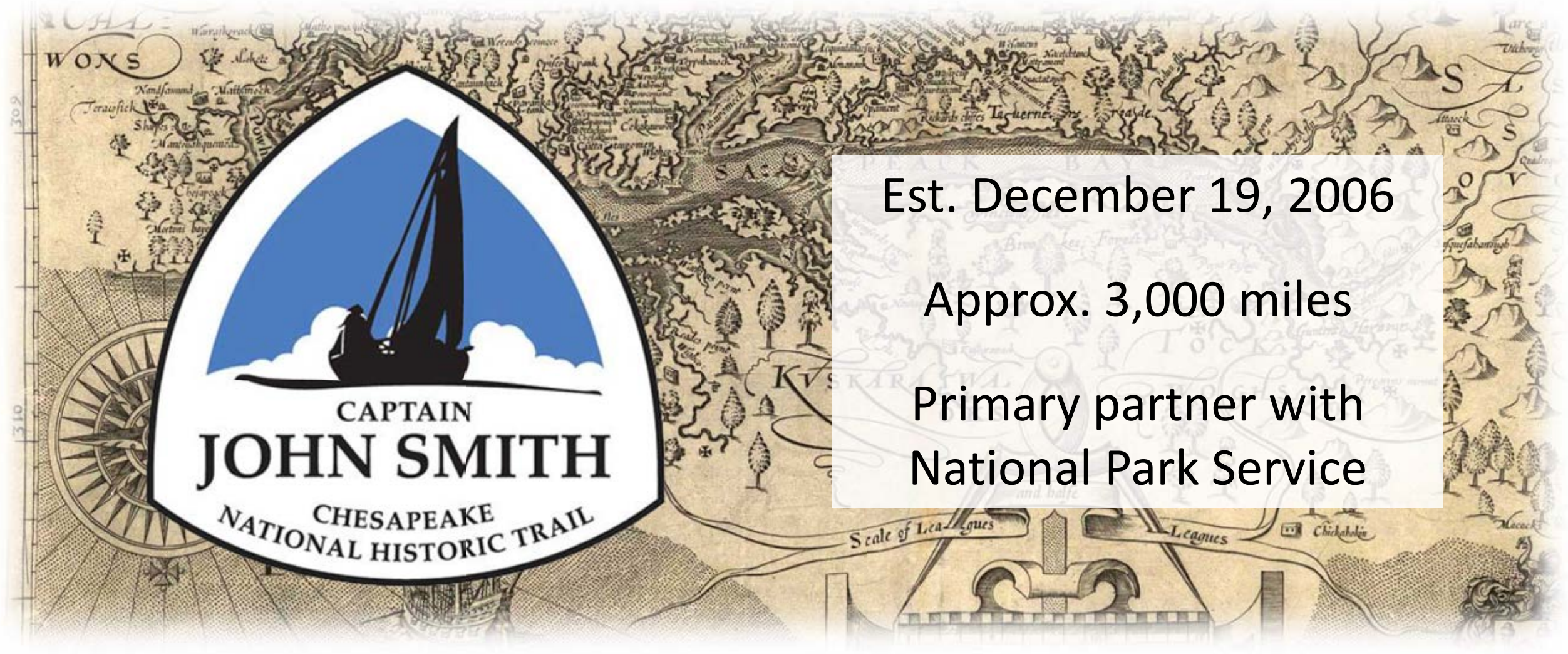
Chesapeake Conservancy
EXPLORE. CONSERVE. INNOVATE.

New Data and Tools for Land Stewardship and Management

Cassandra Pallai
Geospatial Project Manager

Colin Stief
Solutions Engineer



Est. December 19, 2006

Approx. 3,000 miles

Primary partner with National Park Service

Chesapeake Conservancy
EXPLORE. CONSERVE. INNOVATE.

Saving the Chesapeake's Great Rivers and Special Places

Chesapeake Conservancy
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U.S. FISH & WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

Chesapeake Bay Program
A Watershed Partnership

NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE

WILDLIFE MANAGEMENT INSTITUTE
ESTABLISHED IN 1911

CONSERVATION INNOVATION CENTER
CHESAPEAKE CONSERVANCY

intel

NRCS
Natural Resources Conservation Service

esri

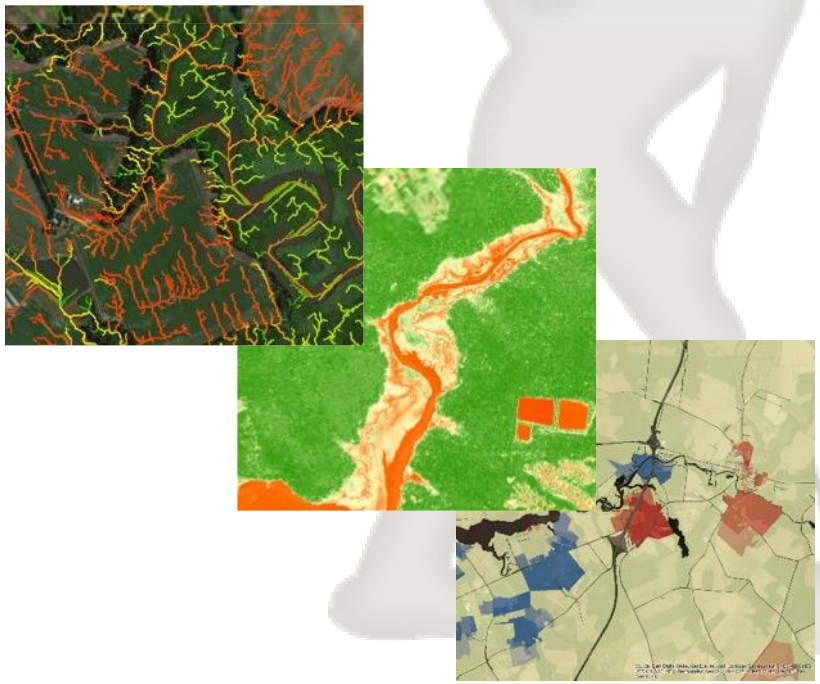
dessc
digital energy & sustainability solutions campaign

NATIONAL GEOGRAPHIC

Big Data

Novel datasets

Higher resolution information



Enabling Partners

Data access

Interactive web-based tools

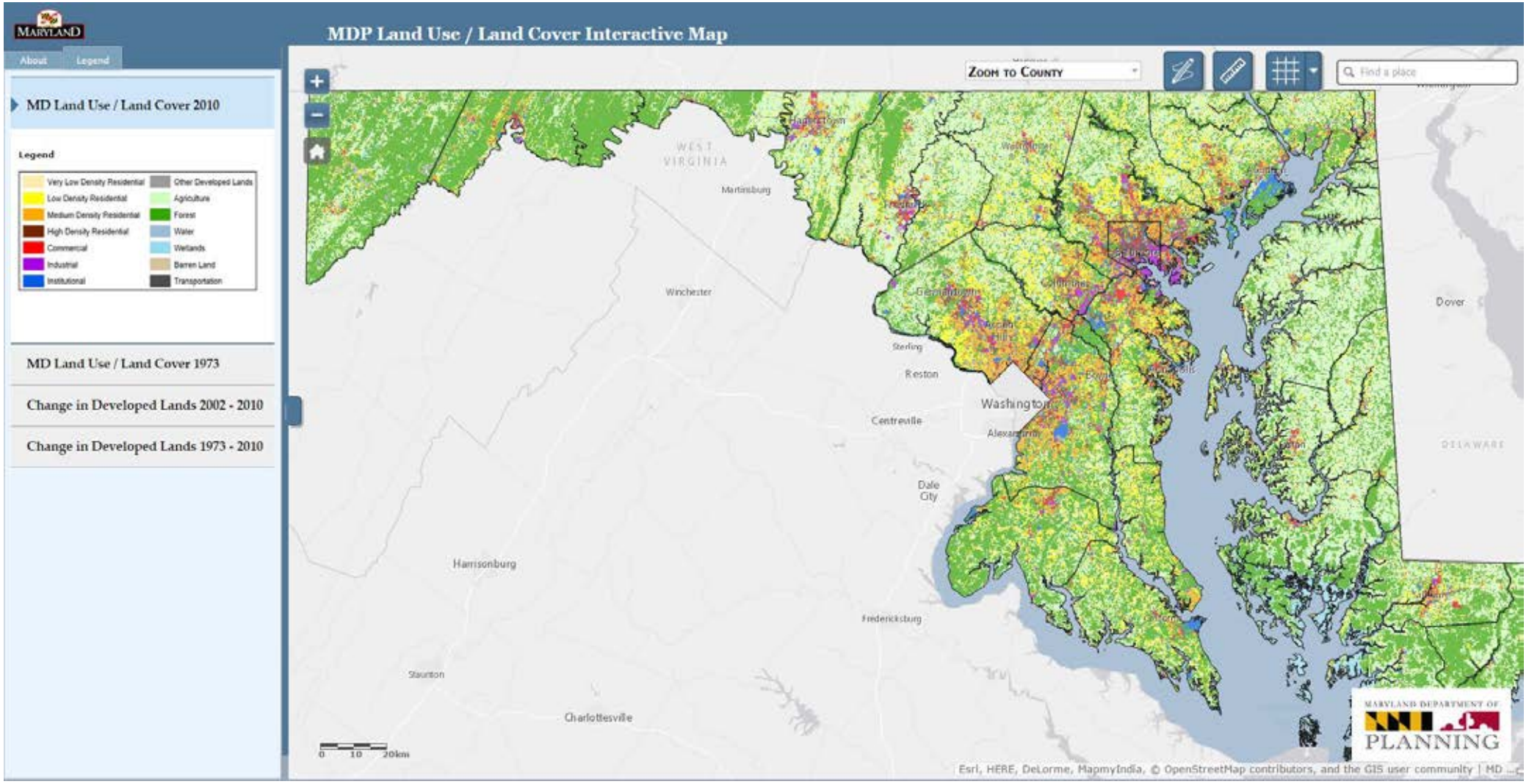
Precision Conservation

Improving Our Understanding of the Landscape through Data

Saving the Chesapeake's Great Rivers and Special Places

Ben Fertig

Land Cover Transformation

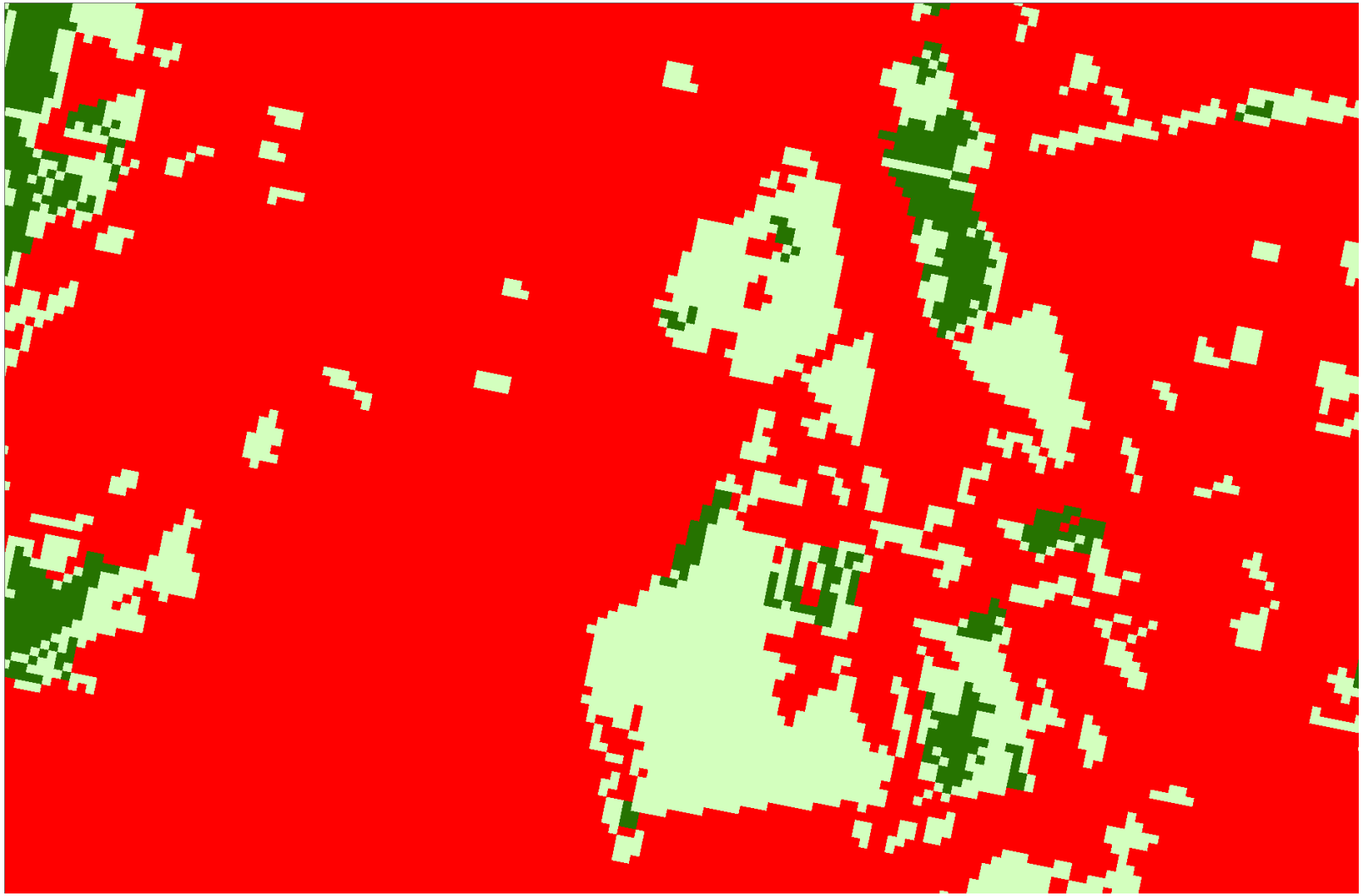


Land Cover Transformation

Washington DC,
Catholic University

NLCD Land Cover Classification

- Barren
- Developed
- Low Vegetation
- Shrubland
- Tree Canopy
- Water
- Wetlands

