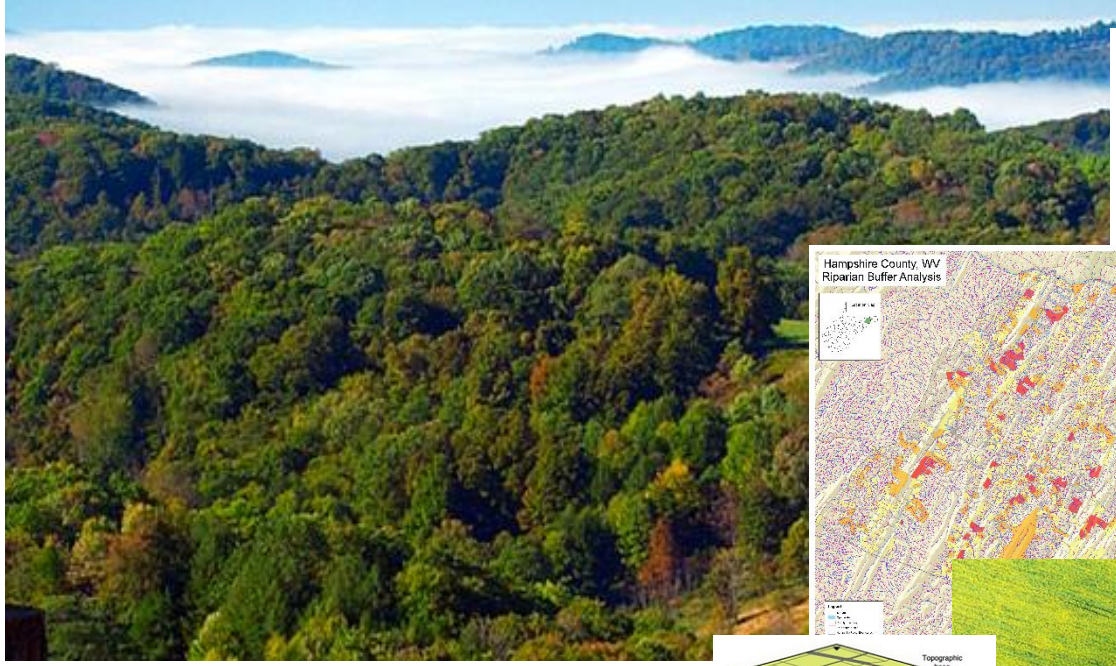
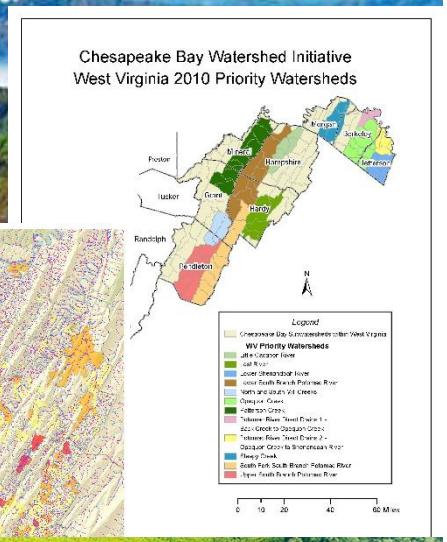
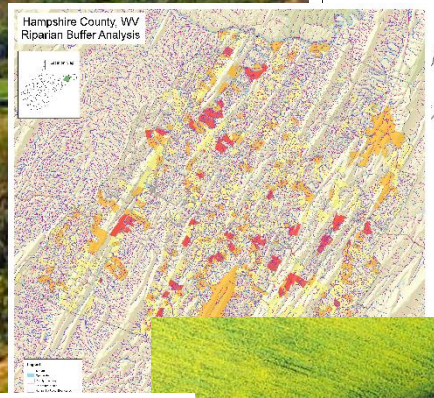
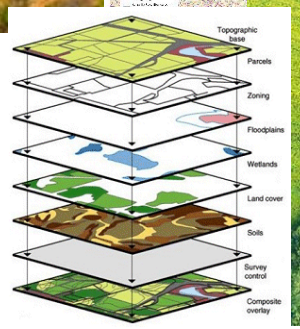
Evaluating Riparian Buffers of WV Landowners in the Chesapeake Bay Drainage









Steve Harouff
DOF GIS Manager

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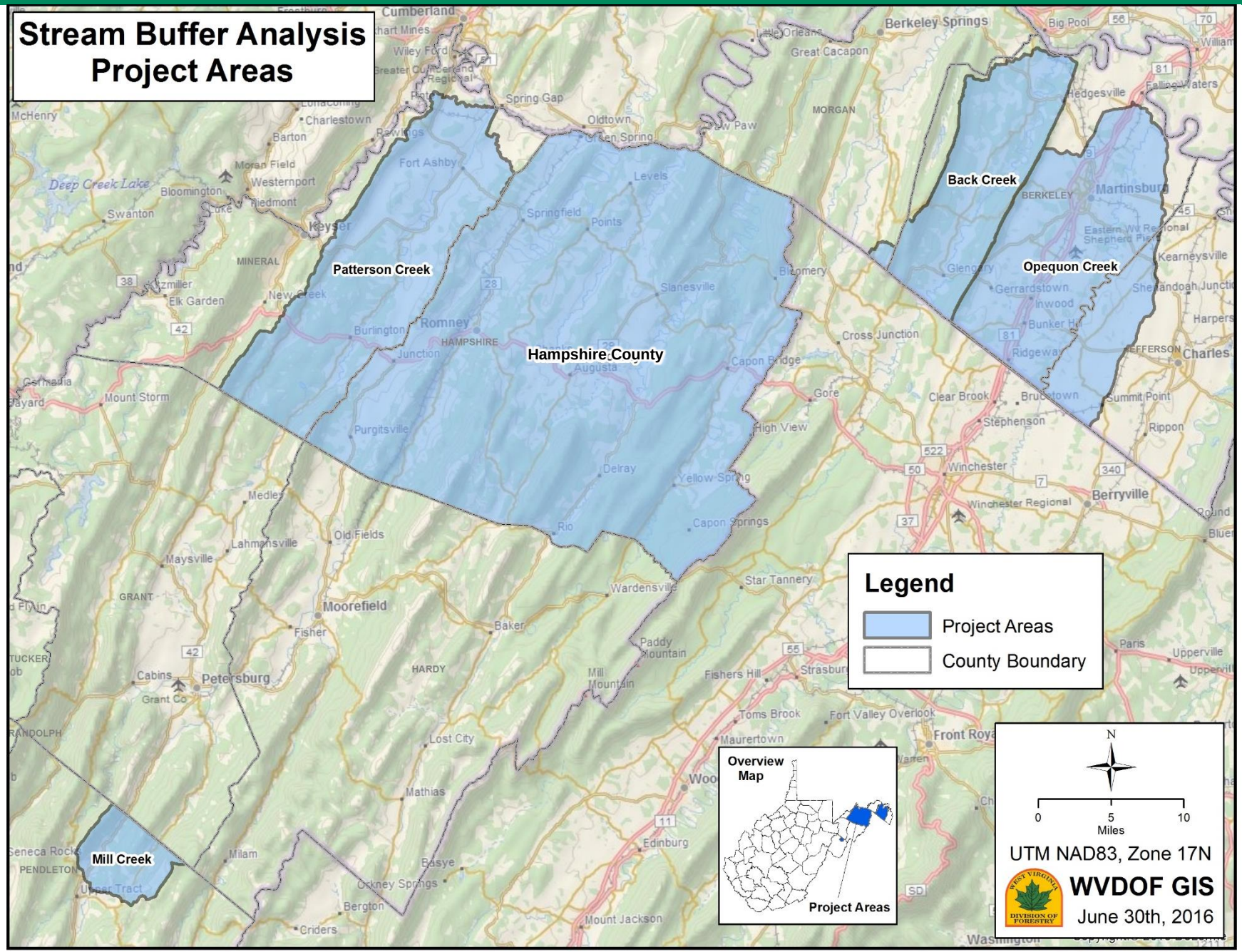
Project Areas



