

# GIS TAX PARCEL AND ROAD DATABASE UPDATE WITH SUMMARY LAND USE ANALYSIS PROJECT ANALYSIS REPORT

## Abstract

This Report contains analysis, comparison and summary trends in the property tax revenues from 2012 to 2017 and their potential transportation, economy and natural hazard implications.



### **Synergy Systems & Services**

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SMALL BUSINESS RESERVE: SB12-23334



**County of Cumberland Bridgeton,  
New Jersey**

## Table of Contents

1. Document Control.....	2
1.1. Document Information.....	2
1.2. Document History.....	2
1.3. Reference Data.....	2
1.4. Applications.....	2
2. Executive Summary.....	3
3. Base Data Analysis.....	4
3.1. Property Class Acreage.....	4
3.2. Land & Building Values.....	6
3.3. Property Tax Revenues.....	7
3.3.1. Tax Deductions.....	9
3.3.2. Tax Exemptions.....	10
4. Additional Data Analysis.....	11
4.1. Natural Hazards – Flooding.....	11
4.1.1. Flood Analysis - Roads.....	15
4.1.2. Flood Analysis – Census Data.....	17
4.2. Additional Parcel Analysis.....	18
4.3. Developmental Pressure.....	25
4.4. Transportation.....	27
5. Conclusion.....	28
6. Appendix.....	29

## 1. Document Control

### 1.1. Document Information

<b>Synergy Project Number</b>	SSNJCC18
<b>Document Owner</b>	A. Nigam
<b>Issue Date</b>	6/20/2018

### 1.2. Document History

VERSION	ISSUE DATE	CHANGES
1.0	5/11/2018	Initial Document Preparation – <b>C. Snyder</b>
1.1	5/22/2018	Conceptual Document Workflow – <b>N. Badamas</b>
1.2	6/05/2018	Peer Review – <b>C. Snyder</b>
1.3	6/08/2018	Peer Review – <b>A. Nigam</b>
1.4	6/12/2018	Document Finalization – <b>N. Badamas, A. Nigam</b>
1.5	6/20/2018	Incorporate Stakeholder Feedbacks and Finalize – <b>N. Badamas</b>
1.6	6/20/2018	Final Review and Export to PDF – <b>A. Nigam</b>

### 1.3. Reference Data

REFERENCE	DATA
State Information Services	2018 Parcel Data (MOD4)
New Jersey Department of Transportation(NJDOT)	2016 Functional Class information
Federal Highway Administration	2015 HPMS lane width data
State ROW	2018 NJDOT Engineering Documents Unit
Tax Maps (ROW data)	2018 Various Cumberland County Townships
Bike Lanes: 2007 NJDOT County Sidewalk Inventory	2013 NJDOT Bicycle Map
Flood and Storm Surge data	2016 FEMA National Flood Hazard Layer
Income & Demographic Data	2016 American Community Survey US Census
Transportation	2018 NJ Transit
Agricultural Data	2018 NJ Farmland Preservation Program
Firm Database Technical Reference	<a href="https://www.fema.gov/media-library-data/">https://www.fema.gov/media-library-data/</a>
FEMA Library	<a href="https://www.fema.gov/media-library">https://www.fema.gov/media-library</a>
Population Data	US Census Bureau

### 1.4. Applications

The following is a list of software leveraged in creating this report.

APPLICATION	DESCRIPTION
Arc Map	Maps and Spatial Analysis
Microsoft Excel	Analysis, Charts and Graphs
Microsoft Word	Documentation
R	Statistical computing and Analysis

## 2. Executive Summary

The Synergy team was tasked by the County of Cumberland to provide a report analyzing, comparing and summarizing trends in the property class acreage, land and improvement values and property tax revenues from 2012 to 2017 and their potential transportation, economic and natural hazard (flood zones) implications.

Synergy provided services to collect, gather, compile, digitize and update County of Cumberland’s tax parcel and road coverages, shapefiles and geodatabases. The resulting product is an ESRI format GIS coverage and associated ESRI geodatabase. The updated County of Cumberland data and datasets from other sources was analyzed, visualized and compared using software applications to create this summary report.

There are 73,426 tax parcels in Cumberland County. Synergy obtained New Jersey property records from State Information Services (SIS) which provided access to an up-to-date 65,925 Cumberland County property records. The difference of 7,501 records most likely occurred because of the 2012 Cumberland County GIS tax parcel file that was used. It is important to point out that multiple parcels can be associated with one PAMS Pin thus, one MOD4 record can be valid for multiple parcels.

The obtained MOD4 data (65,925) was matched to the 2012 Cumberland County GIS tax parcel record (73,426), 61,947 MOD4 records were successfully matched however, 3,978 records were unmatched, and 11,479 GIS tax parcels were unmatched. Once more the 2012 Cumberland County GIS tax parcel file have not been updated with the most recent PAMS Pin information resulting in data discrepancy. The methodology for processing disparate datasets was exploited to identify inconsistencies with the data to improve the data quality.

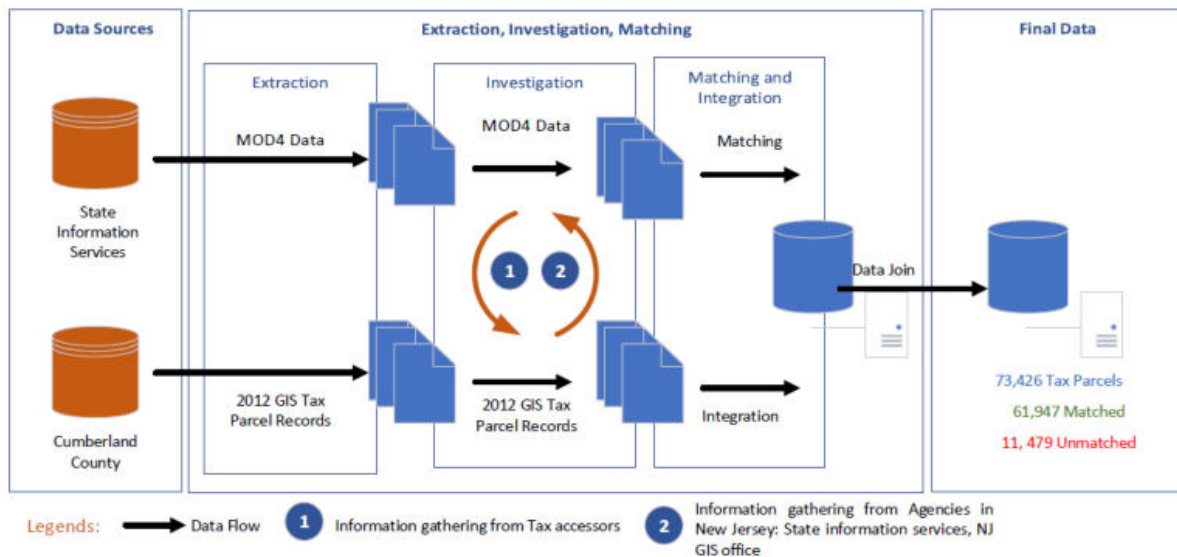


Figure 1: Process of Matching/ Integrating the GIS Data

All the analysis contained herein used the full MOD4 output for Cumberland County except the total value of parcels in Cumberland County map, Parcel value analysis charts, and spatial distribution of parcels which used only GIS matched parcels.

The following sections provide the detailed analysis of the property class acreage, land improvement values, property tax revenues (2012 to 2017 MOD4 Data), potential transportation, economic and natural hazard (flood zones) implications.

### 3. Base Data Analysis

The base data analysis provides a detailed evaluation of each element of the Cumberland County MOD4 data based on the following attribute information; property class acreage, land and building value and property tax revenues.

#### 3.1. Property Class Acreage

Property Class Acreage is calculated directly from the MOD4 database for a comprehensive comparison rather than the methodology used for the previous update which is calculated using matched parcels [(parcel polygon area / square footage conversion factor (43560 feet)]. This analysis is based on the entire MOD4 database output from 2012 and 2018. For example, 2012 records (2012 taxes and 2012 assessment values) and 2018 records (2017 taxes and 2017 assessment values). 2017 tax data has not been released for Cumberland County however, the values were calculated based on municipal tax rate and assessed property value. Properties classed as exempt such as 15A-15F had all their taxes calculated as zero (0) however, the MOD4 database includes property tax records for properties that were previously another non-exempt classification such as 2. These values are pro-rated tax values that are based on previous classifications before the new classification was recognized. For example, a property converted from 2 to 15F in January but didn't get their exempt status recognized until October, will have to pay prorated taxes from January to October. In this scenario for comparison, tax revenue for these exempt classifications in the 2012 and 2017 dataset were converted to zero (0) to compare to the newest 2017 data. The total tax value for these properties in the previous update only totaled approximately \$224,000.

