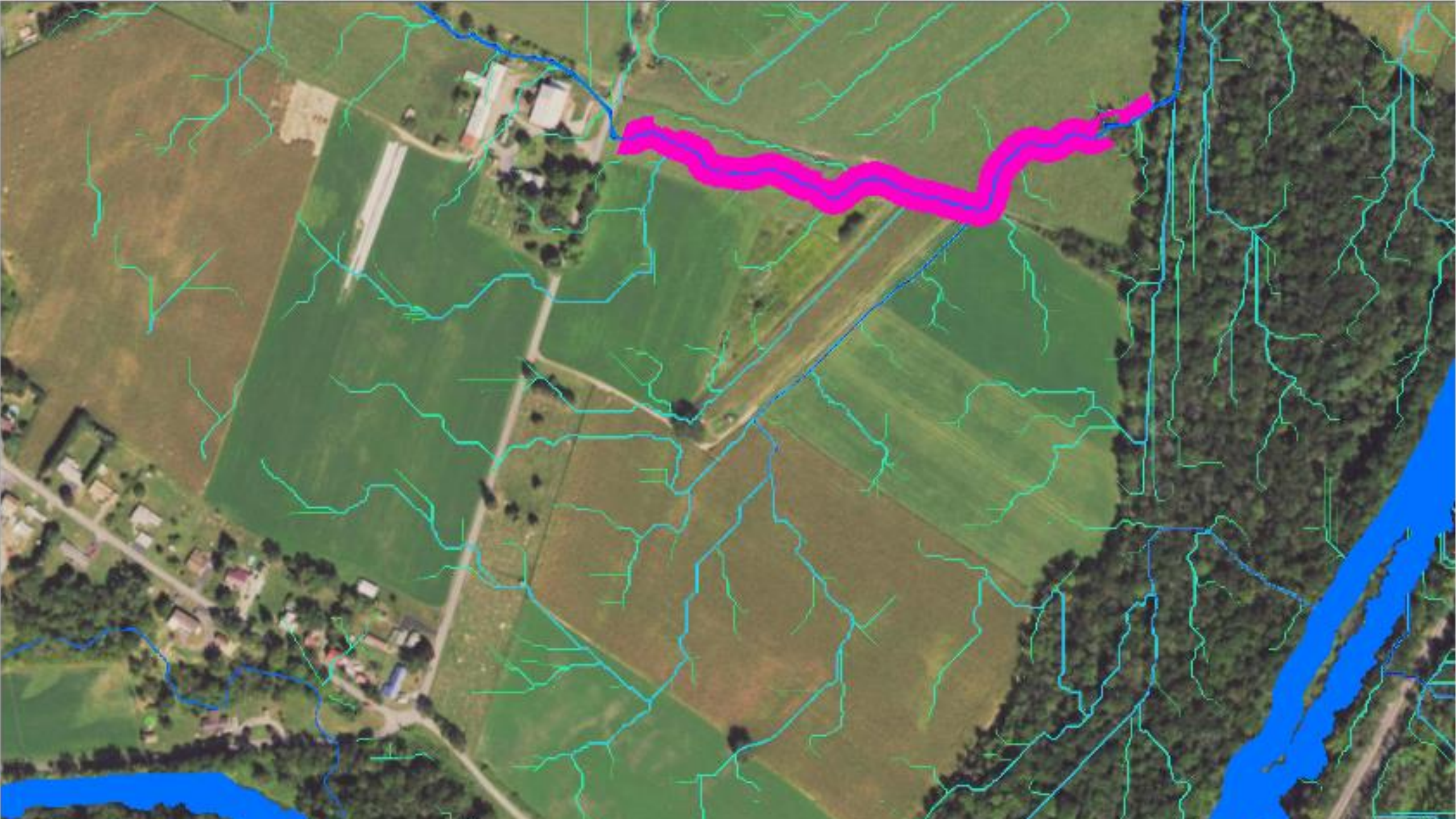
High Resolution Land Cover & Concentrated Flow Paths