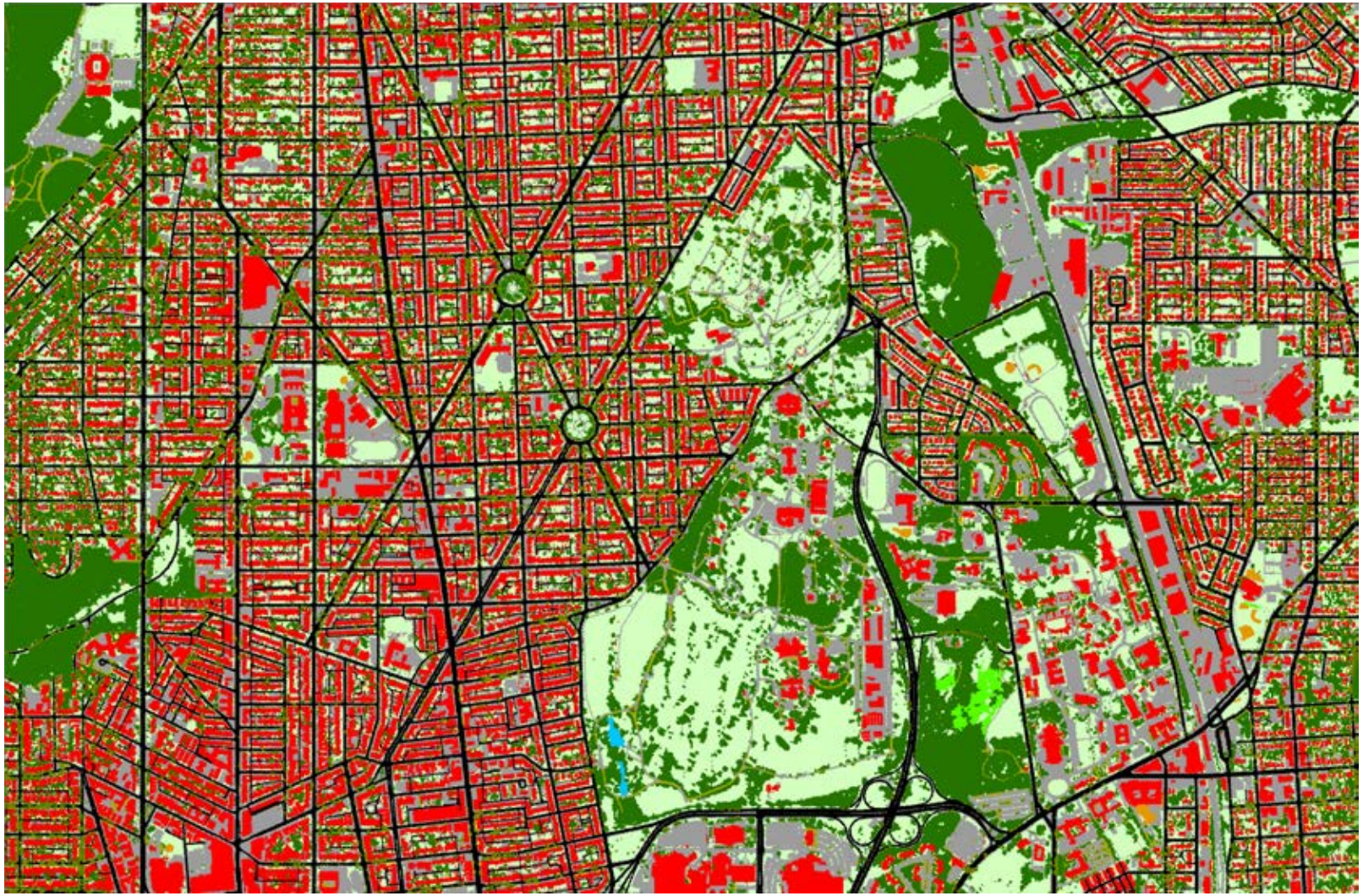


Land Cover Transformation

Washington DC, Catholic University

CBP Land Cover Classification

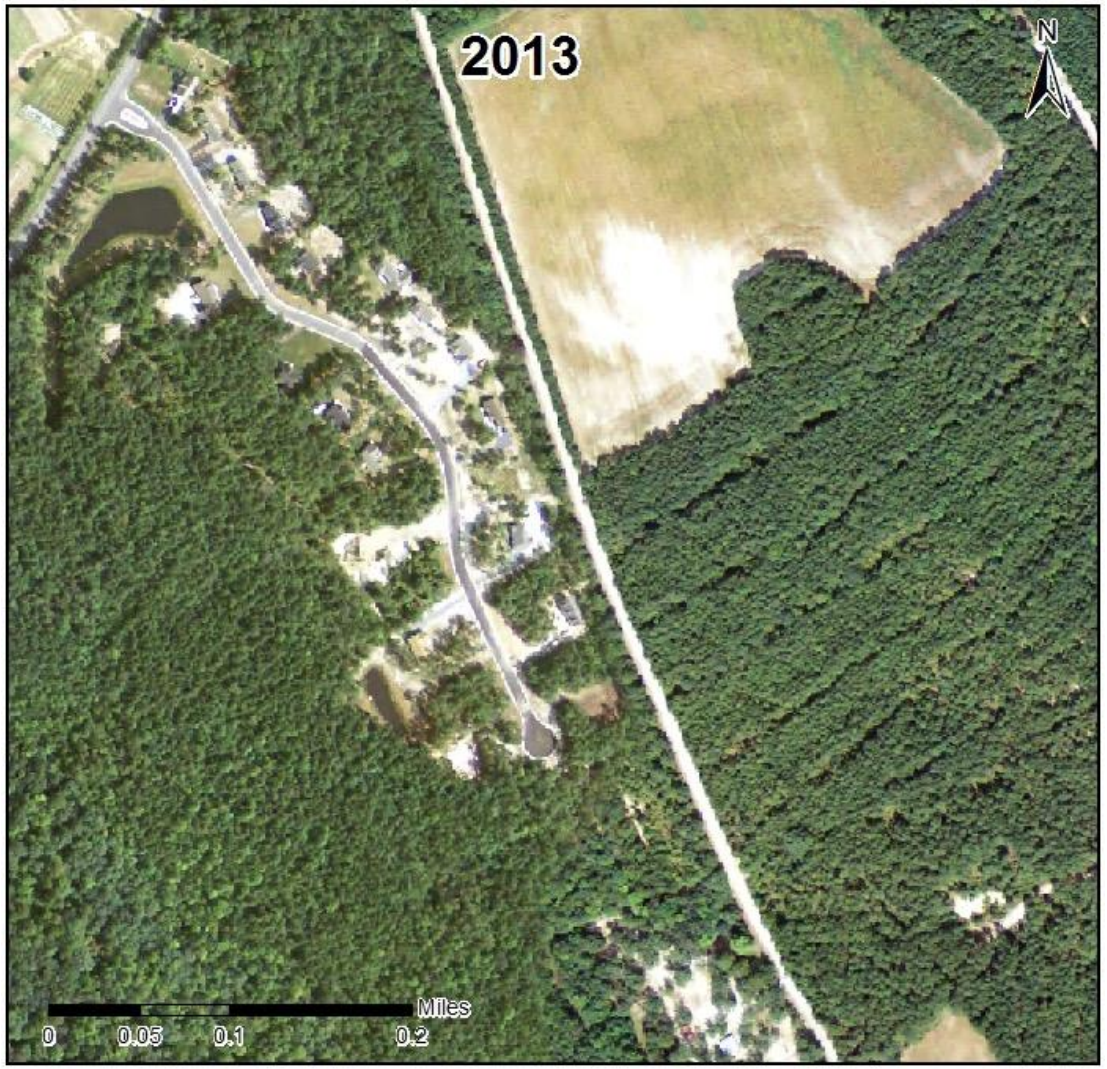
- Barren
- Impervious Roads
- Impervious Surfaces
- Low Vegetation
- Shrubland
- Structures
- Tree Canopy
- Tree Canopy over Impervious Roads
- Tree Canopy over Impervious Surfaces
- Tree Canopy over Structures
- Water
- Wetlands



Land Cover Quantifying Conservation

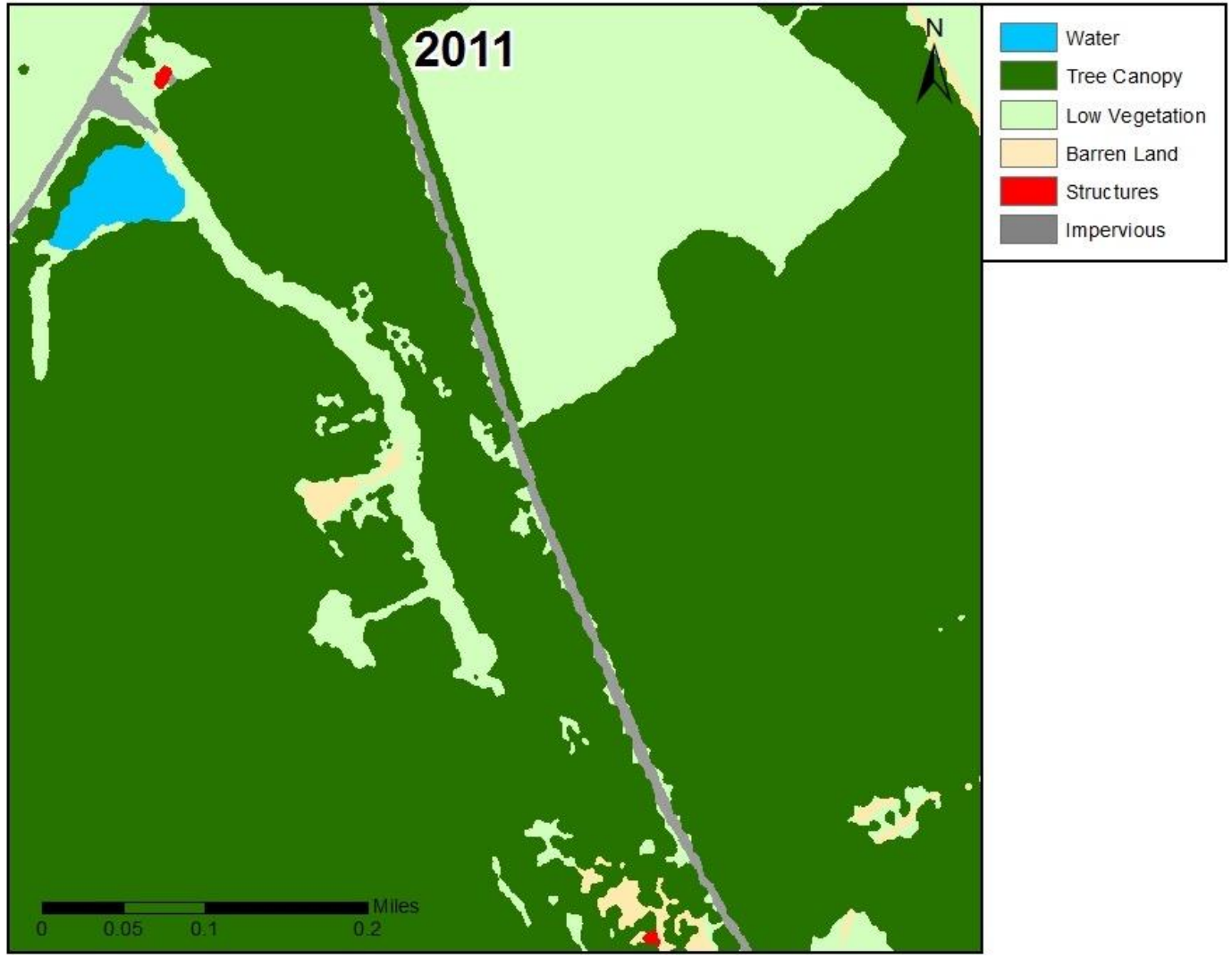
Land Cover	Area (acres)
Water	?
Tree Canopy	
Low Vegetation	
Barren Land	
Structures	
Impervious	

