

# Objective 1: Land Use and Land Use Change

May 20, 2021: AGWG and LUWG

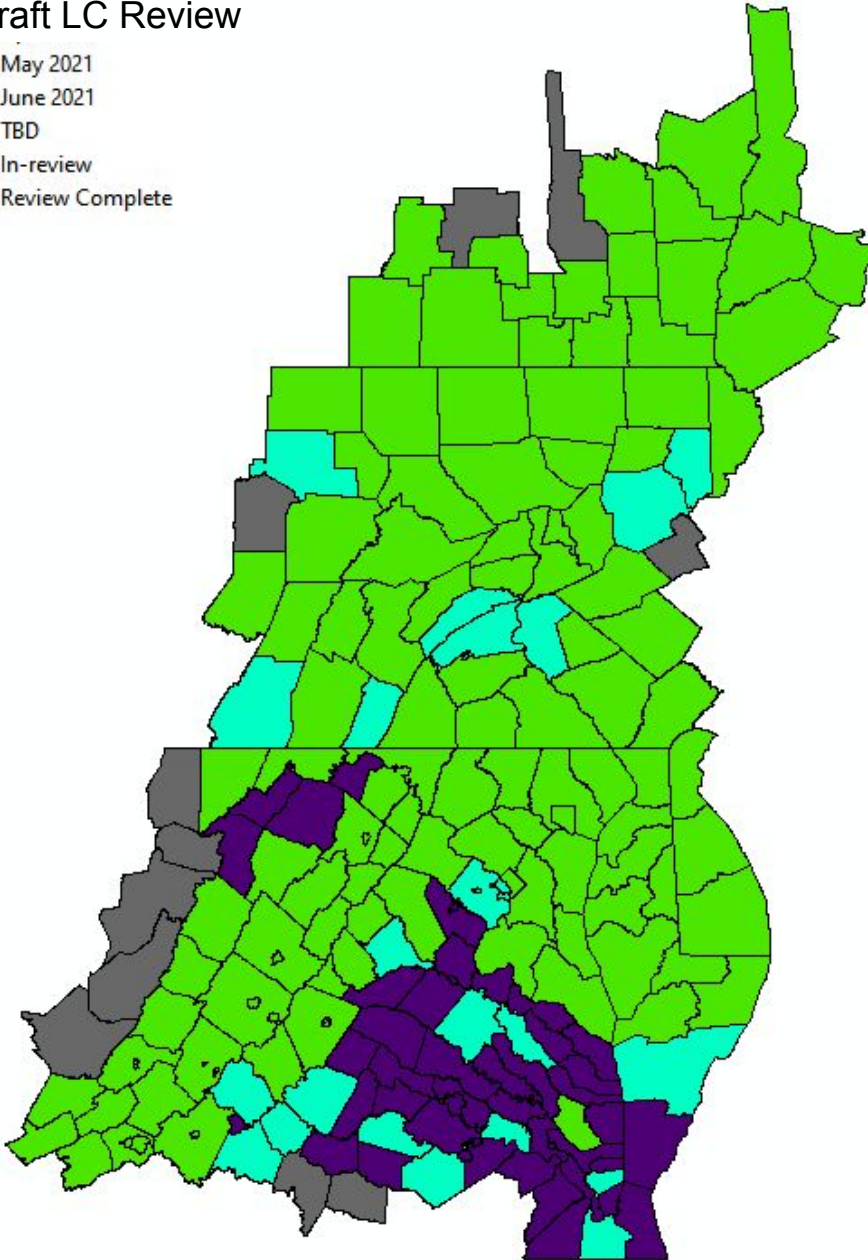
Rachel Soobitsky

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# Land Cover Production Update

## Draft LC Review

May 2021  
June 2021  
TBD  
In-review  
Review Complete



Last Updated: 05/19/21

## Draft Land Cover:

157 out of 206 counties have draft LC and/or gone through local review\*

\*not every locality ended up providing feedback, but every one was contacted

- PA has 2 counties remaining, both mostly outside the watershed
- WV has 9 counties remaining, with 5 of those mostly outside the watershed
- VA has 39 remaining, with 3 of those mostly outside of the watershed
- NY has 2 remaining, both mostly outside of the watershed

## Version 1 Delivery for Land Use Ingestion:

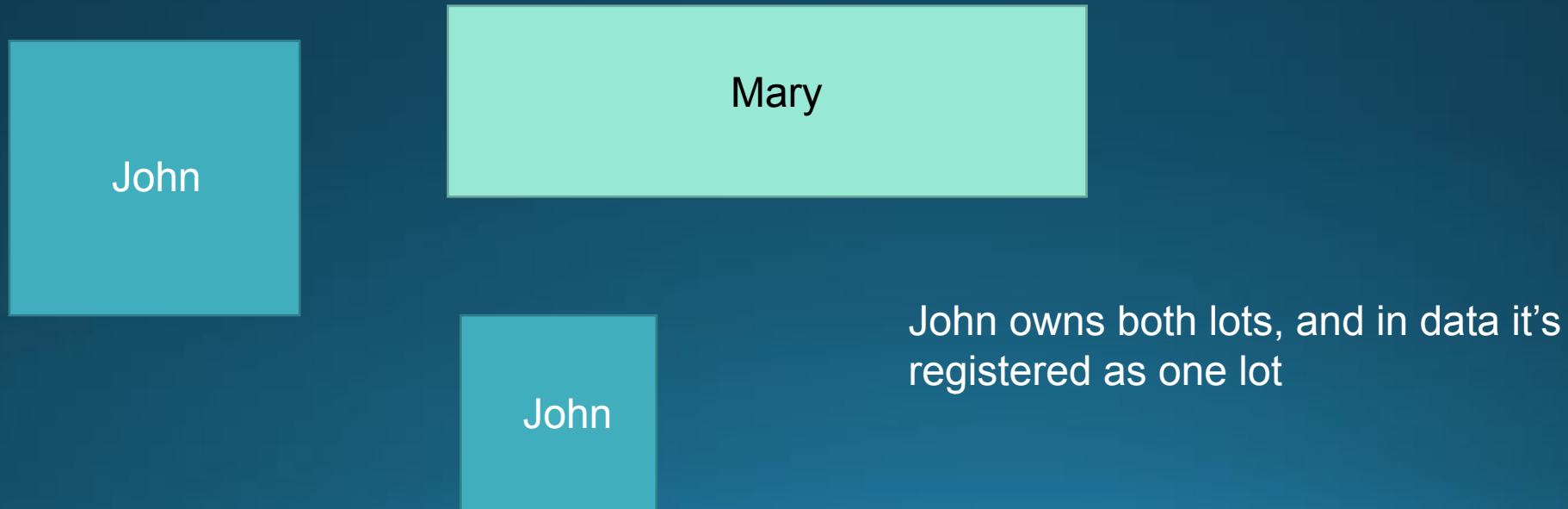
108 counties delivered to date. About 25-35 delivered every Friday

Reminder: The draft Land Use Change was created using draft Land Cover Change and draft 2017/18 Land Use!

Error	Land Cover	2017/18 Land Use	2013 - 2018 Land Use Change	Fixed for CAST?	Method
Small clusters of pixels	Lack of filtering of draft product			Yes	Fixed in v1 land cover
Over-detection of change to new turf grass		Over-classification of turf grass		Yes	Fixed in v1 land use
Any errors related to TC/Forest		Revisions to TC models required		Yes	Fixed in v1 land use
False change to pasture, crop, harvested forest, orchard			Code changes required	Yes	Fixed in land use change
Adjacency issues- false change appearing in areas next to real change		Model missed a step for splitting multipart parcels		Yes	Multipart to Singlepart on the parcel dataset
Misclassification of suspended succession, natural succession, bare developed (all mixed Open in P6)		Code changes required	Code changes required	Yes	Fixed in v1 land use and land use change
Over classification of Agriculture		Requires better mining data		Yes	abandoned mines
Over classification of Turf Grass		Code changes required		Yes	Fixed in v1 land use with parcel thresholds in new method to incorporate local land use
Overclassification of TC in Agriculture		Revisions to TC models required		Yes	Fixed in v1 land use
Over classification of TC over Turf Grass		Revisions to TC models required		Yes	Fixed in v1 land use
Under classification of Natural Succession		Requires better mining data		Yes	abandoned mines
Under classification of Wetlands		Missed step in incorporation of wetlands		Yes	Fixed in v1 land use
Under classification of Suspended Succession		Missed inclusion of transmission line dataset		Yes	Fixed in v1 land use
Under classification of Forest		Revisions to TC models required		Yes	Fixed in v1 land use
Mis-identification of water, impervious, and low veg	Misclassification			Partial*	Mostly fixed in v1, additional fixes planned for v2
Omission and commission of new structure change	Over-reliance on MS Building data			Partial*	Will be more fully fixed by v2
Harvested Forest is misclassified as: Forest to crop, pasture, or turf		Code changes required; Lack of Harvested Forest data		Partial	Fixed order of incorporation of Harvested Forest Model, fixed in v1 land use; only have timber harvest data for MD and PA
TC to Low vegetation change reversed	Misclassified as Low Vegetation to Tree Canopy			Planned	Discussing issue with UVM
Under-detection of Forest growth	Inability to detect growth in shrubs			No	T2 LiDAR lacking
Under classification of Bare Shore		Change thresholds to better capture		No*	Will be fixed in v2
Over classification of change classes due to poor quality parcels			Poor quality parcel data	No	Andillary data is poor quality