2016

Background, Funding and Partners

- Multi-State Grant ***Healthy Forests and Trees for TMDLs in the Potomac***
- Competitive grant provided by USDA, Forest Service for (MD, PA, WV and VA)
- Submitted by Maryland DNR Forest Service
- DOF Lead Herb Peddicord, Chesapeake Bay Forester
- Total Grant Request $375,000
- MD DNR Forest Service – $149,000
- The Potomac Conservancy -$100,000
- PA/Chesapeake Bay Foundation - $50,000
- WVDOF - $44,000
- VA - $32,000

Background, Funding and Partners

- 2010 Forest Resource Assessment determined priority watersheds state-wide which all states developed
- Project goal to reduce nutrient and sediment loads
- Use GIS to determine areas with no riparian buffer for private land owners
- Enroll landowners in the Conservation Reserve Enhancement Program (CREP), a voluntary program of the FSA and NRCS
- Establish forested buffers along streams

CREP
Conservation Reserve Enhancement Program

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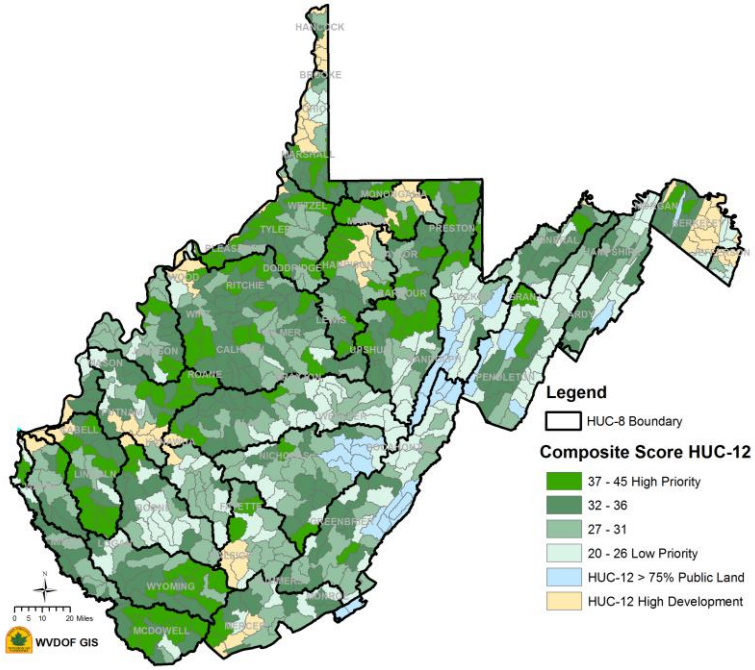
2010 Forest Resource Assessment Priority Watersheds

Protection Input Layer Weighting and Prioritization by HUC-12 Sub-Watershed								
Data Layer	Sub-watershed Reclassification Values							Unit of Measure
	0	1	2	3	4	5	6	
High Quality Streams		<8	8-20	>20				Stream Miles
Public Land	>75*	51-75	26-50	<25				Percent Public Land
Surface and Fill Mining	>20		5-20	<5				Percent of HUC-12
FWP Ability to Produce Clean Water Score	10-13	21-23			19-20 14-16		17-18	APCW Composite Score
Oil and Gas Well Density		<0.004	~	<0.025				Wells per Acre
Public Water Intakes		<4	4-9	>9				Intakes per HUC-12
Harvest Pressure		<3	3-5	6-7	>7			Percent of HUC-12
Structural Density	>0.25*	<=0.25						Structures per Acre

* HUC-12s with a calculated structure density >0.25 structures/acre (urban sub-watersheds) and more than 75 percent public land area were scored, but excluded as priority areas.



Restoration Input Layer Weighting and Prioritization by HUC-12 Sub-Watershed								
Data Layer	Sub-Watershed Reclassification Values							Unit of Measure
	0	1	2	3	4	5	6	
Impaired Streams		<11	11-34	> 34				Stream Miles
Public Land	>75*	51-75	26-50	<25				Percent Public Land
Surface and Fill Mining	>20		5-20	<5				Percent of HUC-12
FWP APCW score	10-13	21-23			19-20 14-16		17-18	FWP APCW Comp. Score
Oil and Gas well density		<0.004	~	<0.025				Wells per Acre
Public Water Intakes		<4	4-9	>9				Intakes per HUC-12
Harvest Pressure		<3	3-5	6-7	>7			Percent of HUC-12
Structural Density	>0.25*	<=0.25						Structures per Acre

2016

CREP Targeting GIS

- Utilize GIS to identify potential CREP enrollees
- Datasets used:

1. NHD Stream layer - buffered 35’
2. Tax parcel data form Berkeley, Hampshire, Jefferson, Mineral, Morgan and Pendleton Counties
3. NRAC 4 class land cover – 9m Res. Forest/Woody, Ag-land, Developed and Water (2011 NAIP Imagery)

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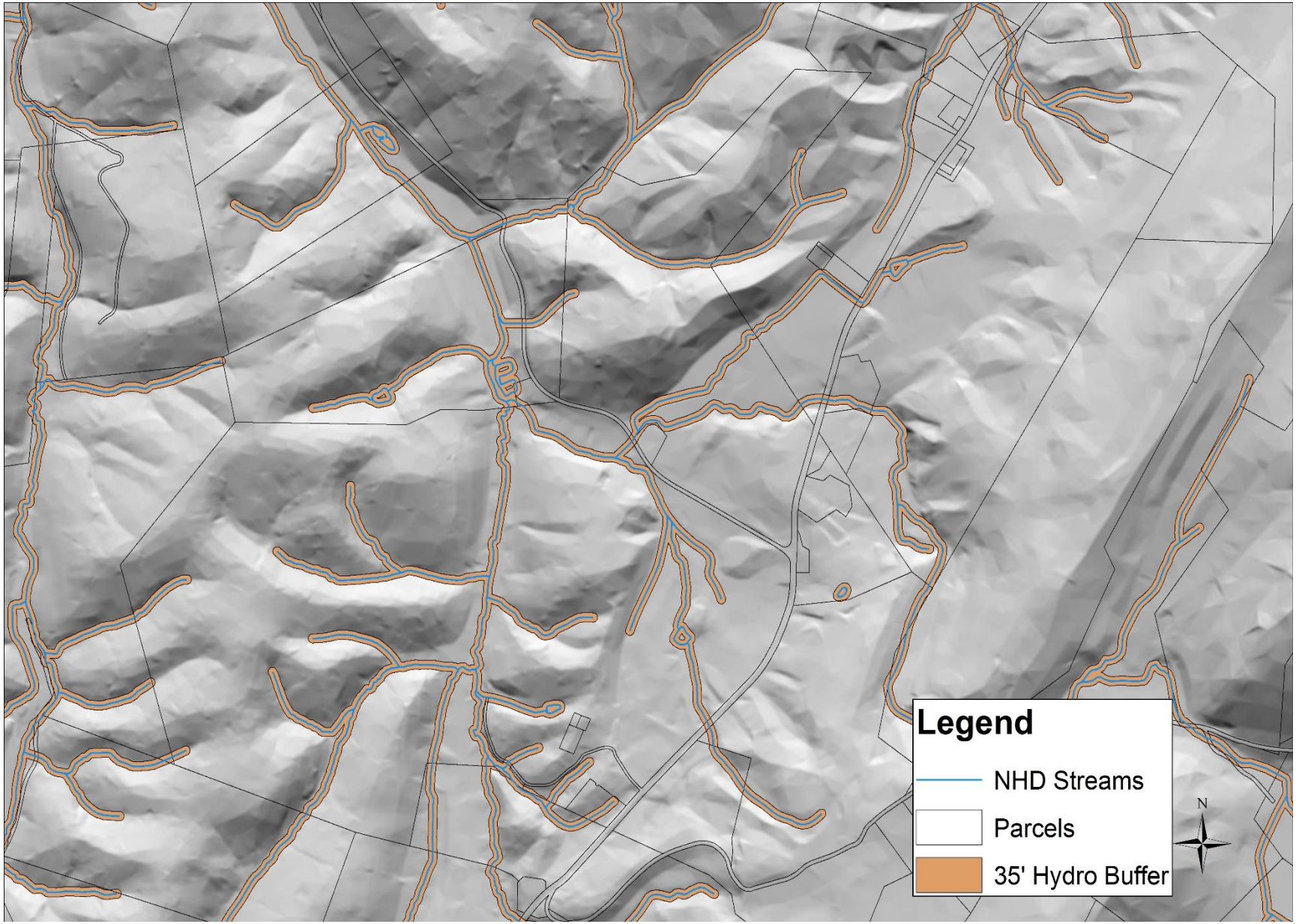
Step 1: Buffer Streams 35’



