

High-res Land Use Data to inform CAST

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**Water Quality Goal Implementation Team Meeting
May 24, 2021**

Timeline for 2013 - 2017 Land Use Change Review for CAST-21

May – Aug 2021

May 24th: WQGIT meets to discuss and decide the following:

- a. The process and schedule for the proposed land use change product through August 23, 2021.
- b. The lists of errors in the land use change product that will be fixed and those that will not be fixed before it is used in CAST.
- c. How the proposed land use change product may be used in CAST-21 and CAST-23 to replace modeled change with measured change and to inform future updates of modeled change through 2025.

June 1 – June 28th : Each Friday, land use change data for counties will be released on the CIC's web application.

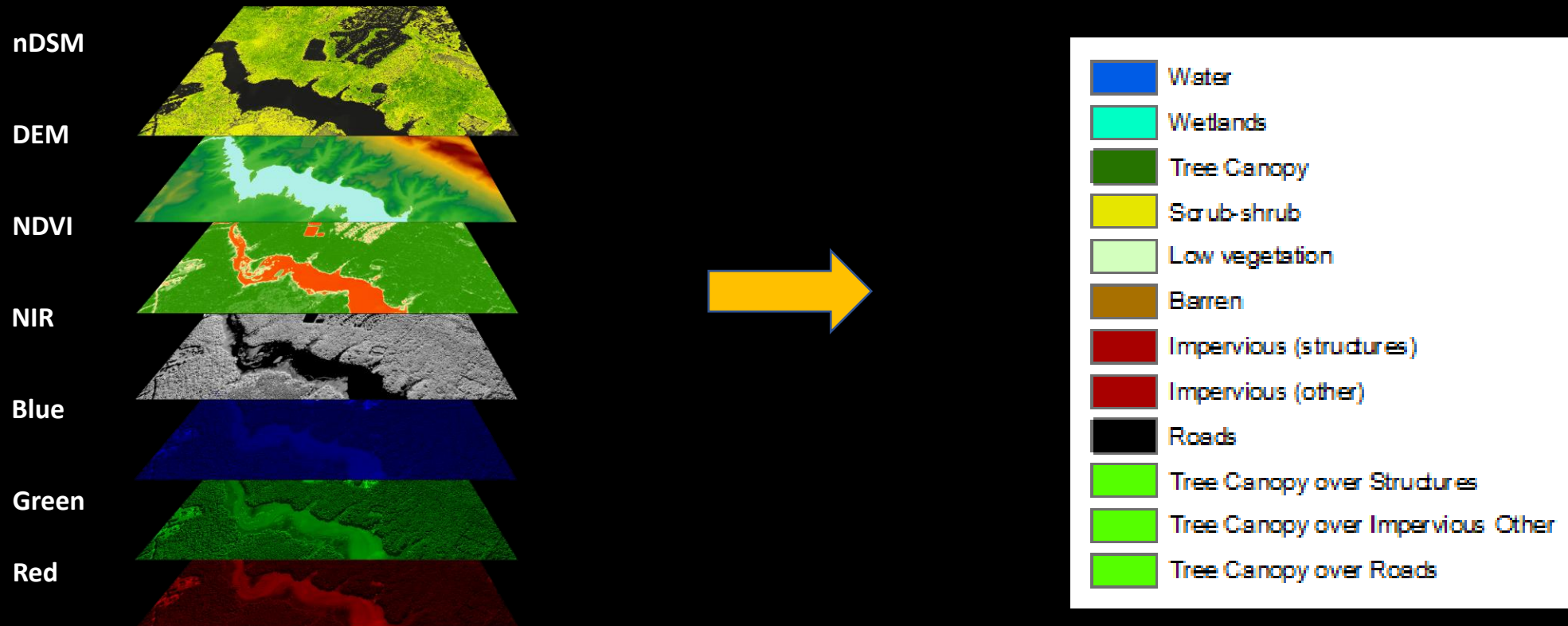
June 28th: Update on the status of the land use change product for 206 counties.

July 14th: LUWG decides whether to endorse use of the land use change product as the “best available data” to inform CAST-21.

July 26th: The WQGIT is presented with CAST data on 2017 land use conditions (via Tableau) comparing CAST-17d, CAST-19, and CAST-21 for all counties in the watershed.

August 23rd: The WQGIT decides whether to approve use of the land use change data in CAST-21.

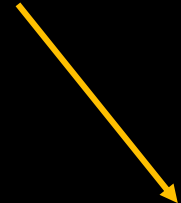
CBP Land Cover Classification (12 classes)



Ancillary Data



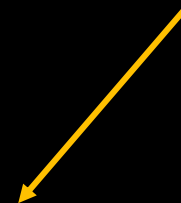
- County Land Use
- Abandoned Mine Lands
- Landfills
- Roads



Land Cover Data



- Impervious surfaces
- Tree canopy
- Low vegetation
- Water



Land Use Data

- Impervious-Roads
- Forests
- Turf Grass
- Cropland

New Land Use Products in Review

Draft 2017 Land Cover:

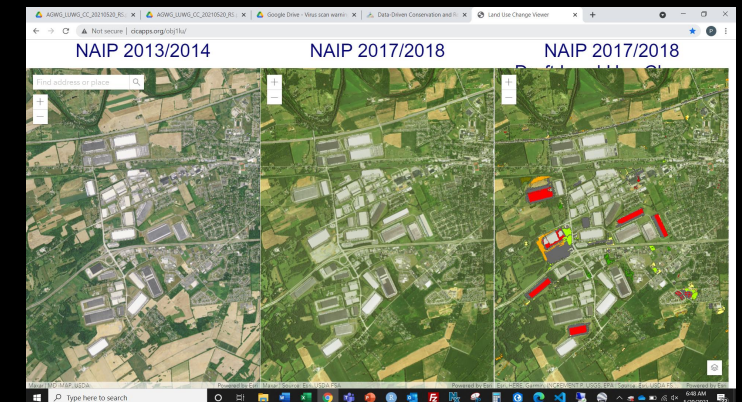
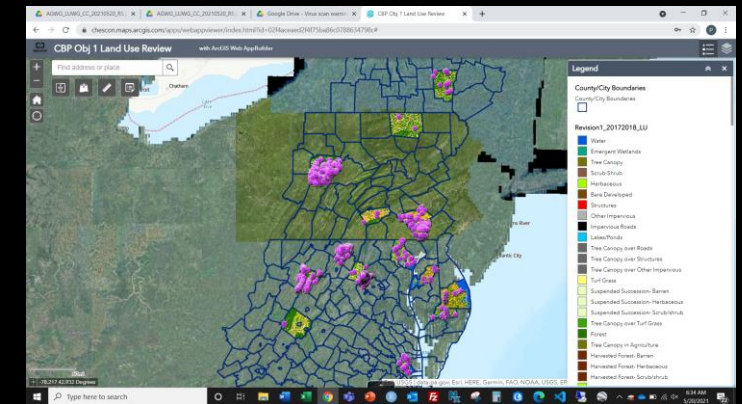
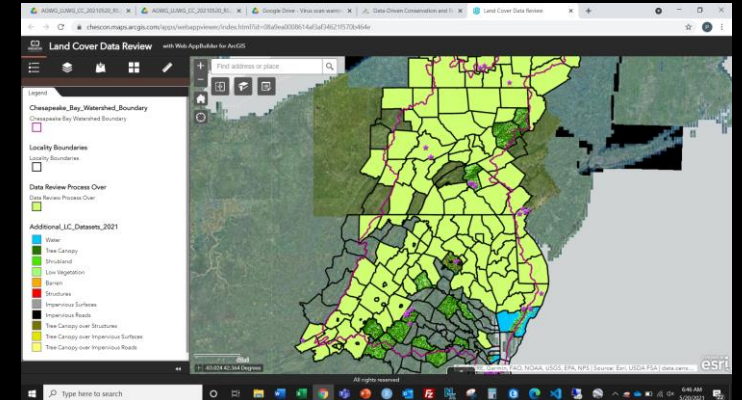
- Reviewed in February – June 2021
- Sent directly to County agencies

Draft 2017 Land Use:

- Reviewed in April – mid-May 2021
- Available online

Draft 2013 - 2017 Land Use Change:

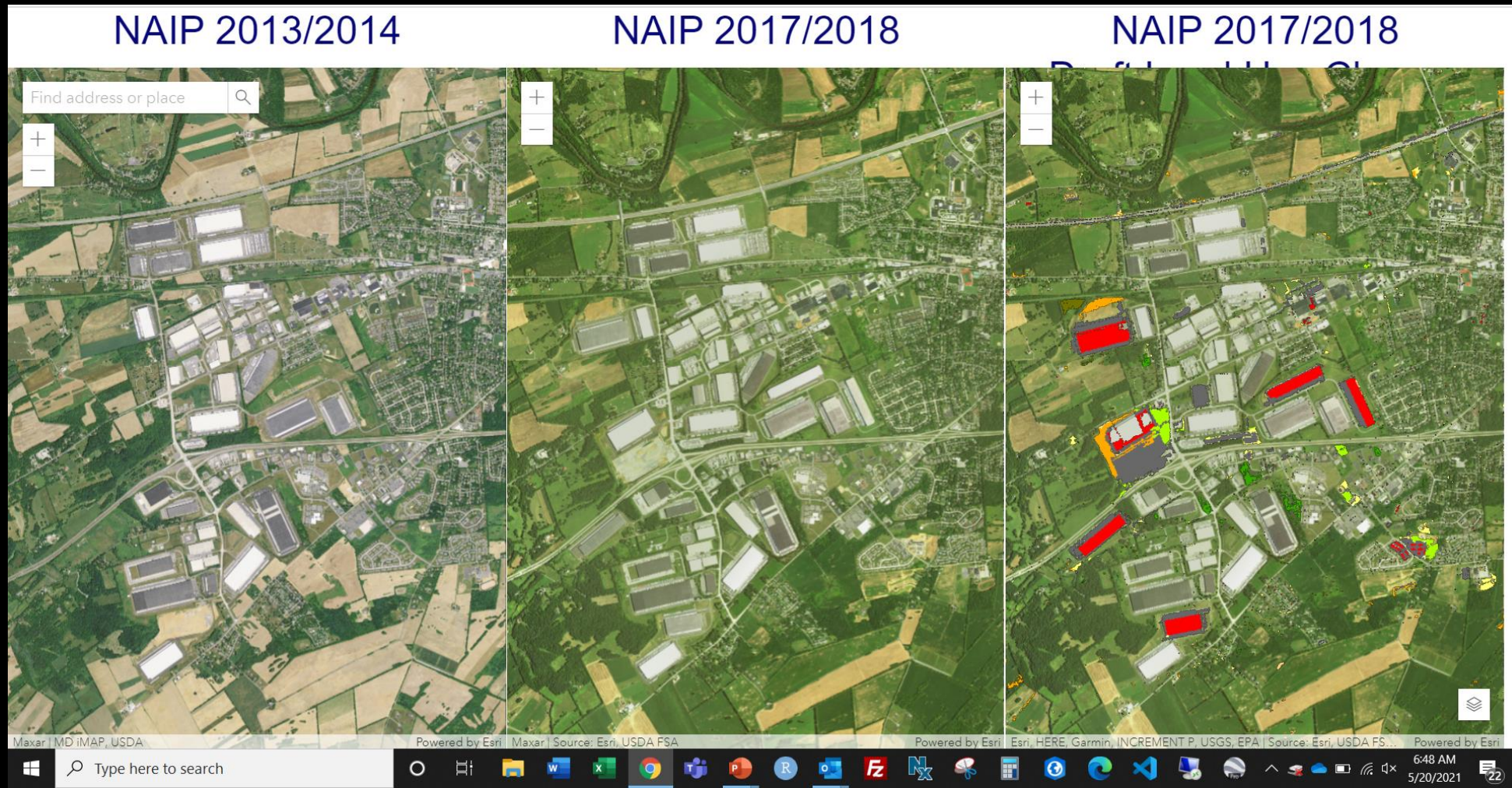
- Based on draft land cover change product
- Unrelated to original 2013 land use in CAST
- Reviewed in mid-May 2021
- Available online



