Objective 1: Land Cover and Land Use Updates
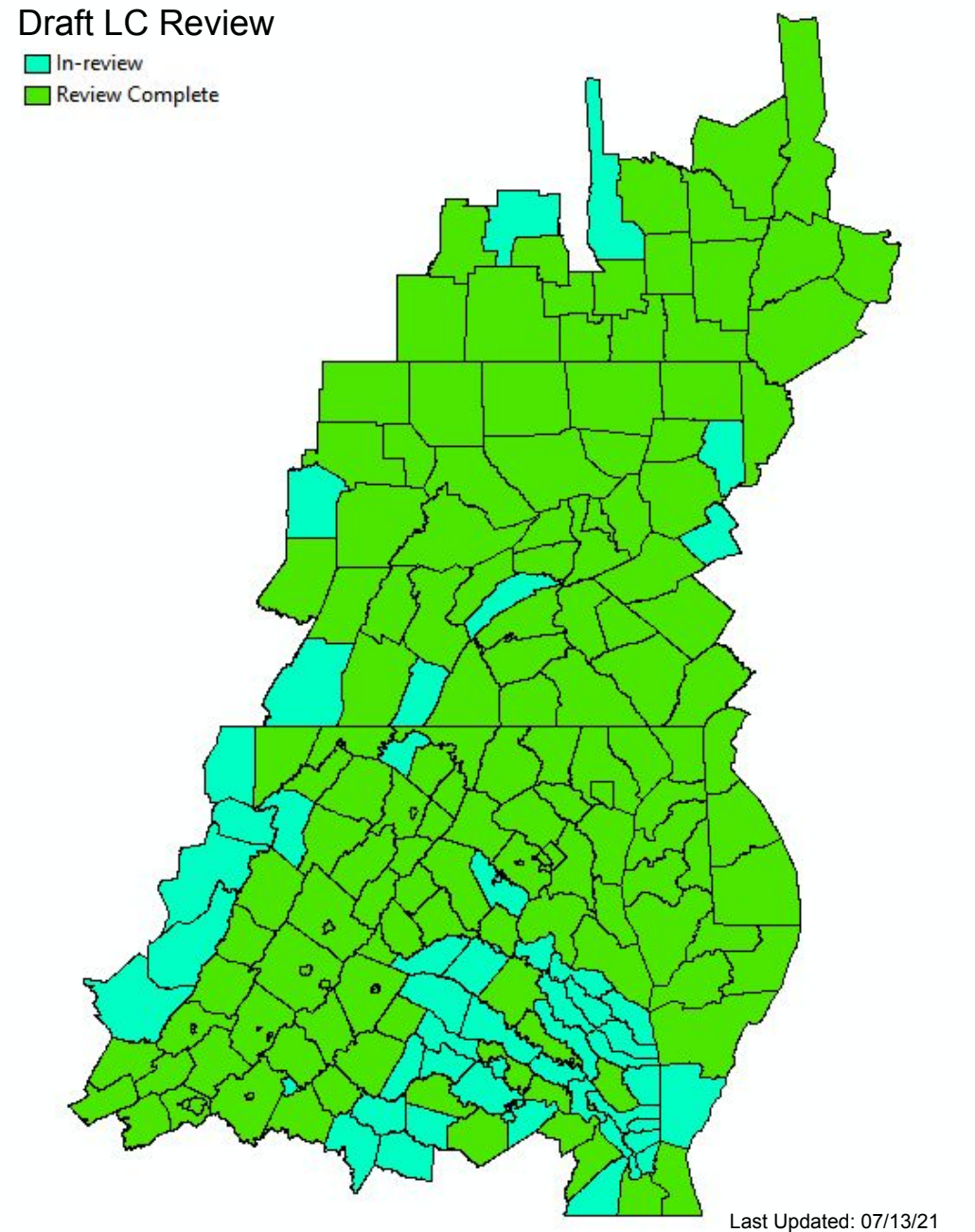
July 14, 2021: LUWG