Land Cover Quantifying Conservation



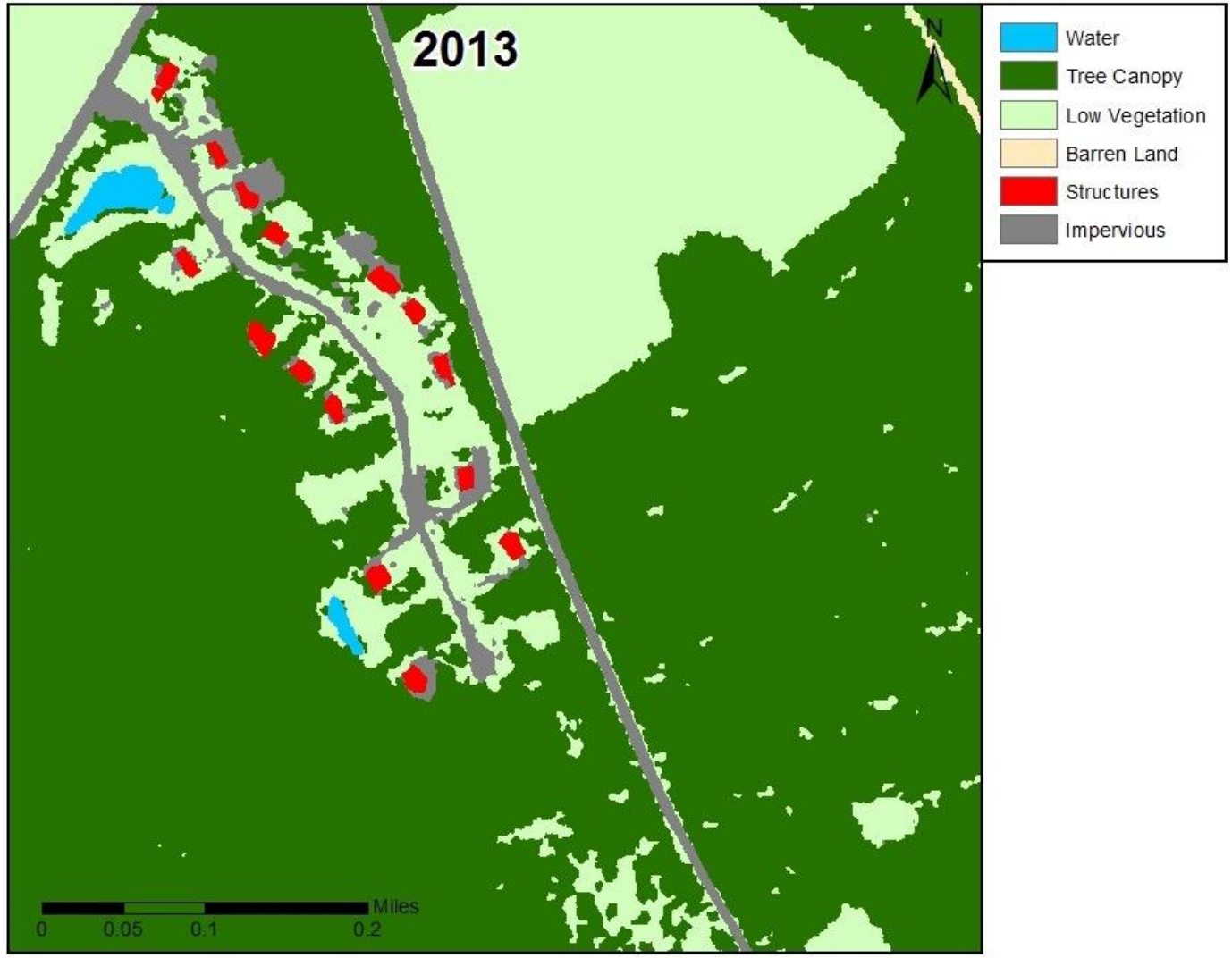
Land Cover	Area (acres)
Water	?
Tree Canopy	
Low Vegetation	
Barren Land	
Structures	
Impervious	

Land Cover Quantifying Conservation



Land Cover	Area (acres)
Water	1.9
Tree Canopy	179.3
Low Vegetation	48.2
Barren Land	2.1
Structures	0.2
Impervious	3.4

Land Cover Quantifying Conservation



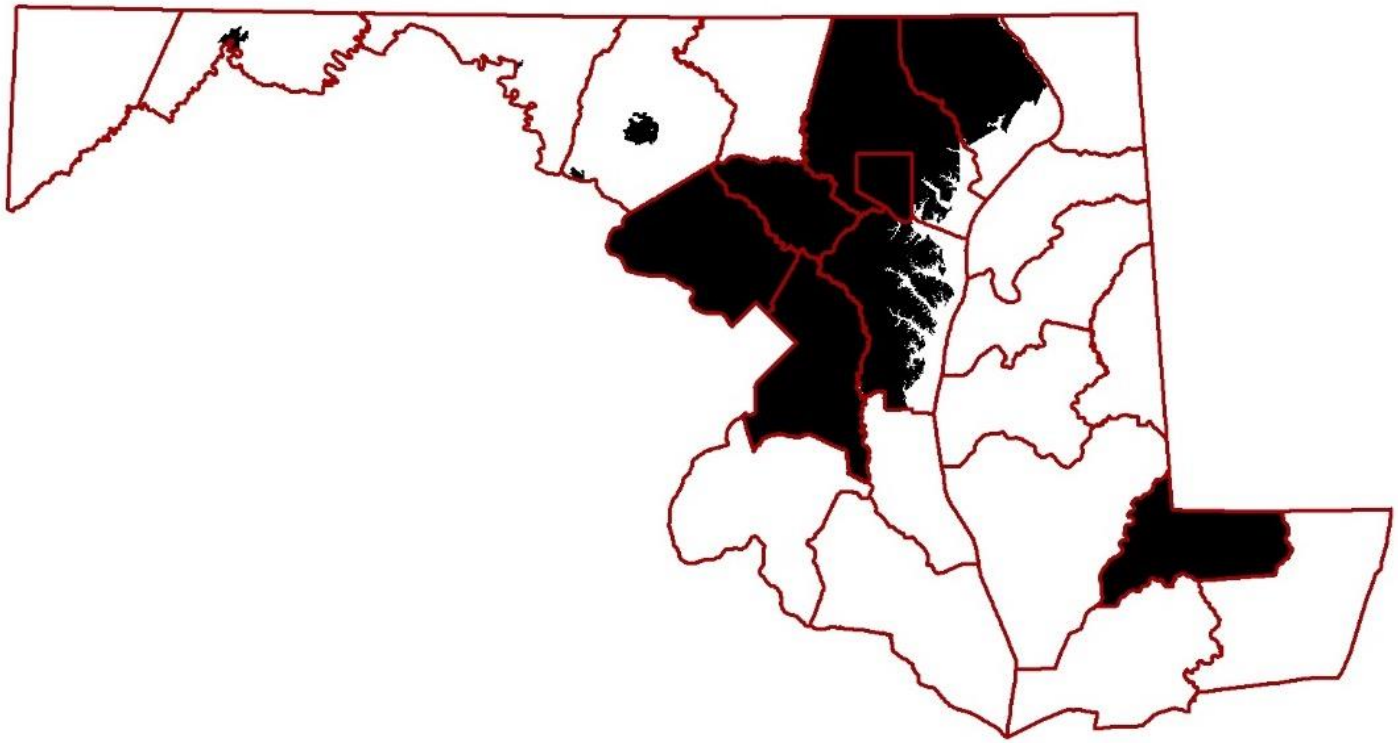
Land Cover	Area (acres)
Water	1.1
Tree Canopy	167.4
Low Vegetation	56.7
Barren Land	0.3
Structures	1.6
Impervious	8.8

Forest loss: 11.9 acres

Land Cover Prioritizing Conservation

Land Cover Prioritizing Conservation

Land Cover High-Res Existing Data



2007

Anne Arundel Co.
Baltimore City
Baltimore Co.
Bowie
Brunswick
Cumberland
Edmonston
Frederick
Greenbelt
Howard Co.
Rockville
Williamsport

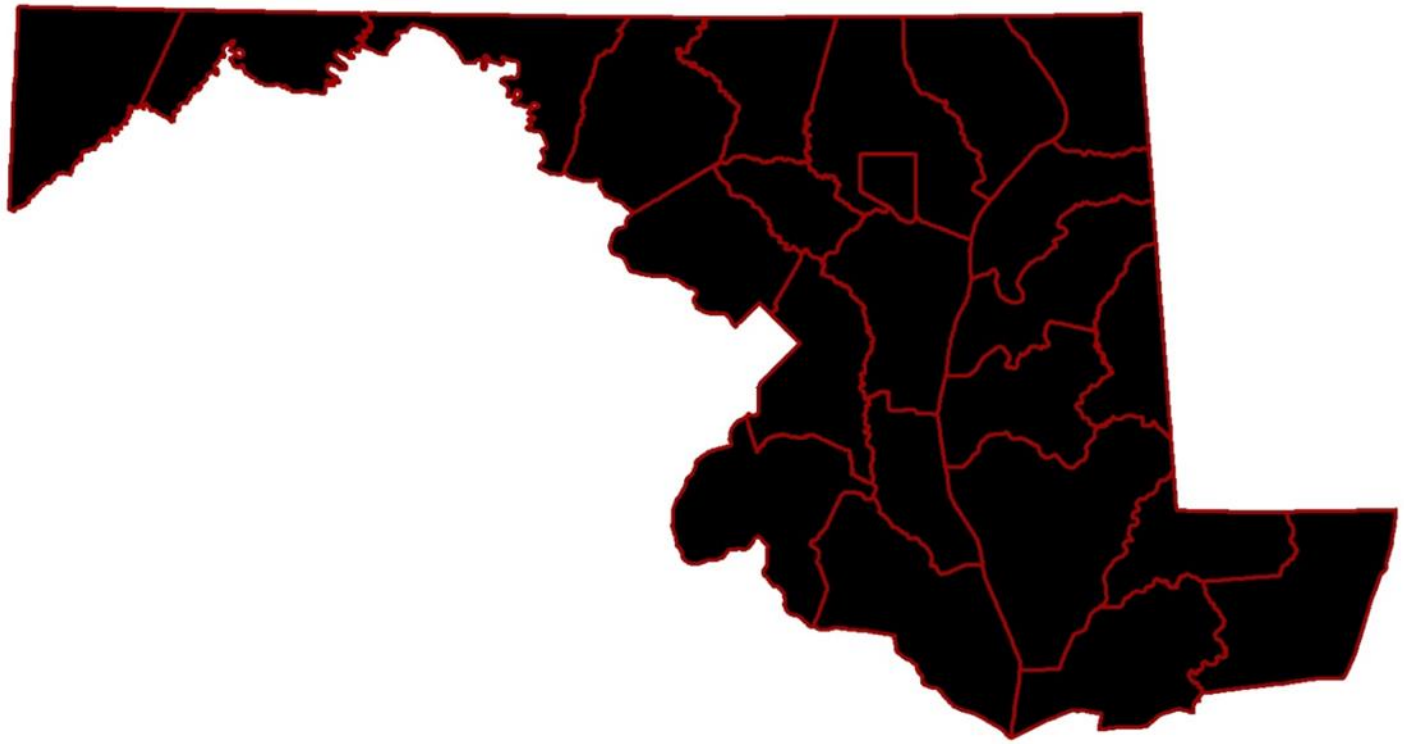
2009

Forest Heights
Montgomery Co.
Prince Georges Co.
Takoma Park

2011

Harford Co.
Wicomico Co.