# Will be fixed for LU Change:

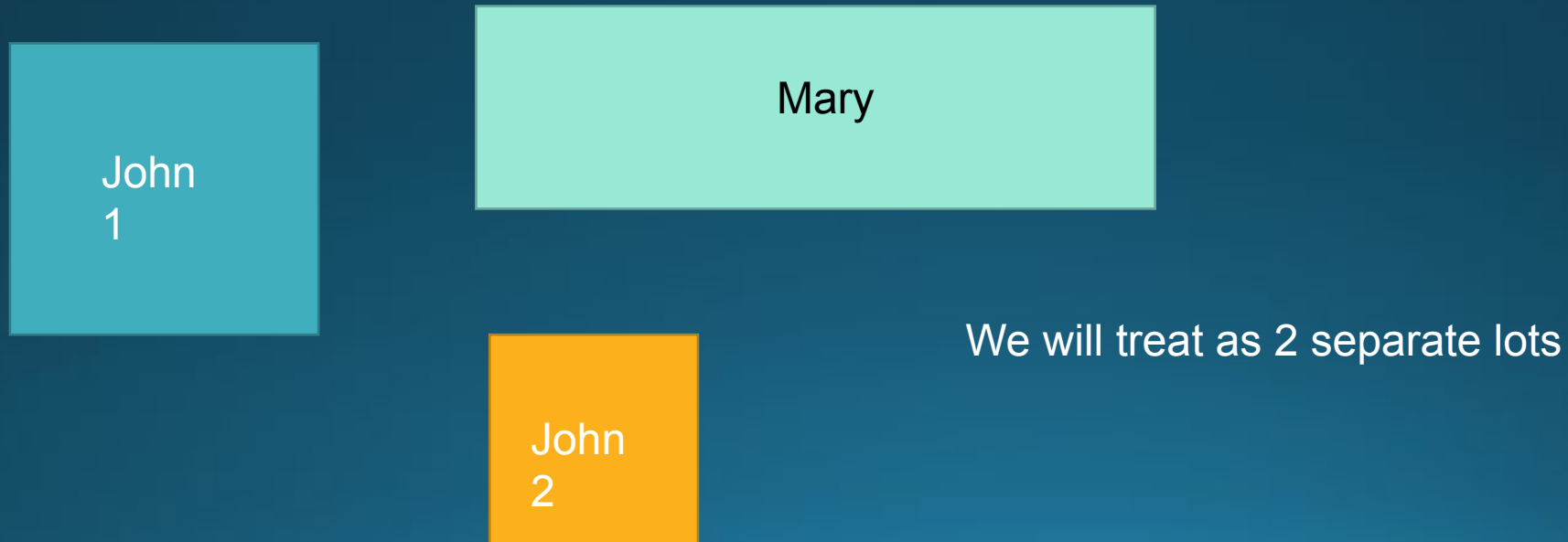
- Ancillary data problem
  - The way our model handled parcel data created adjacency issues





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- Ancillary data problem
  - The way our model handled parcel data created adjacency issues