Rachel Soobitsky
rsoobitsky@chesapeakeconservancy.org
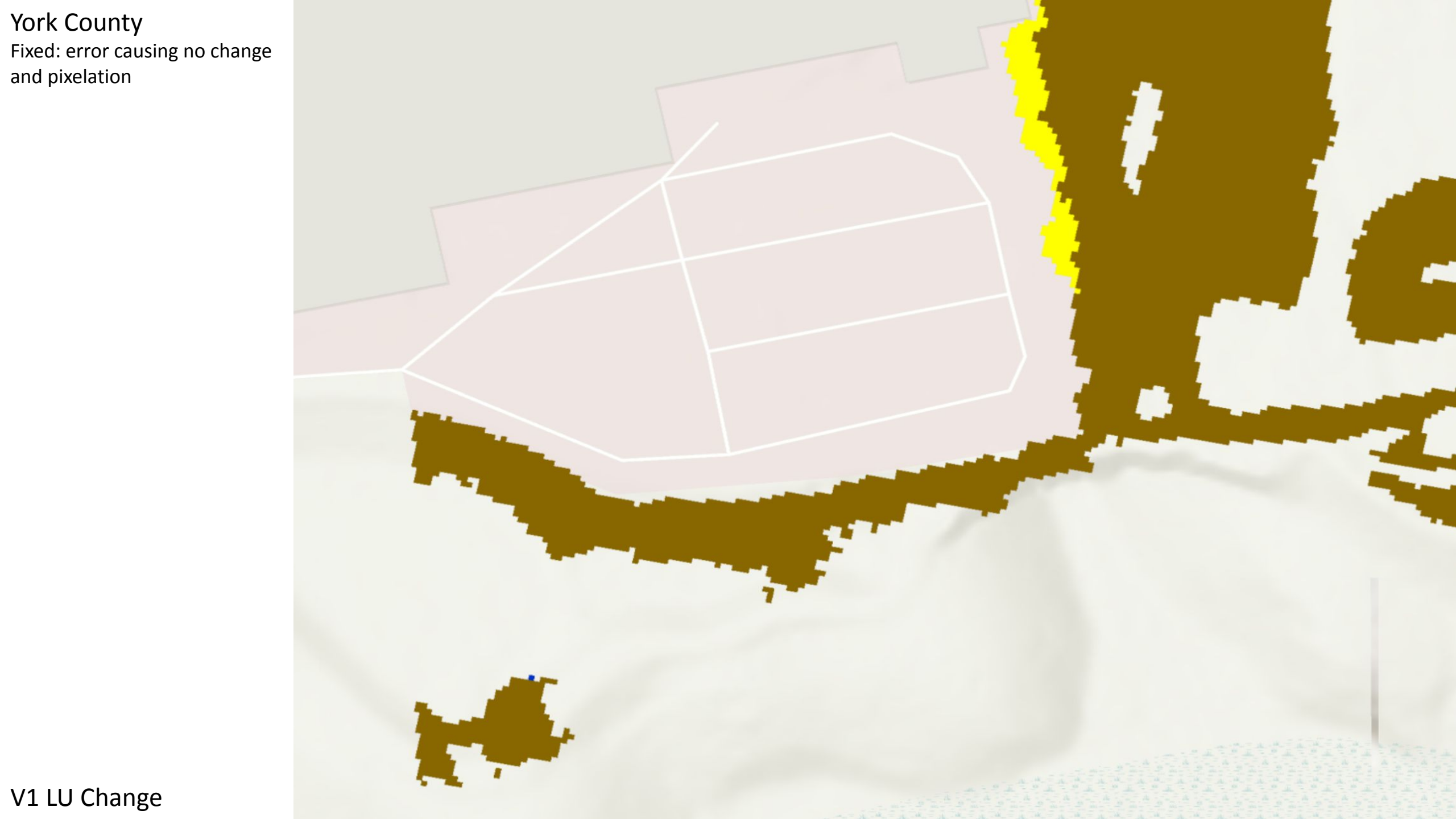
Land Cover Review Update

Draft LC Review
- In-review
- Review Complete

Last Updated: 07/13/21

Land Use Change Errors and Fixes

Land Use Change Error	Land Cover	2017/18 Land Use	2013 - 2018 Land Use Change	Fixed for CAST?
Small clusters of change pixels	Lack of filtering of draft product			Yes
Over-detection of change to new turf grass		Fixed in code		Yes
Any errors related to TC/Forest		Revised TC model		Yes
False change to pasture, crop, harvested forest, orchard			Fixed in code	Yes
Adjacency issues- false change appearing in areas next to real change		Fixed in code to split multipart parcels		Yes
Misclassification of suspended succession, natural succession, bare developed (**all mixed Open in CAST**)		Fixed in code	Fixed in code	Yes
TC to Low vegetation change reversed	Misclassified as Low Vegetation to Tree Canopy			Yes
Error causing no change and pixelation			Fixed in code	Yes
Harvested Forest change (FORE to MO) is misclassified as: Forest to crop, pasture, or turf		Lack of Harvested Forest data (MD and PA only states with data)		Partial
Mis-identification of water, impervious, and low veg in land cover change	Misclassification mostly resolved; additional fixes planned for V2			Partial
Omission and commission of new structure change	Over-reliance on MS Building data; more comprehensively fixed in V2			Partial
Under-detection of Forest growth	Inability to detect growth in shrubs with LiDAR data			No
Over classification of change classes due to poor quality parcels			Poor quality parcel data	No

York County
Fixed: error causing no change and pixelation

V1 LU Change with error

York County
Fixed: error causing no change and pixelation
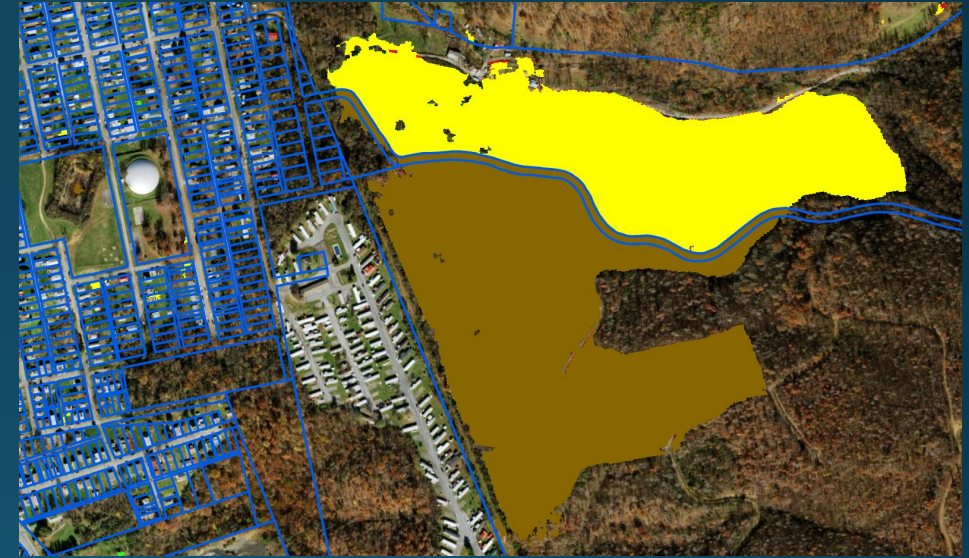
V1 LU Change