Land Use Data for CAST-21

Version 1 2013 - 2017 Land Use Change:

- Most issues/errors identified in review fixed
- Due June 30th



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

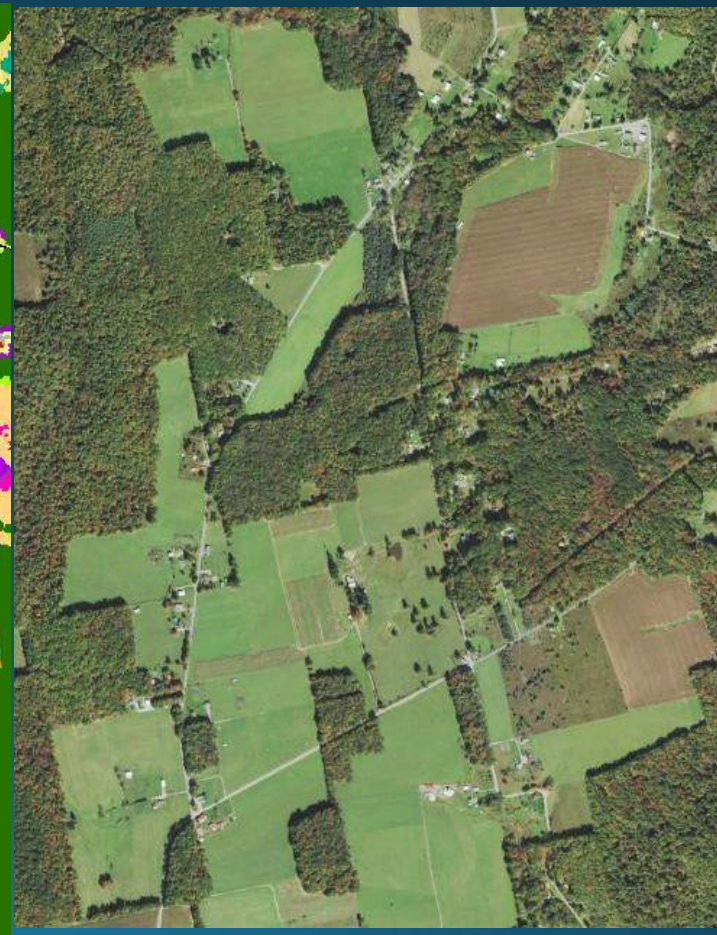
Error	Land Cover	2017/18 Land Use	2013 - 2018 Land Use Change	Fixed for CAST?	Method
Small clusters of pixels	Lack of filtering of draft product			Yes	Fixed in v1 land cover
Over-detection of change to new turf grass		Over-classification of turf grass		Yes	Fixed in v1 land use
Any errors related to TC/Forest		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

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



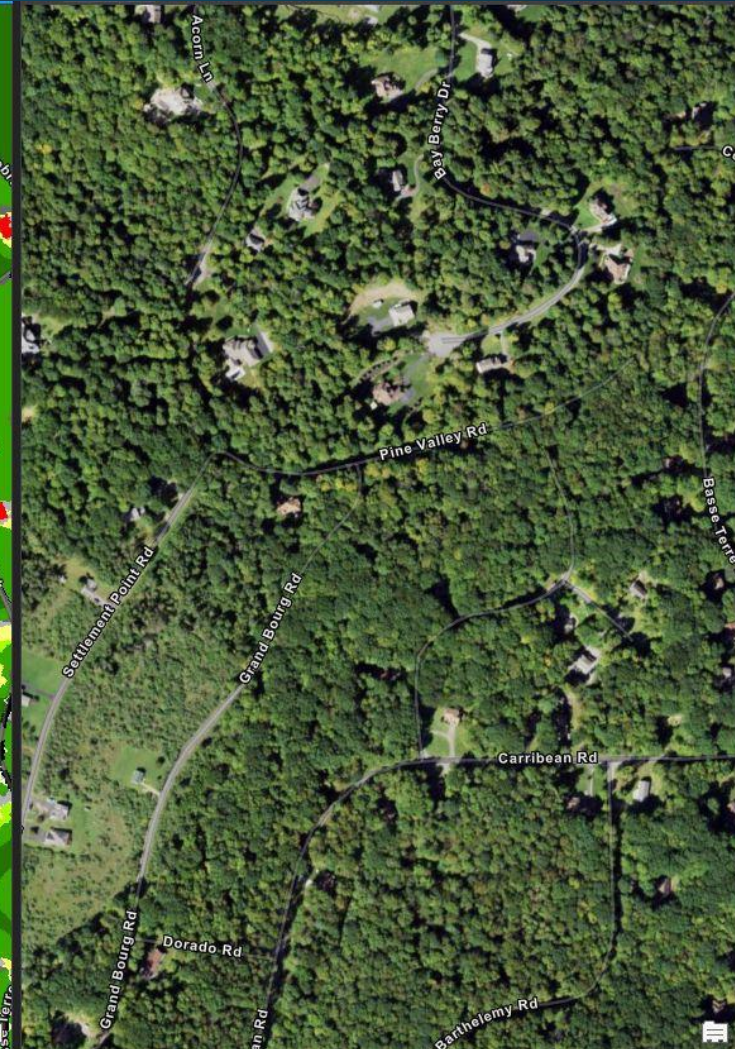
Draft LU



Revision 1 LU



2017/2018 NAIP



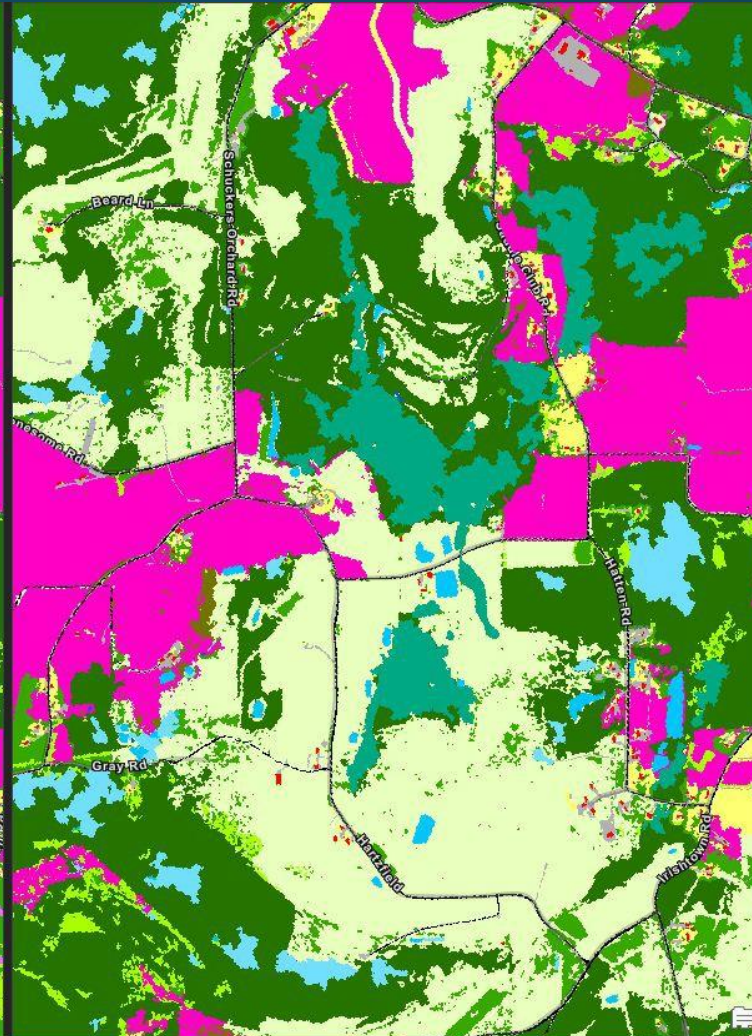
2017/18 LU: Minimized overclassification of Agriculture by adding in abandoned mines dataset