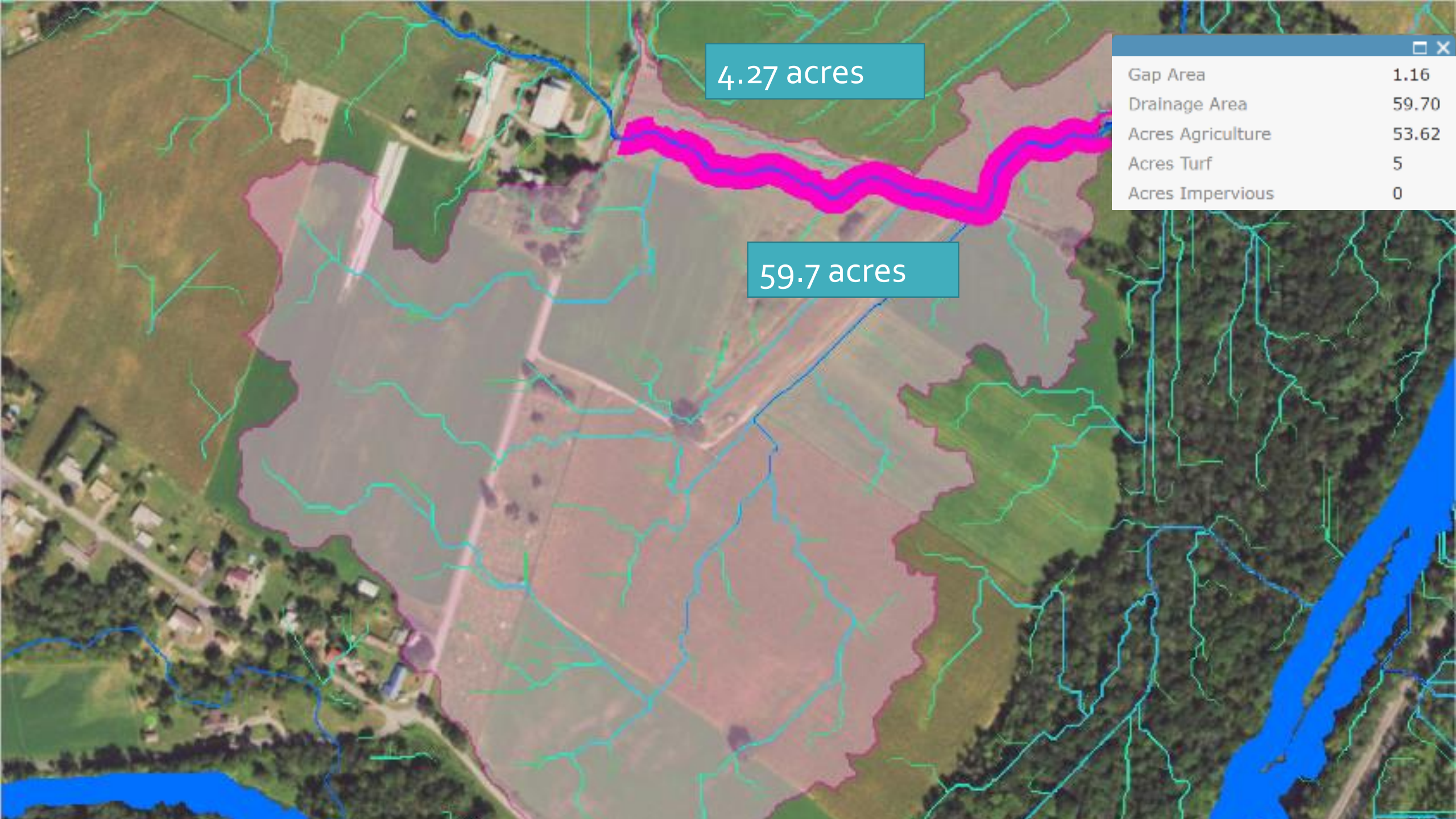


Pixel size: 1 meter by 1 meter

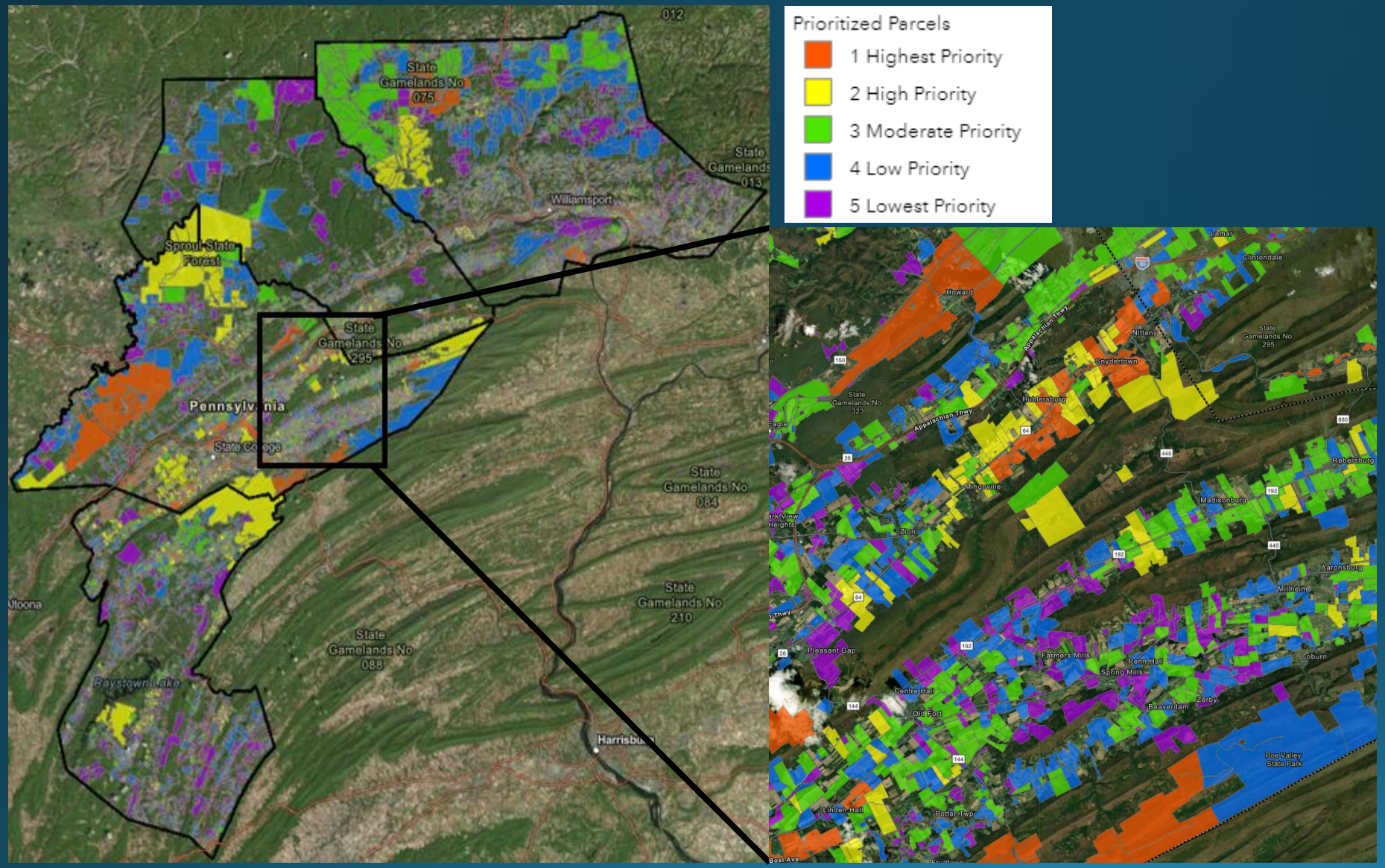
Identified gaps in riparian forest buffer coverage

Compare restoration opportunity areas




4.27 acres
59.7 acres
Gap Area 1.16
Drainage Area 59.70
Acres Agriculture 53.62
Acres Turf 5
Acres Impervious 0

Assessing the landscape



Criteria used in prioritization:

- Area of ROA
- Area of UDA treated
- LC/LU in UDA
- Proximity to quality streams
- Other environmental variables…