Some parcels can cause errors:
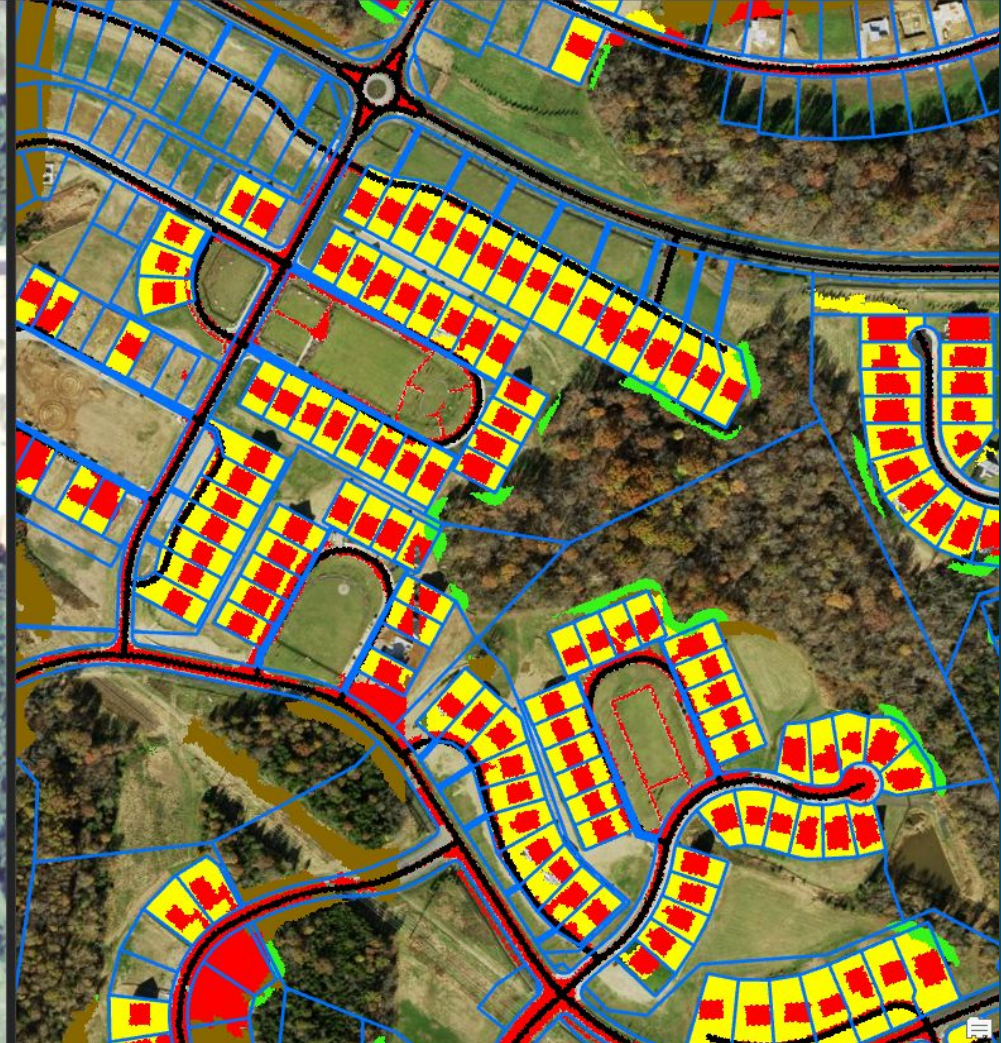## Example: 1 area being classified differently
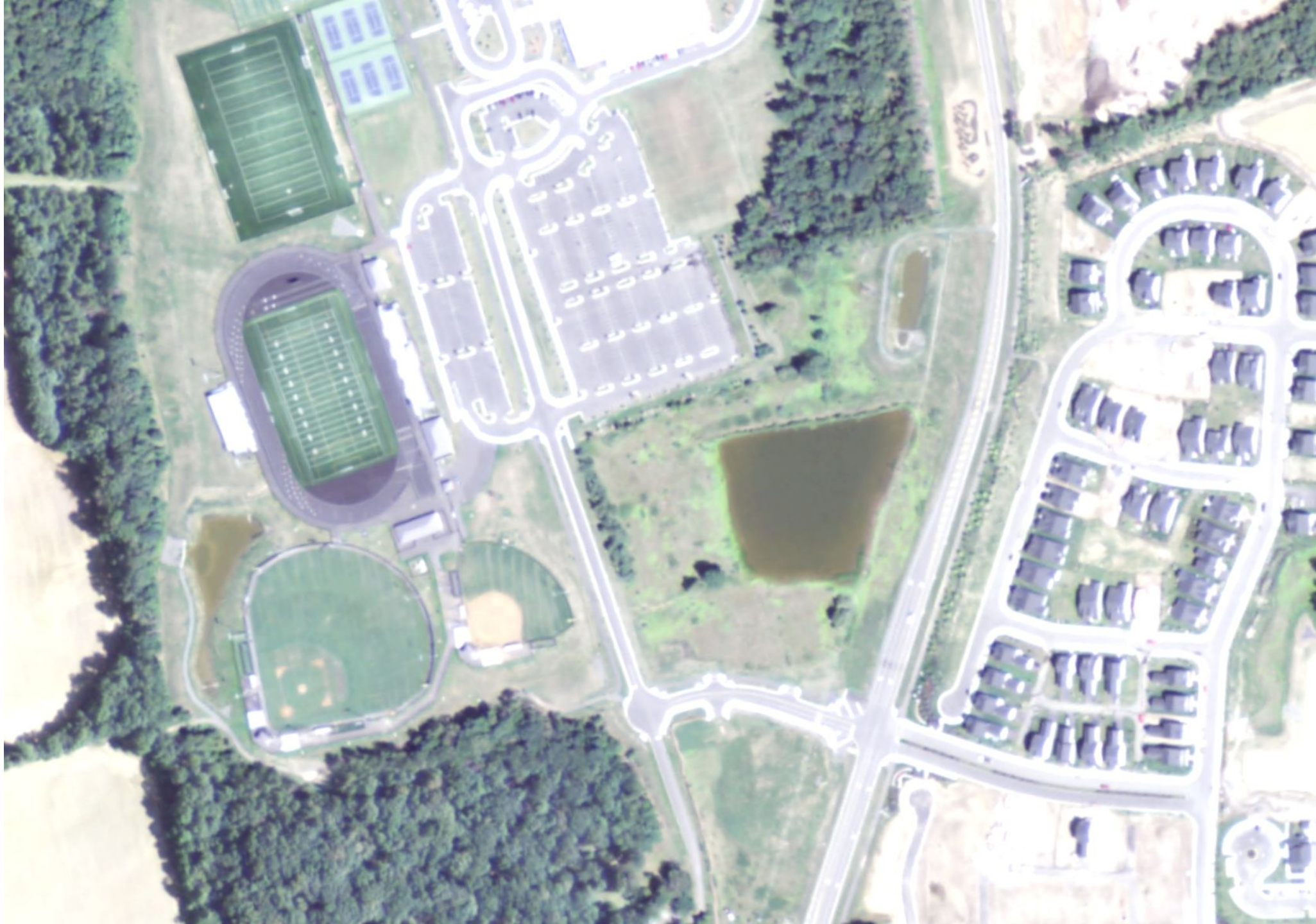
2014