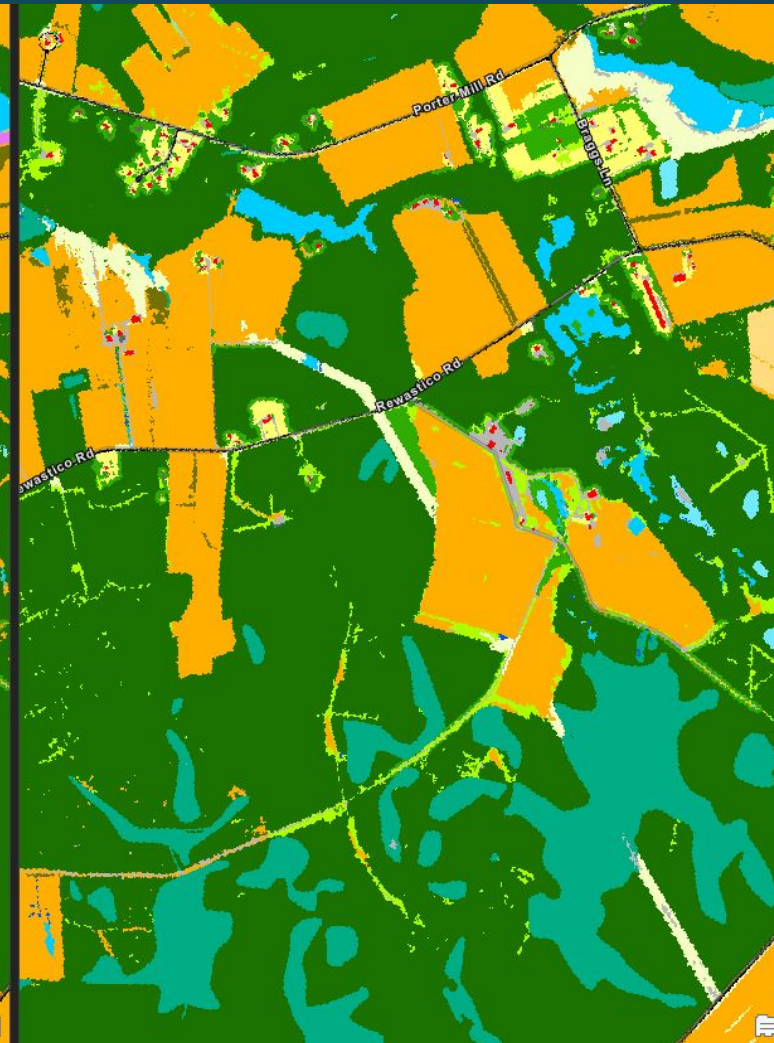


# 2017/18 LU: Fixed incorporation of Wetlands

Draft LU

Revision 1 LU

2017/2018 NAIP



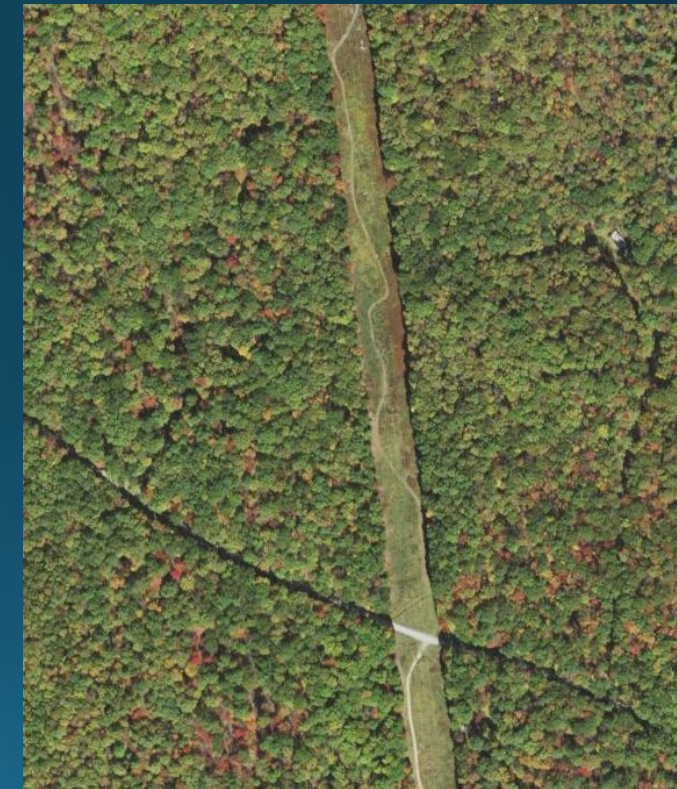


# 2017/18 LU: Fixed omission of suspended succession under transmission lines

Draft LU

Revision 1 LU

2017/2018 NAIP



 Suspended Succession Highlighted in Pink

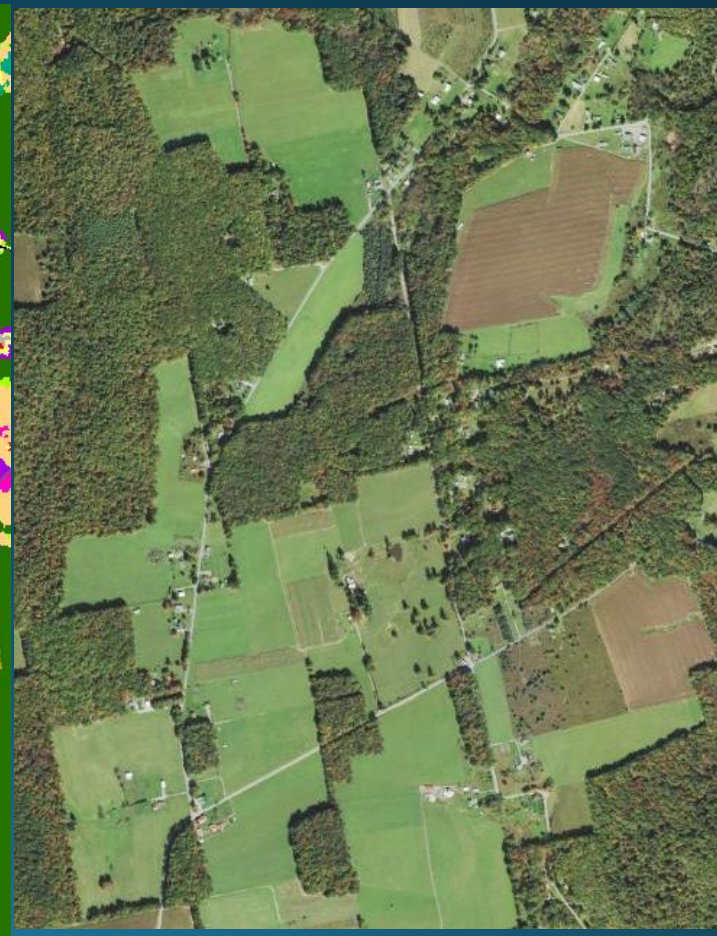
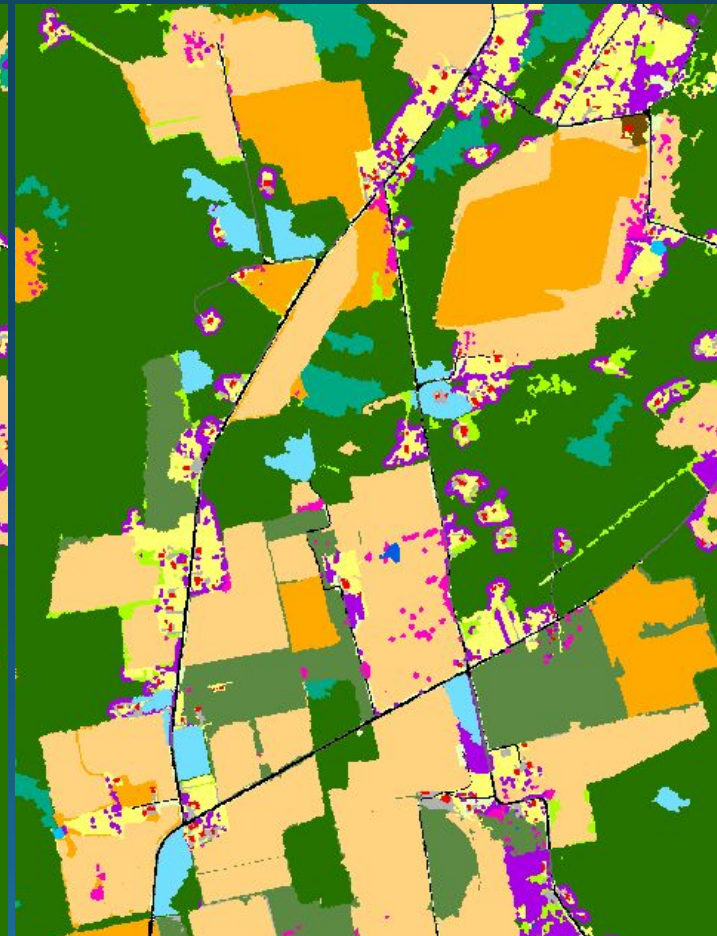


# 2017/18 LU: Fixed commission of TC in Ag + TC over Turf

Draft LU

Revision 1 LU

2017/2018 NAIP



TC over Turf Grass Highlighted in Purple

TC in Agriculture Highlighted in Pink



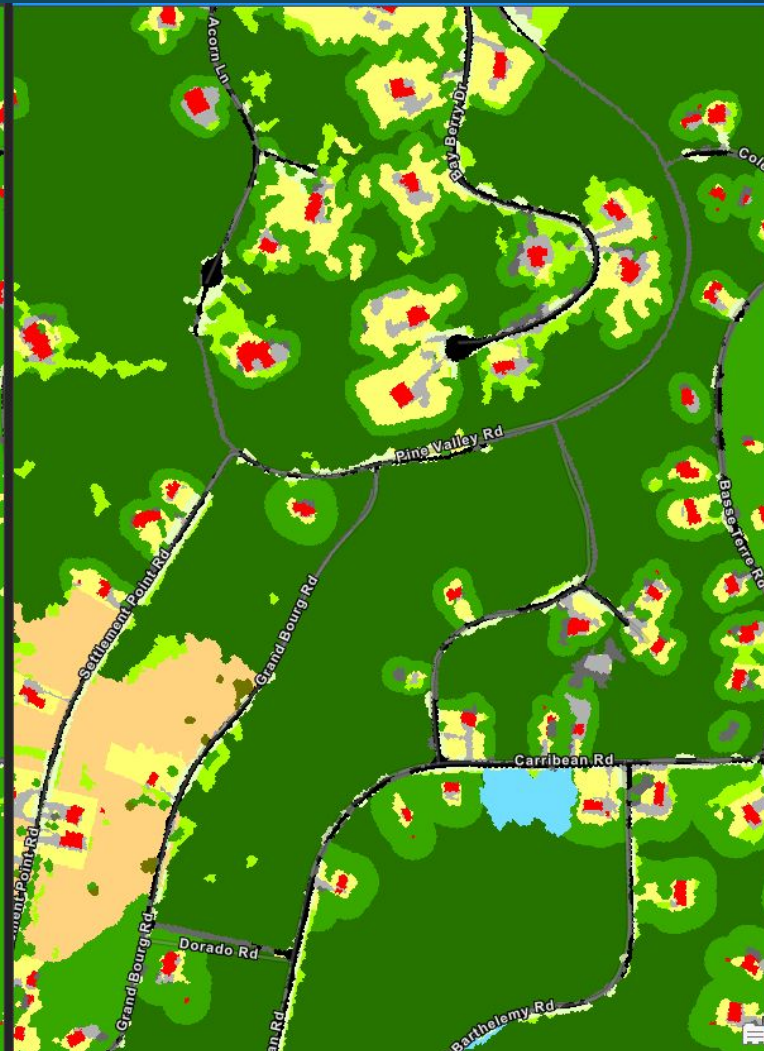
# 2017/18 LU: Fixed Tree Canopy over Turf Grass and Forest Model