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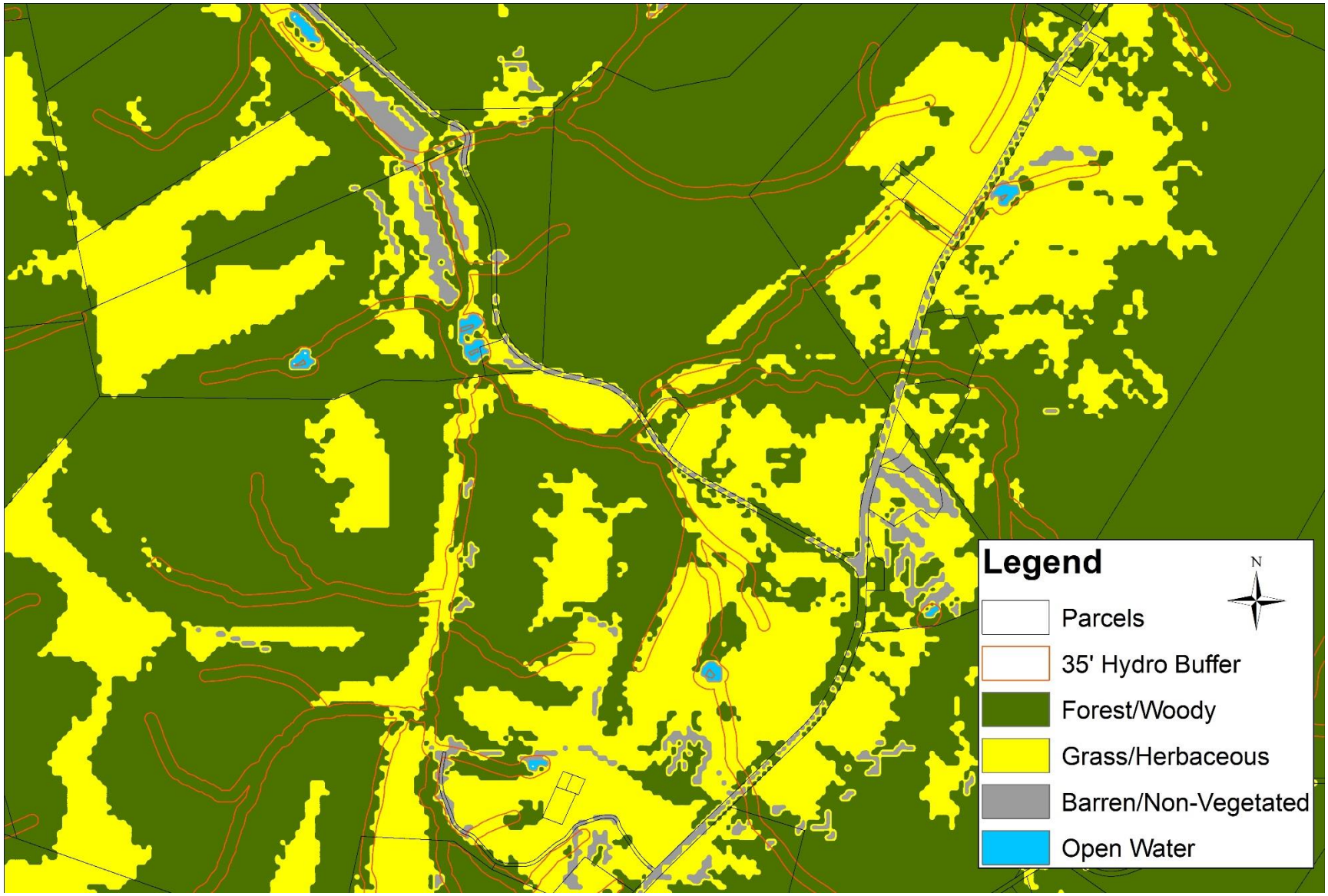
2016