2018

Why parcels help

2014
2018

Land Use Change

Looking ahead, Year 4 (July 2021 – June 2022)

- UVM QAQC-ing further the Land Cover, Land Cover Change
- CIC doing any final tweaks to naming convention or rule-edits in the Land Use that need to be made
- CIC re-running Land Use and Land Use Change on the Version 2 Land Cover and Land Cover Change- to be published by February 2022
- Developing and running an Accuracy Assessment
- Writing a Lessons Learned Document

Loudon County
Water no longer marked as false change

NAIP 2014
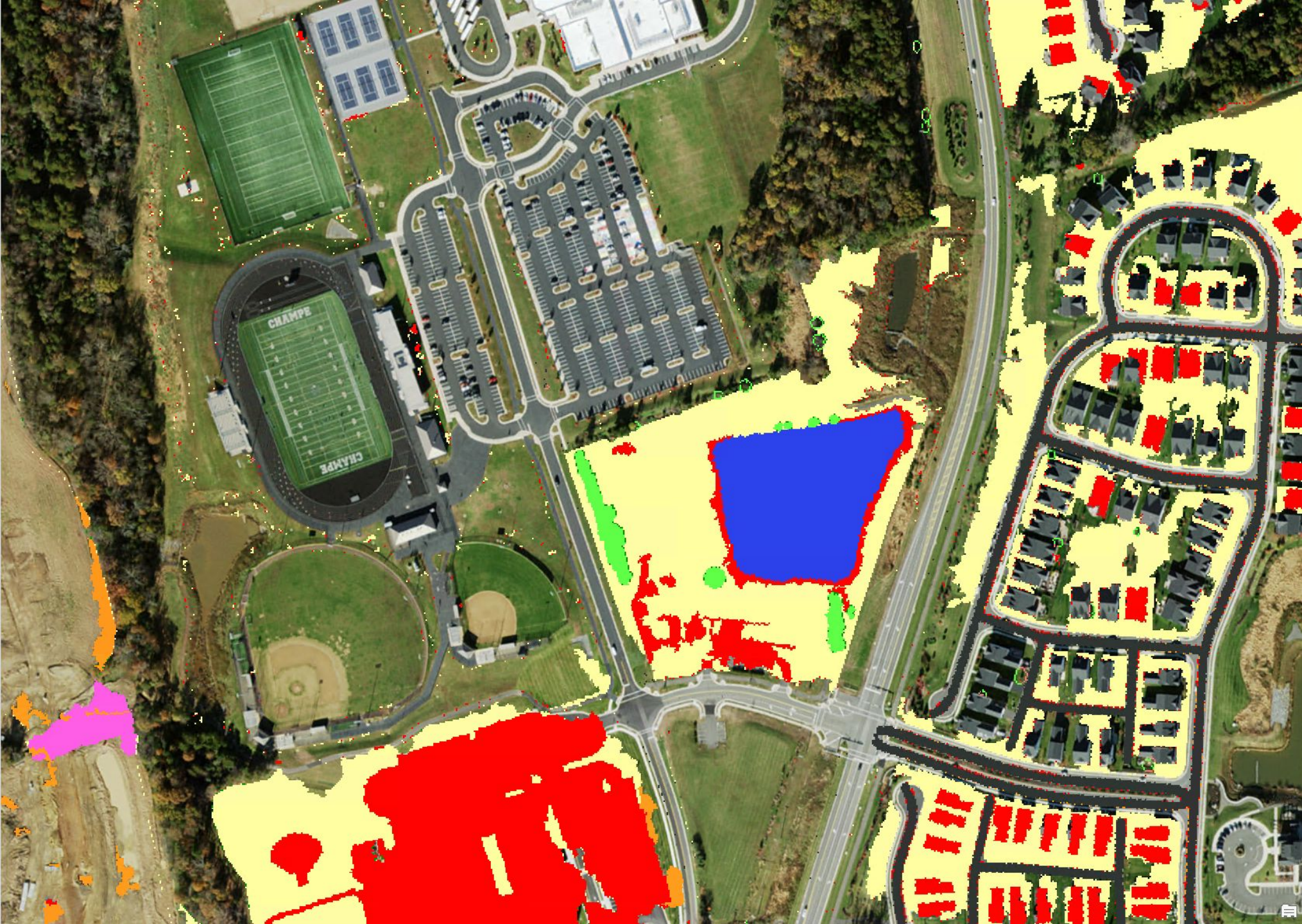
Loudon County

Water no longer marked as false change

NAIP 2018

Loudon County

Issue: Marked as change when water is present in both time periods

Legend:

- Impervious Non-Roads to Impervious Roads
- Turf Grass to Impervious Roads
- Tree Canopy over Turf Grass to Impervious Roads
- Wetlands, Other to Impervious Roads
- Mixed Open to Impervious Roads
- Tree Canopy Over Impervious to Impervious Non-Roads
- Turf Grass to Impervious Non-Roads
- Tree Canopy over Turf Grass to Impervious Non-Roads
- Forest to Impervious Non-Roads
- Wetlands, Other to Impervious Non-Roads
- Mixed Open to Impervious Non-Roads
- Cropland to Impervious Non-Roads
- Impervious Roads to Tree Canopy Over Impervious
- Impervious Non-Roads to Tree Canopy Over Impervious
- Impervious Non-Roads to Turf Grass
- Tree Canopy Over Impervious to Turf Grass
- Tree Canopy over Turf Grass to Turf Grass
- Forest to Turf Grass
- Wetlands, Other to Turf Grass