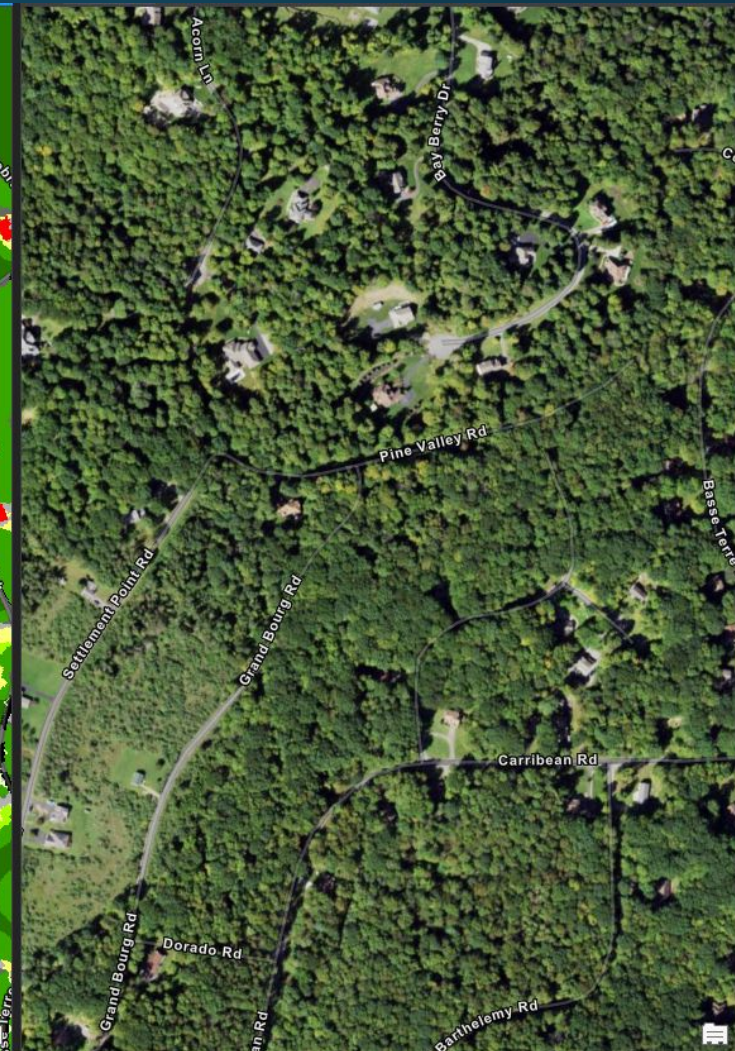
**Draft LU**



**Revision 1 LU**



**2017/2018 NAIP**





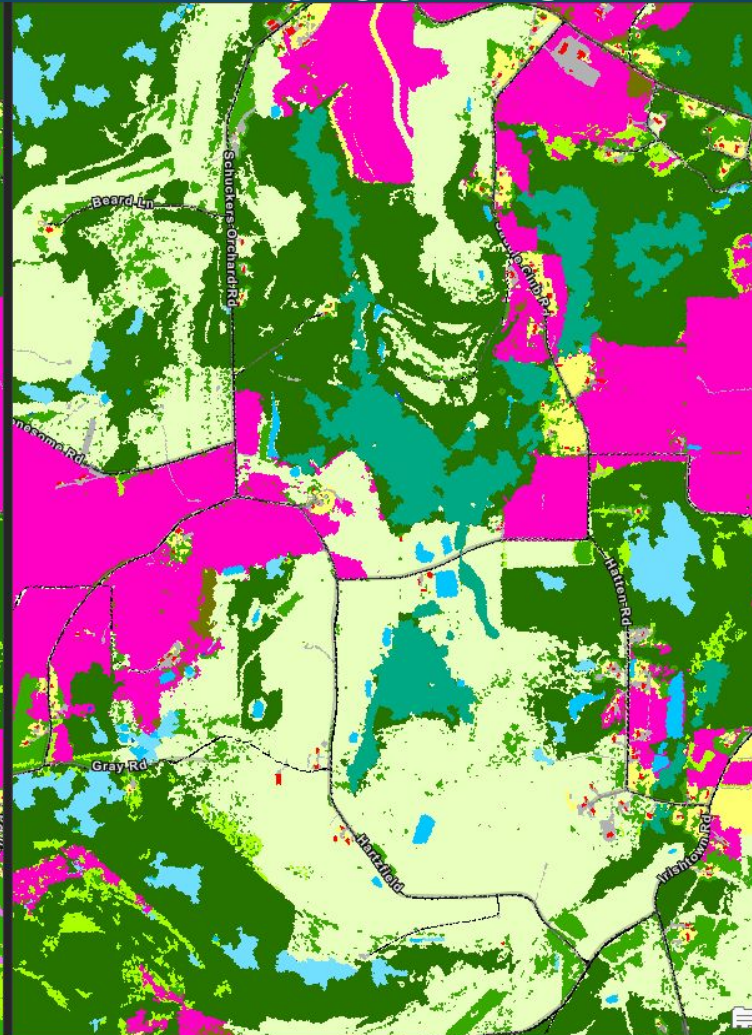
# 2017/18 LU: Minimized overclassification of Agriculture by adding in abandoned mines dataset



**Draft LU**



**Revision 1 LU**



**2017/2018 NAIP**



All Agriculture Classes Highlighted in Pink



Loudon County  
LC Problem- Fixed  
Small clusters of pixels



NAIP 2014



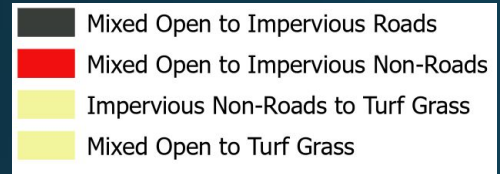
Loudon County  
LC Problem- Fixed  
Small clusters of pixels



NAIP 2018



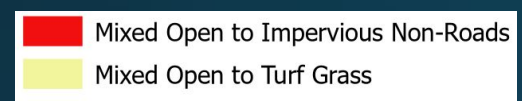
# Loudon County LC Problem- Fixed Small clusters of pixels