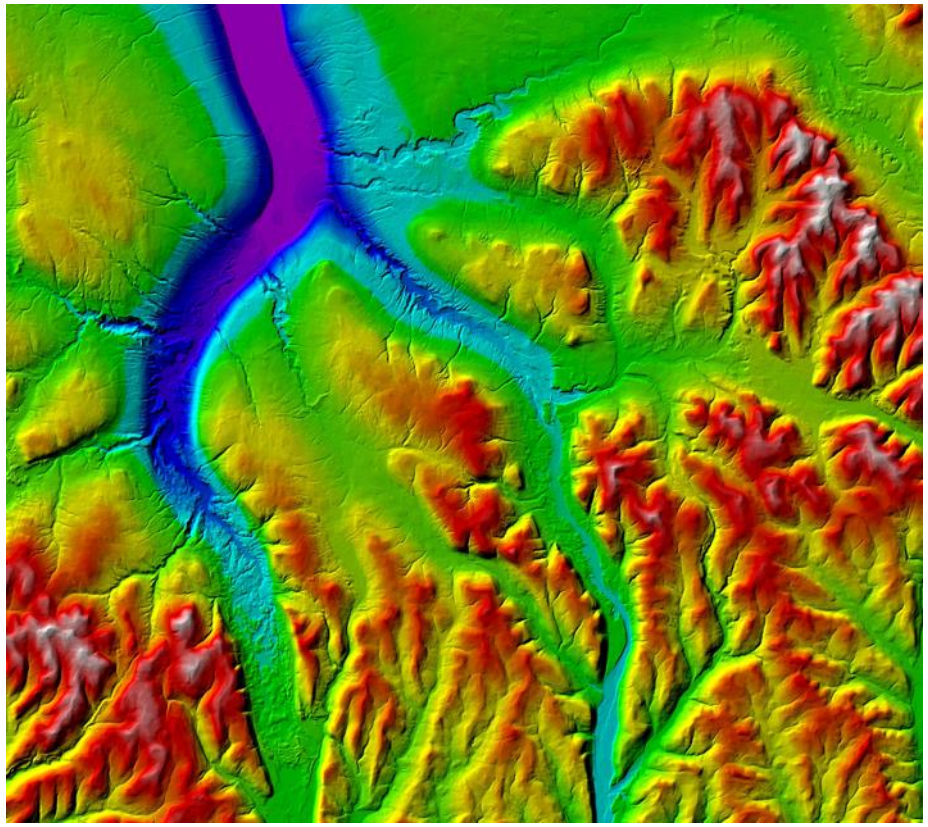
Land Cover High-Res Up Next



2013

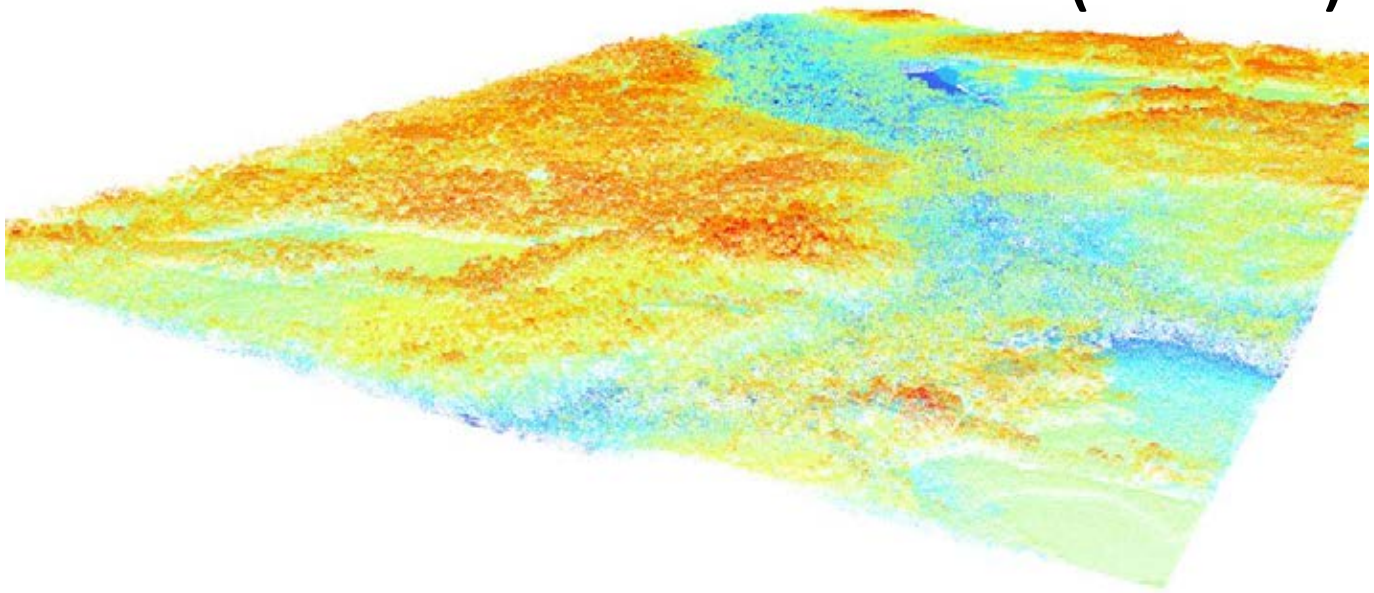
Statewide Coverage

Terrain Data

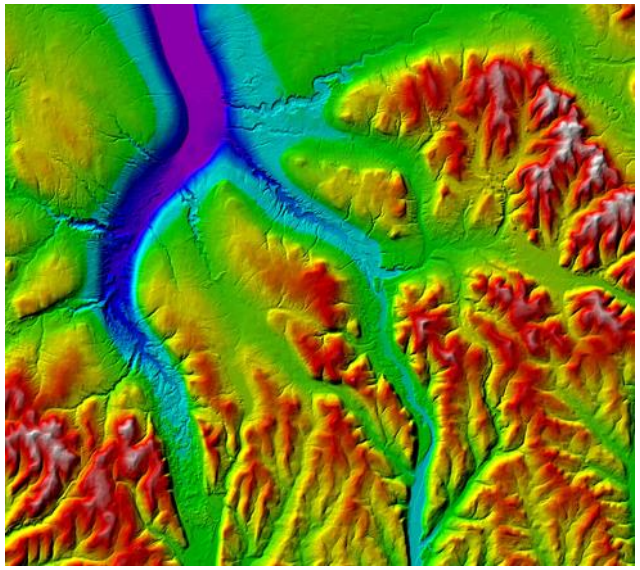


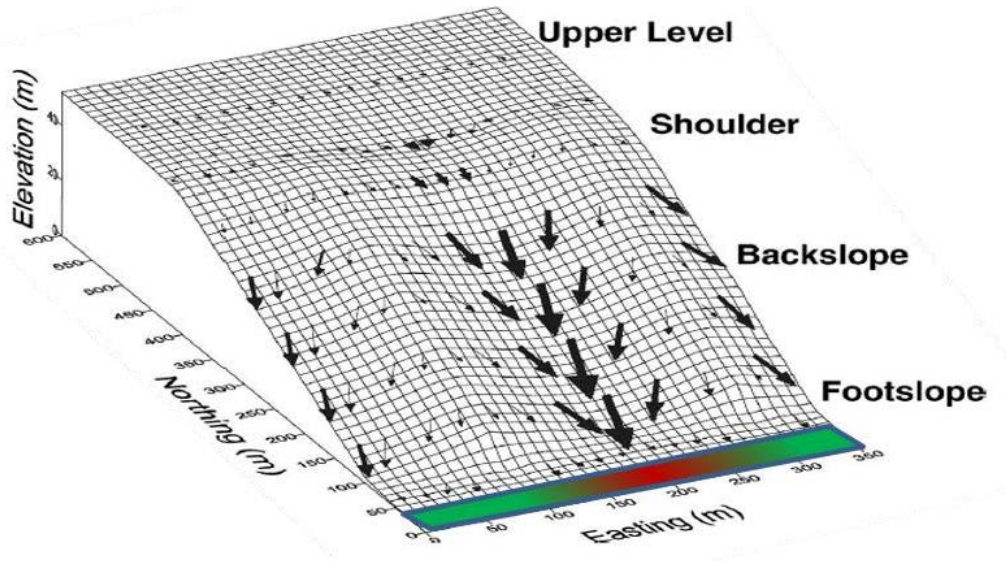
Digital Elevation Model (DEM)

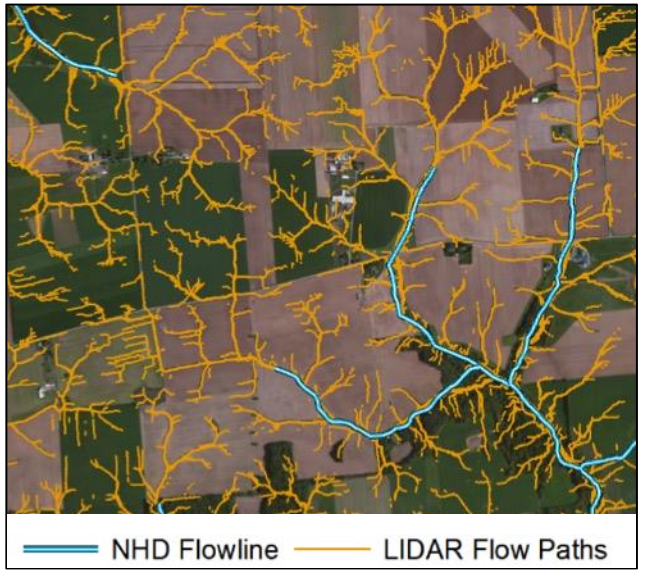
Light Detection And Ranging (LiDAR)