Property Class Acreage from the 2017 update was approximately 500 acres more than in 2012. Property classes of 2, 15C, 3B and 4A all increased substantially in acreage whereas property classes of 1, 3A, 15F saw significant decreases in acreage. The overall parcel count has a difference of approximately 300 records between 2012 and 2017. This could be because more residents took advantage of classifying their multiple properties in the MOD4 record as one entry.

Similarly, the following were observed for total parcel count from 2012 to 2017, an increase in classes 2, 15C, 3B and a decrease in classes 1, 3A, 15F for total parcel count. Property class 4A is an anomaly as this class had a decrease in parcel count but an increase in acreage. The likely reason is 4A (Commercial) had an increase in the size of parcels reclassified but a smaller number of parcels listed as 4A compared to the 2012 data. For instance, large scale commercial properties such as the NJ Motor Sports Park Urban Renewal parcel (487 acres) and South State Inc property (310 acres) were reclassified as 4A which added 797 acres to the 4A class.

<b>PARCEL COUNTS FOR 2012 AND 2017</b>				
<b>Property Class</b>	<b>2012</b>	<b>2017</b>	<b>Count Difference</b>	
1	10,445	9,662	-783	
2	41,490	41,728	238	
15A	104	117	13	
15B	27	22	-5	
15C	4,655	5,090	435	
15D	628	631	3	
15E	55	56	1	
15F	1,037	1,022	-15	
3A	1,526	1,371	-155	
3B	2,917	2,946	29	
4A	2,772	2,711	-61	
4B	296	316	20	
4C	161	138	-23	
5A	45	45	0	
5B	51	52	1	
6A	17	18	1	
6B	1	0	-1	
6C	1	0	-1	
<b>Total</b>	<b>66,228</b>	<b>65,925</b>	<b>-303</b>	

*Table 1 Parcel Counts for 2012 and 2017*

<b>2012 AND 2017 MOD4 DATA ANALYSIS</b>								
<b>Property Class</b>	<b>Acreage</b>		<b>Land Value</b>		<b>Building Value</b>		<b>Property Tax</b>	
	<b>2012</b>	<b>2017</b>	<b>2012</b>	<b>2017</b>	<b>2012</b>	<b>2017</b>	<b>2012</b>	<b>2017</b>
<b>1</b>	41,681	35,522	181,530,700	181,147,400	0	0	5,083,970	5,867,648
<b>2</b>	46,402	47,550	1,101,877,900	1,364,196,100	3,652,157,900	4,525,865,600	154,839,946	183,269,408
<b>15A</b>	1,288	1,473	14,057,600	23,580,200	320,209,800	419,234,400	0	0
<b>15B</b>	415	302	4,809,700	8,968,900	19,033,600	29,190,900	0	0
<b>15C</b>	86,406	90,301	196,276,400	306,454,200	686,486,200	902,473,300	0	0
<b>15D</b>	1,019	1,000	18,792,300	30,226,200	158,468,900	247,166,700	0	0
<b>15E</b>	435	432	3,737,100	4,292,500	3,224,000	2,740,900	0	0
<b>15F</b>	23,509	23,183	43,823,300	60,821,800	312,696,100	372,817,700	0	0
<b>3A</b>	5,272	4,160	50,917,600	51,659,200	182,345,200	196,419,100	7,055,939	8,065,607
<b>3B</b>	85,982	88,068	39,469,900	42,835,100		0	1,183,944	1,415,326
<b>4A</b>	53,888	54,580	236,587,500	381,692,900	686,258,200	1,065,753,500	32,931,196	43,180,920
<b>4B</b>	6,300	6,511	48,623,900	110,616,100	261,179,500	342,268,200	10,887,782	13,556,675
<b>4C</b>	350	381	16,270,800	19,464,000	82,358,200	170,356,500	3,856,561	5,955,940
<b>5A</b>	86	86	0	0	0	0	0	0
<b>5B</b>	84	89	0	0	0	0	0	0
<b>6A</b>	0	0	34,111,505	15,018,311	139,255	127,235	808,292	555,214
<b>6B</b>	0	0	0	0	0	0	0	0
<b>6C</b>	0	0	0	0	0	0	0	0
<b>Total</b>	<b>353,117</b>	<b>353,638</b>	<b>1,990,886,205</b>	<b>2,600,972,911</b>	<b>6,364,556,855</b>	<b>8,274,414,035</b>	<b>216,647,629</b>	<b>261,866,736</b>

*Table 2 2012 and 2017 MOD4 Data Analysis*

### 3.2. Land & Building Values

An overall increase of **\$610,086,706** was observed for land and improvement values between 2012 and 2017 (Table 2). An increase in land value was observed in all property class *except* 1 and 6A. The parcel count for property class 1 (one) for 2017 is approximately 783 less than the 2012 count. The parcel count for property class 6A is 1 (one) parcel more in 2017 compared to 2012. The difference in property class 6A occurred because some records in 2012 that previously had land values, no longer have land values for 2017 (see Appendix 3).

Similarly, an overall increase of **\$1,909,857,180** was observed for building values between 2012 and 2017. An increase in building value was observed in all property class *except* 6A and 15E however, the parcel count for property class 15E is 1 (one) parcel more from 2017 compared to 2012. The difference in building value of property class 15E occurred due to the reclassification of Goultdtown Trinity AME Church to 4A (was initially 15E with a building value of **\$583,000** in 2012). The township of Deerfield property at Morton & Shiloh & Morgan St was previously a 15E property with a building value of **\$53,300** in 2012 but reclassified to a 15C property. With the reclassification of these properties a total value of **\$636,600** was deducted from the 2017 building values for 15E property class. The difference in the building value of property class 6E can be linked to the loss of thousands of dollars on 4 properties (PAMS\_Pin for the four (4) properties - 0601\_500\_1, 0604\_500\_1 and 0604\_500\_2, 0614\_90000\_1).

Overall there are 783 less vacant properties (class 1) from 2012-2017 and the land value for these properties has decreased by 383,300 dollars. The decrease in land value for vacant parcels is extremely difficult to track as there are approximately 200 parcels from 2012 to 2017 that cannot be compared as their GIS Pin (unique identifier) has changed from year to year. The most likely cause of this is that many of these 200 parcels that cannot be compared had a significant reduction in their assessed land value.

The land value of vacant parcels along the Delaware Bay has reduced significantly in past years potentially due to re-evaluation of natural hazards after Superstorm Sandy.

Property Class	DIFFERENCE IN LAND AND BUILDING VALUES FOR PROPERTY CLASSES (2012-2017)	
	Land Value	Building Value
1	-383,300	873,707,700
2	262,318,200	99,024,600
15A	9,522,600	10,157,300
15B	4,159,200	215,987,100
15C	110,177,800	88,697,800
15D	11,433,900	-483,100
15E	555,400	60,121,600
15F	16,998,500	14,073,900
3A	741,600	0
3B	3,365,200	379,495,300
4A	145,105,400	81,088,700
4B	61,992,200	87,998,300
4C	3,193,200	0
5A	0	0
5B	0	-12,020
6A	-19,093,194	0
6B	0	0
6C	0	873,707,700
<b>Total</b>	<b>610,086,706</b>	<b>1,909,857,180</b>

*Table 3 Difference in Land and Building values for Property classes*

### 3.3. Property Tax Revenues

Property tax revenues increased by **\$45,219,107** from 2012 to 2017. An increase was observed in all property class except 6A, 6B and 6C. 6A properties are classified as “Personal Property Telephone” for the classification of tangible personal property of public utilities and oil refineries, 6B property is classified as “Machinery Apparatus or Equipment of Petroleum Refinery” and 6C property is classified as “Phased-out Personal Property”.

Property class 6A experienced an increase in parcel count in 2017 (from 17 to 18), this was as a result of an addition of a Western Union telephone asset. Technically this addition is not a parcel but an asset record. This asset record was valued at zero dollars for both land and building which did not have an impact on the property tax revenues.

One parcel initially classified as 6B was reclassified in 2017 as 6A. It is important to point out that property class 6B (Machinery Apparatus or Equipment of Petroleum Refinery) is tax exempt therefore the reclassification had no impact on tax revenues. Property class 6C (Phase-out Personal Property) no longer exists because this classification was completely phased out.

Tax rates (and differences) for 2012 and 2017 vary for each municipality. Irrespective of the property tax rates category (highest or lowest) in 2012 some townships experienced a tax rate increase or decrease;

2012		2017	
Highest Property Tax Rates	Lowest Property Tax Rates	Highest Property Tax Rates	Lowest Property Tax Rates
Bridgeton - 5.661	Lawrence - 2.178	Bridgeton - 4.522	Fairfield - 2.504
Vineland - 4.132	Commercial - 2.065	Greenwich - 4.243	Commercial - 2.215
Hopewell - 3.612	Downe - 1.690	Deerfield - 3.346	Downe - 2.137

*Table 4 Highest and Lowest Property Tax Rates for 2012 and 2017*

Township that experienced an increase in property tax for 2017 include: Commercial, Deerfield, Downe, Fairfield, Greenwich, Lawrence, Maurice River, Millville, Shiloh and Upper Deerfield however, these increases were quite negligible with the 1.46% highest increase of .65% experienced in Greenwich township. Townships that experienced a decrease in property tax for 2017 include: Bridgeton, Hopewell, Stow Creek and Vineland with the highest decrease in Vineland (1.46%) and Bridgeton (1.13%) townships.