Step 2: Clip Cover Type



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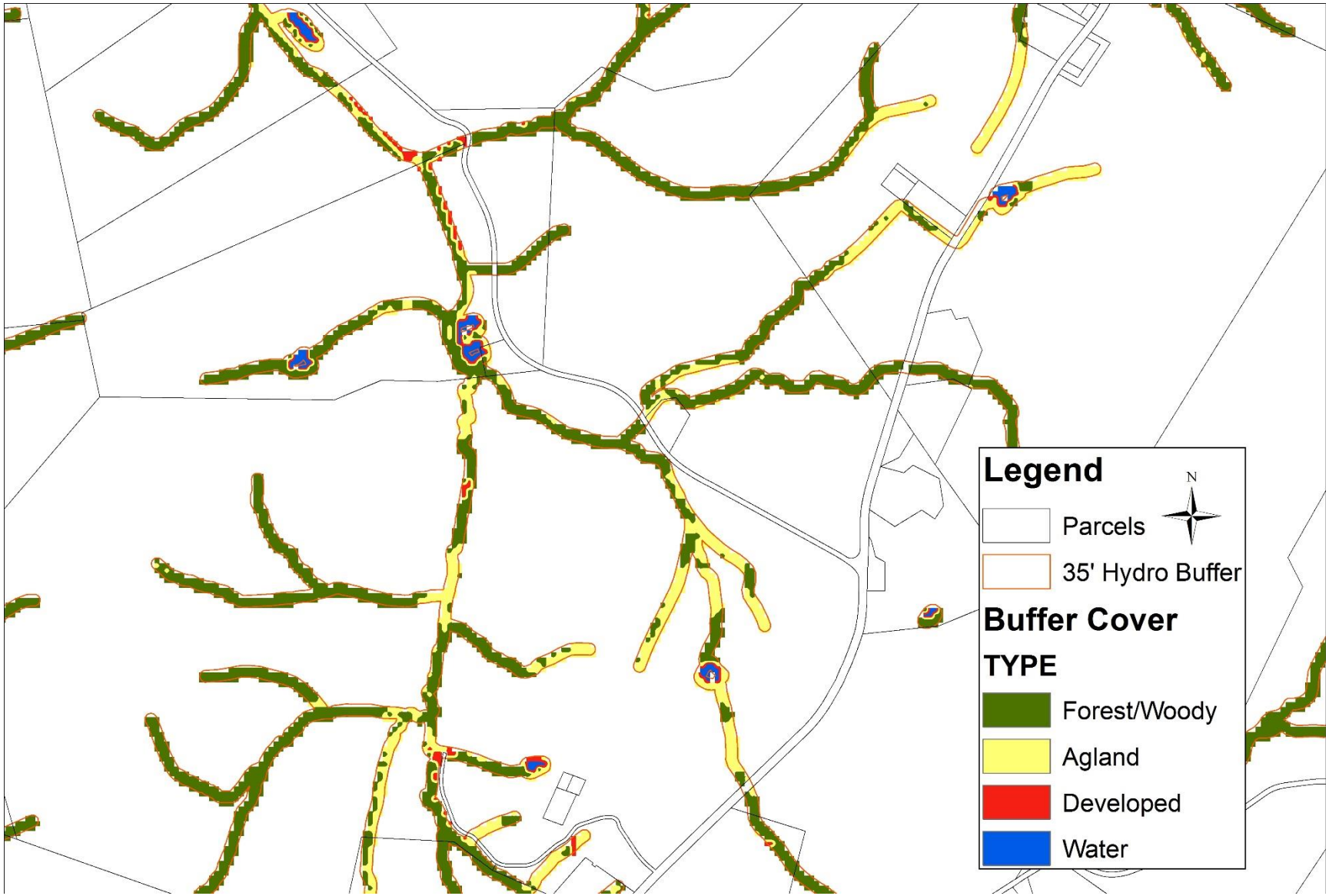
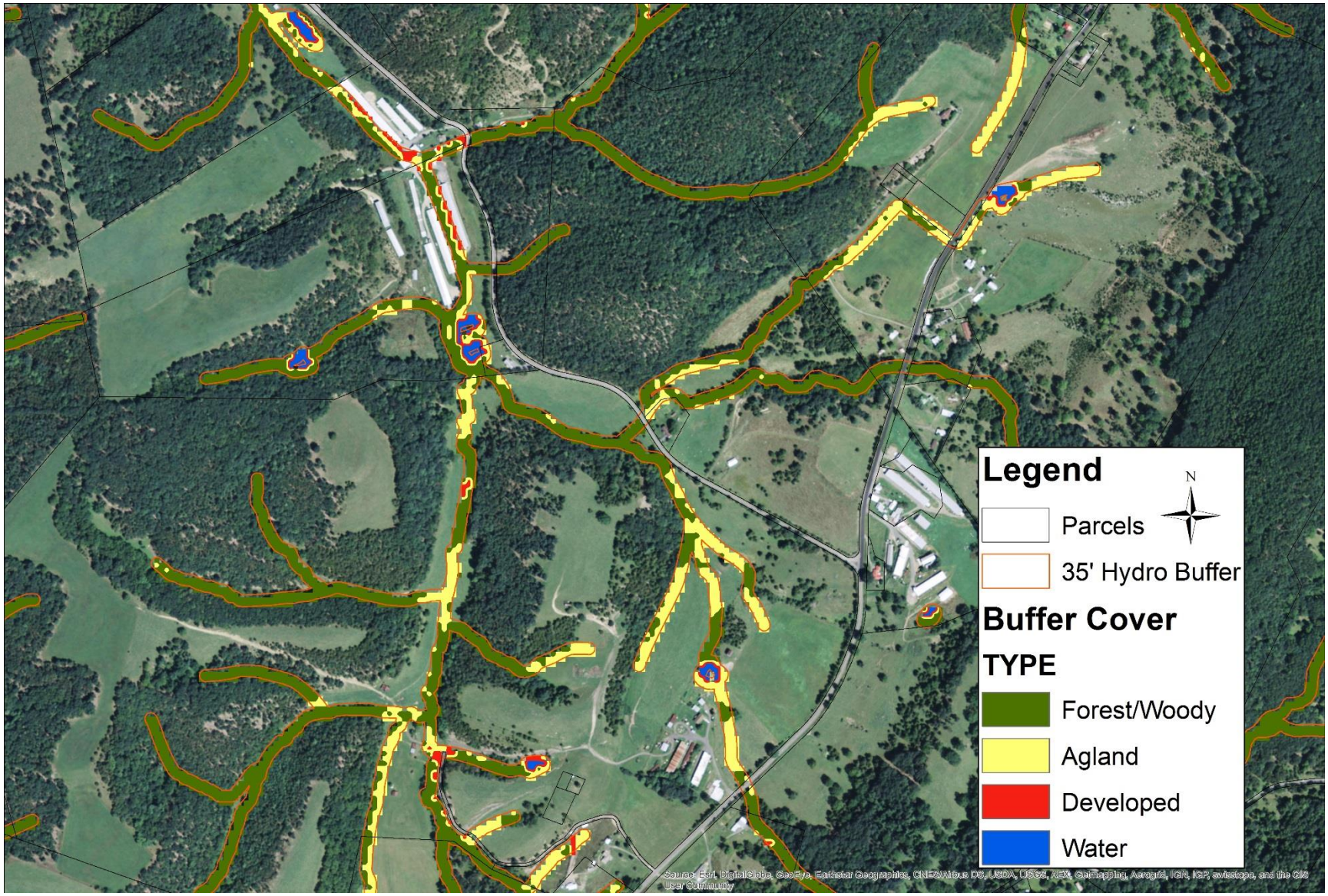
2016