- Mixed Open to Turf Grass
- Cropland to Turf Grass
- Turf Grass to Tree Canopy over Turf Grass
- Mixed Open to Tree Canopy over Turf Grass
- Impervious Non-Roads to Forest
- Tree Canopy Over Impervious to Forest
- Turf Grass to Forest
- Tree Canopy over Turf Grass to Forest
- Mixed Open to Forest
- Cropland to Forest
- Impervious Non-Roads to Mixed Open
- Turf Grass to Mixed Open
- Tree Canopy over Turf Grass to Mixed Open
- Forest to Mixed Open
- Cropland to Mixed Open
- Tree Canopy over Turf Grass to Cropland
- Forest to Cropland
- Mixed Open to Water

Draft LU Change Rollup

Loudon County

Water no longer marked as false change

Impervious Non-Roads to Impervious Roads
Turf Grass to Impervious Roads
Mixed Open to Impervious Roads
Tree Canopy Over Impervious to Impervious Non-Roads
Turf Grass to Impervious Non-Roads
Tree Canopy over Turf Grass to Impervious Non-Roads
Forest to Impervious Non-Roads
Mixed Open to Impervious Non-Roads
Impervious Roads to Tree Canopy Over Impervious
Impervious Non-Roads to Tree Canopy Over Impervious
Impervious Non-Roads to Turf Grass
Forest to Turf Grass
Mixed Open to Turf Grass
Impervious Non-Roads to Tree Canopy over Turf Grass
Turf Grass to Tree Canopy over Turf Grass
Forest to Tree Canopy over Turf Grass
Impervious Roads to Forest
Turf Grass to Forest
Mixed Open to Forest
Water to Forest
Impervious Non-Roads to Mixed Open
Tree Canopy Over Impervious to Mixed Open
Turf Grass to Mixed Open
Tree Canopy over Turf Grass to Mixed Open
Forest to Mixed Open