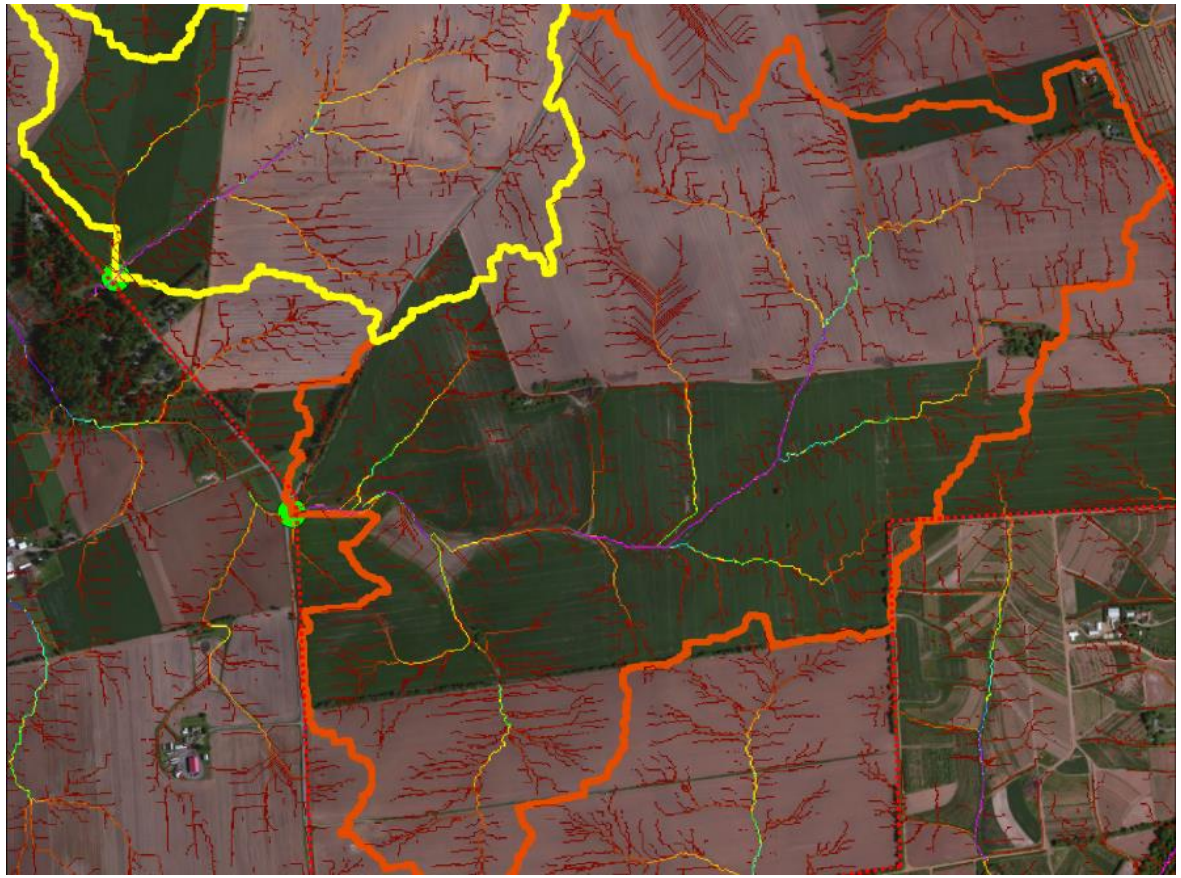
Terrain Data Derivatives



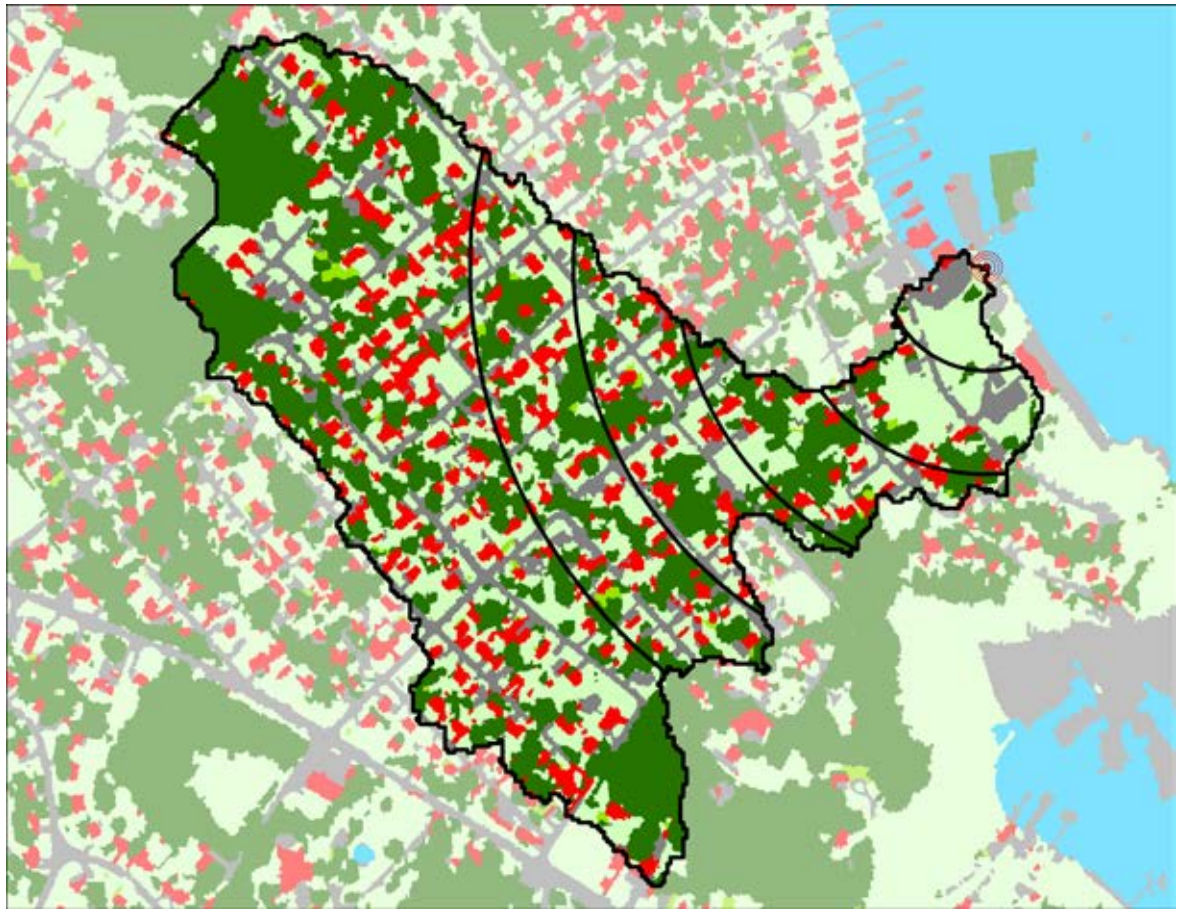




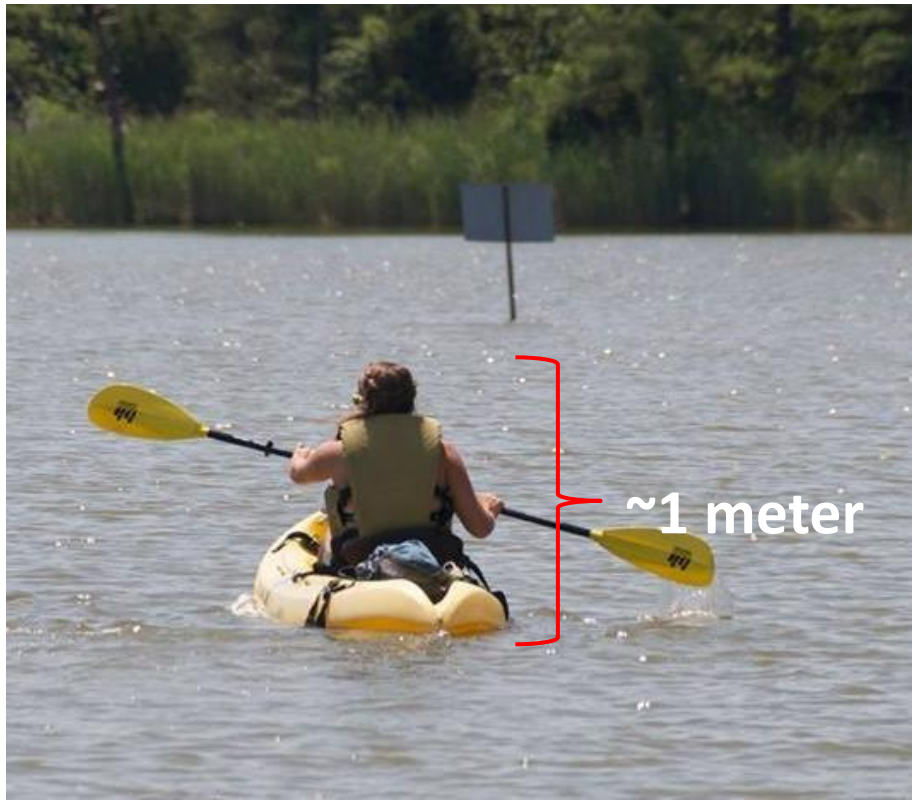
Terrain Data Novel Prioritization



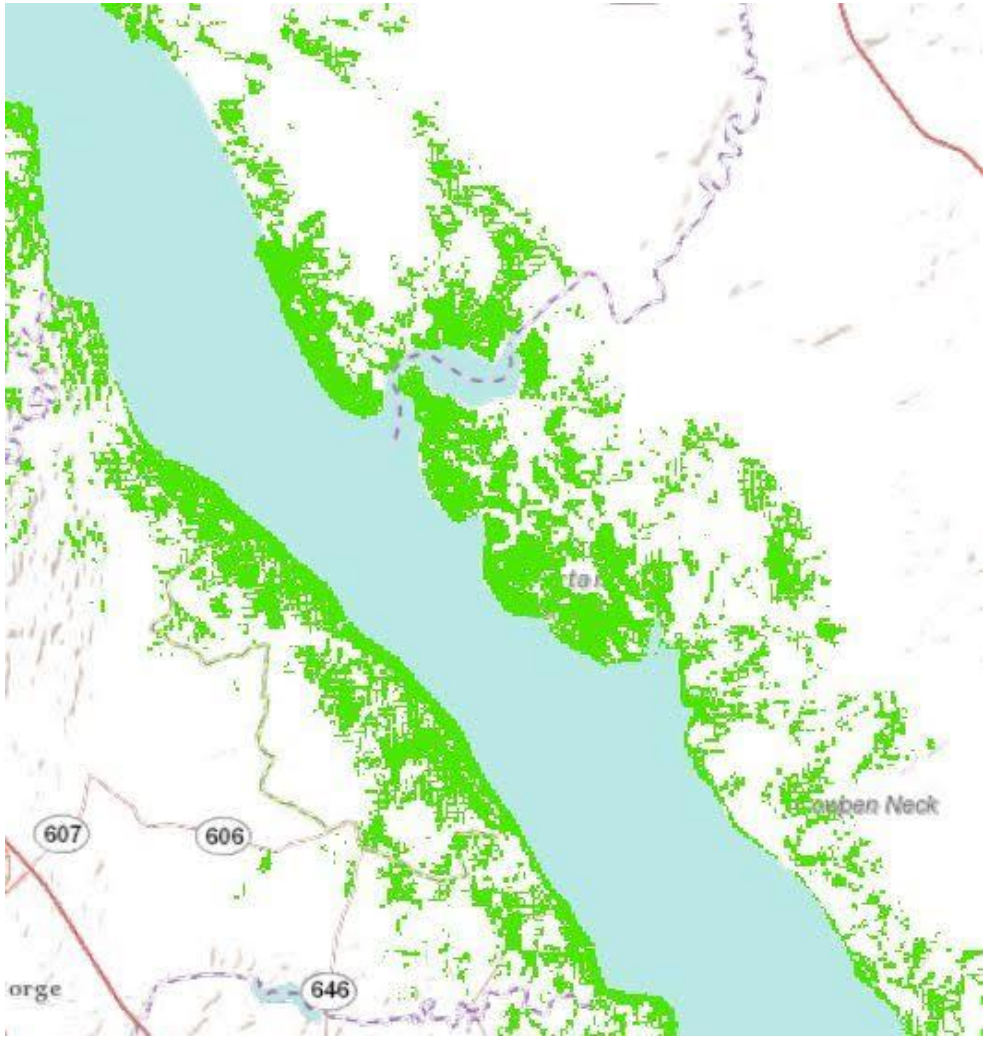
by watershed…



Terrain Data Novel Prioritization

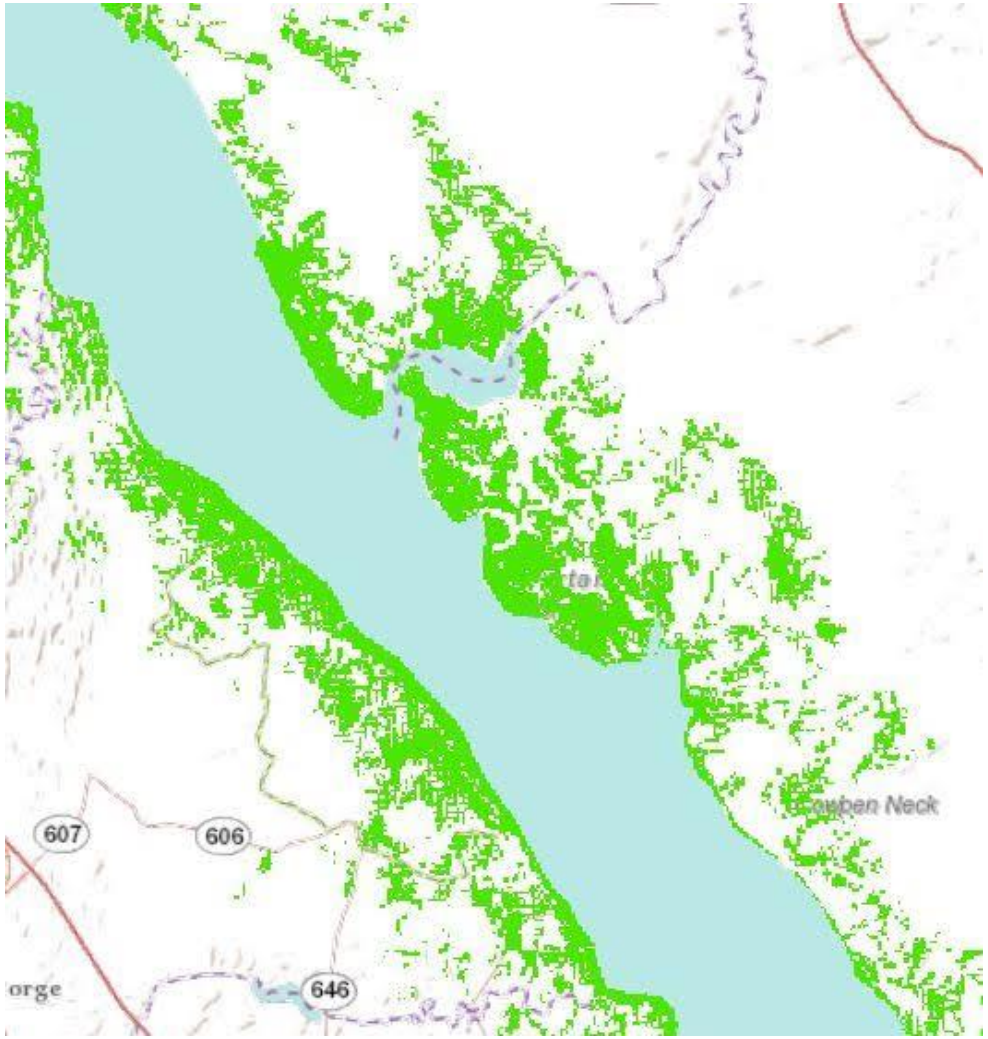


and by "Viewshed"

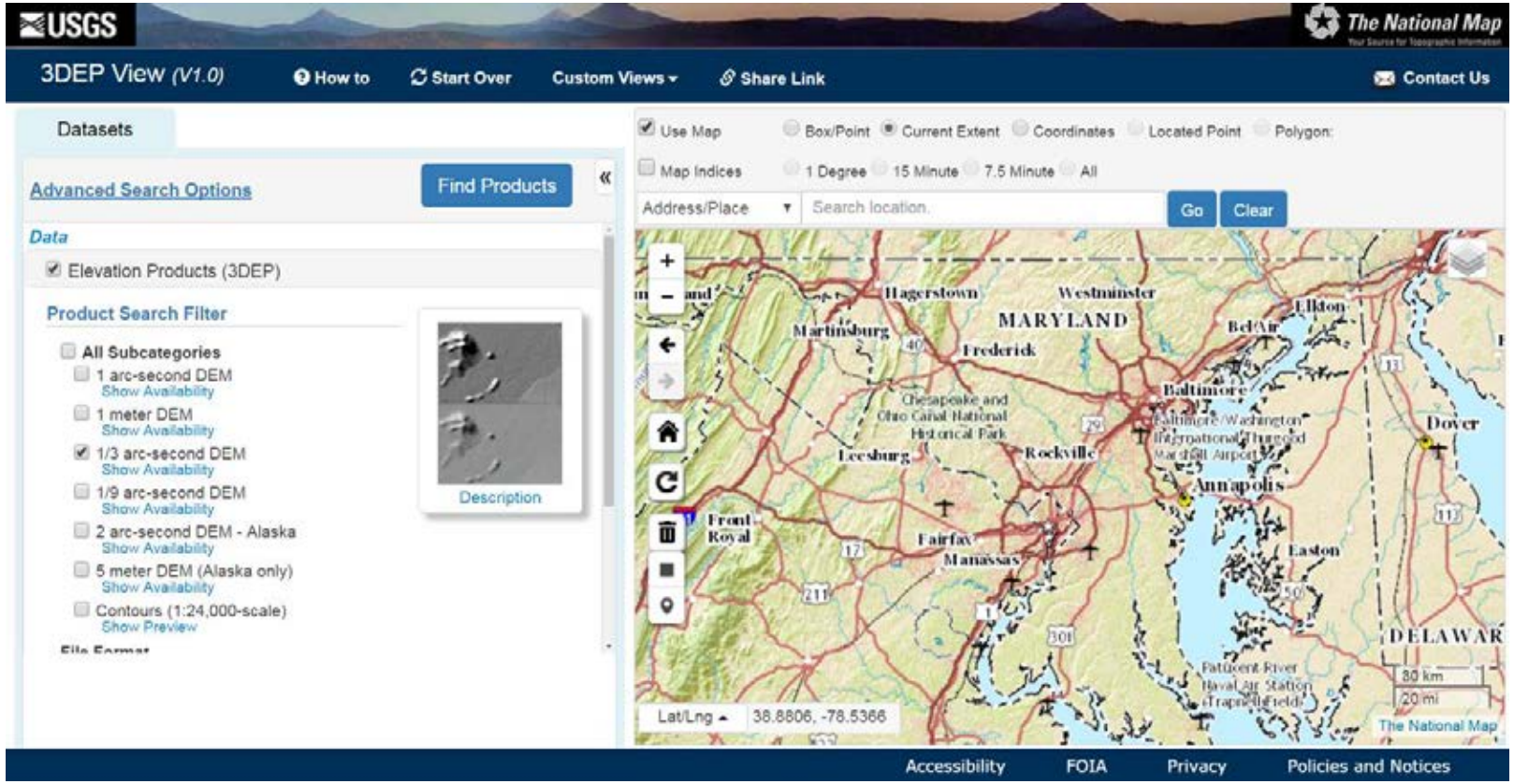


Terrain Data Novel Prioritization

and by “Viewshed”