Step 2: Clip Cover Type



2016

Step 3: Verify results with imagery

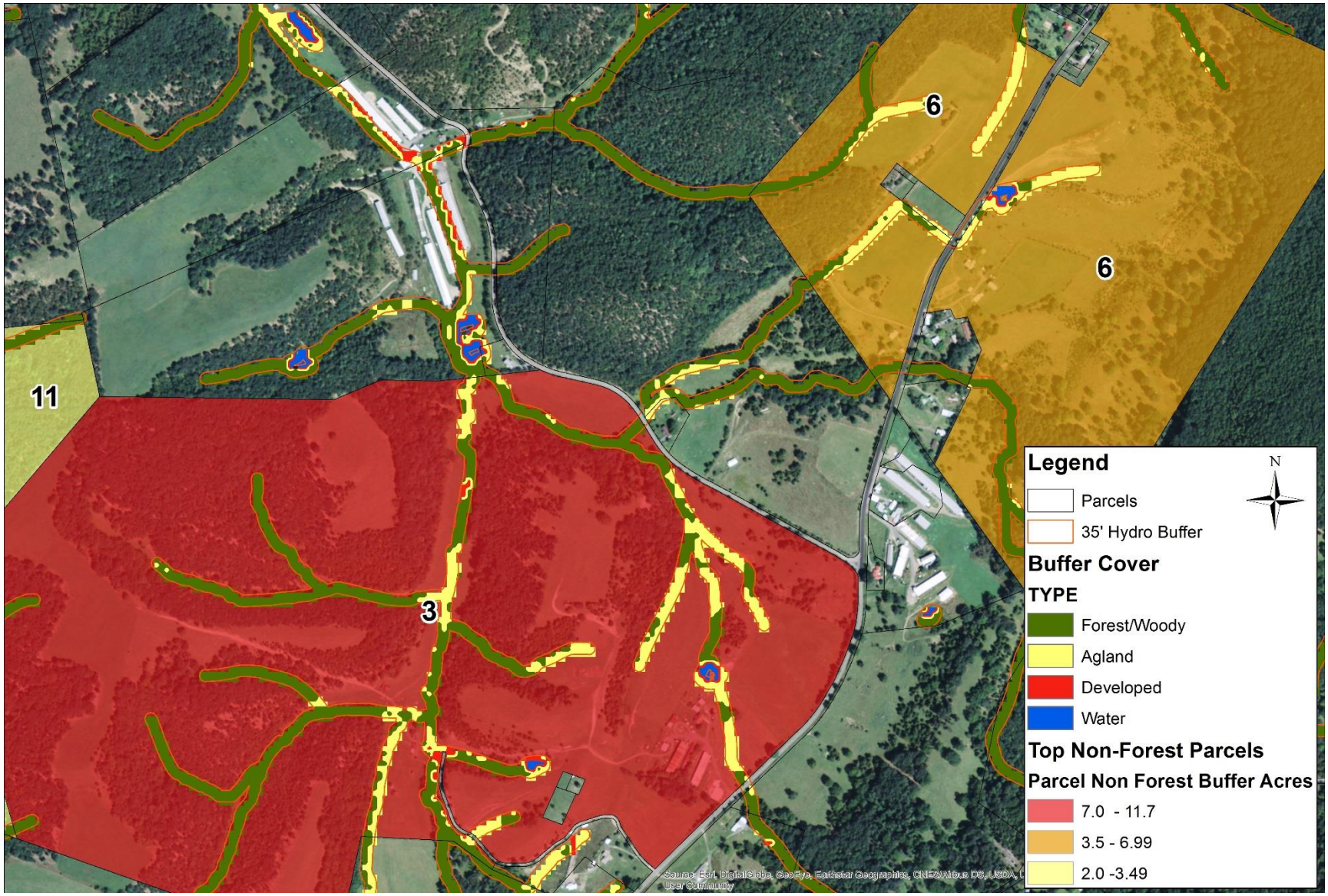


2016

Step 3: Verify results with imagery

2016

Step 4: Tabulate Area buffer cover types



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Step 4: Use PARID as zones for Tabulate Area tool

Table

Top Non-Forest Parcels

FID	Shape *	PARID	ForBufAc_1	NoForBuf_1	DIST_1	MAP_1	PID_1	ACRES_1	DistMap_1	
4	Polygon	05 14001300000000	7.025584	2.041623	05	14	13	106.5	05-14	HE
12	Polygon	05 21002000000000	3.823039	2.461957	05	21	20	29.74	05-21	AL
2	Polygon	05 6001000010000	1.501193	2.501989	05	06	10.1	73.03	05-06	RA
11	Polygon	05 19002200000000	18.074367	2.682132	05	19	22	191	05-19	MO
6	Polygon	05 15002600000000	2.722164	2.882291	05	15	26	142.5	05-15	MIL
8	Polygon	05 18001500000000	0.44035	3.142498	05	18	15	17.014	05-18	MIT
0	Polygon	0								
1	Polygon	0								
5	Polygon	0								
9	Polygon	0								
10	Polygon	0								
7	Polygon	0								
3	Polygon	0								
13	Polygon	0								

0

Top Non-Forest Parcel

Tabulate Area

Input raster or feature zone data

Parcels

Zone field

PARID

Input raster or feature class data

Buffer Cover

Class field

VALUE

Output table

C:\Users\stharouff\Documents\ArcGIS\Default.gdb\Tabulat_Pendlet1

Processing cell size (optional)

9

Tabulate Area

Calculates cross-tabulated areas between two datasets and outputs a table.

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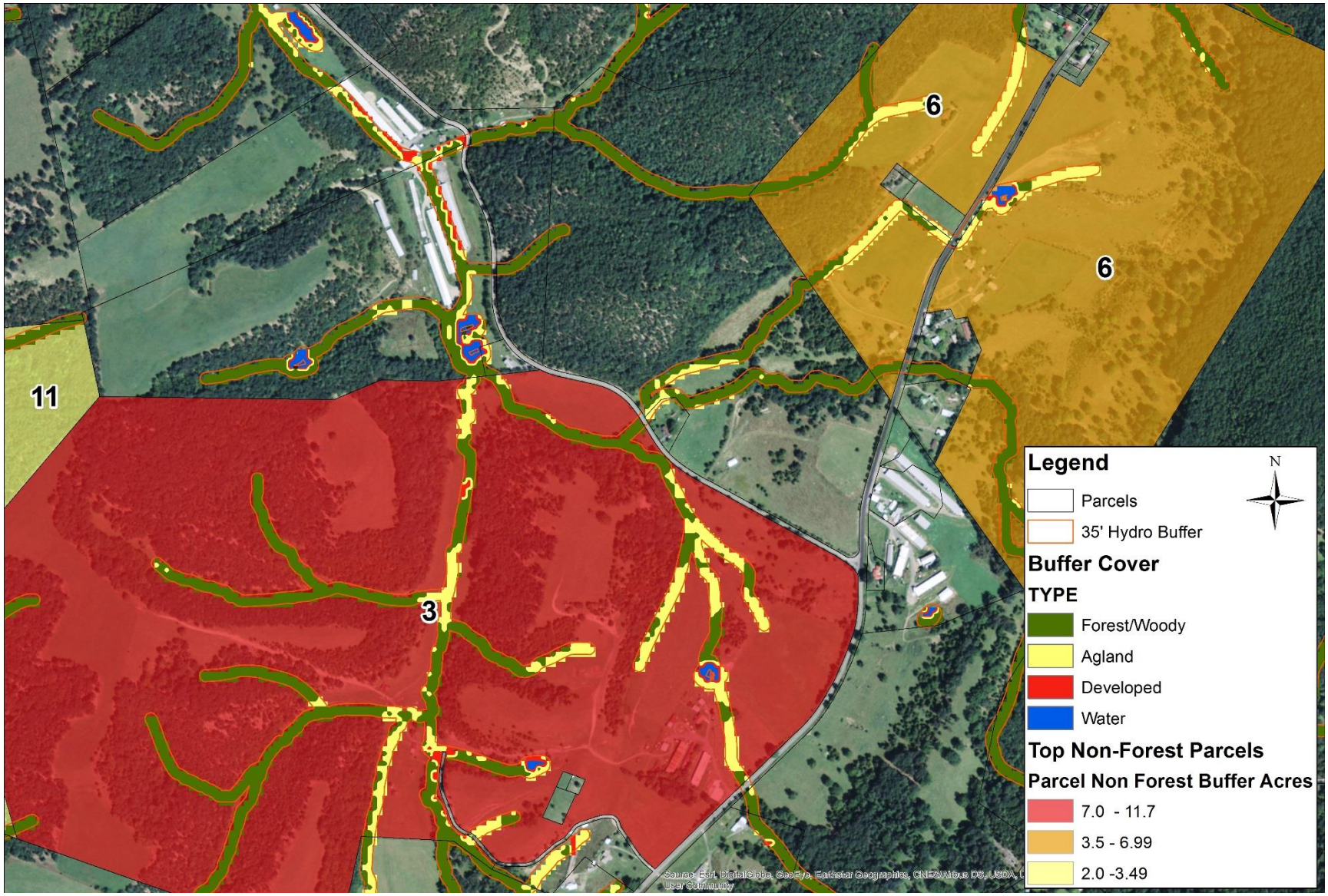
Step 5: Join area results to parcel data for ranking