Draft LU Change  
Rollup



Loudon County  
LC Problem- Fixed  
Small clusters of pixels



V2 LU Change





# Loudon County LU Change Problem- Fixed

False change to pasture,  
crop, harvested forest,  
orchard



NAIP 2014



# Loudon County LU Change Problem- Fixed

False change to pasture,  
crop, harvested forest,  
orchard



NAIP 2018

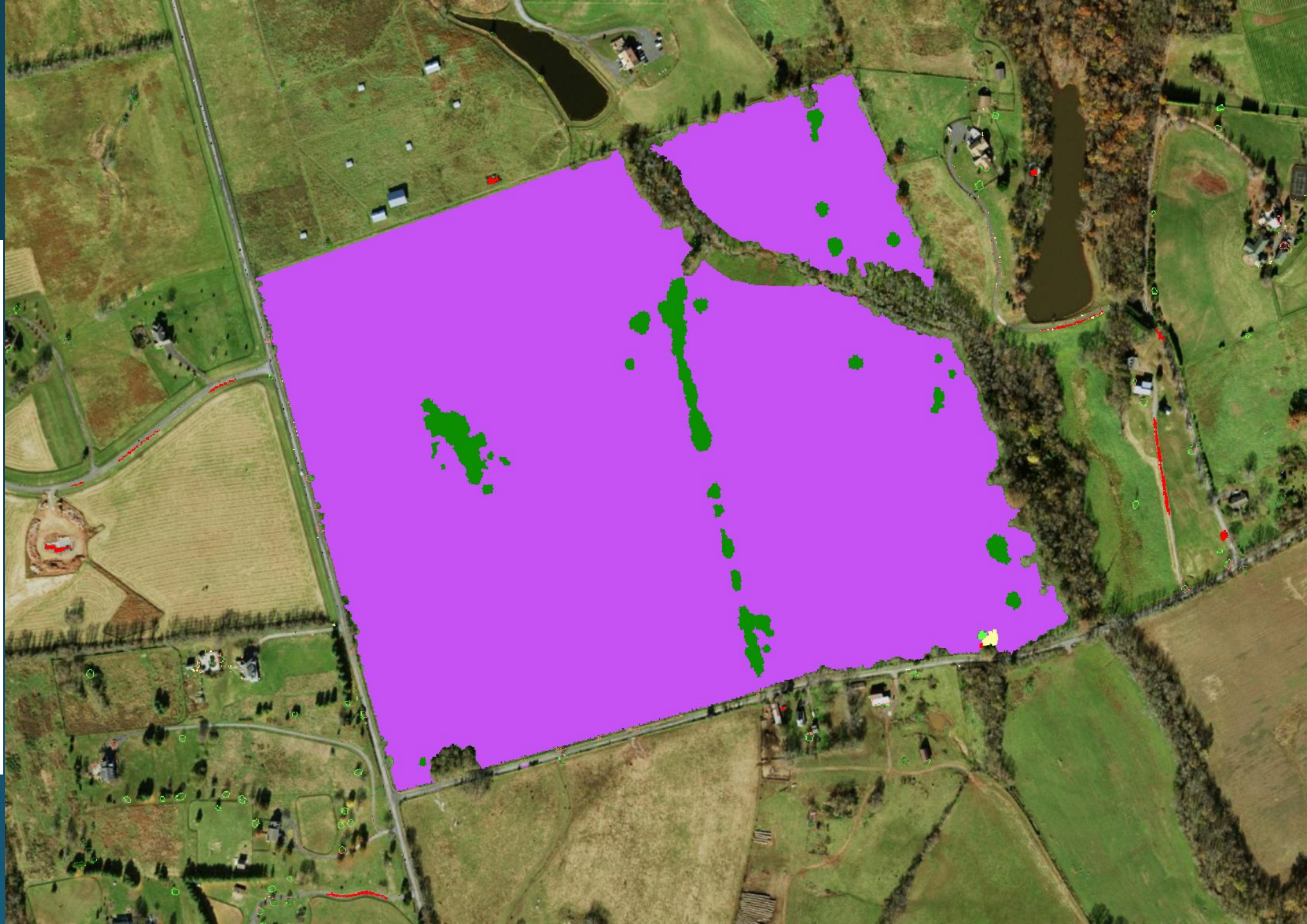


# Loudon County LU Change Problem- Fixed

False change to pasture,  
crop, harvested forest,  
orchard



Draft LU Change  
Rollup





# Loudon County LU Change Problem- Fixed

False change to pasture,  
crop, harvested forest,  
orchard





Loudon County  
Fixed:  
New structures  
missed by change,  
some structures called  
change when already  
present





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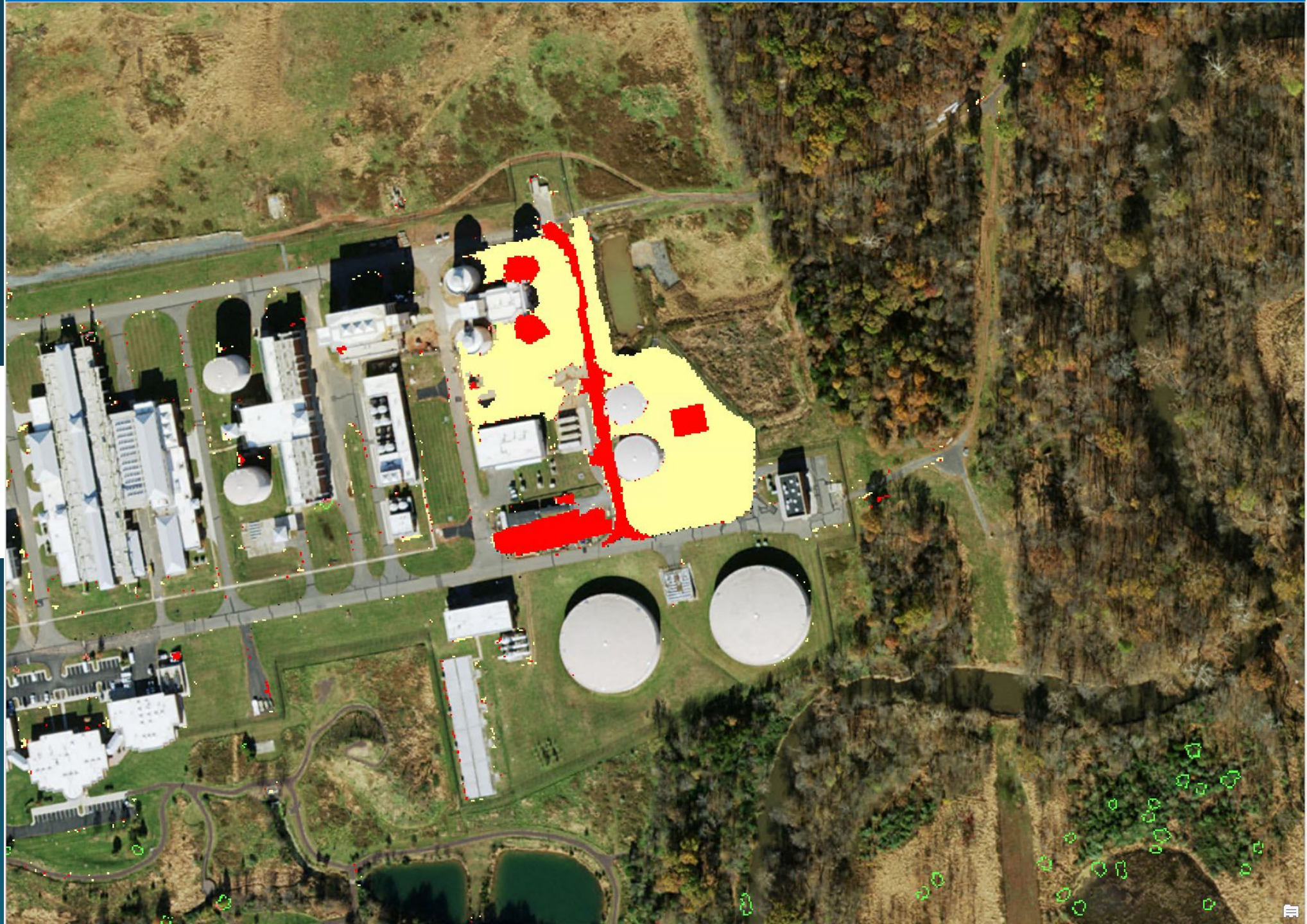




Loudon County  
Fixed:  
New structures  
missed by change,  
some structures called  
change when already  
present