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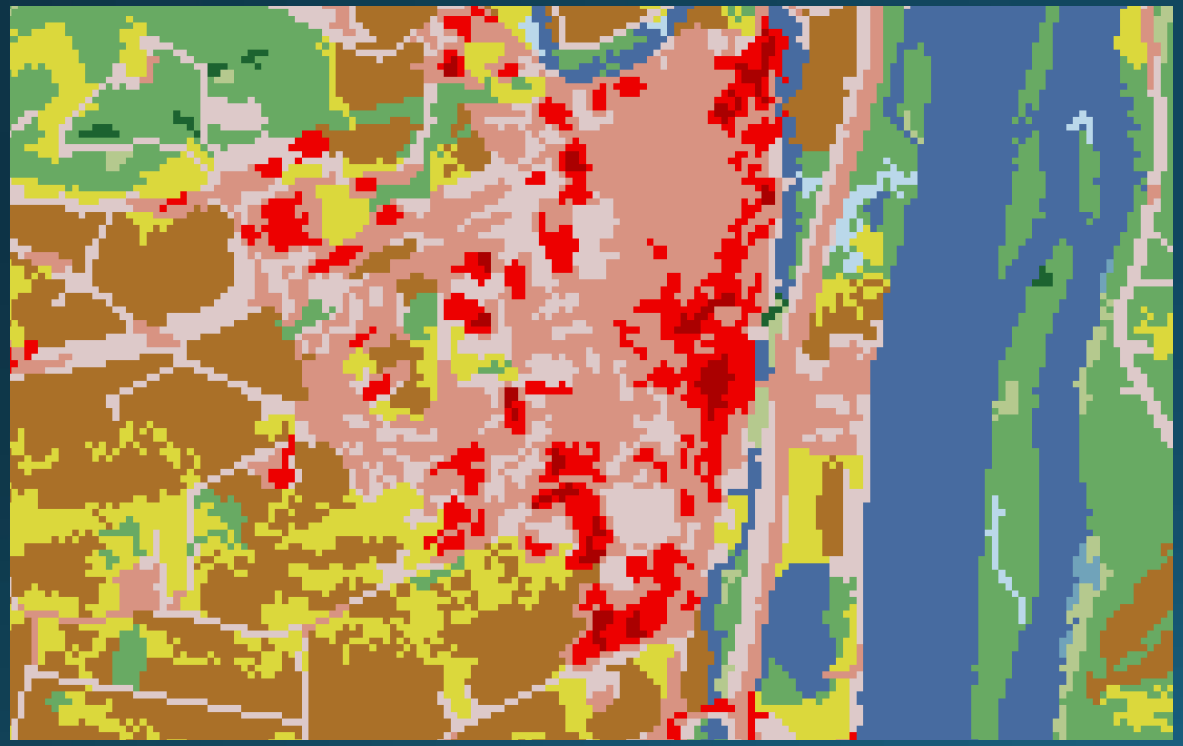
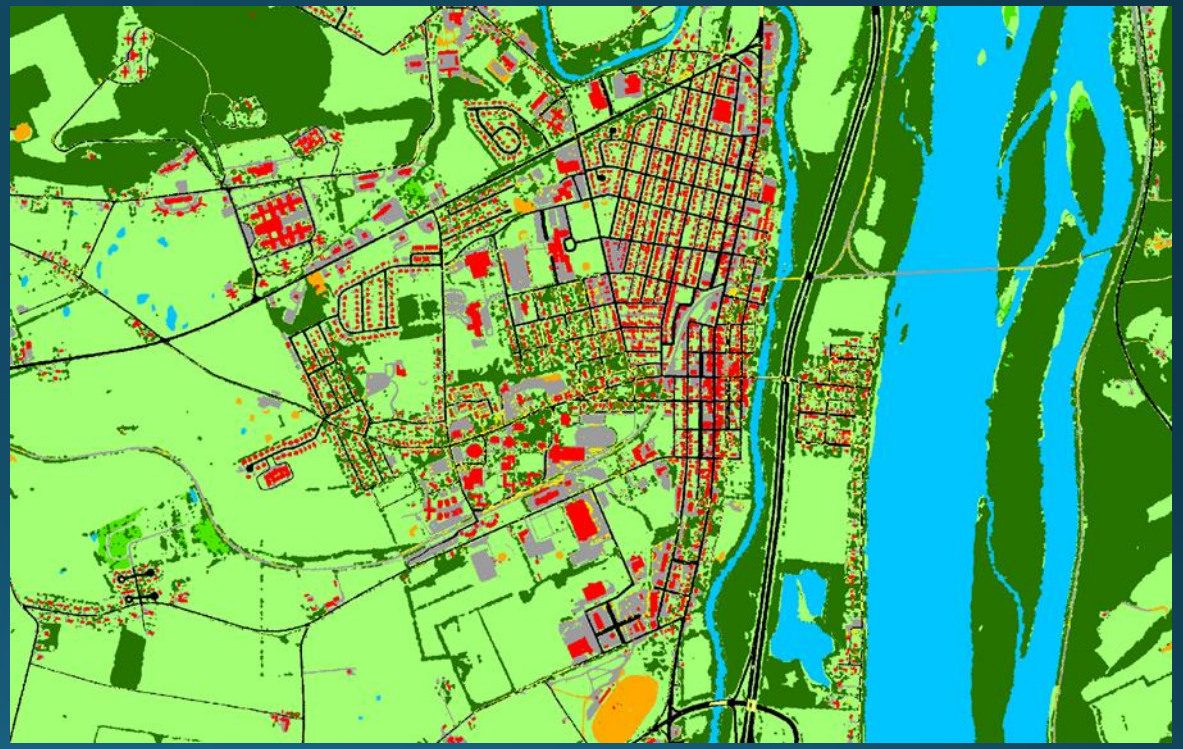
bit.ly/CICLandCoverWebviewer





More Information

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- Conservation Innovation Center
  conservationinnovationcenter.org
- Chesapeake Bay Land Cover
  conservationinnovationcenter.org/land-cover-data-project
- Pennsylvania Case Study – Conservation Opportunities Analysis
  envisionthesusquehanna.org/precision-conservation-data-and-tools
- Pennsylvania Case Study – Restoration Reporting
  restorationreports.com
- Maryland Case Study – Watershed Delineation Tools
  chesapeakeconservancy.org/apps/ConservationToolbox
  Watershed Delineation -> "Zoom to Chester"
- Maryland Case Study – Prince George's County Stormwater Prioritization Tool
  chesapeakeconservancy.org/apps/PG_Stormwater

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