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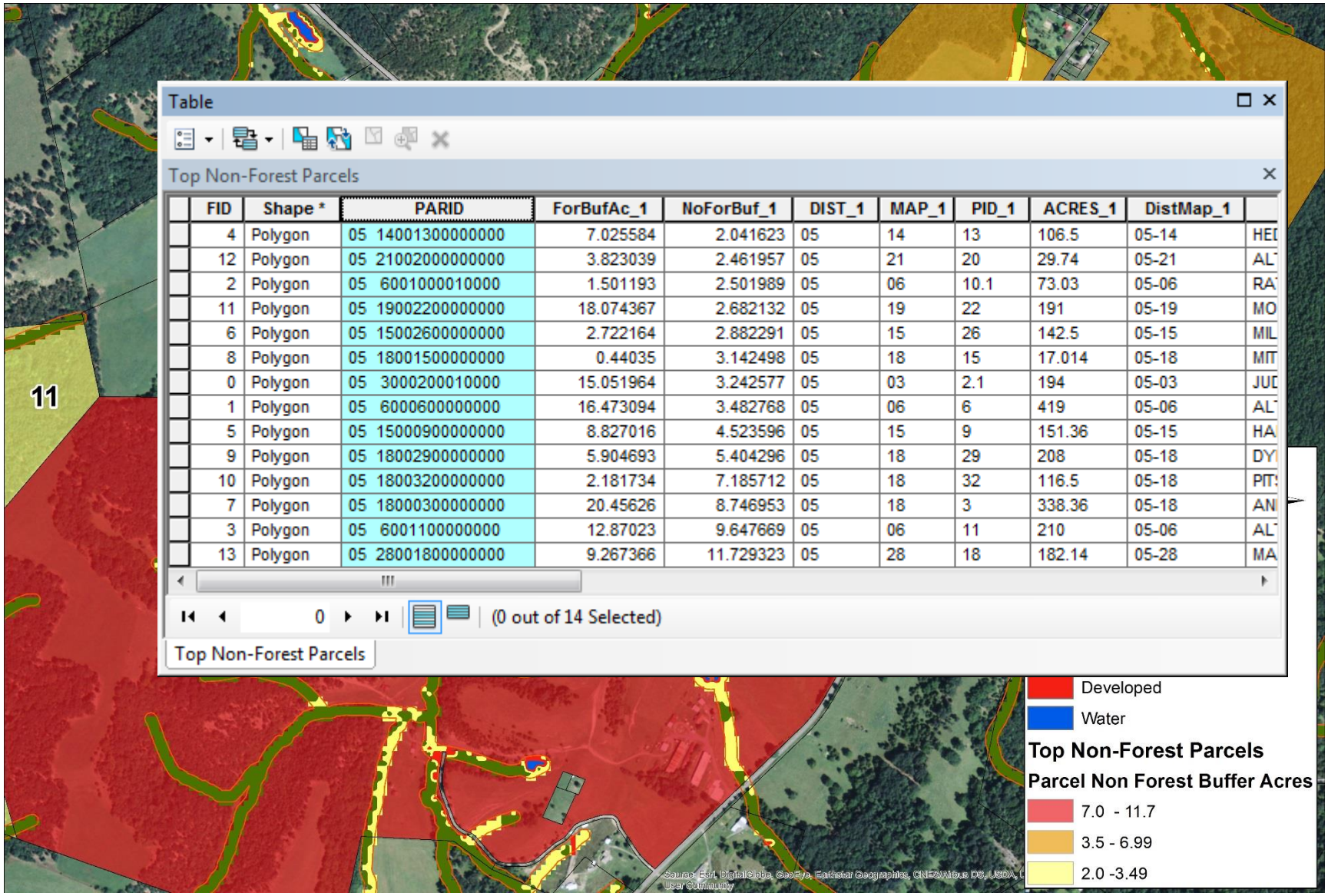
Step 6: Develop mailing lists



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11	Polygon	05 19002200000000	18.074367	2.682132	05	19	22	191	05-19	MO
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8	Polygon	05 18001500000000	0.44035	3.142498	05	18	15	17.014	05-18	MIT
0	Polygon	05 3000200010000	15.051964	3.242577	05	03	2.1	194	05-03	JU
1	Polygon	05 6000600000000	16.473094	3.482768	05	06	6	419	05-06	AL
5	Polygon	05 15000900000000	8.827016	4.523596	05	15	9	151.36	05-15	HA
9	Polygon	05 18002900000000	5.904693	5.404296	05	18	29	208	05-18	DY
10	Polygon	05 18003200000000	2.181734	7.185712	05	18	32	116.5	05-18	PIT
7	Polygon	05 18000300000000	20.45626	8.746953	05	18	3	338.36	05-18	AN
3	Polygon	05 6001100000000	12.87023	9.647669	05	06	11	210	05-06	AL
13	Polygon	05 28001800000000	9.267366	11.729323	05	28	18	182.14	05-28	MA

0 (0 out of 14 Selected)