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

Draft LU Change  
Rollup

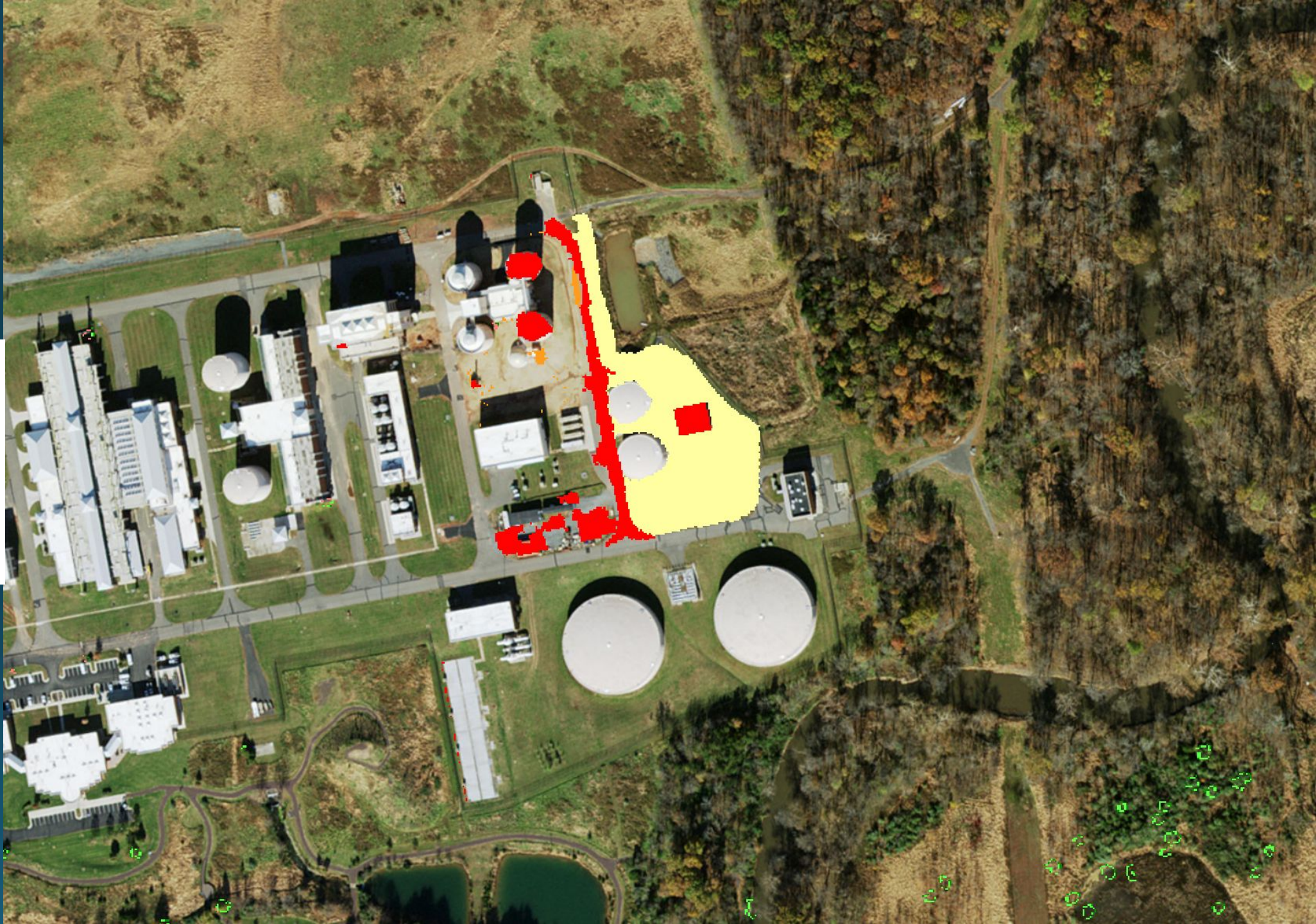




Loudon County  
Fixed:  
New structures  
missed by change,  
some structures called  
change when already  
present