Property tax rates often rise during periods of economic uncertainty and fall during periods of economic prosperity. Cumberland County’s aggregate property tax rates reflect this pattern only slightly as the municipal aggregated tax rates equal 41.725% for 2012 and 41.73% for 2017.



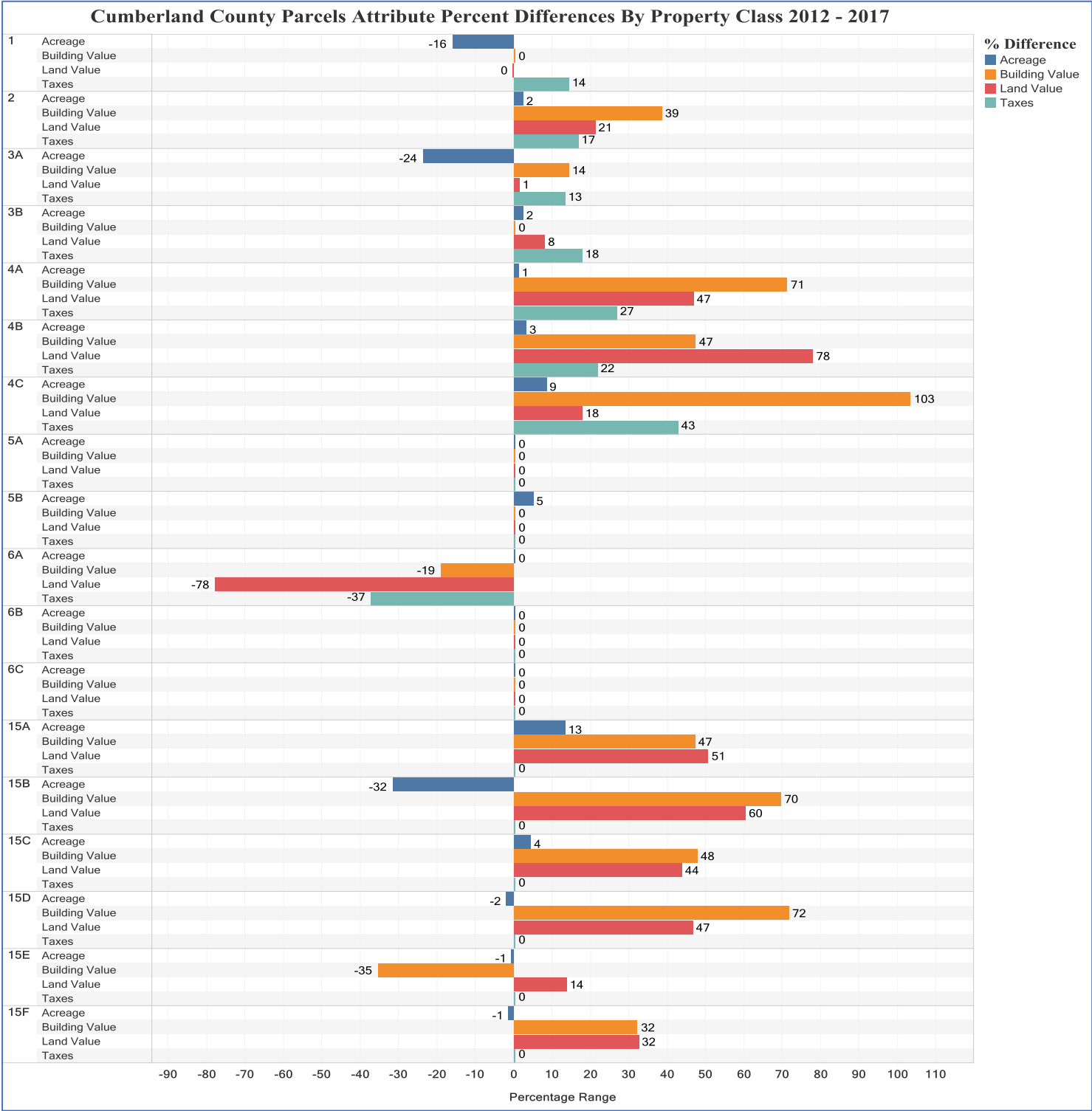


Table 5 Cumberland County Parcels Attribute Percent Differences by Property Class 2012 and 2017

### 3.3.1. Tax Deductions

New Jersey properties are eligible to receive five (5) different types of deductions on their property taxes which include veterans, senior citizen, widow of a veteran, disabled person and surviving spouse. Each of these deductions is valued at \$250 for both years. The tables below demonstrate the utilization of deduction by property class for 2012 and 2017:

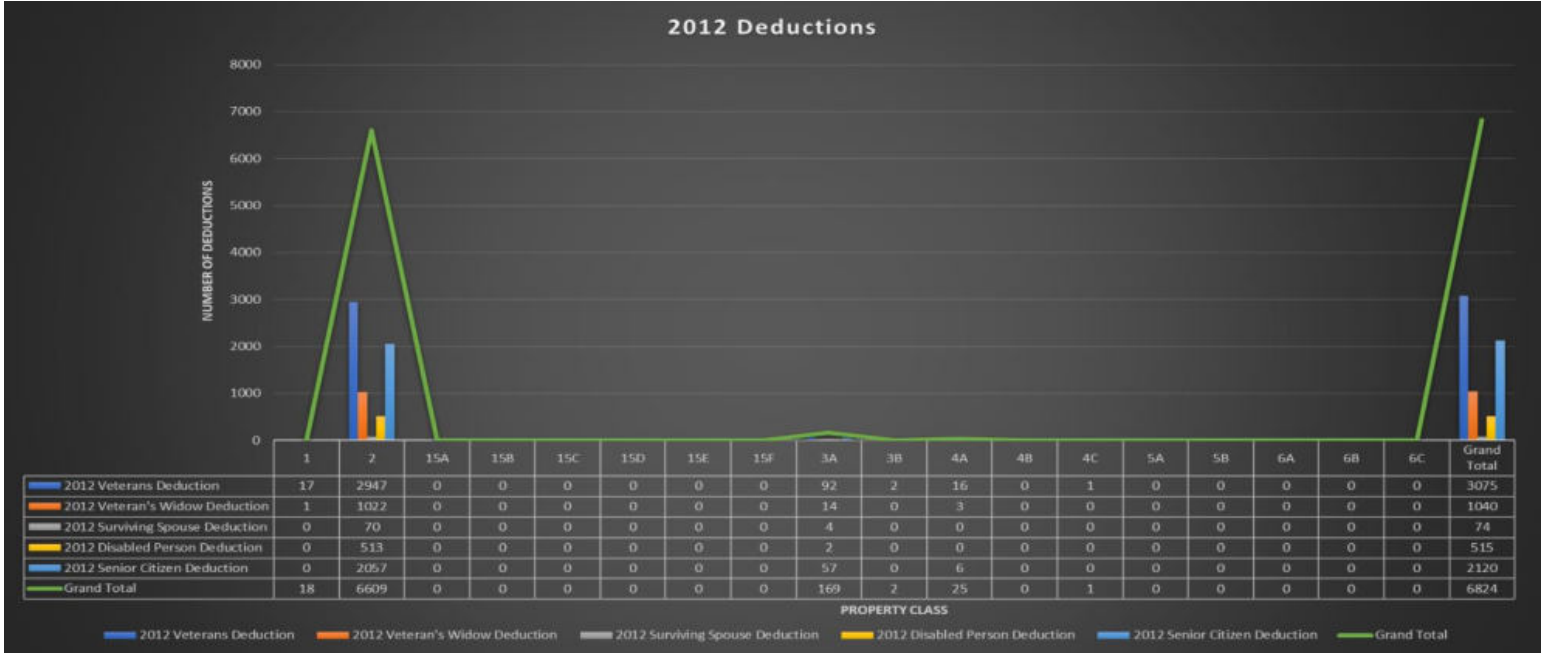


Table 6 2012 Tax Deductions by Property Class

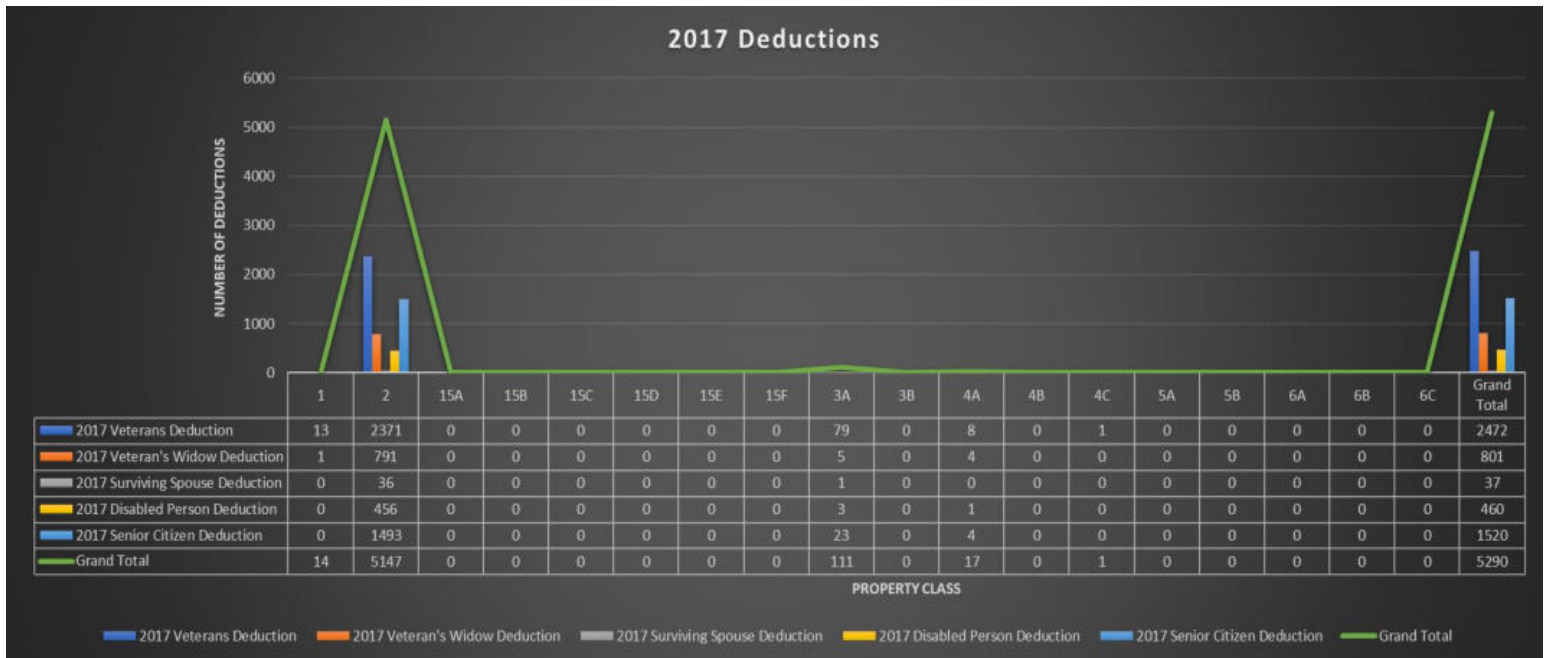


Table 7 2017 Tax Deductions Utilization by Property Class

There were 1,534 less property tax deductions in 2017 as compared to 2012. The major decrease in deductions was senior citizens and veterans. This may be because there are less senior citizens and veterans that now own (at least) a property in Cumberland County.

### 3.3.2. Tax Exemptions

Limited Tax Exemptions (LTE) are exemptions that are applied to the total property value. For instance, if an exemption totals \$10,000 and the total property value is \$50,000, the total assessed value will be \$40,000 (\$50,000 less \$10,000) which is the taxable amount whereas, deductions are applied to the taxable amount after exemptions are calculated.

There was a reduction of 249 exemptions taken in 2017 (341 in 2012 and 92 in 2017). This reduction was evident in all the five exemption categories. For all Class 1 (Vacant Land) properties and Class 3B (Farmland-Qualified) properties, land only is assessed. Any farm buildings, such as silos, barns or other accessory farm buildings are assessed within the 3A classification in the improvement column.

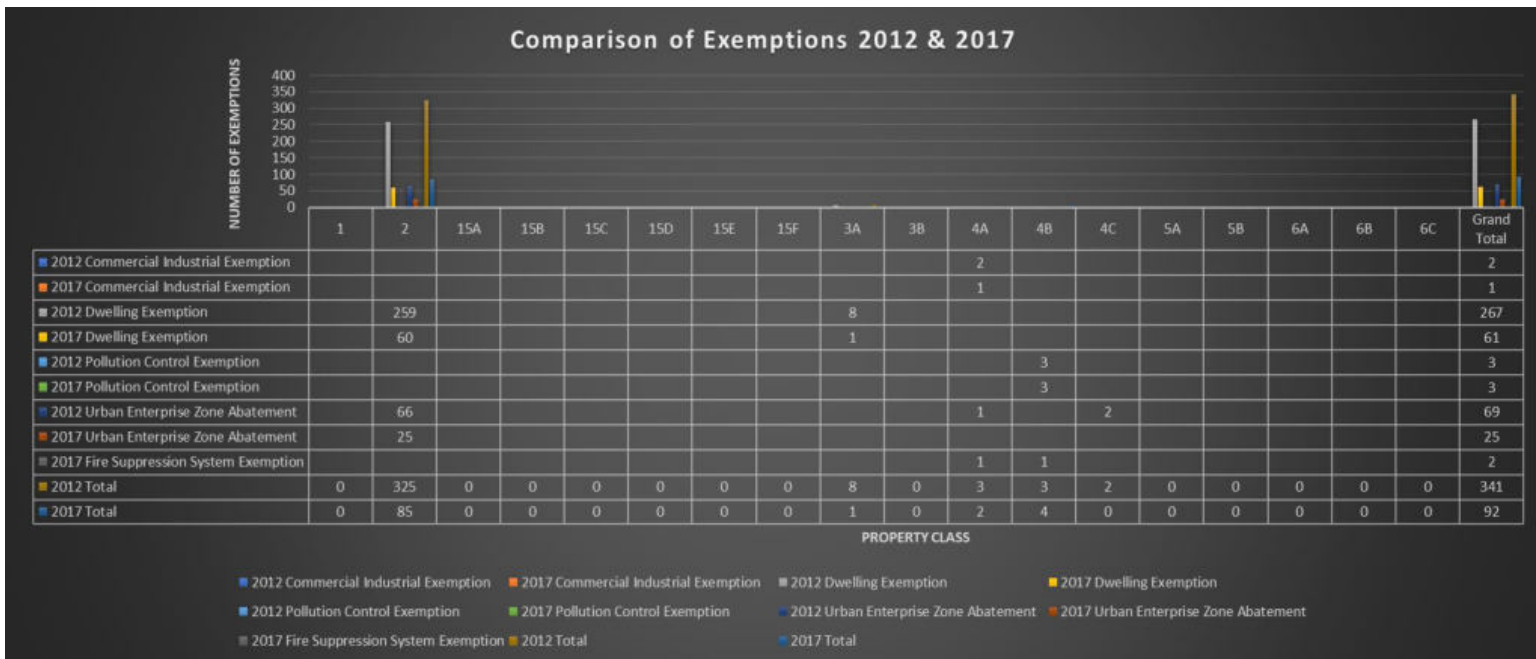


Table 8 2012 and 2017 Property Tax Exemptions

## 4. Additional Data Analysis

The additional data analysis provides a detailed evaluation of each element of the Cumberland County MOD4 data based on the following information: natural hazards, transportation categories and economic data.

### 4.1. Natural Hazards – Flooding

Zone AE is the extent of flooding in the event of a 1% or 100-year flood. The extent of flooding for each area will differ as the base water level in a 100-year flood differs depending on existing land elevation. Cumberland County has **8985** parcels that are within Zone AE.

Two parcels may both be classed within an AE zone however, the extent of flooding for the individual AE zone *may* differ. For example, parcel one (1) may be in an AE zone with a base flood elevation of 8 feet and parcel 2 may be in an AE zone with a base flood elevation of 20 feet. Three (3) townships harbor the most properties within this zone, Downe, Maurice River and Commercial. These townships all share a coastline with the Delaware Bay which explains why they fall within the zone AE.

ZONE AE PARCEL INFORMATION				
Property Class	2017 Parcel Count	Acreage	2017 Taxes	Total Value
Unclassified	1,209	15,898	0	0
1	1,338	14,559	690,700	24,062,300
15A	16	412	0	94,636,700
15B	1	0	0	301,500
15C	762	41,211	0	254,918,900
15D	43	103	0	22,940,700
15E	6	67	0	657,500
15F	372	17,468	0	34,139,900
2	2,170	7,122	9,894,807	352,703,700
3A	48	1,463	229,626	7,211,700
3B	335	20,191	302,281	7,769,900
4A	207	1,163	2,396,067	73,612,300
4B	46	2,111	1,236,913	40,941,600
4C	6	53	614,685	16,053,700
5A	6	57	0	0
5B	18	25	0	0
<b>Total</b>	<b>6,583</b>	<b>121,902</b>	<b>15,365,080</b>	<b>929,950,400</b>

*Table 9 Zone AE Parcel Information*

Zone VE is subject to flooding from wave action during storm surges from 100-year tidal flood events. Cumberland County has **940** parcels that are within Zone VE. Again, the three (3) most impacted townships include Downe, Maurice River and Commercial.