Terrain Data Existing Info



Challenges

Dispersed data

Infrastructure requirements

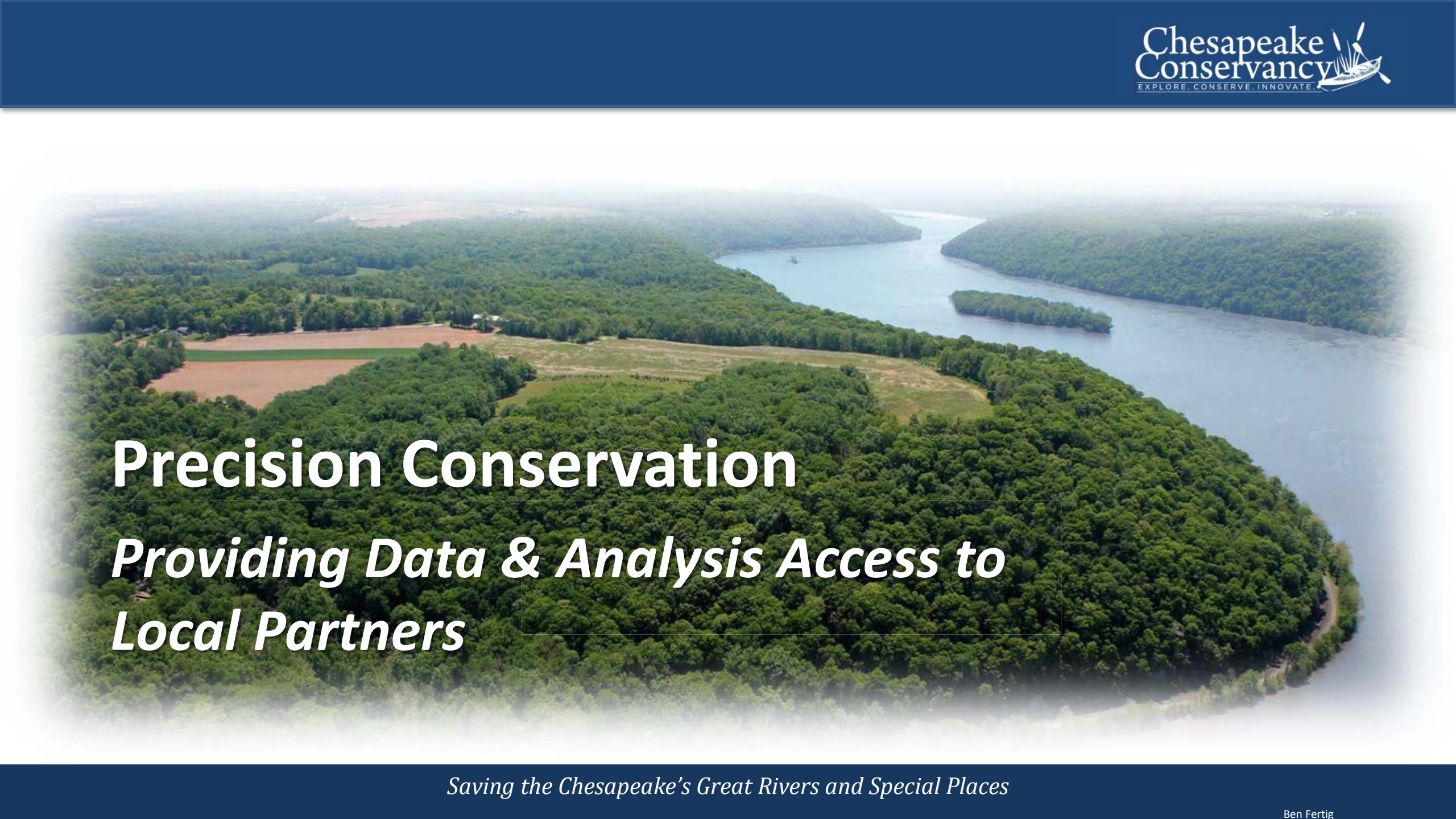
Software

Powerful computers

Storage capacity

Specialized training

Staff time



Precision Conservation

Providing Data & Analysis Access to Local Partners

Saving the Chesapeake's Great Rivers and Special Places

Ben Fertig

Enabling Partners

Data

Web services

Curating

Web-based tools

Access

Outputs

Conservation Toolbox

CONSERVATION TOOLBOX

Chesapeake Conservancy
CONSERVATION TOOLBOX
Map Layers
Search
Filter
Land Cover
Report Generator
Watershed Delineation
www.chesapeakeconservancy.org/apps/ConservationToolbox
Topographic