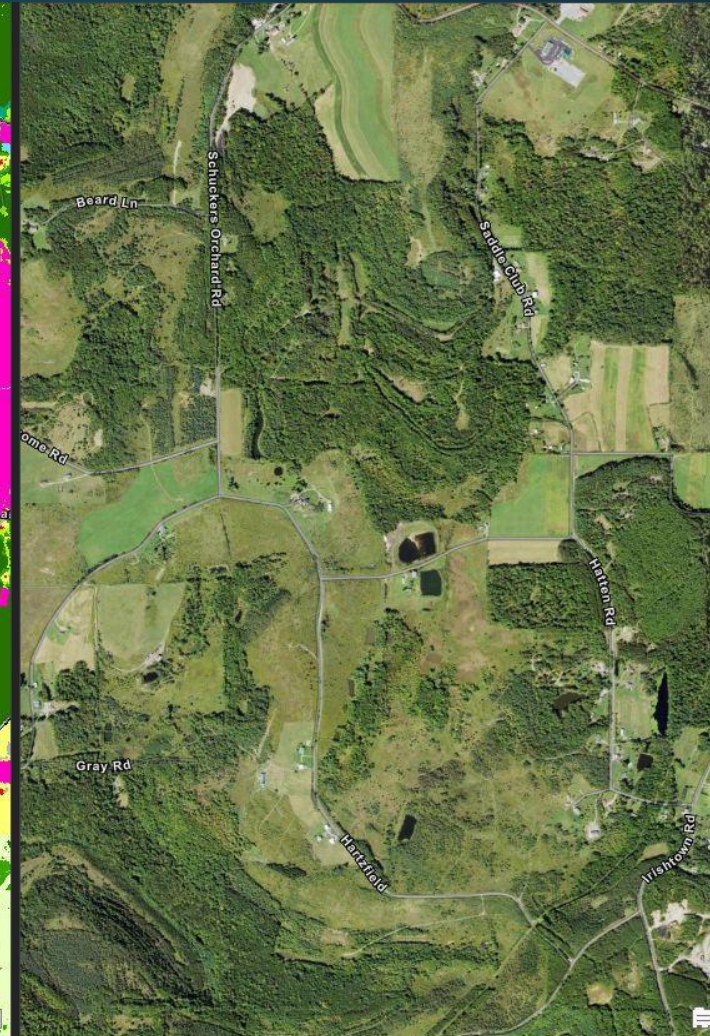
Draft LU



Revision 1 LU



2017/2018 NAIP



All Agriculture Classes Highlighted in Pink

Loudon County
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

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

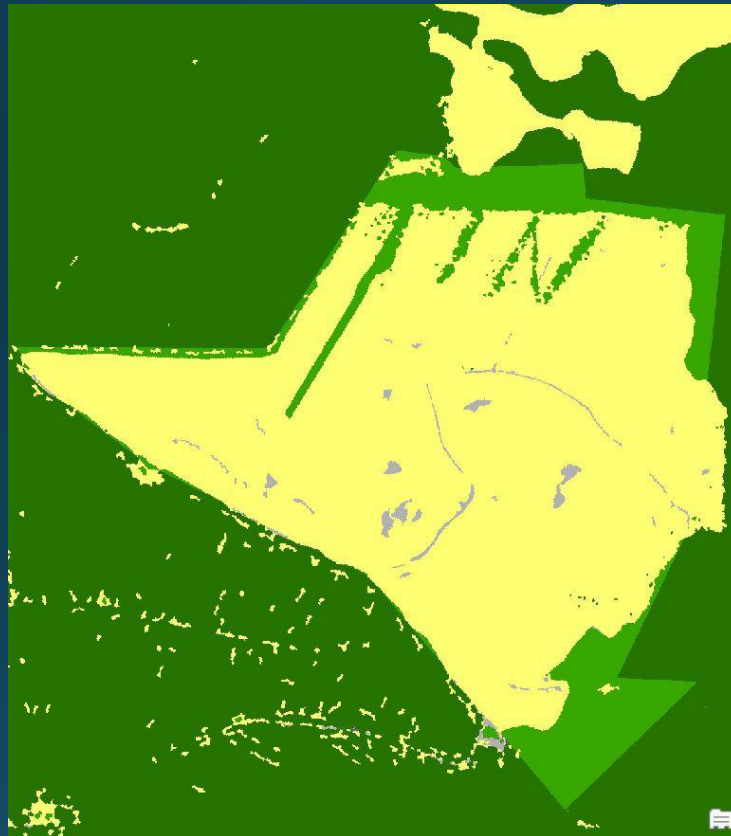
V2 LU Change



2017/18 LU: Partial fix of Harvested Forest

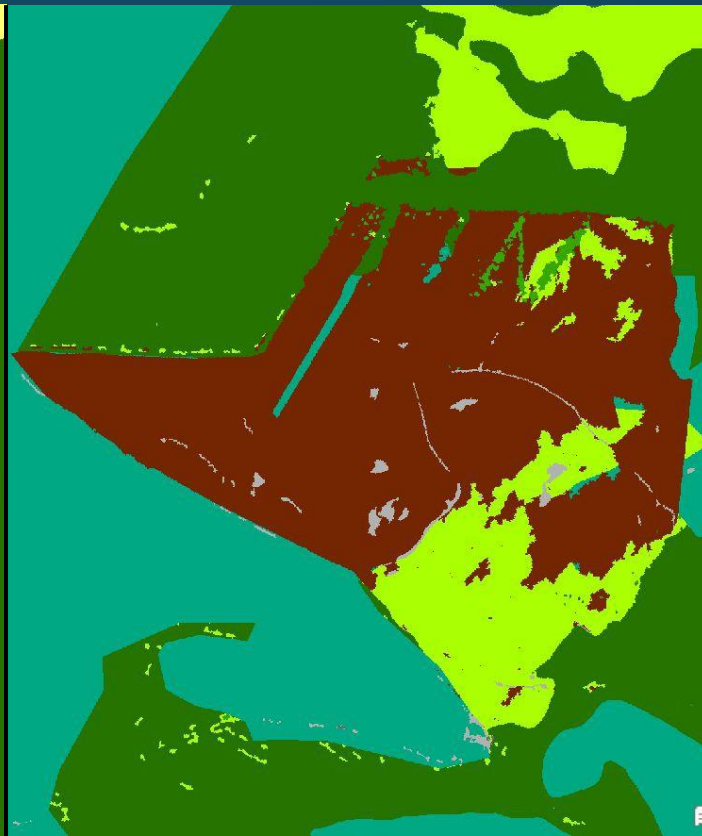


Draft LU



Turf Grass

Revision 1 LU



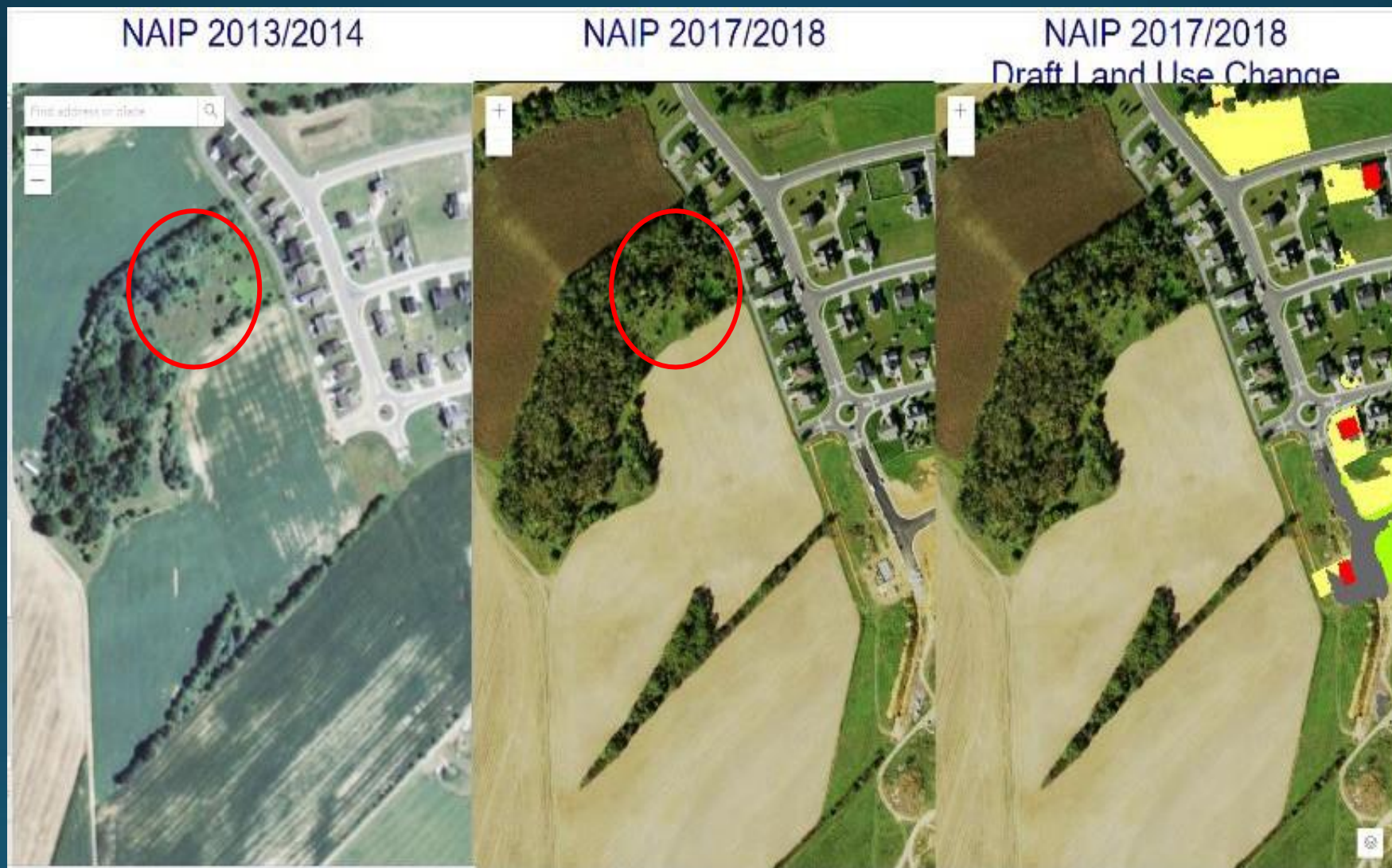
Timber Harvest
& Natural Succession

2017/2018 NAIP



Under-detection of Forest Growth:

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

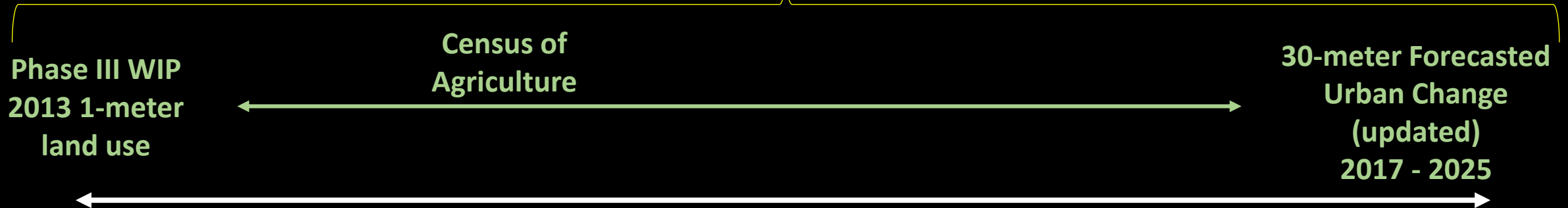


CAST-19

CBPO-estimated annual Feeding
Space and Double Crop acres

+

State-reported annual
Construction &
Timber harvest acres



2013

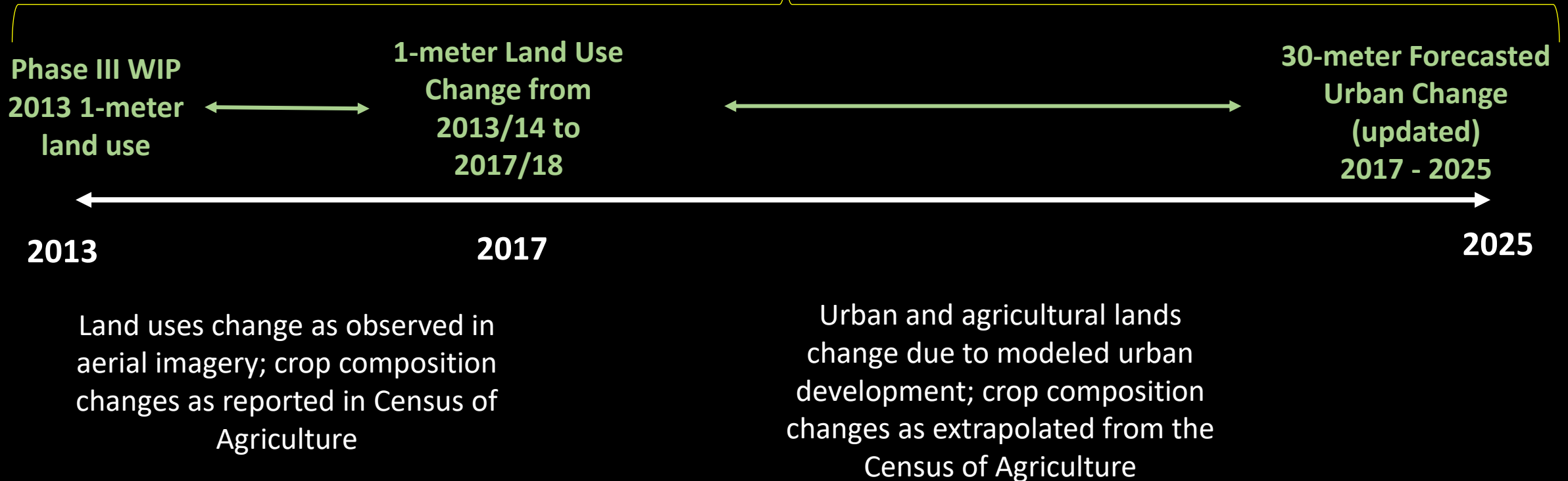
2017

2025

Urban land interpolated between
2013 and 2025, Agricultural land
trends and crop composition
determined by the Census of
Agriculture.