ZONE VE PARCEL INFORMATION				
Property Class	2017 Parcel Count	Acreage	2017 Taxes	Total Value
Unclassified	314	2,921	0	0
1	204	4,412	166,049	5,591,900
15C	139	13,222	0	11,359,100

<b>15E</b>	1	5	0	4,500
<b>15F</b>	34	3,441	0	4,891,700
<b>2</b>	186	1,913	1,076,329	41,028,100
<b>3A</b>	4	211	25,474	794,900
<b>3B</b>	28	5,372	61,136	1,556,300
<b>4A</b>	30	247	145,382	5,029,000
<b>Total</b>	<b>940</b>	<b>31,744</b>	<b>1,474,371</b>	<b>70,255,500</b>

*Table 10 Zone VE Parcel Information*

Zone X is the extent of flooding in the event of a 500-year flood. Cumberland County has **4722** parcels that fall within Zone X (0.2% chance of flood event).

<b>ZONE X PARCEL INFORMATION</b>				
<b>Property Class</b>	<b>2017 Parcel Count</b>	<b>Acreage</b>	<b>2017 Taxes</b>	<b>Total Value</b>
<b>Unclassified</b>	499	10,669	0	0
<b>1</b>	783	7,886	516,405	18,612,200
<b>15A</b>	20	460	0	114,128,900
<b>15B</b>	1	0	0	301,500
<b>15C</b>	376	27,723	0	240,820,600
<b>15D</b>	64	119	0	28,794,500
<b>15E</b>	9	67	0	741,500
<b>15F</b>	166	7,532	0	26,886,500
<b>2</b>	2,169	6,720	9,472,690	336,443,800
<b>3A</b>	50	1,303	268,540	8,684,100
<b>3B</b>	301	19,390	300,761	7,648,200
<b>4A</b>	216	926	3,381,210	93,998,900
<b>4B</b>	46	3,550	1,318,106	43,036,000
<b>4C</b>	8	59	630,567	16,574,600
<b>5A</b>	3	26	0	0
<b>5B</b>	11	14	0	0
<b>Total</b>	<b>4,722</b>	<b>86,444</b>	<b>15,888,280</b>	<b>936,671,300</b>

*Table 11 Zone X Parcel Information*

There is an overlap of parcels within zones AE, VE and X. This means that properties within zones AE, VE and X are subject to multiple flooding hazards from wave action, 100-year rain based flood events and 500-year flood events. The maps below indicate the intersection of each zone, but the extent of each zone will not match the lines provided by FEMA because the FEMA lines are created regardless of parcel size/location. Thus, if a parcel intersects the zone it will be included even though only a third or section of a parcel intersects the zone line. It is important to point out the following:

- Parcels that intersect the zones AE, VE and X zones are included regardless of the section.
- All areas subject to a 100-year flood are also subject to a 500-year flood.
- There are areas subject to a 100-year flood that are also subjected to VE or wave action dangers
- There are some areas subject to a 500-year flood that are also subjected to VE or wave action dangers however, not subject to a 100-year flood

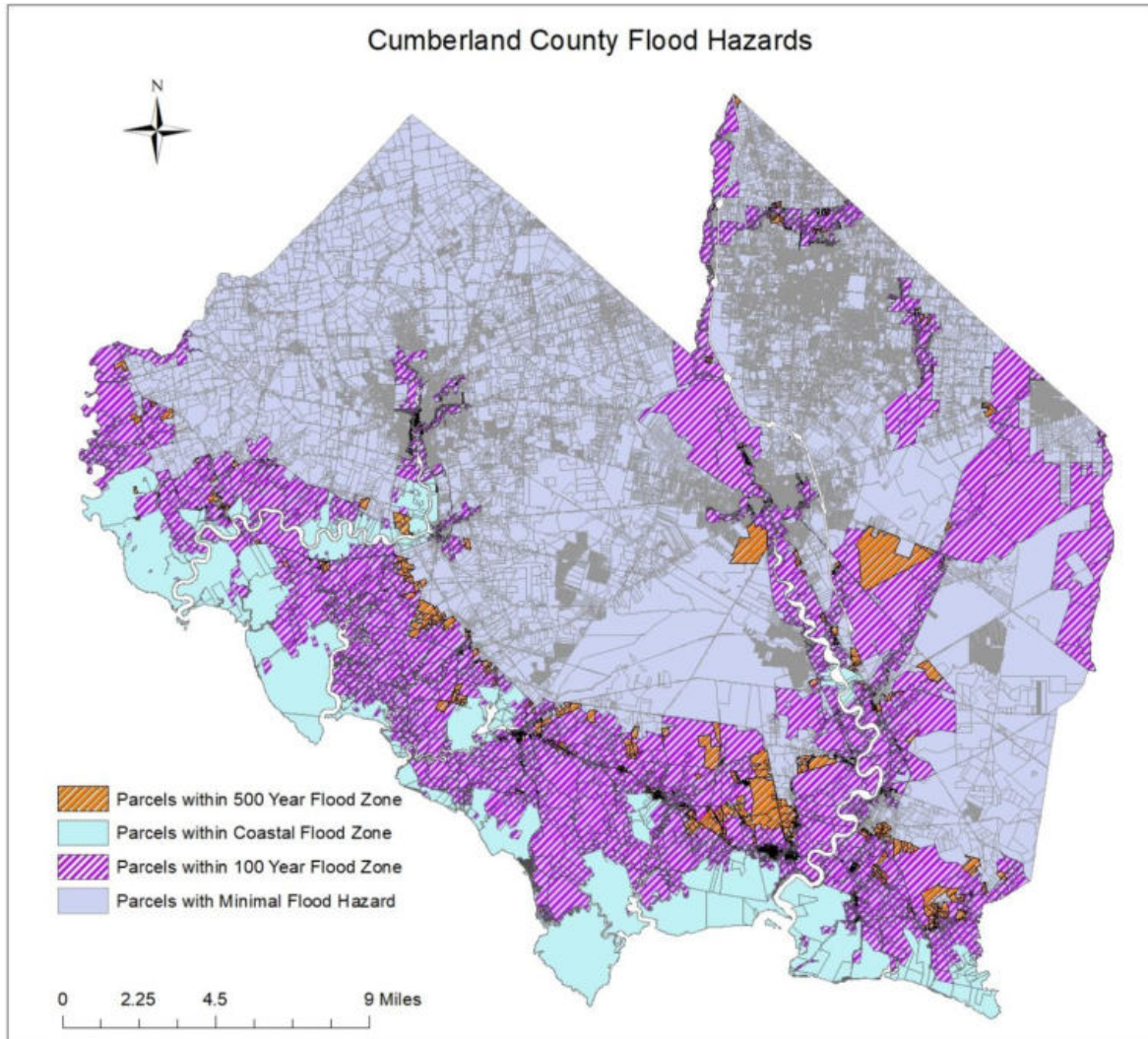


Figure 2 Cumberland County Flood Hazard

In Figure 3 below, Both Bridgeton and Millville are subject to flood threats because of their location on the Cohansey River and Maurice River. While both cities are subject to similar geographic dispersion of the impacts of a 100-year flood, the city center of Bridgeton has significantly more parcels that are impacted during a 500-year flood. As the east side of the city begins to flood, many more residential parcels will be impacted. Another portion of the eastern section of the County along the Manumuskin River and a section along Panther Branch in the north east section of the County will be impacted by flood events. However, majority of these sections of the County are rural and thus impacts from flood events *could* be mitigated.

Finally, a tributary of the Maurice River called Blackwater Branch that runs through the northern section of the County impacts the County with flood issues during both 100 and 500-year floods.