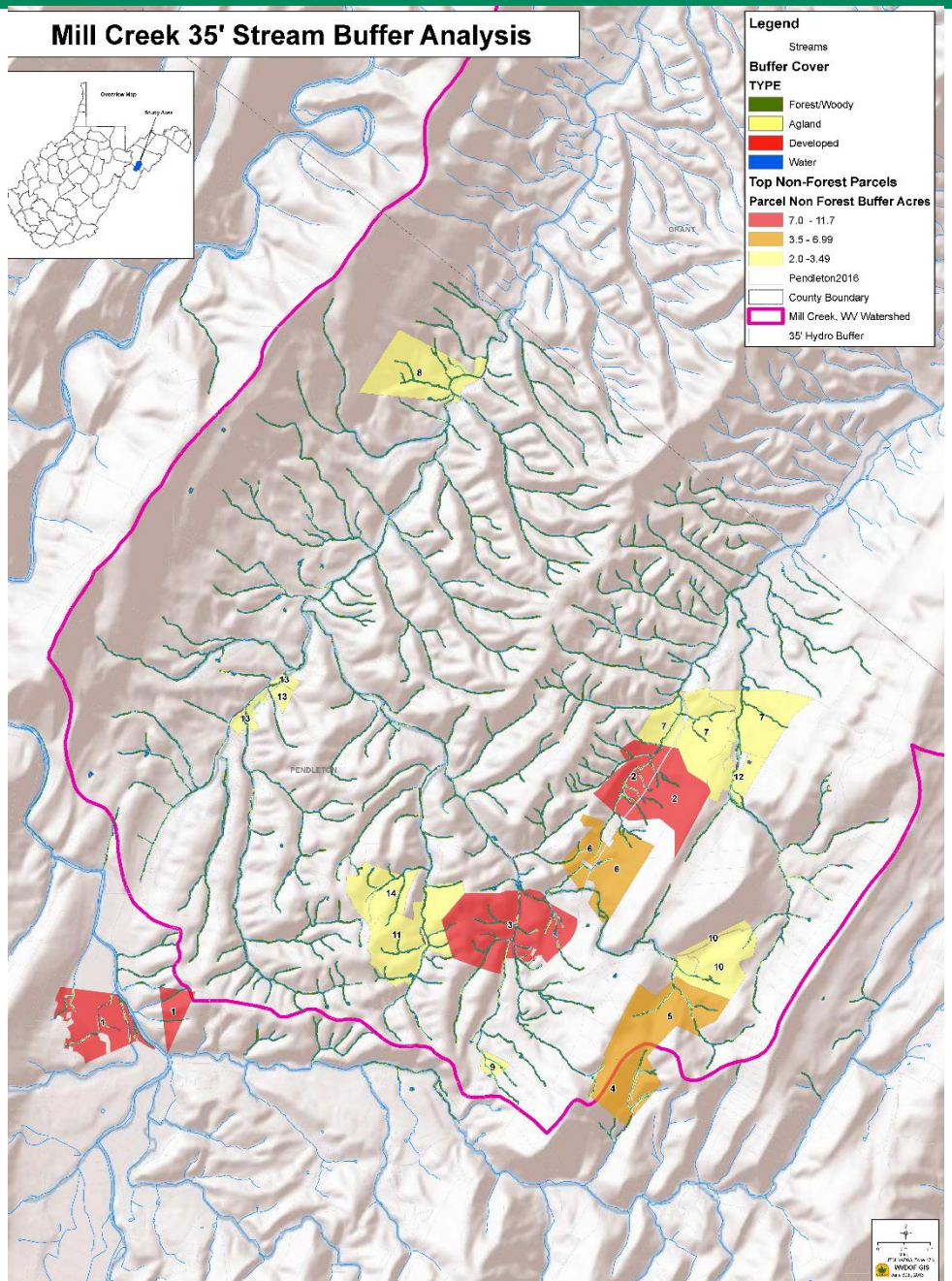
Top Non-Forest Parcels

2016

Results shared with Bay Forester - Maps and Data

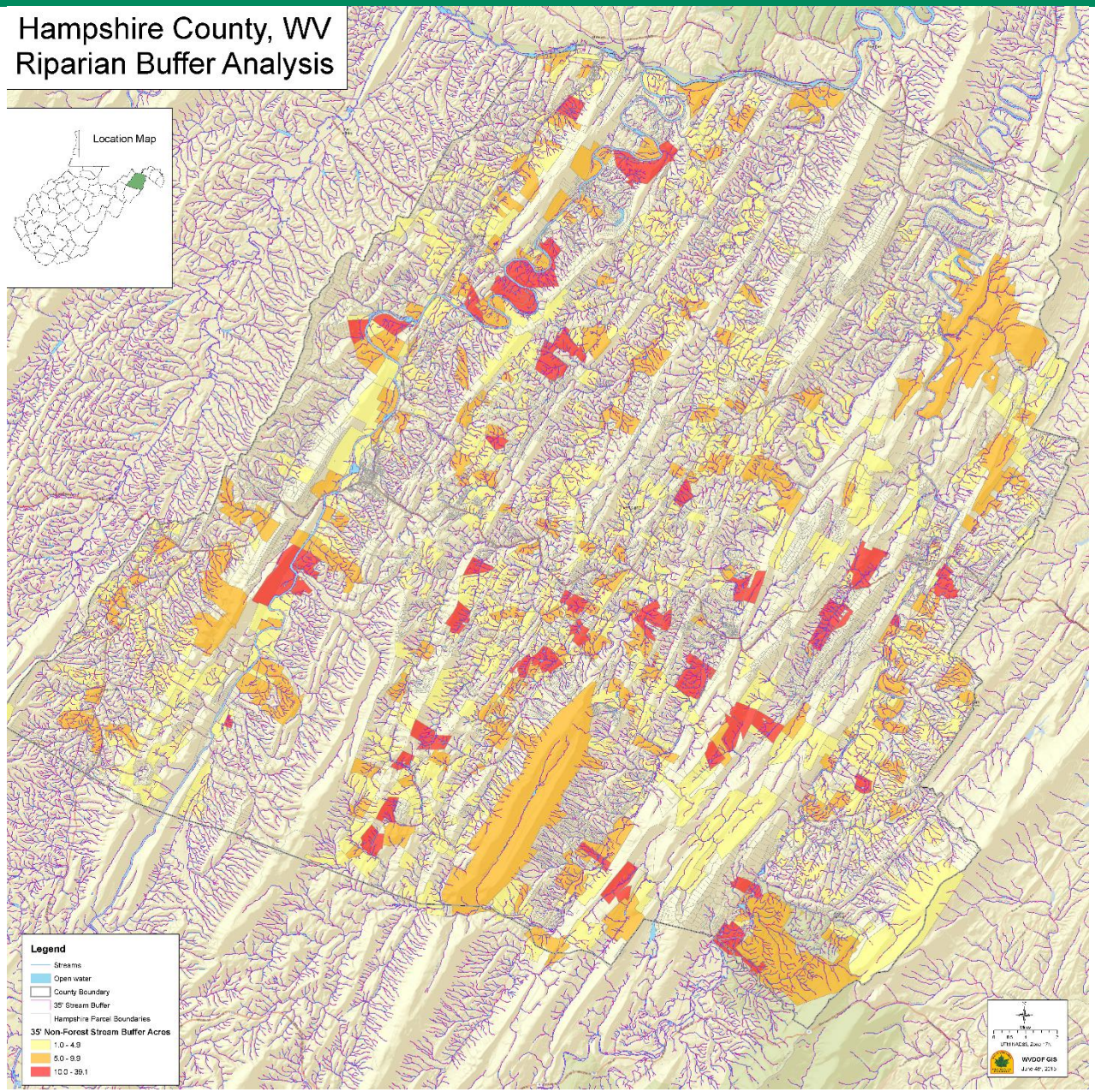
Limitations:

- Accuracy of the tax parcel data
- Accuracy of the Stream data
- Accuracy of the image classifications