Conservation Toolbox

Data Services

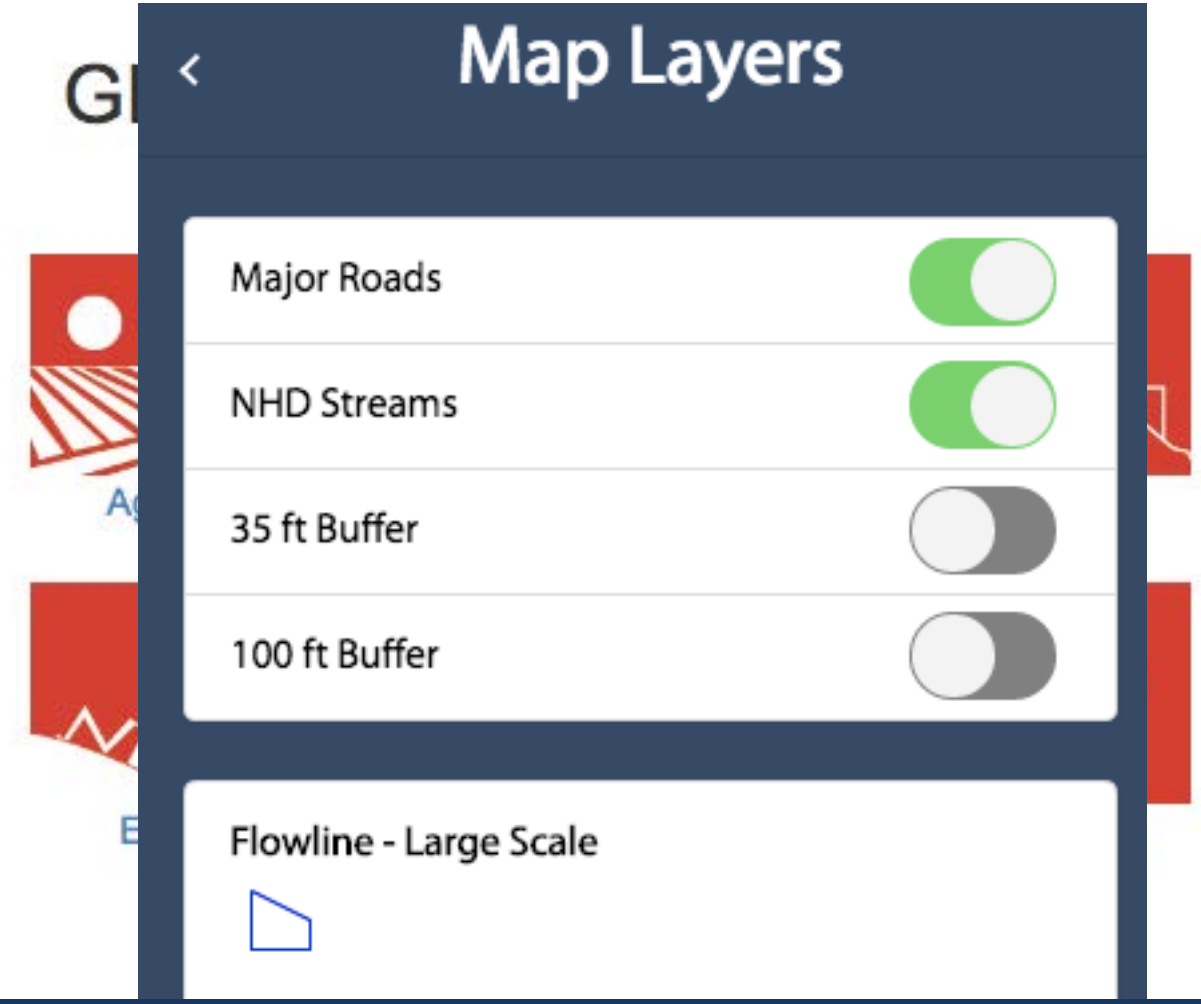
Maintained data links

MD iMap

Map Overlays

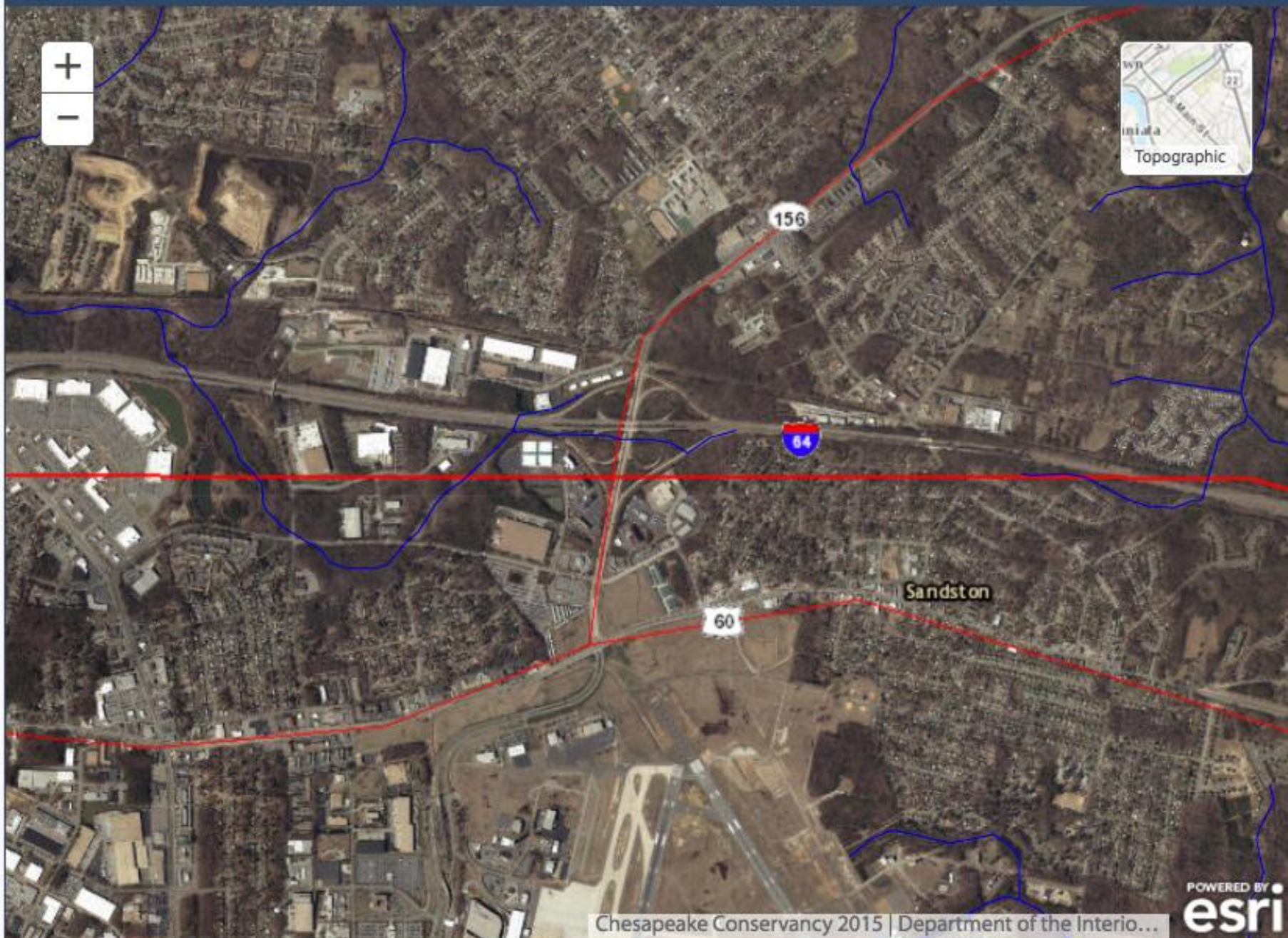
Data comparison

Interoperability



Map Layers

Chesapeake Conservancy



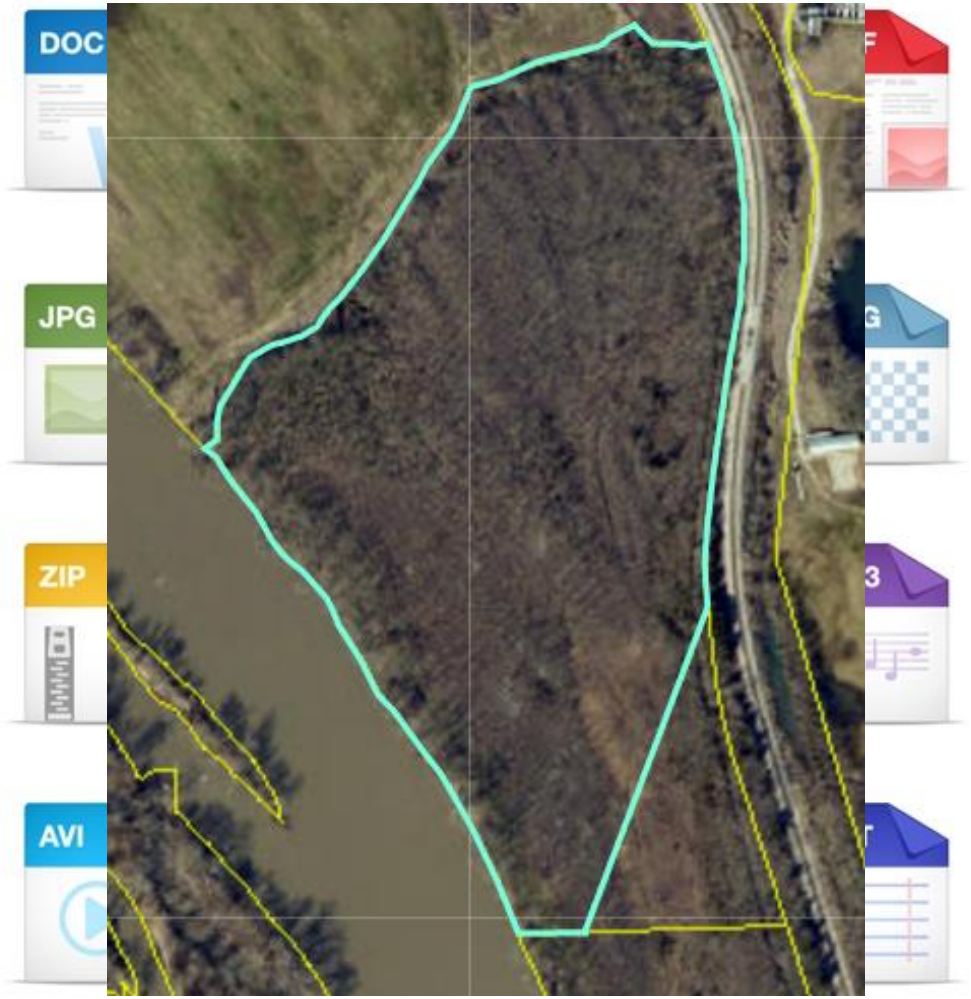
Conservation Toolbox

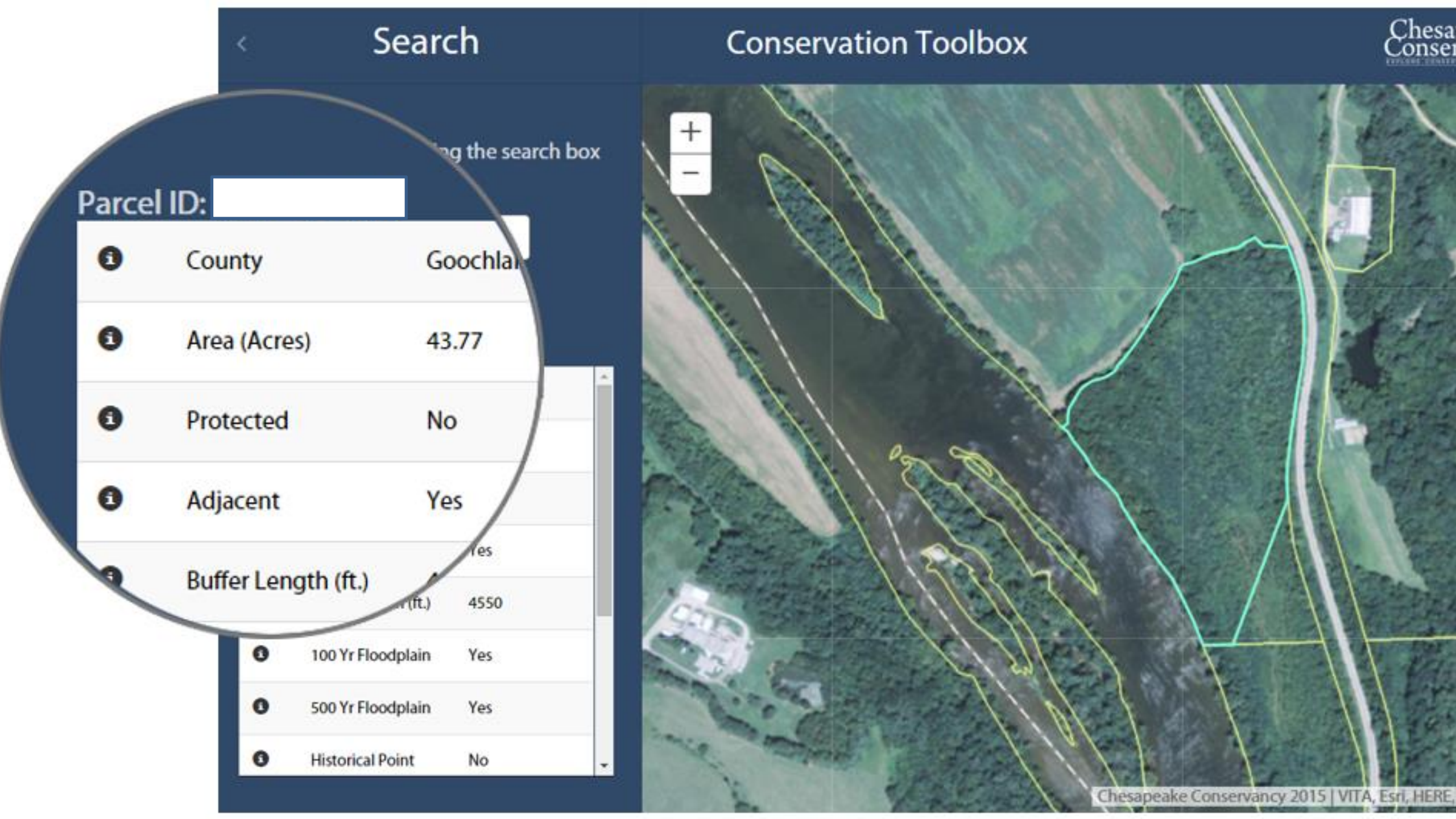
Data Creation / Curation

Subset

Standardization

Assessments




Search
Conservation Toolbox
g the search box
Parcel ID:
County
Goochla
Area (Acres)
43.77
Protected
No
Adjacent
Yes
Buffer Length (ft.)
Yes
(ft.)
4550
100 Yr Floodplain
Yes
500 Yr Floodplain
Yes
Historical Point
No
Chesapeake Conservancy 2015 | VITA, Esri, HERE,