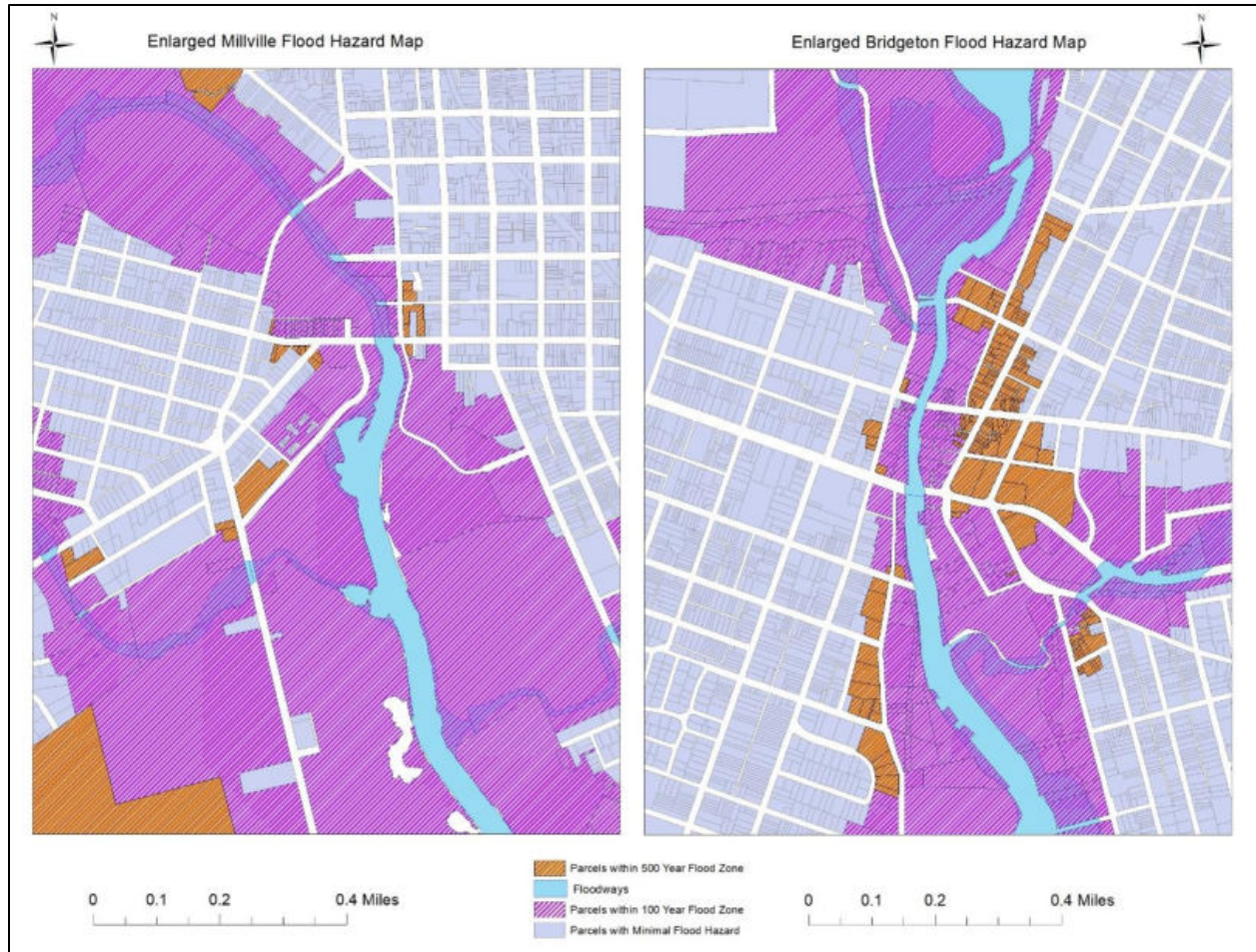


Figure 3 Bridgeton and Millville Flood Hazard Map

Zone AO is shallow flooding or roadway ponding during a 100-year flood event. Cumberland County has 44 parcels that fall within zone AO. This area is within the City of Bridgeton and it is directly east of the Cohansy River. Below is a summary of parcel information for Zone AO

ZONE AO PARCEL INFORMATION				
Property Class	2017 Parcel Count	Acreage	2017 Taxes	Total Value
Unclassified	1	0	0	0
1	5	30	3,007	66,500
15C	1	2	0	32,100
15D	1	2	0	167,600
15F	1	0	0	56,700
2	34	7	90,594	2,003,400
4A	1	0	755	16,700

Table 12 Zone AO Parcel Information

Cumberland County has significant flood issues to be concerned with. The southern section of the County has significant flood impacts from both coastal flooding and the low-lying elevation of this section of the County located along the Delaware Bay.

#### 4.1.1. Flood Analysis - Roads

Cumberland County has 1008 street centerline segments that could potentially be impacted by flood events and coastal flooding (Figure 5). A total of 410 streets within Cumberland County could be impacted by flood events and coastal flooding. **553** of the centerlines falls within Zone X or the 500-year flood zone. **434** of the centerlines falls within Zone AE or the 100-year flood zone. **15** of the centerlines fall within Zone VE or the coastal flooding zone. **6** of the centerlines fall within Zone VO or the shallow flooding/ponding zone (Figure 4).

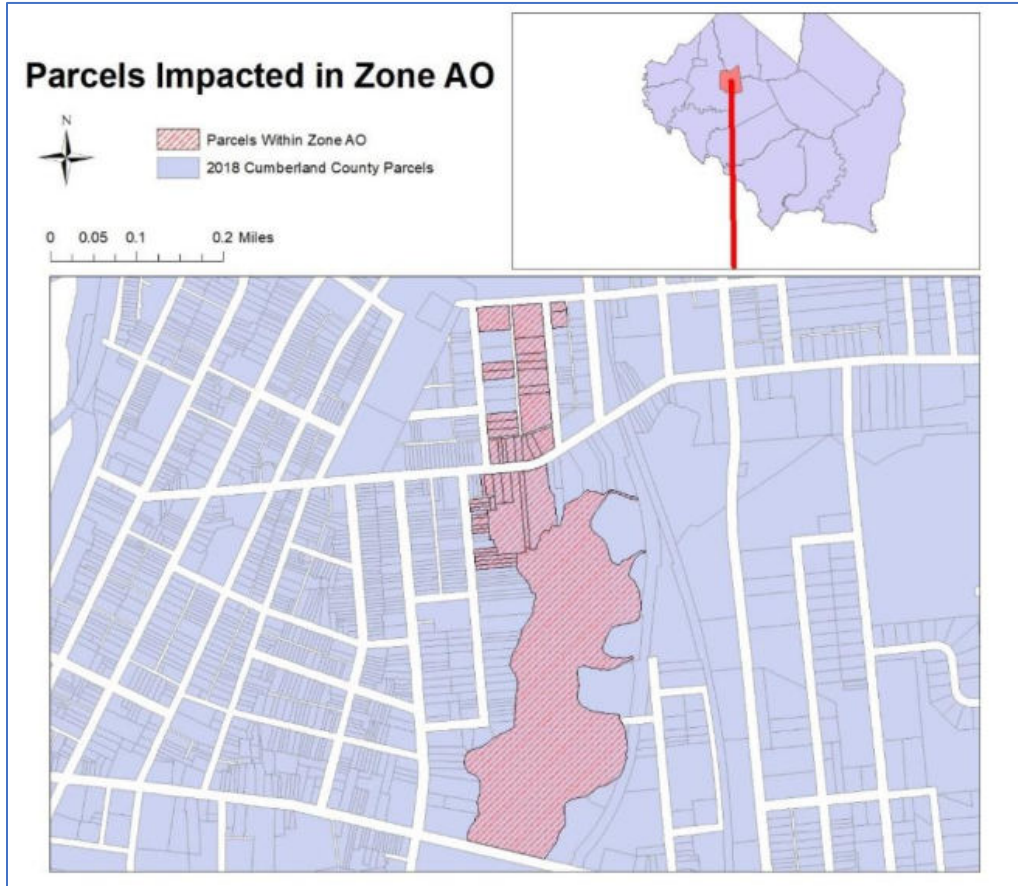


Figure 4 Parcels that fall within zone AO

CUMBERLAND COUNTY FLOOD ANALYSIS BY IMPACTED ROAD MILES		
Functional Class	Number of Centerline Segments	Impacted Road Miles
2	10	11
3	48	5
4	164	30
5	53	13
6	69	14
7	664	158

Table 13 Cumberland County Flood Analysis by Impacted Road Miles

A road with a flood threat could mean any of the following:

- The entire road is subject to a flood threat



- A section of the road is subject to a flood threat

Cumberland County has many roads that would be impacted by flood events in the Southern region adjacent to Delaware Bay where land elevations are very low (under 10 feet). There are also roads that are impacted by flooding in the city centers of Bridgeton and Millville and in North and East Vineland (Figure 5).