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

V2 LU Change





Loudon County  
LU change problem-  
Fixed  
Over-detection of change to  
turf



NAIP 2014



Loudon County  
LU change problem-  
Fixed  
Over-detection of change to  
turf



NAIP 2018



# Loudon County LU change problem- Fixed

Over-detection of change to  
turf



Draft LU Change  
Rollup





# Loudon County

## LU change problem- Fixed

Over-detection of change to turf



V2 LU Change





# Wicomico County

## LC Problem- Partial Fix

Omission and commission of  
new structure change





# Wicomico County LC Problem- Partial Fix

Omission and commission of  
new structure change



NAIP 2018



# Wicomico County

## LC Problem- Partial Fix

Omission and commission of  
new structure change



Draft LU Change  
Rollup





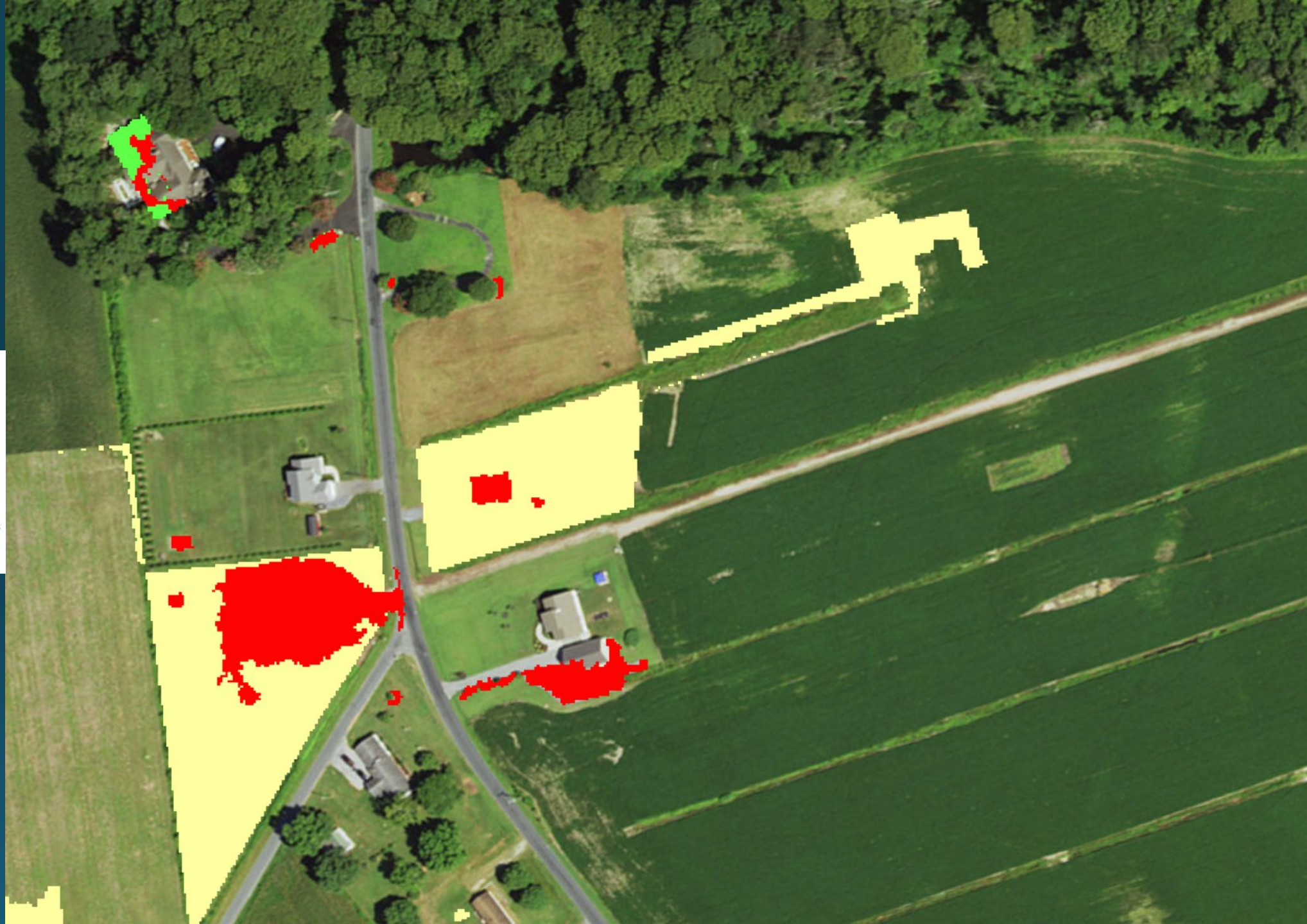
# Wicomico County

## LC Problem- Partial Fix

Omission and commission of  
new structure change



V2 LU Change

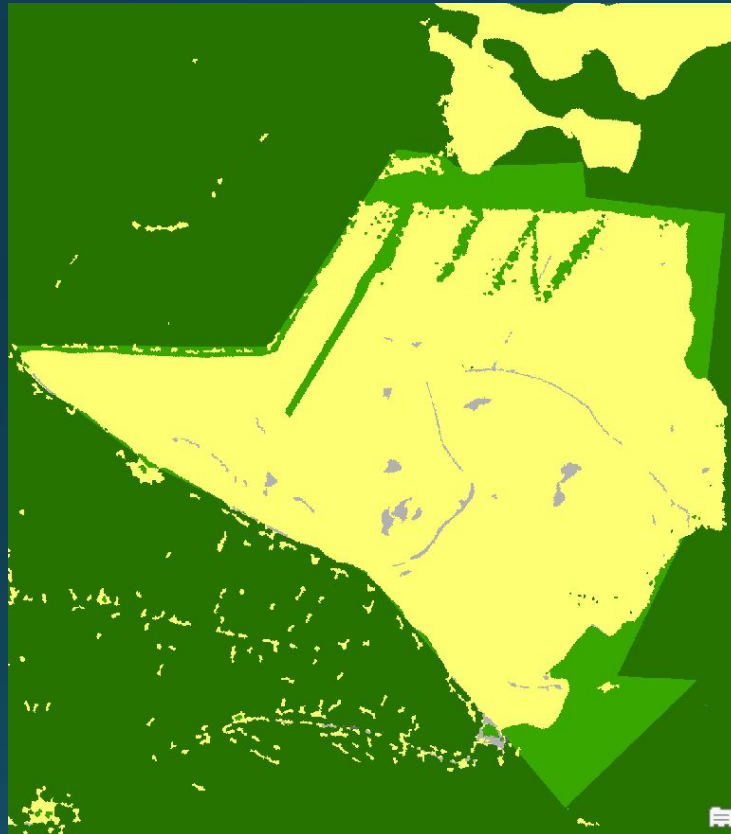




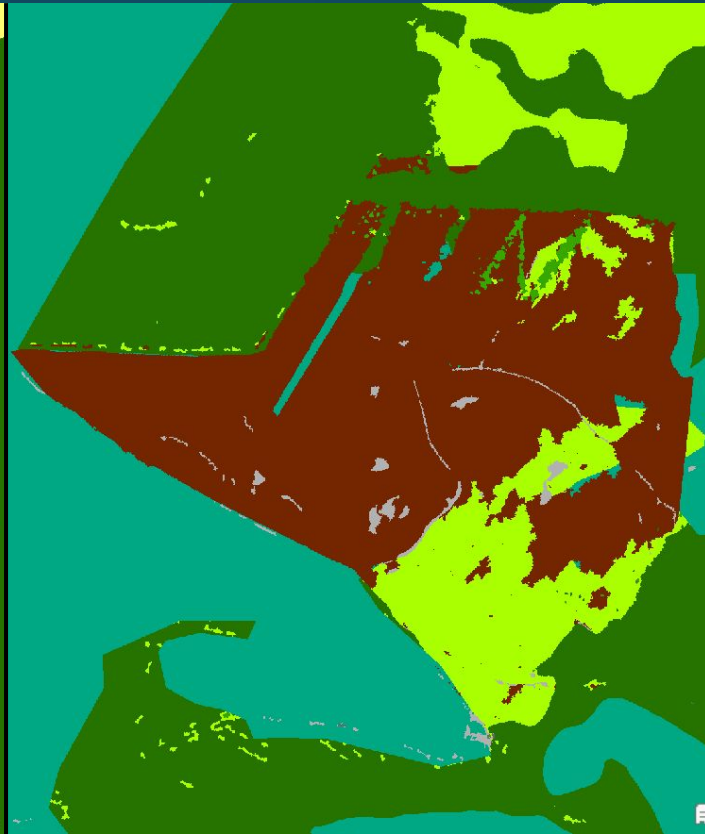
# 2017/18 LU: Partial fix of Harvested Forest



Draft LU



Revision 1 LU



2017/2018 NAIP





# Hardy County LC Problem- Partial Fixed

Mis-identification of water,  
other impervious, and low  
vegetation





# Hardy County LC Problem- Partial Fixed

Mis-identification of water,  
other impervious, and low  
vegetation

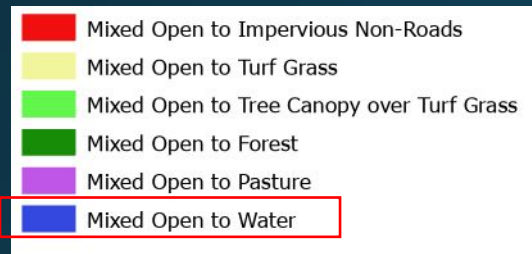


NAIP 2018

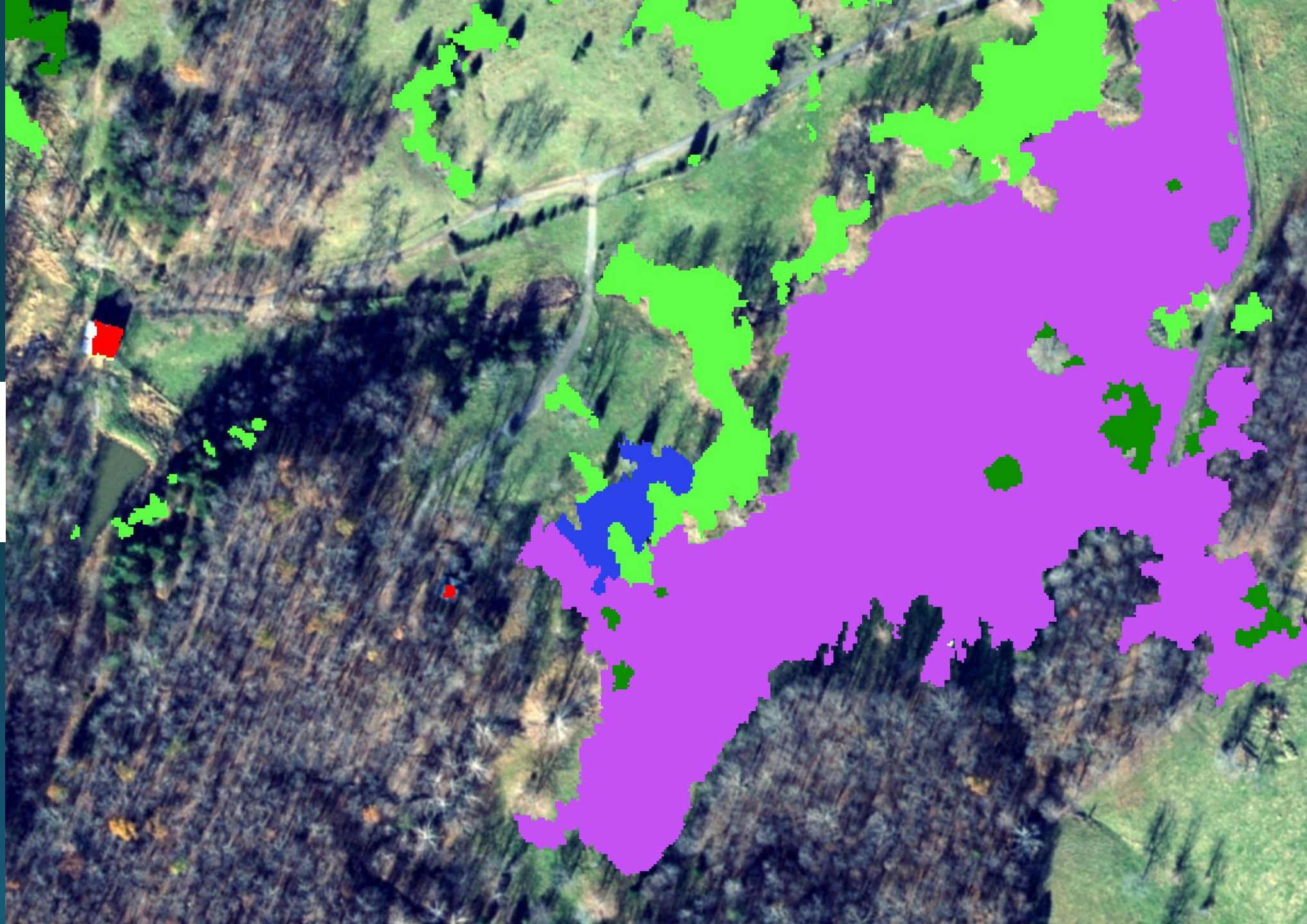


# Hardy County LC Problem- Partial Fixed

Mis-identification of water,  
other impervious, and low  
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Draft LU Change  
Rollup