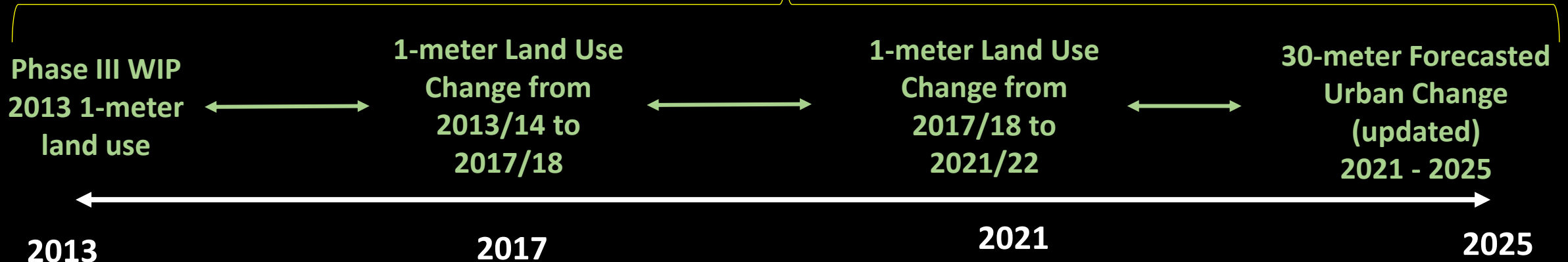
CAST-21

CBPO-estimated annual Feeding
Space and Double Crop acres
+
State-reported annual
Construction &
Timber harvest acres



CAST-23

CBPO-estimated annual Feeding
Space and Double Crop acres
+
State-reported annual
Construction &
Timber harvest acres

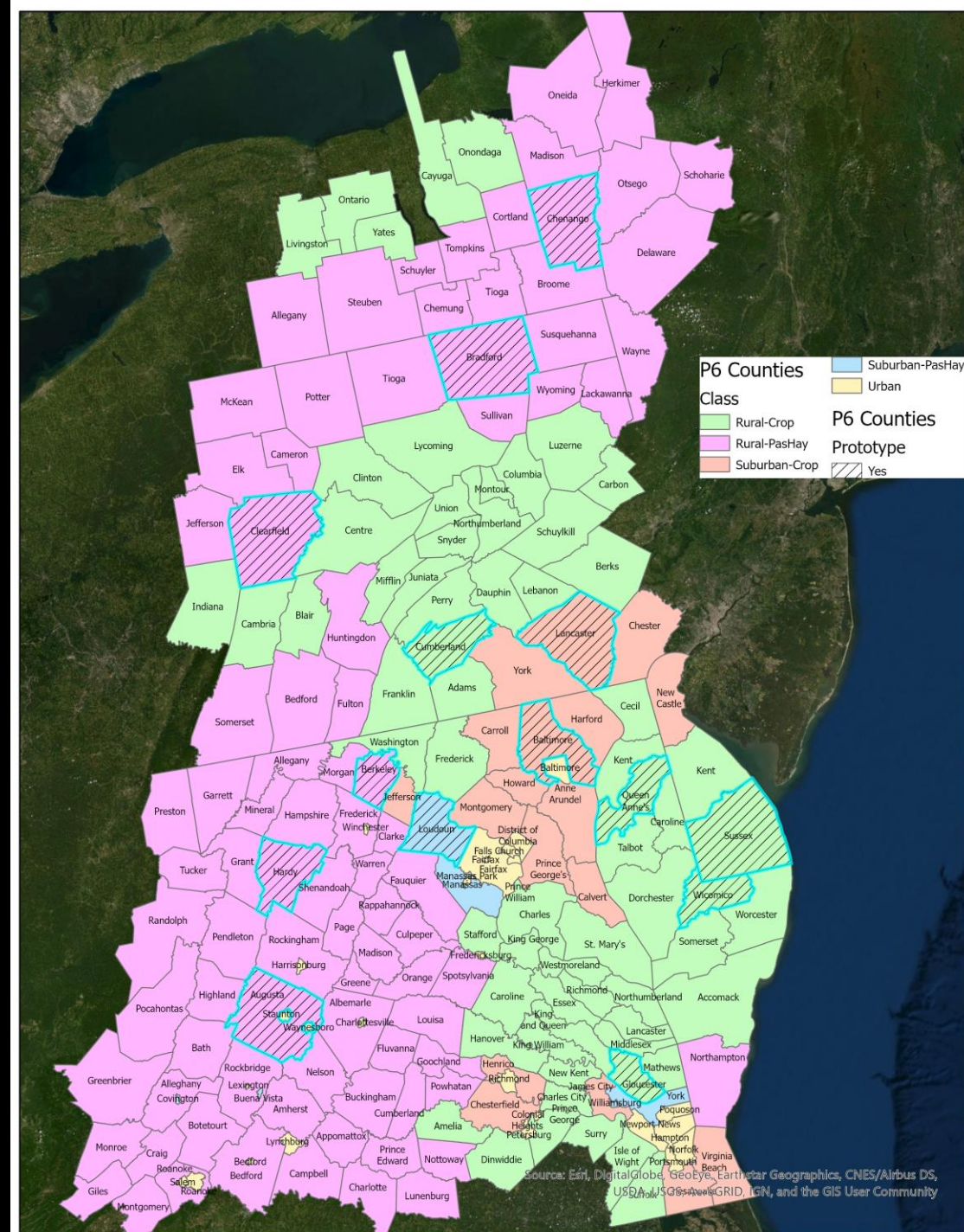


Land uses change as observed in
aerial imagery; crop composition
changes as reported in Census of
Agriculture

Urban and agricultural lands
change due to modeled urban
development; crop composition
changes as extrapolated from the
Census of Agriculture

Land Use Change in the 14 Prototype Counties: 2013/14 – 2017/18

FIPS	CNTY_NAME	P_Crop	P_Dev	Class
10005	SUSSEX	97.4%	18.8%	Rural-Crop
24005	BALTIMORE	66.7%	38.6%	Suburban-Crop
24035	QUEEN ANNES	96.3%	14.2%	Rural-Crop
24045	WICOMICO	94.5%	20.6%	Rural-Crop
36017	CHENANGO	28.3%	5.8%	Rural-PasHay
42015	BRADFORD	39.2%	5.7%	Rural-PasHay
42033	CLEARFIELD	42.0%	8.1%	Rural-PasHay
42041	CUMBERLAND	65.8%	24.6%	Rural-Crop
42071	LANCASTER	68.2%	29.2%	Suburban-Crop
51015	AUGUSTA	27.1%	9.3%	Rural-PasHay
51073	GLOUCESTER	85.1%	12.6%	Rural-Crop
51107	LOUDOUN	33.1%	27.7%	Suburban-PasHay
54003	BERKELEY	33.1%	23.8%	Rural-PasHay
54031	HARDY	22.2%	6.4%	Rural-PasHay



Land Use Change in the 14 Prototype Counties: 2013/14 – 2017/18

- Land use change code establishes rules to translate land cover change (2013 – 2017) derived from spectral data into land use change. The rules integrate the 2017 land use, parcels, and landscape context information with land cover change data.
- Adjusting these rules/code for one county alters conditions in all other counties. To make this effort manageable, a representative sample of the ~200 Chesapeake Bay watershed counties was needed to develop and refine the rules and to manage the CBP Partner review.
- Prototype counties were chosen by the LUWG to be representative of all states, physiographic provinces, levels of urbanization, and diversity of agricultural practices.

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Phase 6 Land Use/Cover Classes

1. Impervious Roads

- 2.1 Impervious
 - 2.1.1 Roads

2. Impervious Non-Roads

- 2.1 Impervious
 - 2.1.2 Structures
 - 2.1.3 Other Impervious
- 4.2 Solar fields
 - 4.2.1 Impervious

3. Tree Canopy Over Impervious

- 2.1 Impervious
 - 2.1.4 Tree Canopy over Impervious

4. Turf Grass

- 2.2 Pervious, Developed
 - 2.2.1 Turf Grass

5. Tree Canopy over Turf Grass

- 2.2 Pervious, Developed
 - 2.2.4 Tree Canopy over Turf Grass

6. Forest

- 3.1 Forest (≥ 1 acre, 240-ft width)
- 3.2 Tree Canopy in Agriculture

7. Wetlands, Floodplain

- 5.2 Riverine, Wetlands

8. Wetlands, Other

- 5.3 Terrene/Isolated, Wetlands

9. Wetlands, Tidal

- 5.1 Tidal, Wetlands

10. Mixed Open

- 2.2 Pervious, Developed
 - 2.2.2 Bare Developed
 - 2.2.3 Suspended Succession
- 3.3 Harvested Forest (≤ 3 years)
- 3.4 Natural Succession (> 3 years)
- 4.2 Solar fields
 - 4.2.2 Pervious
- 4.3 Extractive (active mines)
- 5.4 Bare shore, Water Margins

11. Cropland

- 4.1 Agriculture
 - 4.1.1 Cropland
 - 4.1.3 Orchard/vineyard

12. Pasture

- 4.1 Agriculture
 - 4.1.2 Pasture

13. Water

- 1.1 Lentic
 - 1.1.1 Estuary (tidal)
 - 1.1.2 Lakes & Ponds
- 1.2 Lotic
 - 1.2.1 Streams

**Change among these classes
is irrelevant to CAST!**

How to Interpret Land Use Change Tables: 2013/14 – 2017/18

Draft and revised (Version 0.9) Gain and Loss Tables: e.g., in Augusta County, Virginia, 69 acres of cropland in 2013/14 were converted to non-cropland in 2017/18 and 218 acres of non-cropland in 2013/14 were converted into cropland in 2017/18, yielding a net increase of 149 cropland acres.

DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Augusta	LOSS	70	1,715	152	17	2,764	126	74	441	237	1
	GAIN	279	469	596	3	1,286	1,558	50	346	1,002	6
	NET	210	(1,246)	444	(13)	(1,477)	1,432	(24)	(95)	765	5
Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Augusta	LOSS	69	1,538	151	17	1,211	125	73	492	225	1
	GAIN	218	435	591	3	1,276	380	49	308	742	0
	NET	149	(1,203)	439	(13)	65	255	(24)	(184)	517	(1)

County CrossTab Tables: e.g., of the 69 acres of cropland in 2013/14 that were converted to non-cropland in 2017/18, 41 acres to impervious surfaces, 25 acres were converted to forest, and 3 acres to other uses. Of the 218 acres of non-cropland that transitioned to cropland, 8 acres from impervious surfaces, 23 acres from tree canopy over turf grass, and 184 were converted from forest, etc.

T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	-	16.08	-	0.48	0.04	-	-	-	-	-	-	-	16.60
Impervious Non-Roads	2.38	-	33.08	39.21	2.99	0.58	-	0.10	-	35.15	7.93	29.85	0.01	151.30
Tree Canopy Over Impervious	0.00	44.45	-	8.32	-	-	0.04	-	-	16.33	1.03	2.74	-	72.92
Turf Grass	0.01	21.98	0.00	-	199.90	0.77	-	-	-	2.16	-	0.13	-	224.95
Tree Canopy over Turf Grass	-	96.57	-	106.42	-	0.00	-	-	-	210.38	23.44	55.56	-	492.38
Forest	-	64.92	-	116.09	0.02	-	-	-	-	1,010.96	183.67	262.35	0.00	1,638.01
Wetlands, Floodplain	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Open	0.94	240.02	0.16	468.91	101.92	369.17	-	-	-	-	1.24	28.91	0.00	1,211.27
Cropland	-	41.16	0.01	0.62	1.01	25.03	-	-	-	0.89	-	0.36	-	69.09
Pasture	-	81.59	0.03	2.39	1.23	39.49	-	-	-	0.36	0.30	-	-	125.38
Water	-	-	0.01	-	0.93	0.26	-	-	-	-	-	-	-	1.20
Gain	3.33	590.69	49.37	741.96	308.48	435.35	0.04	0.10	-	1,276.23	217.62	379.91	0.01	4,003.09

Augusta County, Virginia: 2013/14 – 2017/18

DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
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Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Augusta	LOSS	69	1,638	151	17	1,211	125	73	492	225	1
	GAIN	218	435	591	3	1,276	280	49	308	742	0
	NET	149	(1,203)	439	(13)	65	255	(24)	(184)	517	(1)

CRP = cropland
FOR = forest
INR = impervious non-road
IR = impervious road
MO = mixed open
PAS = pasture
TCI = tree canopy over impervious
TCT = tree canopy over turf grass
TG = turf gras
WAT = water

Observed Change in Agriculture, 2013-2017
Land Use Change: + 404 acres

Surveyed Change in Harvested Cropland, 2012-2017,
Census of Agriculture: + 13,269

Modeled Change in Agriculture, 2013-2017,
Chesapeake Bay Land Change Model: -399

T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
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Wetlands, Floodplain	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Open	0.94	240.02	0.16	468.91	101.92	369.17	-	-	-	-	1.24	28.91	0.00	1,211.27
Cropland	-	41.16	0.01	0.62	1.01	25.03	-	-	-	0.89	-	0.36	-	69.09
Pasture	-	81.59	0.03	2.39	1.23	39.49	-	-	-	0.36	0.30	-	-	125.38
Water	-	-	0.01	-	0.93	0.26	-	-	-	-	-	-	-	1.20
Gain	3.33	590.69	49.37	741.96	308.48	435.35	0.04	0.10	-	1,276.23	217.62	379.91	0.01	4,003.09

Augusta County, Virginia: 2013/14 – 2017/18

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INR = impervious non-road
IR = impervious road
MO = mixed open
PAS = pasture
TCI = tree canopy over impervious
TCT = tree canopy over turf grass
TG = turf grass
WAT = water

Observed Change in Agriculture, 2013-2017
Land Use Change: + 404 acres

Observed Change in Development, 2013-2017
Land Use Change: + 735 acres

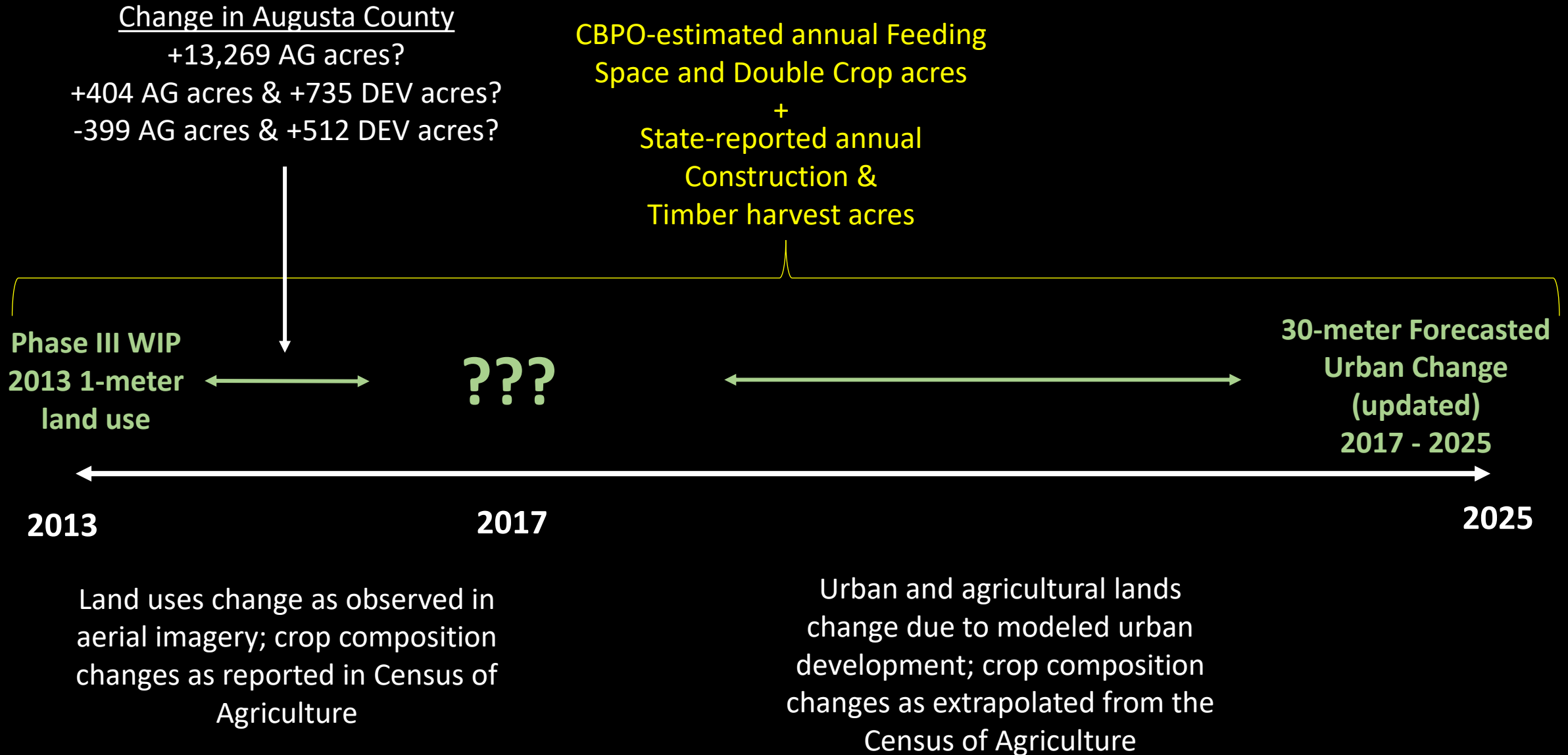
Surveyed Change in Harvested Cropland, 2012-2017,
Census of Agriculture: + 13,269

Modeled Change in Agriculture, 2013-2017,
Chesapeake Bay Land Change Model: - 399

Modeled Change in Development, 2013-2017,
Chesapeake Bay Land Change Model: + 512

T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	-	16.08	-	0.48	0.04	-	-	-	-	-	-	-	16.60
Impervious Non-Roads	2.38	-	33.08	39.21	2.99	0.58	-	0.10	-	35.15	7.93	29.85	0.01	151.30
Tree Canopy Over Impervious	0.00	44.45	-	8.32	-	-	0.04	-	-	16.33	1.03	2.74	-	72.92
Turf Grass	0.01	21.98	0.00	-	199.90	0.77	-	-	-	2.16	-	0.13	-	224.95
Tree Canopy over Turf Grass	-	96.57	-	106.42	-	0.00	-	-	-	210.38	23.44	55.56	-	492.38
Forest	-	64.92	-	116.09	0.02	-	-	-	-	1,010.96	183.67	262.35	0.00	1,638.01
Wetlands, Floodplain	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Open	0.94	240.02	0.16	468.91	101.92	369.17	-	-	-	-	1.24	28.91	0.00	1,211.27
Cropland	-	41.16	0.01	0.62	1.01	25.03	-	-	-	0.89	-	0.36	-	69.09
Pasture	-	81.59	0.03	2.39	1.23	39.49	-	-	-	0.36	0.30	-	-	125.38
Water	-	-	0.01	-	0.93	0.26	-	-	-	-	-	-	-	1.20
Gain	3.33	590.69	49.37	741.96	308.48	435.35	0.04	0.10	-	1,276.23	217.62	379.91	0.01	4,003.09

CAST-21



Queen Anne’s County, Maryland: 2013/14 – 2017/18

DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Queen Anne's	LOSS	489	394	29	3	1,212	95	15	135	328	1
	GAIN	446	667	637	64	78	101	13	175	517	2
	NET	(43)	273	609	61	(1,134)	5	(2)	41	189	1
Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Queen Anne's	LOSS	483	244	33	3	1,198	96	11	169	131	1
	GAIN	259	664	511	51	20	22	14	175	650	2
	NET	(224)	420	478	48	(1,177)	(74)	3	6	519	1

CRP = cropland
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INR = impervious non-road
IR = impervious road
MO = mixed open
PAS = pasture
TCI = tree canopy over impervious
TCT = tree canopy over turf grass
TG = turf gras
WAT = water

Observed Change in Agriculture, 2013-2017
Land Use Change: - 298 acres

Surveyed Change in Harvested Cropland, 2012-2017,
Census of Agriculture: + 9,236

Modeled Change in Agriculture, 2013-2017,
Chesapeake Bay Land Change Model: - 90

Observed Change in Development, 2013-2017
Land Use Change: + 1,054 acres

Modeled Change in Development, 2013-2017,
Chesapeake Bay Land Change Model: + 112