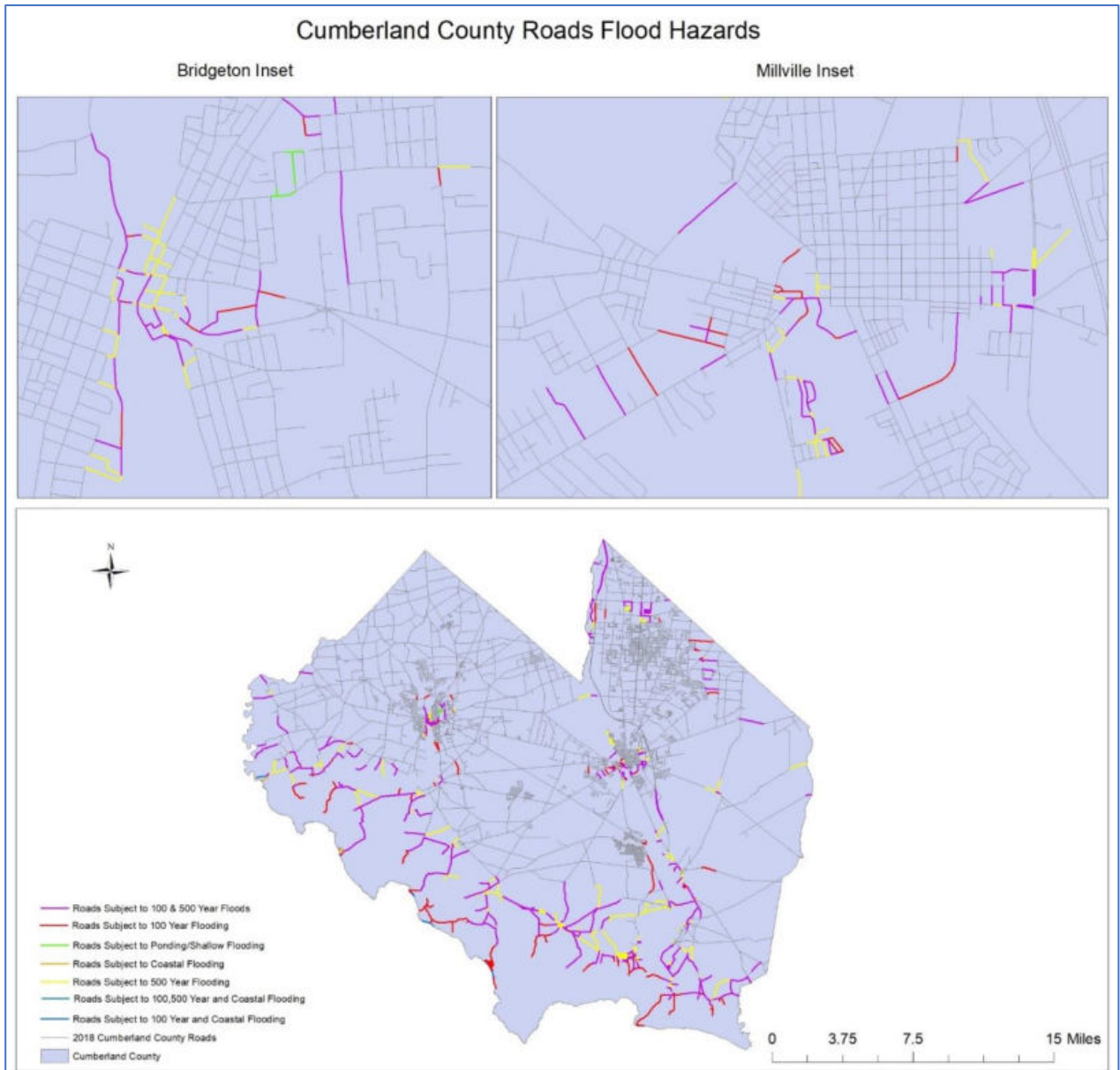


Figure 5 Cumberland County Road Flood Hazards

#### 4.1.2. Flood Analysis – Census Data

The average nonwhite population percentage in Cumberland County is listed as 38% or 62% white. Census Tracts along the coast of the Delaware Bay where Coastal and 100/500-year flood threats are high have a nonwhite population of 23% or lower with a 77% or higher white population. However, Census Tract 104.01 has a non-white population of 60%. Therefore, this census tract which includes the township of Fairfield needs to be treated with care and make sure equal public services related to flooding are received as these residents could make a case of unequal access to resources/services based on their minority status. This analysis cannot pinpoint where every resident lives and it is possible that the majority of the nonwhite population lives outside the flood zones within the census tract. This information is strictly meant to showcase that there is an area, Fairfield tract in which flood threats are high and there is a disproportionate amount of minority citizens compared with the other tracts prone to coasting flooding in Cumberland County.

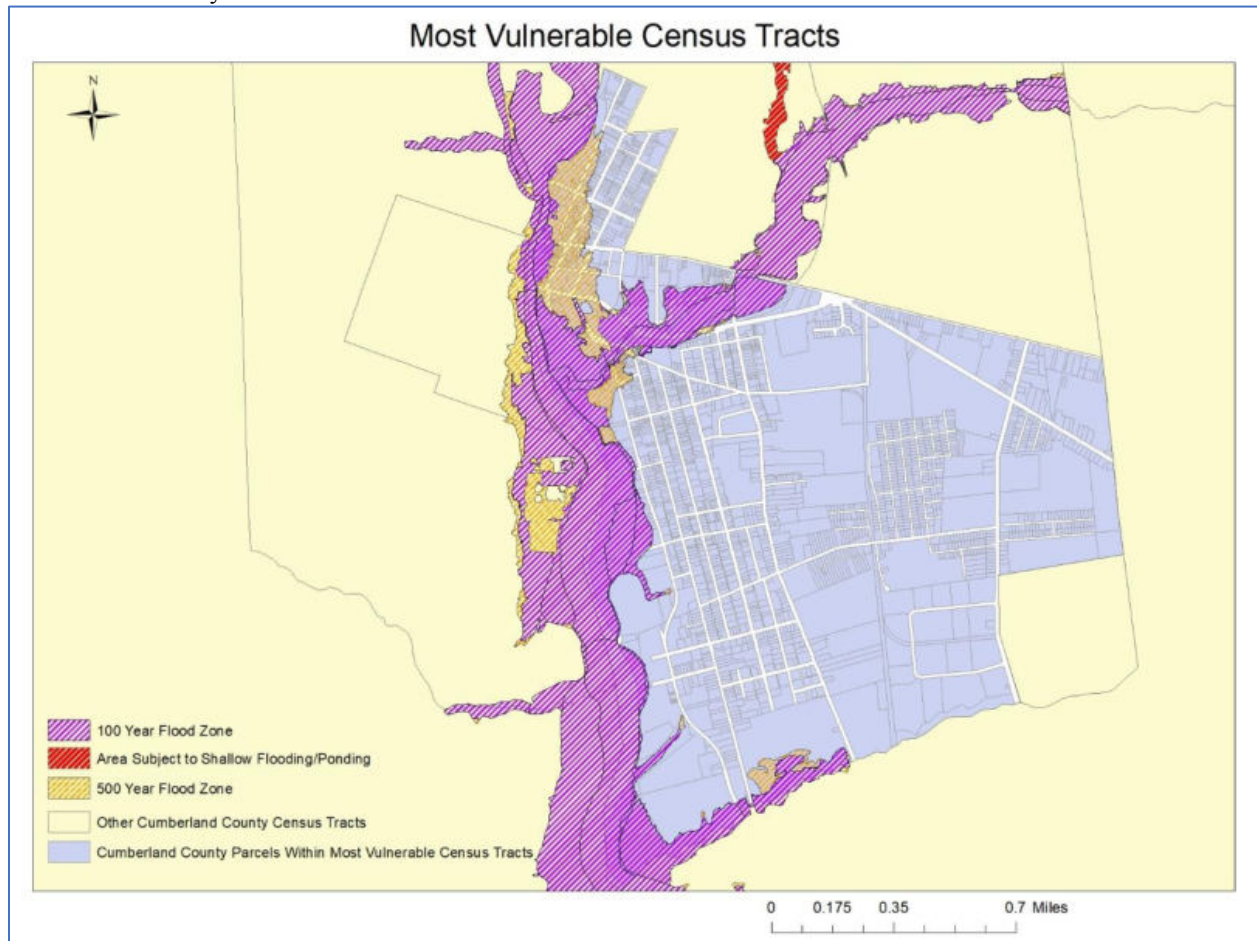


Figure 6 Most Vulnerable Census Tracts

The City of Bridgeton is another area in Cumberland County where minority demographics have to be recognized in conjunction with flood threats compared with the rest of the County. Four census tracts within the center of the city that are within the flood threaten zones contain large amounts of minority citizens, with 77%, 65%, 57% and 54% nonwhite population. Two census tracts to the southeast of the city center including tract 205.03 and tract 201 have median family incomes of a household of 5 at just 27, 461 and 58,571 respectively. Census tracts are some of the most concerning in Cumberland County when one factors in income, race and flood hazard. This is strictly a macro analysis, there is a possibility of vulnerable sub populations within a census tract for example, the high income, low minority, flood hazardous areas of Vineland may have a household or neighborhood within this tract that is extremely vulnerable because the neighborhood is comparable to Bridgeton census tracts in terms of low income and minority status.