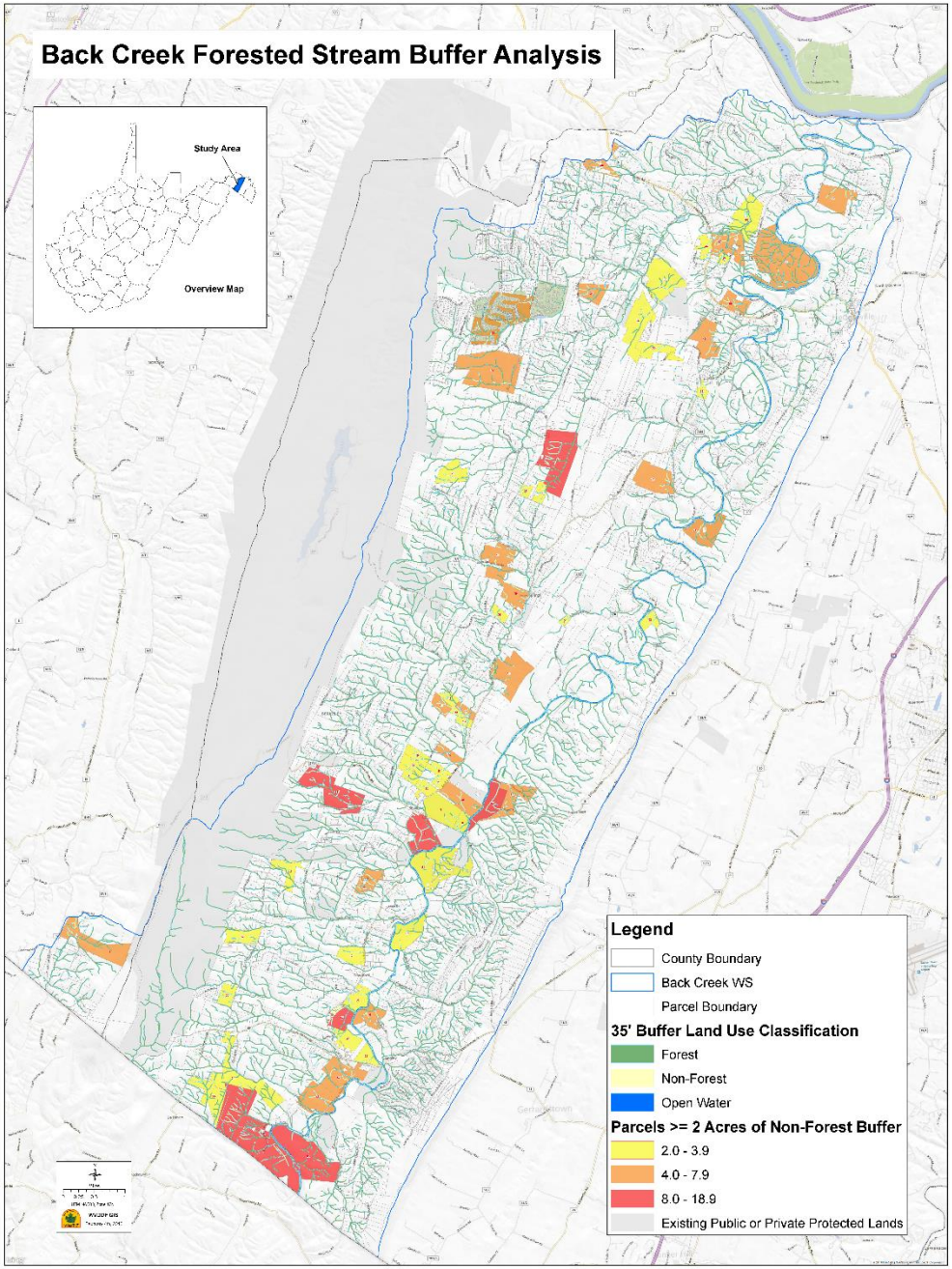
2016

Results - Hampshire County



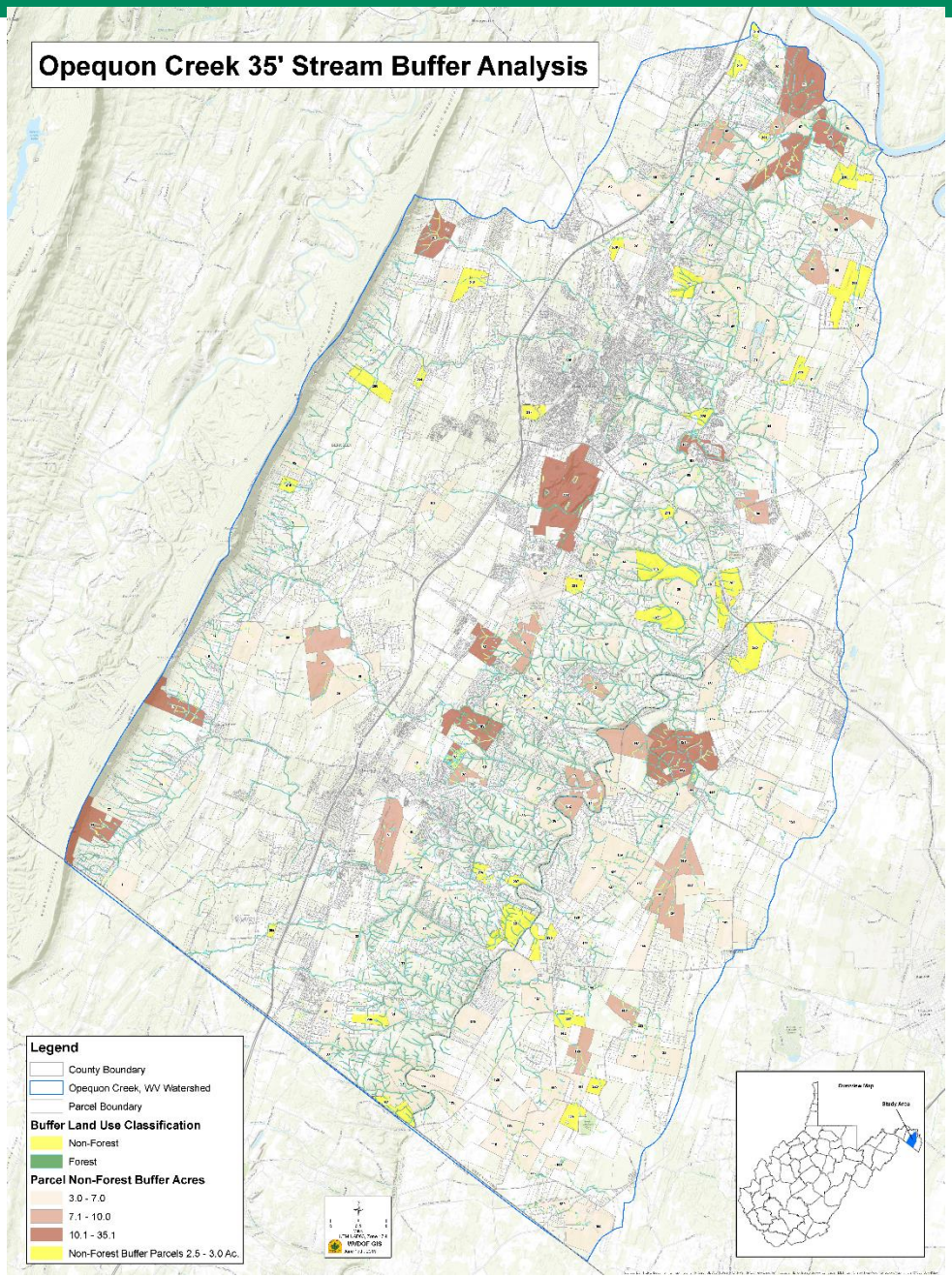
2016

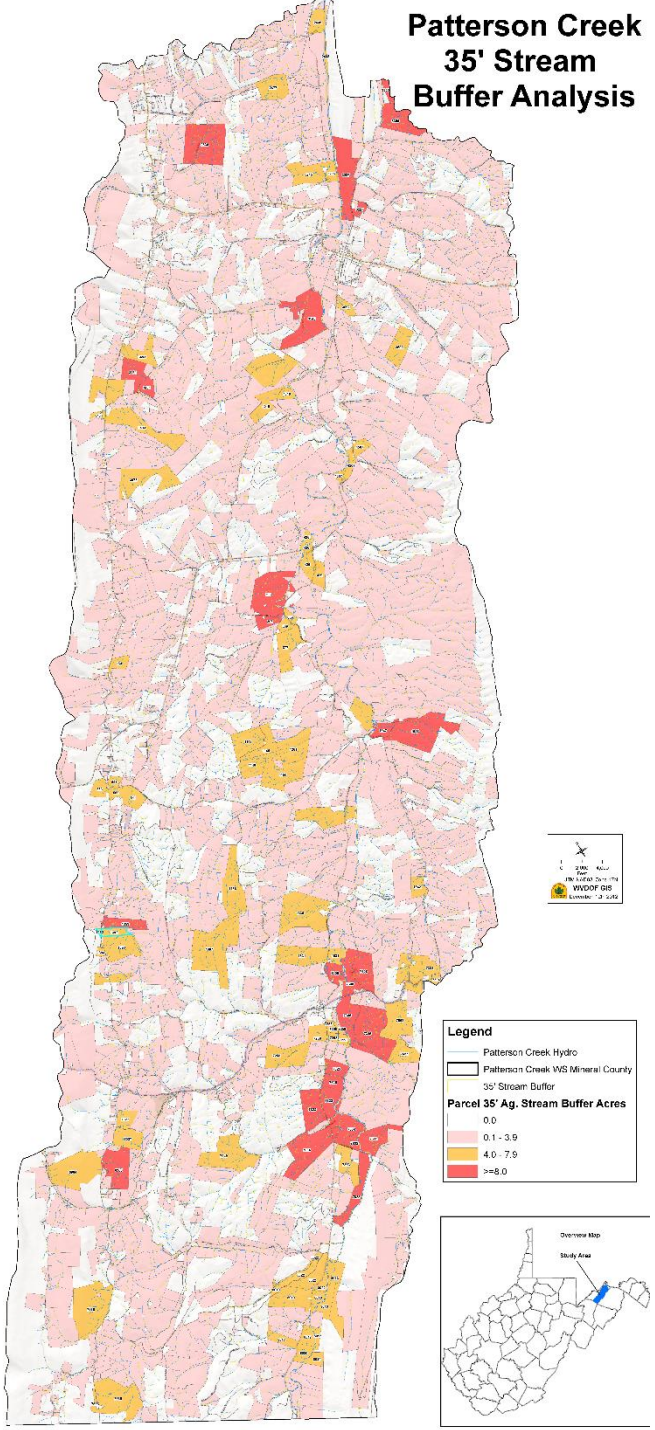
Results – Back Creek Morgan/Berkeley Counties



2016

More Results……





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2016

Where we are today….

- GIS analysis was the first step
- So far about 300 mailings have been sent to landowners for CREP program
- About 5% responded with 3 miles planted so far
- Staffing limitations have not allowed for good follow-ups, but new staff have just been hired

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Questions?

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304-293-0056
steven.e.harouff@wv.gov

2016