T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	0.40	1.05	0.17	0.23	0.12	-	-	-	0.65	0.00	0.00	-	2.61
Impervious Non-Roads	6.82	-	8.52	6.71	1.85	0.49	0.04	0.01	0.01	1.06	5.31	1.67	0.82	33.31
Tree Canopy Over Impervious	0.23	2.45	-	5.44	0.21	0.22	0.03	0.00	0.00	1.47	0.68	0.43	-	11.15
Turf Grass	1.68	44.02	0.14	-	80.70	3.00	0.00	0.01	0.05	0.91	0.43	0.20	0.04	131.17
Tree Canopy over Turf Grass	0.98	42.38	1.70	69.90	-	2.88	-	-	-	10.11	39.34	1.22	0.02	168.53
Forest	3.65	24.61	0.74	88.30	2.45	-	-	-	-	4.18	108.54	10.99	0.06	243.51
Wetlands, Floodplain	-	-	-	0.05	-	-	-	-	-	-	-	-	0.00	0.05
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	0.01	-	0.11	-	-	-	-	-	-	-	-	0.01	0.12
Mixed Open	35.16	211.01	1.64	442.99	76.09	318.59	-	-	-	-	104.60	7.50	0.15	1,197.73
Cropland	2.01	132.75	0.21	33.82	8.15	303.90	-	-	-	1.76	-	0.10	0.53	483.24
Pasture	0.02	53.56	0.05	2.77	4.66	34.43	-	-	-	0.27	0.49	-	0.01	96.27
Water	-	0.00	0.00	-	0.50	0.33	-	0.00	0.00	-	0.10	0.00	-	0.94
Gain	50.55	511.19	14.04	650.25	174.83	663.97	0.07	0.02	0.06	20.42	259.49	22.11	1.63	2,368.64

Augusta County, Virginia: 2013/14 – 2017/18

DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Augusta	LOSS	70	1,715	152	17	2,764	126	74	441	237	1
	GAIN	279	469	596	3	1,286	1,558	50	346	1,002	6
	NET	210	(1,246)	444	(13)	(1,477)	1,432	(24)	(95)	765	5
Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Augusta	LOSS	69	1,638	151	17	1,211	125	73	492	225	1
	GAIN	218	435	591	3	1,276	380	49	308	742	0
	NET	149	(1,203)	439	(13)	65	255	(24)	(184)	517	(1)

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IR = impervious road
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PAS = pasture
TCI = tree canopy over impervious
TCT = tree canopy over turf grass
TG = turf gras
WAT = water

T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	-	16.08	-	0.48	0.04	-	-	-	-	-	-	-	16.60
Impervious Non-Roads	2.38	-	33.08	39.21	2.99	0.58	-	0.10	-	35.15	7.93	29.85	0.01	151.30
Tree Canopy Over Impervious	0.00	44.45	-	8.32	-	-	0.04	-	-	16.33	1.03	2.74	-	72.92
Turf Grass	0.01	21.98	0.00	-	199.90	0.77	-	-	-	2.16	-	0.13	-	224.95
Tree Canopy over Turf Grass	-	96.57	-	106.42	-	0.00	-	-	-	210.38	23.44	55.56	-	492.38
Forest	-	64.92	-	116.09	0.02	-	-	-	-	1,010.96	183.67	262.35	0.00	1,638.01
Wetlands, Floodplain	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Open	0.94	240.02	0.16	468.91	101.92	369.17	-	-	-	-	1.24	28.91	0.00	1,211.27
Cropland	-	41.16	0.01	0.62	1.01	25.03	-	-	-	0.89	-	0.36	-	69.09
Pasture	-	81.59	0.03	2.39	1.23	39.49	-	-	-	0.36	0.30	-	-	125.38
Water	-	-	0.01	-	0.93	0.26	-	-	-	-	-	-	-	1.20
Gain	3.33	590.69	49.37	741.96	308.48	435.35	0.04	0.10	-	1,276.23	217.62	379.91	0.01	4,003.09

Baltimore County, Maryland: 2013/14 – 2017/18

DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Baltimore	LOSS	64	133	303	51	1,887	52	42	339	1,897	0
	GAIN	29	299	1,964	90	320	79	10	764	1,213	3
	NET	(36)	166	1,661	39	(1,567)	26	(32)	425	(684)	2
Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Baltimore	LOSS	46	41	295	52	2,923	29	36	300	581	0
	GAIN	15	217	1,331	21	49	57	20	752	1,838	2
	NET	(31)	176	1,036	(31)	(2,874)	29	(16)	452	1,257	1

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IR = impervious road
MO = mixed open
PAS = pasture
TCI = tree canopy over impervious
TCT = tree canopy over turf grass
TG = turf gras
WAT = water

T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	18.45	0.60	0.06	28.58	3.85	-	-	-	0.02	0.00	-	-	51.57
Impervious Non-Roads	0.74	-	4.44	170.62	79.41	15.10	0.00	-	0.01	14.06	2.89	7.82	0.04	295.12
Tree Canopy Over Impervious	1.09	5.46	-	23.66	1.54	0.45	0.00	0.00	0.01	3.63	0.21	0.30	0.01	36.37
Turf Grass	1.62	161.09	0.92	-	393.57	18.88	0.00	0.00	0.01	4.39	0.12	0.21	0.05	580.85
Tree Canopy over Turf Grass	0.41	4.76	6.00	228.98	-	28.69	-	-	-	23.72	4.48	2.70	0.09	299.82
Forest	0.05	1.00	1.13	15.42	6.11	-	-	-	-	1.45	6.28	9.41	0.03	40.88
Wetlands, Floodplain	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Open	17.08	1,110.85	6.78	1,396.56	237.44	114.88	-	-	-	-	1.06	36.78	1.37	2,922.80
Cropland	0.01	13.63	0.10	1.56	2.94	26.28	-	-	-	1.31	-	0.22	0.00	46.05
Pasture	0.01	16.19	0.07	1.17	2.04	9.05	-	-	-	0.05	0.01	-	0.00	28.59
Water	0.01	0.02	-	0.01	0.38	0.07	-	-	-	0.01	-	-	-	0.49
Gain	21.01	1,331.44	20.04	1,838.05	752.00	217.25	0.01	0.00	0.03	48.64	15.05	57.45	1.58	4,302.54

Berkeley County, West Virginia: 2013/14 – 2017/18

DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Berkeley	LOSS	104	657	310	12	4,273	180	26	554	774	10
	GAIN	612	3,358	719	39	287	291	36	124	1,431	3
	NET	508	2,701	408	26	(3,986)	111	11	(429)	657	(7)
Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Berkeley	LOSS	45	693	133	6	1,552	44	13	242	273	3
	GAIN	329	135	716	39	195	44	36	120	1,389	1
	NET	284	(558)	583	32	(1,358)	0	24	(121)	1,116	(1)

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PAS = pasture
TCI = tree canopy over impervious
TCT = tree canopy over turf grass
TG = turf gras
WAT = water

T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	0.88	4.28	0.64	0.04	0.26	-	-	-	0.01	-	-	-	6.11
Impervious Non-Roads	4.14	-	31.93	70.52	0.94	0.16	0.02	-	-	6.99	15.83	2.37	0.02	132.92
Tree Canopy Over Impervious	0.08	3.40	-	7.75	-	-	-	-	-	0.68	0.63	0.03	-	12.58
Turf Grass	0.45	85.85	0.00	-	93.21	1.84	-	-	-	90.75	0.83	-	0.00	272.93
Tree Canopy over Turf Grass	2.15	51.65	-	115.63	-	0.00	-	-	-	32.84	35.62	3.92	0.01	241.81
Forest	5.54	65.35	-	338.34	0.22	-	-	-	-	44.91	206.28	32.38	0.10	693.12
Wetlands, Floodplain	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Open	17.03	467.79	0.06	853.51	24.69	117.00	-	-	-	-	66.00	5.36	0.99	1,552.43
Cropland	3.14	30.00	0.01	2.17	0.07	5.75	-	-	-	4.21	-	-	0.00	45.35
Pasture	5.97	11.25	0.02	0.44	0.16	8.05	-	-	-	14.13	3.77	-	0.04	43.82
Water	-	-	0.00	-	1.04	1.61	-	-	-	0.00	-	-	-	2.66
Gain	38.50	716.18	36.29	1,389.01	120.36	134.67	0.02	-	-	194.51	328.95	44.07	1.16	3,003.72

Bradford County, Pennsylvania: 2013/14 – 2017/18

CRP = cropland
FOR = forest
INR = impervious non-road
IR = impervious road
MO = mixed open
PAS = pasture
TCI = tree canopy over impervious
TCT = tree canopy over turf grass
TG = turf gras
WAT = water

DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Bradford	LOSS	53	1,529	299	7	3,451	241	45	220	178	6
	GAIN	312	529	649	24	111	2,091	16	185	2,102	12
	NET	259	(1,000)	350	16	(3,340)	1,849	(29)	(35)	1,924	7
Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Bradford	LOSS	56	1,025	294	5	2,886	248	49	677	155	6
	GAIN	183	535	641	19	104	832	12	206	2,862	4
	NET	128	(490)	347	15	(2,782)	584	(38)	(471)	2,707	(1)

T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	-	4.57	-	0.16	0.18	-	-	-	-	-	-	-	4.90
Impervious Non-Roads	2.21	-	5.56	81.13	1.21	0.19	0.59	-	-	12.14	32.39	158.56	-	293.98
Tree Canopy Over Impervious	1.18	3.06	-	17.23	0.21	0.00	0.07	0.01	-	24.96	0.40	2.09	-	49.20
Turf Grass	0.20	49.31	0.10	-	91.62	10.39	0.34	-	-	1.79	0.00	1.08	-	154.83
Tree Canopy over Turf Grass	2.24	103.78	0.07	466.78	-	0.87	-	-	-	25.26	11.69	66.09	0.01	676.77
Forest	4.64	92.88	0.06	575.39	3.63	-	-	-	-	36.21	60.72	251.13	0.01	1,024.68
Wetlands, Floodplain	-	-	-	0.19	-	-	-	-	-	-	-	-	-	0.19
Wetlands, Other	-	-	-	0.03	-	-	-	-	-	-	-	-	-	0.03
Wetlands, Tidal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Open	4.26	204.35	1.24	1,706.41	103.00	455.49	-	-	-	-	61.64	345.40	4.23	2,886.02
Cropland	0.00	30.15	0.02	2.31	0.16	12.58	-	-	-	2.28	-	8.04	-	55.54
Pasture	4.67	157.89	0.07	12.61	2.00	52.78	-	-	-	1.48	16.59	-	-	248.09
Water	-	-	-	-	4.24	1.29	-	-	-	-	-	-	-	5.54
Gain	19.40	641.42	11.68	2,862.08	206.23	533.77	1.00	0.01	-	104.12	183.42	832.38	4.25	5,399.76