V1 LU Change

Loudon County
Fixed over-detection of change to turf

NAIP 2014

Loudon County
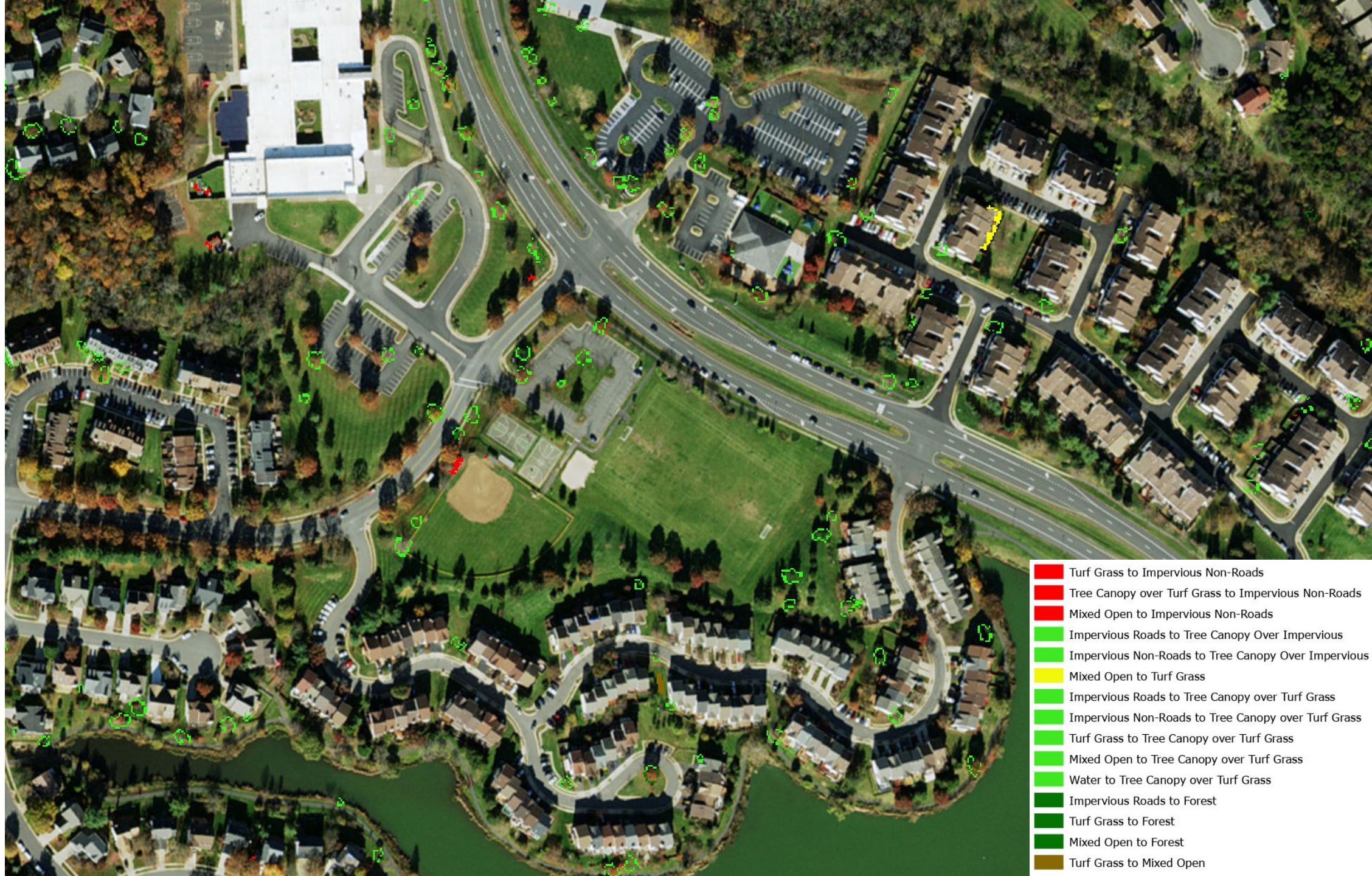Fixed over-detection of change to turf

NAIP 2018

Loudon County

Issue: Over-detection of change to turf

Legend:

- Turf Grass to Impervious Roads
- Mixed Open to Impervious Roads
- Tree Canopy Over Impervious to Impervious Non-Roads
- Turf Grass to Impervious Non-Roads
- Tree Canopy over Turf Grass to Impervious Non-Roads
- Mixed Open to Impervious Non-Roads
- Impervious Roads to Tree Canopy Over Impervious
- Impervious Non-Roads to Tree Canopy Over Impervious
- Impervious Non-Roads to Turf Grass
- Mixed Open to Turf Grass
- Turf Grass to Tree Canopy over Turf Grass
- Mixed Open to Tree Canopy over Turf Grass
- Water to Tree Canopy over Turf Grass
- Turf Grass to Forest
- Tree Canopy over Turf Grass to Forest
- Mixed Open to Forest
- Turf Grass to Mixed Open
- Mixed Open to Water