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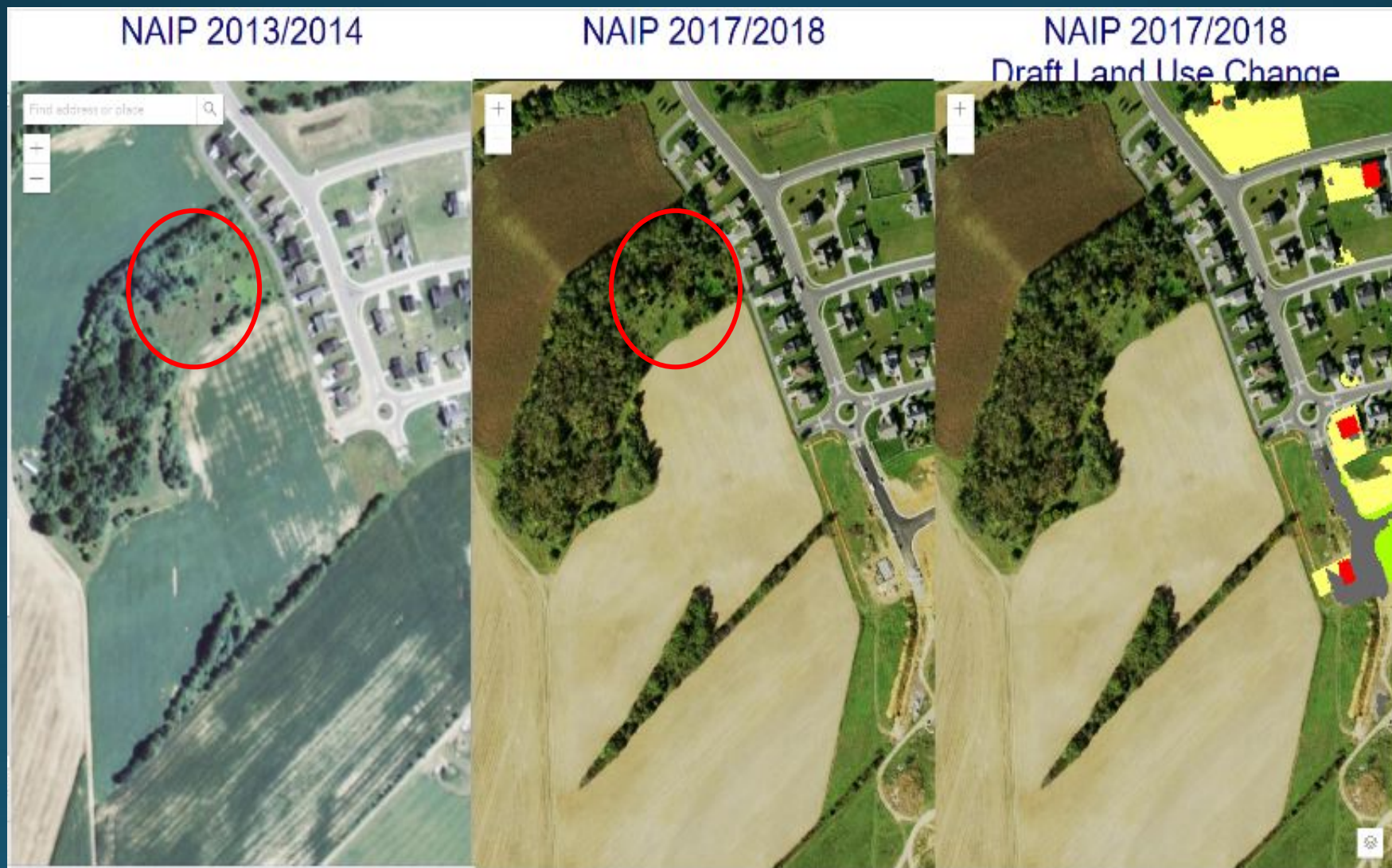
V2 LU Change





# Under-detection of Forest Growth:

Can't be fixed- need two dates of high-quality lidar to best capture





Berkley County  
Parcel problem- can't  
be fixed



NAIP 2014



Berkley County  
Parcel problem- can't  
be fixed

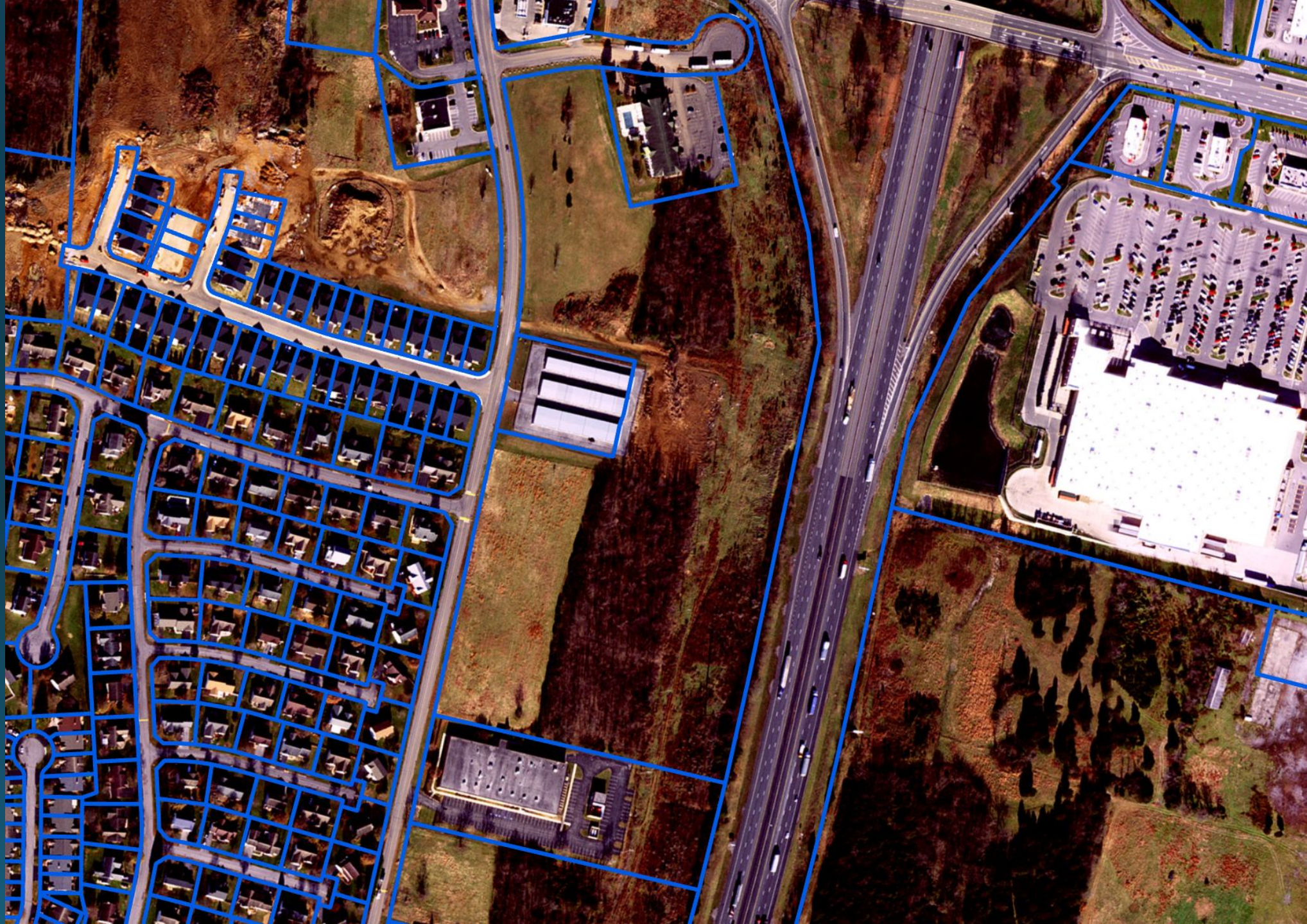


NAIP 2018



# Berkley County Parcel problem- can't be fixed

 Parcels



Parcels



# Berkley County

## Parcel problem- can't be fixed



Parcels

- 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
- Tree Canopy Over Impervious to Turf Grass
- Tree Canopy over Turf Grass to Turf Grass
- Forest to Turf Grass
- Mixed Open to Turf Grass
- Turf Grass to Tree Canopy over Turf Grass
- Mixed Open to Tree Canopy over Turf Grass
- Turf Grass to Forest
- Mixed Open to Forest
- Turf Grass to Mixed Open
- Tree Canopy over Turf Grass to Mixed Open
- Forest to Mixed Open
- Mixed Open to Pasture

Parcels & V2 LU





# Remaining Work to Develop V1 of LU Change

- Architecture:
  - Finalizing data prep in open source (translating from arcpy)
  - Architecting modules to run as an integrated workflow
- 2017/18 Land Use:
  - Address turf over classification:
    - Tighter parcel size thresholds and removed from "filling" models
  - Contiguous patches of land with heterogeneous land uses:
    - Adjust filling models to create more homogenous land use based on parcel statistics
  - Conflicting ancillary data for parcels:
    - Classify based on layer with highest "confidence"
- 2013/14 – 2017/18 Land Use Change:
  - Updating and finalizing Tree Canopy change
- Run 206 LU and LU change – post LU change in batches every Friday