Chenango County, New York: 2013/14 – 2017/18

DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Chenango	LOSS	17	471	67	16	2,851	98	28	117	433	4
	GAIN	44	486	189	0	58	1,119	26	481	1,690	10
	NET	27	16	121	(16)	(2,793)	1,020	(2)	364	1,258	7
Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Chenango	LOSS	17	441	67	16	1,303	106	28	119	418	4
	GAIN	10	461	187	0	50	167	26	451	1,165	3
	NET	(7)	20	119	(16)	(1,254)	61	(2)	332	748	(1)

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TG = turf gras
WAT = water

T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	-	14.42	-	1.15	0.38	-	-	-	-	-	0.46	-	16.41
Impervious Non-Roads	-	-	11.31	39.34	0.21	0.06	0.03	-	-	2.83	1.33	12.09	-	67.20
Tree Canopy Over Impervious	-	0.74	-	10.70	-	-	0.03	-	-	15.11	0.34	0.93	-	27.86
Turf Grass	0.00	39.08	-	-	368.53	5.85	0.07	-	-	3.86	-	0.19	-	417.57
Tree Canopy over Turf Grass	-	24.45	-	78.78	-	0.00	-	-	-	4.81	2.37	8.35	-	118.77
Forest	-	12.90	-	343.52	0.00	-	-	-	-	16.43	3.37	64.31	-	440.53
Wetlands, Floodplain	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Open	0.00	73.15	0.00	686.65	77.45	379.67	-	-	-	-	2.89	80.83	2.79	1,303.44
Cropland	-	4.06	-	0.08	0.14	13.00	-	-	-	0.02	-	-	-	17.29
Pasture	-	32.18	-	6.29	0.37	60.84	-	-	-	6.53	-	-	-	106.20
Water	-	-	-	-	2.74	1.01	-	-	-	-	-	-	-	3.74
Gain	0.00	186.56	25.74	1,165.36	450.59	460.80	0.13	-	-	49.59	10.30	167.17	2.79	2,519.02

Clearfield County, Pennsylvania: 2013/14 – 2017/18

DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Clearfield	LOSS	47	4,846	194	7	5,309	137	63	600	402	3
	GAIN	887	827	819	2	4,143	3,668	20	585	651	7
	NET	840	(4,019)	625	(5)	(1,166)	3,531	(44)	(16)	249	4
Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Clearfield	LOSS	39	4,732	154	7	1,982	69	63	340	307	3
	GAIN	172	863	812	2	4,236	444	20	325	821	2
	NET	133	(3,869)	658	(5)	2,253	375	(44)	(15)	514	(1)

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TCI = tree canopy over impervious
TCT = tree canopy over turf grass
TG = turf gras
WAT = water

T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	0.22	6.49	-	0.14	0.60	-	-	-	0.04	-	-	-	7.49
Impervious Non-Roads	0.37	-	12.74	15.18	0.17	0.26	0.26	2.98	-	110.55	2.23	9.19	-	153.92
Tree Canopy Over Impervious	0.00	2.89	-	21.27	-	-	0.15	0.21	-	38.03	0.39	0.32	-	63.25
Turf Grass	0.00	73.53	0.00	-	219.66	0.71	0.12	0.06	-	6.44	3.50	3.31	-	307.32
Tree Canopy over Turf Grass	0.00	95.86	-	58.53	-	0.00	-	-	-	154.01	9.98	21.83	-	340.21
Forest	0.50	245.30	-	383.97	0.35	-	-	-	-	3,917.24	59.55	125.59	-	4,732.49
Wetlands, Floodplain	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Open	0.25	314.40	0.27	341.78	102.64	847.58	-	-	-	-	89.89	283.72	1.81	1,982.36
Cropland	-	33.51	0.00	0.17	0.22	2.66	-	-	-	1.85	-	0.52	-	38.92
Pasture	1.02	46.53	-	0.43	0.18	7.15	-	-	-	7.49	6.36	-	-	69.15
Water	-	-	-	-	2.05	0.56	0.17	0.00	-	-	-	-	-	2.77
Gain	2.14	812.23	19.50	821.32	325.40	859.52	0.69	3.24	-	4,235.65	171.91	444.46	1.81	7,697.89

Cumberland County, Pennsylvania: 2013/14 – 2017/18

CRP = cropland
FOR = forest
INR = impervious non-road
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MO = mixed open
PAS = pasture
TCI = tree canopy over impervious
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TG = turf gras
WAT = water

DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Cumberland	LOSS	1,223	7,564	547	10	1,673	838	154	1,495	2,915	1
	GAIN	1,133	4,670	5,482	116	511	486	64	752	3,207	2
	NET	(90)	(2,895)	4,935	105	(1,162)	(353)	(90)	(743)	292	0
Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Cumberland	LOSS	425	1,282	259	4	1,962	218	105	1,115	579	1
	GAIN	556	232	2,310	33	163	244	26	294	2,092	0
	NET	132	(1,051)	2,050	29	(1,799)	26	(79)	(821)	1,513	(1)

T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	-	3.60	-	0.23	0.12	-	-	-	-	-	-	-	3.95
Impervious Non-Roads	5.53	-	16.60	147.97	7.60	1.24	-	-	-	19.47	33.98	26.82	-	259.22
Tree Canopy Over Impervious	0.13	50.61	-	29.70	0.56	0.00	-	-	-	8.61	6.19	8.74	-	104.54
Turf Grass	2.55	280.77	0.40	-	263.81	23.65	-	-	-	2.12	5.34	0.01	-	578.65
Tree Canopy over Turf Grass	2.42	220.92	0.26	691.20	-	0.09	-	-	-	70.83	90.19	38.99	0.00	1,114.90
Forest	0.00	142.76	0.06	587.71	1.89	-	-	-	-	58.29	343.67	147.90	0.00	1,282.28
Wetlands, Floodplain	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Open	21.46	1,076.99	4.65	619.16	17.98	139.03	-	-	-	-	71.05	11.72	0.00	1,962.05
Cropland	0.84	368.22	0.10	11.39	0.56	32.66	-	-	-	0.96	-	10.01	-	424.73
Pasture	0.04	169.29	0.07	4.52	1.02	34.50	-	-	-	2.72	6.03	-	-	218.18
Water	-	0.00	0.00	-	0.57	0.23	-	-	-	-	-	-	-	0.81
Gain	32.97	2,309.56	25.75	2,091.65	294.23	231.53	-	-	-	162.99	556.45	244.18	0.00	5,949.31

Gloucester County, Virginia: 2013/14 – 2017/18

CRP = cropland
FOR = forest
INR = impervious non-road
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PAS = pasture
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DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Gloucester	LOSS	26	3,408	61	2	2,708	1	20	653	64	1
	GAIN	591	1,867	114	6	289	103	8	88	3,876	0
	NET	565	(1,541)	53	3	(2,418)	103	(12)	(565)	3,813	(1)
Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Gloucester	LOSS	27	2,993	58	2	2,615	1	22	987	54	1
	GAIN	533	1,845	111	6	286	102	8	87	3,781	0
	NET	507	(1,147)	53	3	(2,329)	102	(14)	(900)	3,727	(1)

T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	-	0.98	-	0.59	0.55	-	-	-	-	-	-	-	2.11
Impervious Non-Roads	0.83	-	5.59	39.40	1.75	4.20	-	0.10	0.07	3.09	2.42	0.25	-	57.70
Tree Canopy Over Impervious	0.03	5.88	-	11.17	-	-	0.06	-	-	3.17	1.07	0.40	-	21.77
Turf Grass	0.59	10.96	0.09	-	39.87	2.27	-	-	0.03	0.43	-	-	0.00	54.25
Tree Canopy over Turf Grass	2.98	30.22	-	815.07	-	0.00	-	-	-	75.40	62.53	0.89	0.00	987.09
Forest	0.14	20.97	0.00	2,235.53	0.02	-	-	-	-	203.47	432.45	99.95	0.00	2,992.53
Wetlands, Floodplain	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Open	0.97	32.37	1.07	679.36	43.59	1,821.82	-	-	-	-	34.66	0.88	0.03	2,614.77
Cropland	0.00	9.91	0.03	0.48	0.27	15.91	-	-	-	-	-	-	-	26.60
Pasture	0.00	0.48	0.00	-	-	0.08	-	-	-	-	-	-	-	0.57
Water	-	-	-	-	0.68	0.07	-	-	-	-	-	-	-	0.75
Gain	5.53	110.79	7.77	3,781.01	86.76	1,844.91	0.06	0.10	0.10	285.56	533.13	102.38	0.04	6,758.13

Hardy County, West Virginia: 2013/14 – 2017/18

DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Hardy	LOSS	3	1,308	16	0	1,028	27	36	334	99	0
	GAIN	110	182	160	0	886	966	2	143	400	3
	NET	107	(1,126)	144	(0)	(142)	939	(34)	(192)	300	3
Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Hardy	LOSS	2	1,142	16	0	284	20	36	500	56	0
	GAIN	70	55	159	0	886	508	2	55	319	1
	NET	68	(1,087)	143	(0)	602	488	(34)	(445)	263	0

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TG = turf gras
WAT = water

T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	-	0.00	-	0.01	0.00	-	-	-	-	-	-	-	0.01
Impervious Non-Roads	-	-	1.94	4.68	0.76	0.04	-	-	-	6.14	0.26	1.85	-	15.67
Tree Canopy Over Impervious	0.00	1.51	-	5.40	-	-	0.03	-	-	26.44	0.39	1.83	-	35.60
Turf Grass	-	7.88	-	-	46.37	0.24	-	-	-	1.62	0.01	-	-	56.11
Tree Canopy over Turf Grass	0.00	16.97	-	80.09	-	0.00	-	-	-	312.33	7.20	82.97	0.00	499.57
Forest	-	25.76	-	109.68	0.08	-	-	-	-	539.63	61.61	404.33	0.54	1,141.64
Wetlands, Floodplain	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Open	0.00	94.44	-	117.77	7.48	46.55	-	-	-	-	0.00	17.15	0.41	283.80
Cropland	-	0.89	-	0.35	0.02	0.98	-	-	-	0.00	-	-	-	2.24
Pasture	-	11.58	-	0.78	0.07	6.65	-	-	-	0.06	0.76	-	-	19.90
Water	-	-	-	-	0.00	0.48	-	-	-	-	-	-	-	0.48
Gain	0.00	159.02	1.94	318.75	54.79	54.95	0.03	-	-	886.22	70.23	508.13	0.95	2,055.03

Lancaster County, Pennsylvania: 2013/14 – 2017/18

DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Lancaster	LOSS	840	953	175	9	3,140	255	76	616	687	4
	GAIN	844	285	2,680	38	163	182	56	385	2,118	6
	NET	3	(668)	2,506	29	(2,977)	(74)	(20)	(231)	1,431	2
Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Lancaster	LOSS	831	769	177	9	2,656	263	75	681	552	4
	GAIN	476	279	2,675	38	159	125	56	390	1,819	1
	NET	(356)	(490)	2,498	29	(2,497)	(138)	(20)	(291)	1,267	(3)