Draft LU Change Rollup

Loudon County
Fixed over-detection of change to turf

V1 LU Change

Turf Grass to Impervious Non-Roads
Tree Canopy over Turf Grass to Impervious Non-Roads
Mixed Open to Impervious Non-Roads
Impervious Roads to Tree Canopy Over Impervious
Impervious Non-Roads to Tree Canopy Over Impervious
Mixed Open to Turf Grass
Impervious Roads to Tree Canopy over Turf Grass
Impervious Non-Roads to Tree Canopy over Turf Grass
Turf Grass to Tree Canopy over Turf Grass
Mixed Open to Tree Canopy over Turf Grass
Water to Tree Canopy over Turf Grass
Impervious Roads to Forest
Turf Grass to Forest
Mixed Open to Forest
Turf Grass to Mixed Open

Loudon County
No longer false change to pasture, crop, harvested forest, orchard

NAIP 2014

Loudon County
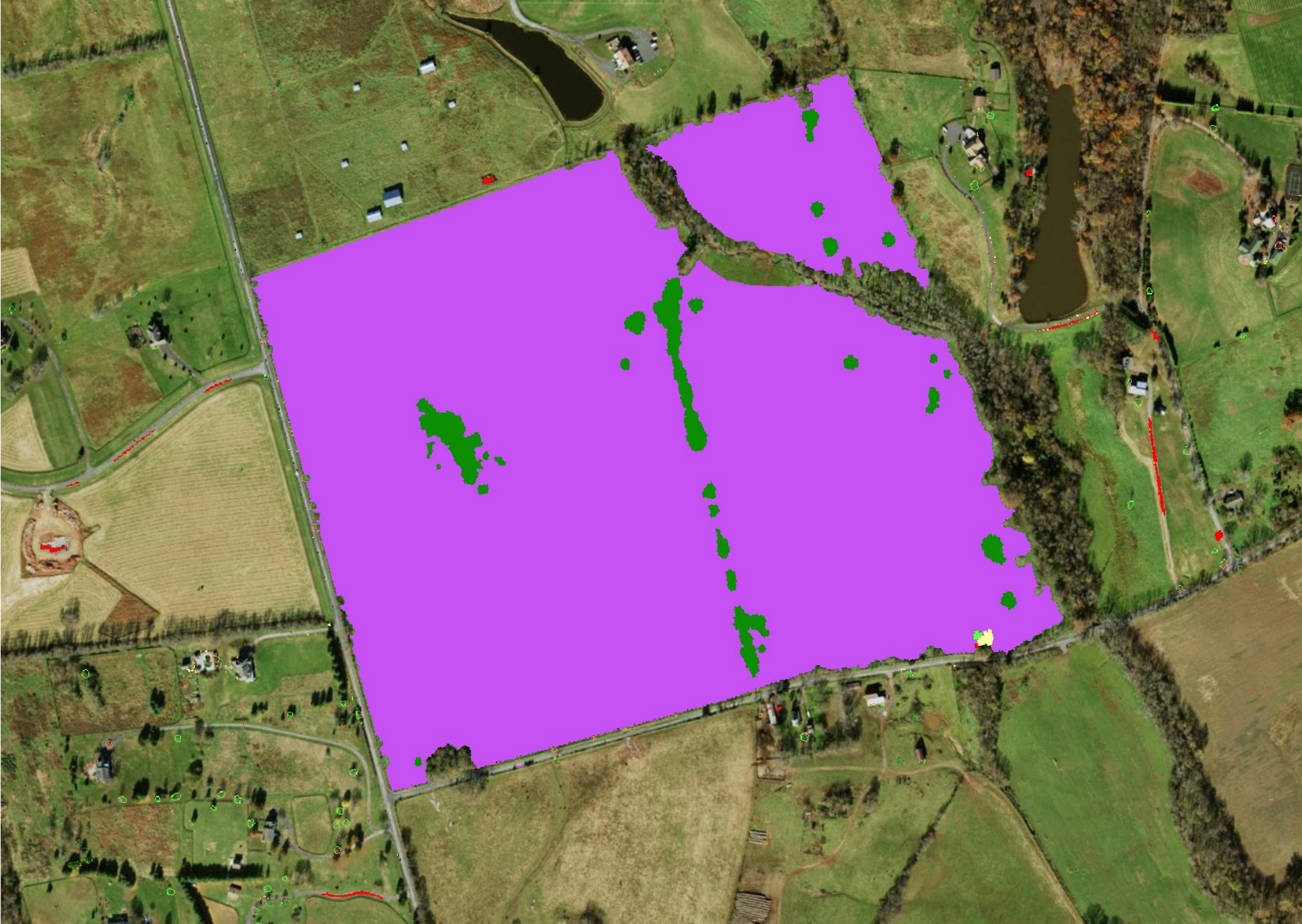No longer false change to pasture, crop, harvested forest, orchard

NAIP 2018

Loudon County
Issue: false change to pasture,
crop, harvested forest, orchard

Turf Grass to Impervious Roads
Mixed Open to Impervious Roads
Pasture to Impervious Roads
Turf Grass to Impervious Non-Roads
Tree Canopy over Turf Grass to Impervious Non-Roads
Forest to Impervious Non-Roads
Mixed Open to Impervious Non-Roads
Pasture to Impervious Non-Roads
Impervious Roads to Tree Canopy Over Impervious
Impervious Non-Roads to Tree Canopy Over Impervious
Tree Canopy over Turf Grass to Turf Grass
Mixed Open to Turf Grass
Pasture to Turf Grass
Turf Grass to Tree Canopy over Turf Grass
Mixed Open to Tree Canopy over Turf Grass
Pasture to Tree Canopy over Turf Grass
Impervious Roads to Forest
Impervious Non-Roads to Forest
Tree Canopy Over Impervious to Forest
Turf Grass to Forest
Mixed Open to Forest
Cropland to Forest
Pasture to Forest
Water to Forest
Mixed Open to Pasture
Pasture to Water