Conservation Toolbox

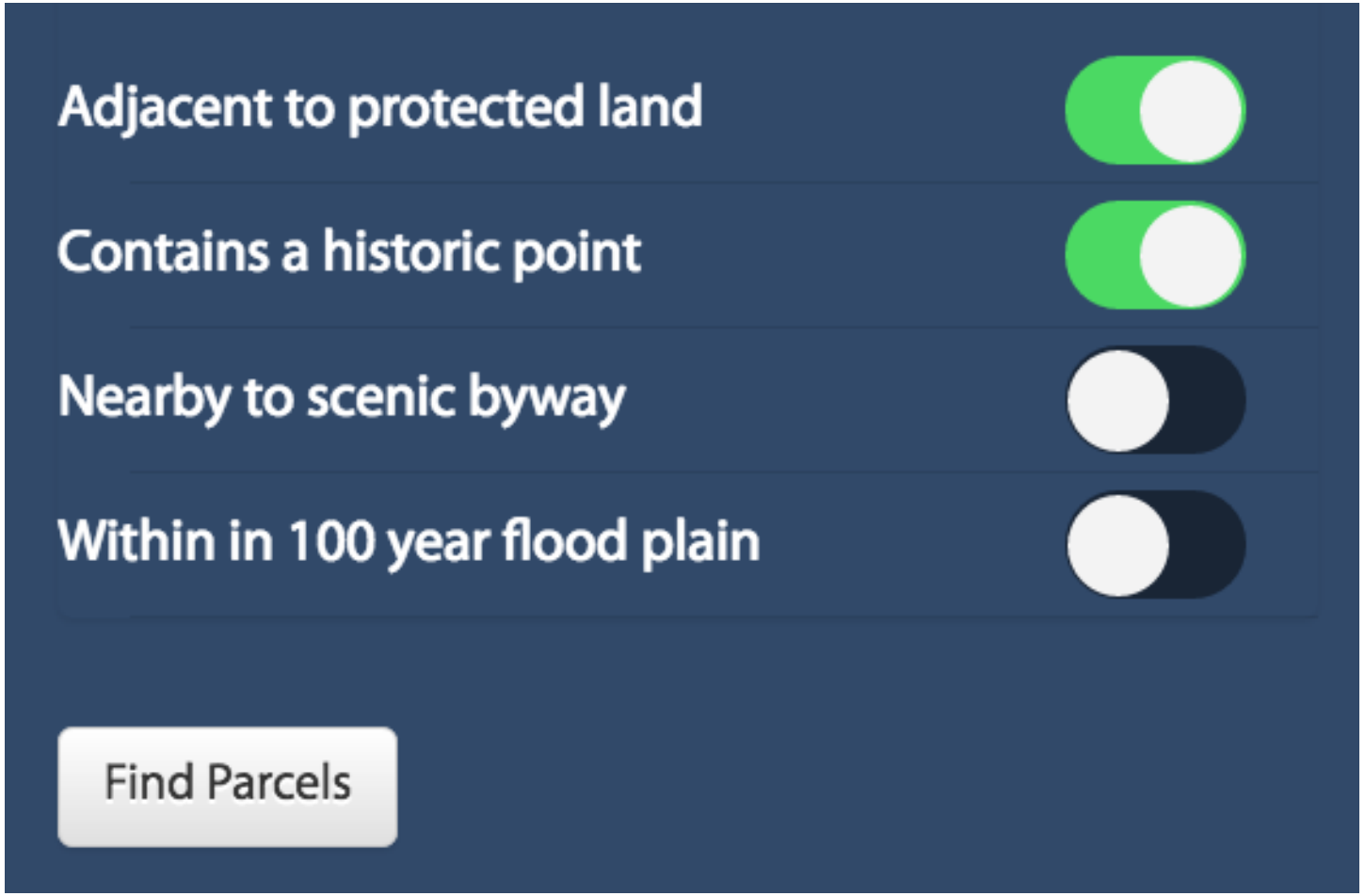
Data Creation / Curation

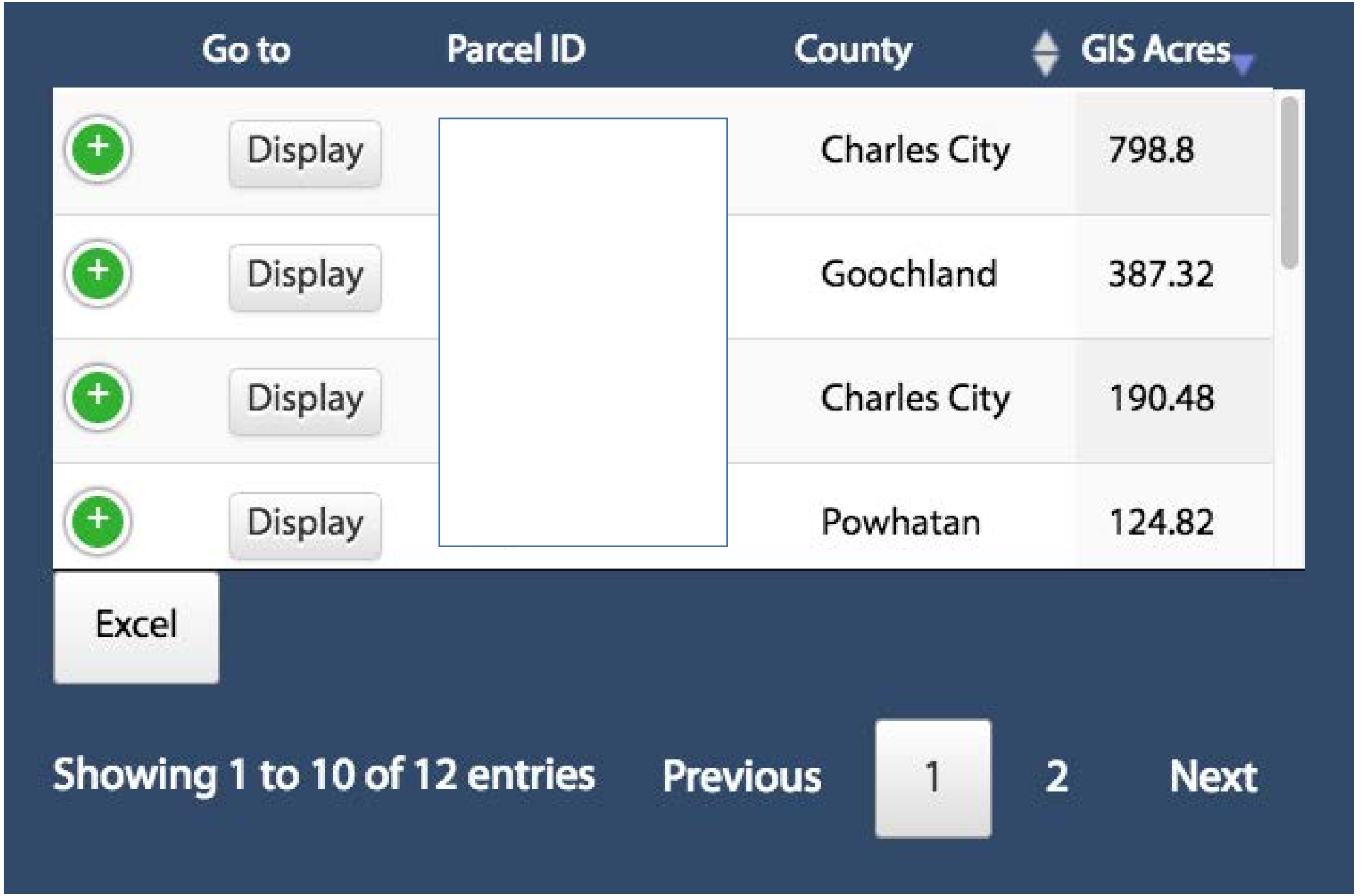
Subset

Standardization

Assessments

Filters




Go to
Parcel ID
County
GIS Acres
Display
Charles City
798.8
Display
Goochland
387.32
Display
Charles City
190.48
Display
Powhatan
124.82
Excel
Showing 1 to 10 of 12 entries
Previous
1
2
Next

Conservation Toolbox

Data Creation / Curation

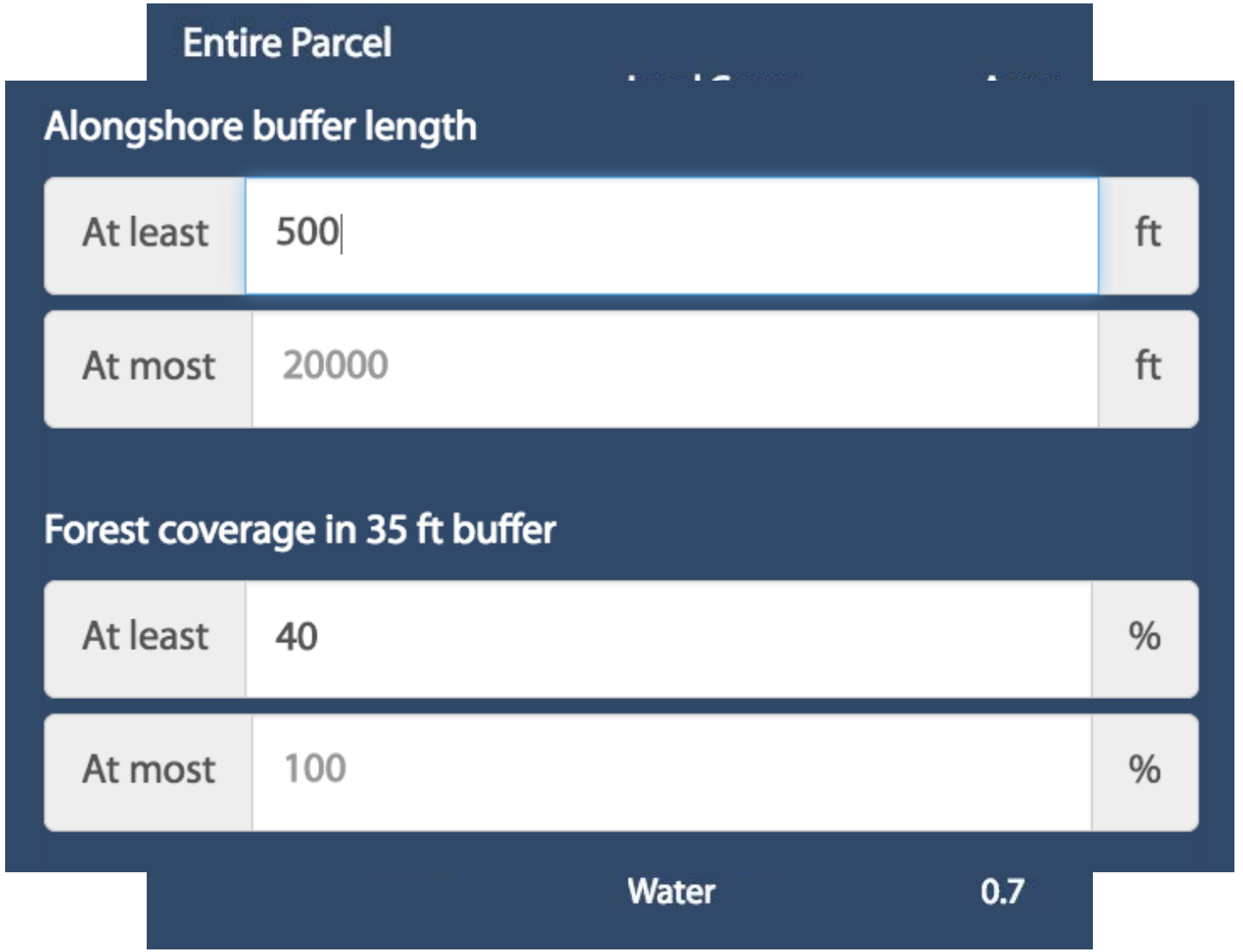
Subset

Standardization

Assessments

Filters

Land Cover



Conservation Toolbox

Web-based Access

No software

Any browser

Analysis

Watershed delineation

…?

Conservation Toolbox

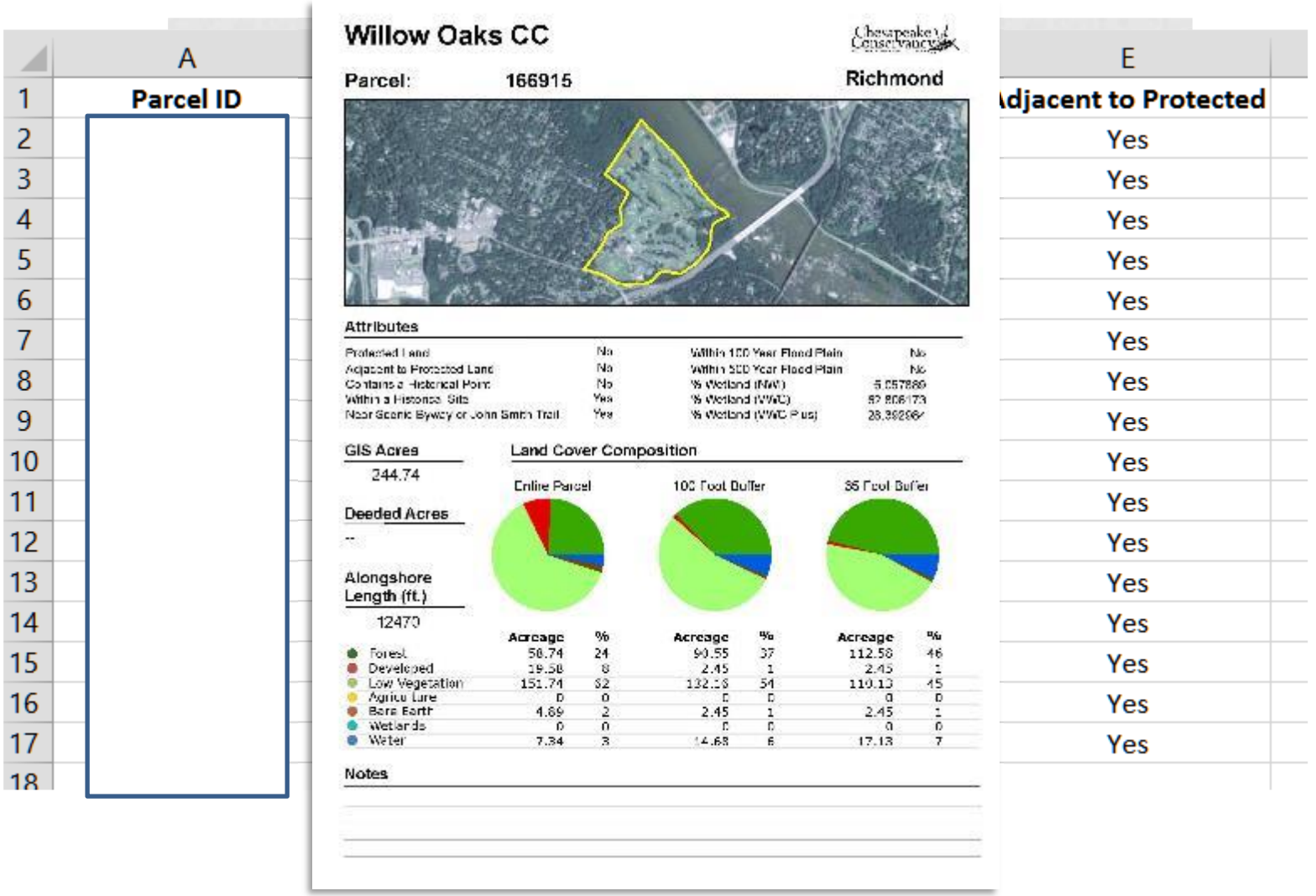
Instant Outputs

Apply results

Share your work

Spreadsheets

PDFs…



	A	E
1	Parcel ID	Adjacent to Protected
2		Yes
3		Yes
4		Yes
5		Yes
6		Yes
7		Yes
8		Yes
9		Yes
10		Yes
11		Yes
12		Yes
13		Yes
14		Yes
15		Yes
16		Yes
17		Yes
18		

Willow Oaks CC

Parcel: 166915 Richmond

Attributes

Protected Land	No	Within 100 Year Flood Plain	No
Adjacent to Protected Land	No	Within 500 Year Flood Plain	No
Contains a Historical Point	No	% Wetland (NWI)	5.057889
Within a Historic Site	Yes	% Wetland (VWC)	62.806173
Near Scenic Byway or John Smith Trail	Yes	% Wetland (VWC Plus)	28.39286

GIS Acres: 244.74

Deeded Acres: --

Alongshore Length (ft.): 12470

Land Cover Composition

Online Parcel | 100 Foot Buffer | 35 Foot Buffer

	Acreage	%	Acreage	%	Acreage	%
Forest	58.74	24	90.55	37	112.58	46
Developed	19.58	8	2.45	1	2.45	1
Low Vegetation	151.74	62	132.16	54	110.13	45
Agricu Lure	0	0	0	0	0	0
Bare Earth	4.89	2	2.45	1	2.45	1
Wetlands	0	0	0	0	0	0
Water	7.34	3	14.68	6	17.13	7

Notes

MET Planning and Monitoring

Monitoring and Reporting

Resource intensive

Paper based

Web-based App

Prioritization

Desktop or mobile

Change Detection Slider

Comparing NAIP Imagery from 2011 and 2013

1 2 3

Plain Imagery

A new development.

VITA, Esri, HERE, DeLorme, INCREMENT P, Intermap, USGS, METI/NASA, EPA, USDA |

Transferring data from geodata.md.gov...

Change Detection Slider

Comparing NAIP Imagery from 2011 and 2013

1 2 3

Plain Imagery

A new development.

Contact Information

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