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T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	-	6.99	-	0.76	1.03	-	-	-	-	-	-	-	8.78
Impervious Non-Roads	9.18	-	48.89	65.73	2.83	0.12	0.03	-	-	7.26	33.54	9.61	0.00	177.21
Tree Canopy Over Impervious	0.11	50.02	-	13.63	-	0.01	0.00	0.01	-	8.45	2.64	0.54	-	75.42
Turf Grass	0.64	274.70	-	-	263.91	2.37	0.03	-	-	3.97	6.08	0.37	0.00	552.07
Tree Canopy over Turf Grass	0.63	269.50	-	311.78	-	0.24	-	-	-	33.70	54.34	10.96	0.00	681.17
Forest	1.57	105.28	-	213.50	0.01	-	-	-	-	101.30	284.27	62.59	0.00	768.51
Wetlands, Floodplain	-	0.25	-	-	-	-	-	-	-	-	-	-	0.00	0.25
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Open	24.46	1,075.57	0.03	1,195.88	108.09	135.03	-	-	-	-	82.23	33.69	1.05	2,656.04
Cropland	1.36	685.81	0.00	14.29	10.25	109.51	-	-	-	3.30	-	6.80	0.00	831.32
Pasture	0.00	214.33	0.00	4.16	1.92	28.26	-	-	-	1.47	12.55	-	-	262.68
Water	-	0.00	-	-	2.05	1.91	-	-	-	-	-	-	-	3.96
Gain	37.95	2,675.45	55.92	1,818.97	389.83	278.49	0.07	0.01	-	159.45	475.65	124.56	1.06	6,017.41

Loudoun County, Virginia: 2013/14 – 2017/18

DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Loudoun	LOSS	52	1,898	438	54	9,168	55	95	1,816	783	2
	GAIN	345	390	2,846	505	661	1,429	153	552	7,463	19
	NET	293	(1,509)	2,408	451	(8,507)	1,374	57	(1,264)	6,680	17
Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Loudoun	LOSS	53	3,100	460	41	6,095	49	107	507	385	2
	GAIN	160	461	2,559	473	1,151	151	110	396	5,334	3
	NET	107	(2,639)	2,100	432	(4,944)	101	3	(111)	4,949	1

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T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	3.15	29.57	0.00	3.97	3.23	0.00	-	-	0.99	-	-	-	40.93
Impervious Non-Roads	135.93	-	68.85	168.90	11.33	7.85	0.07	0.00	-	60.22	1.92	4.65	-	459.72
Tree Canopy Over Impervious	2.90	62.49	-	15.92	2.44	0.00	0.07	-	-	21.17	0.55	1.00	-	106.55
Turf Grass	17.27	75.82	1.81	-	200.62	34.98	0.25	0.00	-	53.64	0.27	0.84	-	385.49
Tree Canopy over Turf Grass	21.35	215.40	0.25	141.71	-	-	-	-	-	106.99	5.48	16.09	-	507.27
Forest	81.76	800.80	1.54	1,115.69	19.37	-	-	-	-	901.97	65.06	113.68	-	3,099.87
Wetlands, Floodplain	-	-	0.00	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Open	211.12	1,364.69	7.59	3,857.66	155.18	398.33	-	-	-	-	82.80	14.27	3.12	6,094.76
Cropland	2.86	16.19	0.04	22.21	0.99	4.82	-	-	-	5.59	-	-	-	52.71
Pasture	0.01	20.76	0.05	12.36	1.15	10.30	-	-	-	0.42	4.05	-	-	49.11
Water	-	0.12	0.01	-	1.08	0.77	0.00	0.00	-	-	-	-	-	1.99
Gain	473.21	2,559.42	109.70	5,334.46	396.14	460.28	0.39	0.01	-	1,151.00	160.12	150.54	3.12	10,798.38

Queen Anne’s County, Maryland: 2013/14 – 2017/18

DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Queen Anne's	LOSS	489	394	29	3	1,212	95	15	135	328	1
	GAIN	446	667	637	64	78	101	13	175	517	2
	NET	(43)	273	609	61	(1,134)	5	(2)	41	189	1
Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Queen Anne's	LOSS	483	244	33	3	1,198	96	11	169	131	1
	GAIN	259	664	511	51	20	22	14	175	650	2
	NET	(224)	420	478	48	(1,177)	(74)	3	6	519	1

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TG = turf gras
WAT = water

T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	0.40	1.05	0.17	0.23	0.12	-	-	-	0.65	0.00	0.00	-	2.61
Impervious Non-Roads	6.82	-	8.52	6.71	1.85	0.49	0.04	0.01	0.01	1.06	5.31	1.67	0.82	33.31
Tree Canopy Over Impervious	0.23	2.45	-	5.44	0.21	0.22	0.03	0.00	0.00	1.47	0.68	0.43	-	11.15
Turf Grass	1.68	44.02	0.14	-	80.70	3.00	0.00	0.01	0.05	0.91	0.43	0.20	0.04	131.17
Tree Canopy over Turf Grass	0.98	42.38	1.70	69.90	-	2.88	-	-	-	10.11	39.34	1.22	0.02	168.53
Forest	3.65	24.61	0.74	88.30	2.45	-	-	-	-	4.18	108.54	10.99	0.06	243.51
Wetlands, Floodplain	-	-	-	0.05	-	-	-	-	-	-	-	-	0.00	0.05
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	0.01	-	0.11	-	-	-	-	-	-	-	-	0.01	0.12
Mixed Open	35.16	211.01	1.64	442.99	76.09	318.59	-	-	-	-	104.60	7.50	0.15	1,197.73
Cropland	2.01	132.75	0.21	33.82	8.15	303.90	-	-	-	1.76	-	0.10	0.53	483.24
Pasture	0.02	53.56	0.05	2.77	4.66	34.43	-	-	-	0.27	0.49	-	0.01	96.27
Water	-	0.00	0.00	-	0.50	0.33	-	0.00	0.00	-	0.10	0.00	-	0.94
Gain	50.55	511.19	14.04	650.25	174.83	663.97	0.07	0.02	0.06	20.42	259.49	22.11	1.63	2,368.64

Sussex County, Delaware: 2013/14 – 2017/18

DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Sussex	LOSS	1,113	5,149	92	16	7,096	133	123	1,606	897	4
	GAIN	3,285	2,530	3,985	269	2,617	561	50	601	2,316	14
	NET	2,172	(2,618)	3,894	254	(4,479)	429	(74)	(1,005)	1,418	10
Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Sussex	LOSS	1,068	4,287	111	13	6,875	115	177	2,199	525	5
	GAIN	2,451	2,566	3,887	245	2,581	447	47	584	2,557	9
	NET	1,383	(1,721)	3,776	232	(4,294)	332	(130)	(1,615)	2,032	4

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WAT = water

T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	2.76	7.60	0.85	0.67	0.94	-	-	-	0.05	0.15	-	-	13.01
Impervious Non-Roads	17.10	-	27.67	31.73	6.59	2.44	-	-	0.00	4.22	14.08	7.35	-	111.19
Tree Canopy Over Impervious	0.06	46.53	-	56.05	1.89	0.05	0.02	0.00	0.01	53.09	17.26	2.10	-	177.07
Turf Grass	12.90	204.70	0.59	-	263.74	32.01	-	-	-	5.00	4.34	2.01	-	525.29
Tree Canopy over Turf Grass	27.79	575.40	5.55	386.78	-	3.54	-	-	-	803.98	292.16	103.27	0.03	2,198.50
Forest	31.84	258.86	1.56	208.42	10.35	-	-	-	-	1,677.40	1,859.07	238.75	0.05	4,286.29
Wetlands, Floodplain	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	-	-	0.60	-	-	-	-	-	-	-	-	-	0.60
Mixed Open	124.30	1,920.17	3.61	1,816.58	293.13	2,374.02	-	-	-	-	259.56	74.23	9.37	6,874.97
Cropland	29.42	805.61	0.18	49.17	2.76	133.21	-	-	-	27.75	-	19.67	-	1,067.78
Pasture	1.56	72.78	0.03	7.12	1.07	18.31	-	-	-	9.84	4.20	-	-	114.90
Water	-	0.00	0.02	-	3.39	1.58	-	0.00	-	-	-	-	-	4.98
Gain	244.97	3,886.79	46.81	2,557.30	583.58	2,566.10	0.02	0.00	0.02	2,581.34	2,450.80	447.39	9.45	15,374.57

Wicomico County, Maryland: 2013/14 – 2017/18

DRAFT		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Wicomico	LOSS	582	1,597	91	5	3,709	50	52	319	568	8
	GAIN	1,677	3,121	639	19	53	89	0	555	825	3
	NET	1,094	1,524	549	15	(3,656)	39	(52)	236	257	(6)
Version 0.9		CRP	FOR	INR	IR	MO	PAS	TCI	TCT	TG	WAT
Wicomico	LOSS	516	1,759	104	5	2,698	24	51	80	397	8
	GAIN	1,199	2,408	567	7	244	62	1	444	710	0
	NET	684	648	464	2	(2,454)	37	(50)	363	313	(8)

CRP = cropland
FOR = forest
INR = impervious non-road
IR = impervious road
MO = mixed open
PAS = pasture
TCI = tree canopy over impervious
TCT = tree canopy over turf grass
TG = turf gras
WAT = water

T1-T2 LU	Impervious Roads	Impervious Non-Roads	Tree Canopy Over Impervious	Turf Grass	Tree Canopy over Turf Grass	Forest	Wetlands, Floodplain	Wetlands, Other	Wetlands, Tidal	Mixed Open	Cropland	Pasture	Water	Loss
Impervious Roads	-	-	0.18	-	2.77	2.01	0.03	-	-	-	-	-	-	4.99
Impervious Non-Roads	1.98	-	0.40	42.80	19.02	3.84	0.72	0.11	-	8.87	25.86	0.02	-	103.63
Tree Canopy Over Impervious	0.01	30.50	-	12.05	0.45	-	0.13	0.00	0.03	5.26	2.66	0.09	-	51.16
Turf Grass	0.25	30.26	0.07	-	336.29	22.21	0.88	0.07	0.01	6.01	1.21	-	-	397.27
Tree Canopy over Turf Grass	-	35.73	0.10	29.33	-	-	-	-	-	8.04	7.00	0.21	0.00	80.41
Forest	0.17	100.50	0.32	247.13	5.05	-	-	-	-	199.77	1,144.97	61.39	-	1,759.30
Wetlands, Floodplain	-	0.00	0.00	0.00	-	-	-	-	-	-	-	-	-	-
Wetlands, Other	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wetlands, Tidal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mixed Open	3.96	186.35	0.06	351.75	65.95	2,072.07	-	-	-	-	17.79	-	0.26	2,698.20
Cropland	0.86	182.17	0.01	26.54	10.59	279.03	-	-	-	16.44	-	-	-	515.63
Pasture	-	1.86	-	0.40	0.08	22.02	-	-	-	-	-	-	-	24.36
Water	-	-	-	-	3.68	4.40	0.16	0.01	-	-	-	-	-	8.25
Gain	7.24	567.37	1.14	710.01	443.87	2,405.58	1.92	0.20	0.04	244.39	1,199.48	61.71	0.26	5,643.22