Draft LU Change
Rollup

Loudon County
No longer false change to pasture, crop, harvested forest, orchard

Legend:
- Tree Canopy Over Impervious to Impervious Non-Roads
- Turf Grass to Impervious Non-Roads
- Tree Canopy over Turf Grass to Impervious Non-Roads
- Forest to Impervious Non-Roads
- Mixed Open to Impervious Non-Roads
- Pasture to Impervious Non-Roads
- Impervious Roads to Tree Canopy Over Impervious
- Impervious Non-Roads to Tree Canopy Over Impervious
- Forest to Turf Grass
- Impervious Non-Roads to Tree Canopy over Turf Grass
- Turf Grass to Tree Canopy over Turf Grass
- Forest to Tree Canopy over Turf Grass
- Mixed Open to Tree Canopy over Turf Grass
- Impervious Roads to Forest
- Turf Grass to Forest
- Mixed Open to Forest
- Water to Forest
- Forest to Pasture

V1 LU Change

Loudon County
Fixed over-detection of change to turf in new development

NAIP 2014

Loudon County
Fixed over-detection of change
to turf in new development

NAIP 2018

Loudon County

Issue: over-detection of change to turf in new development

Legend:
- Impervious Non-Roads to Impervious Roads
- Tree Canopy Over Impervious to Impervious Roads
- Tree Canopy over Turf Grass to Impervious Roads
- Forest to Impervious Roads
- Wetlands, Floodplain to Impervious Roads
- Wetlands, Other to Impervious Roads
- Mixed Open to Impervious Roads
- Tree Canopy Over Impervious to Impervious Non-Roads
- Turf Grass to Impervious Non-Roads
- Tree Canopy over Turf Grass to Impervious Non-Roads
- Forest to Impervious Non-Roads
- Wetlands, Floodplain to Impervious Non-Roads
- Wetlands, Other to Impervious Non-Roads
- Mixed Open to Impervious Non-Roads
- Impervious Non-Roads to Tree Canopy Over Impervious
- Impervious Non-Roads to Turf Grass
- Tree Canopy Over Impervious to Turf Grass
- Tree Canopy over Turf Grass to Turf Grass
- Forest to Turf Grass
- Wetlands, Floodplain to Turf Grass
- Mixed Open to Turf Grass
- Turf Grass to Tree Canopy over Turf Grass
- Mixed Open to Tree Canopy over Turf Grass
- Impervious Non-Roads to Forest
- Turf Grass to Forest
- Tree Canopy over Turf Grass to Forest
- Mixed Open to Forest
- Impervious Non-Roads to Mixed Open
- Tree Canopy Over Impervious to Mixed Open
- Tree Canopy over Turf Grass to Mixed Open
- Forest to Mixed Open

Draft LU Change Rollup

Loudon County
Fixed over-detection of change
to turf in new development

Legend:

- Impervious Non-Roads to Impervious Roads
- Tree Canopy Over Impervious to Impervious Roads
- Turf Grass to Impervious Roads
- Tree Canopy over Turf Grass to Impervious Roads
- Forest to Impervious Roads
- Mixed Open to Impervious Roads
- Tree Canopy Over Impervious to Impervious Non-Roads
- Turf Grass to Impervious Non-Roads
- Tree Canopy over Turf Grass to Impervious Non-Roads
- Forest to Impervious Non-Roads
- Mixed Open to Impervious Non-Roads
- Impervious Non-Roads to Tree Canopy Over Impervious
- Impervious Non-Roads to Turf Grass
- Tree Canopy Over Impervious to Turf Grass
- Forest to Turf Grass
- Mixed Open to Turf Grass
- Impervious Non-Roads to Tree Canopy over Turf Grass
- Turf Grass to Tree Canopy over Turf Grass
- Forest to Tree Canopy over Turf Grass
- Mixed Open to Tree Canopy over Turf Grass
- Impervious Non-Roads to Forest
- Tree Canopy over Turf Grass to Forest
- Mixed Open to Forest
- Turf Grass to Wetlands, Floodplain
- Impervious Non-Roads to Mixed Open
- Tree Canopy Over Impervious to Mixed Open
- Turf Grass to Mixed Open
- Forest to Mixed Open

V1 LU Change

Wicomico County

Speckles of forest no longer exist

Source: Esri, USDA FSA, MD iMAP, USDA

NAIP 2018

Wicomico County

Speckles of forest no longer exist

Draft LU

Wicomico County

Speckles of forest no longer exist

Bare Developed
Structures
Other Impervious
Impervious Roads
Turf Grass
Suspended Succession- Herbaceous
Tree Canopy over Turf Grass
Forest
Tree Canopy in Agriculture
Harvested Forest Herbaceous
Natural Succession Herbaceous
Riverine (Non-Tidal) Wetlands Barren
Riverine (Non-Tidal) Wetlands Forest

V1 LU