It is important to point out that this is strictly a macro analysis, thus there may be vulnerable sub populations within a particular census tract. *For example, the high income, low minority, flood hazardous areas of Vineland may have a particular household or neighborhood within this tract that is extremely vulnerable because the neighborhood is comparable to Bridgeton census tracts in terms of low income and minority status, but this macro level analysis and macro level data would not pick up these vulnerable sub populations, only macro trends.*

#### 4.2. Additional Parcel Analysis

Cumberland County has an uneven distribution of data in terms of total value for the County's parcels with 96% of the County's parcels valued at under \$300,000 and Only 1% of the County's parcels (833) are valued at over 1 million dollars. The highest class of parcels in Cumberland County is 25,254 parcels within falls within the \$71,301 to \$164,000 value. This means that approximately 41% of the total number of parcels (61,947) are between this value. Approximately 46,766 parcels in the County are under \$164,000 in total value. Since this analysis only used the GIS matched parcels, this amounts to approximately 75% of the parcels are under \$164,000 in total value.

This map below illustrates the total value of parcels in Cumberland County segmented into 8 different classes. There are missing parcels because approximately 11,000 parcels do not have any associated MOD4 data, therefore this map omitted any parcels with no total value information.

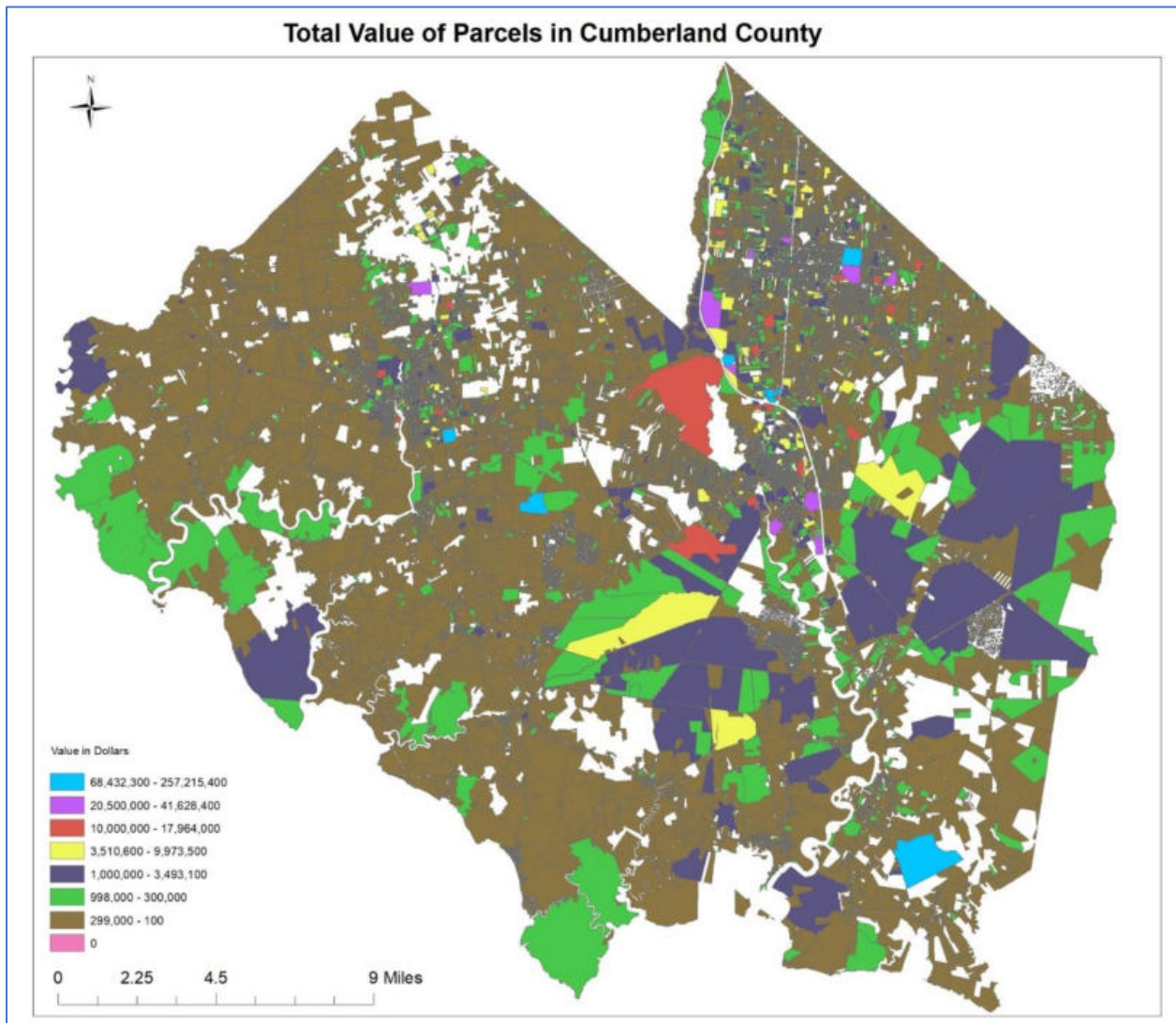


Figure 7 Total Value of Parcels in Cumberland County

The map below illustrates the five most valuable parcels in Cumberland County and their geographic location (Figure 8).

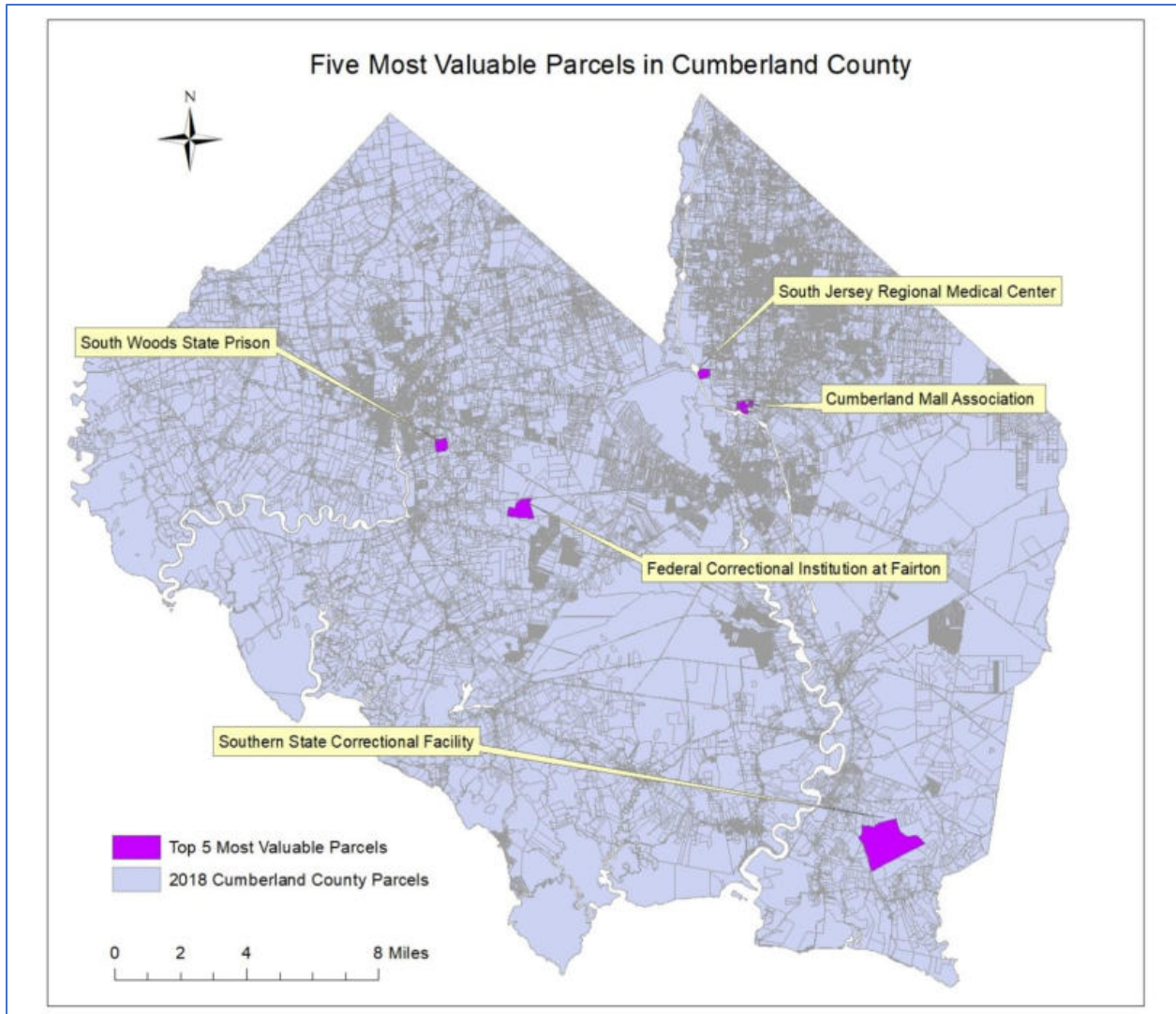


Figure 8 Most Valuable Parcels

The following charts illustrates a classification based on total value (Figure 9) and a breakdown of parcels under \$300,000 (Figure 10).

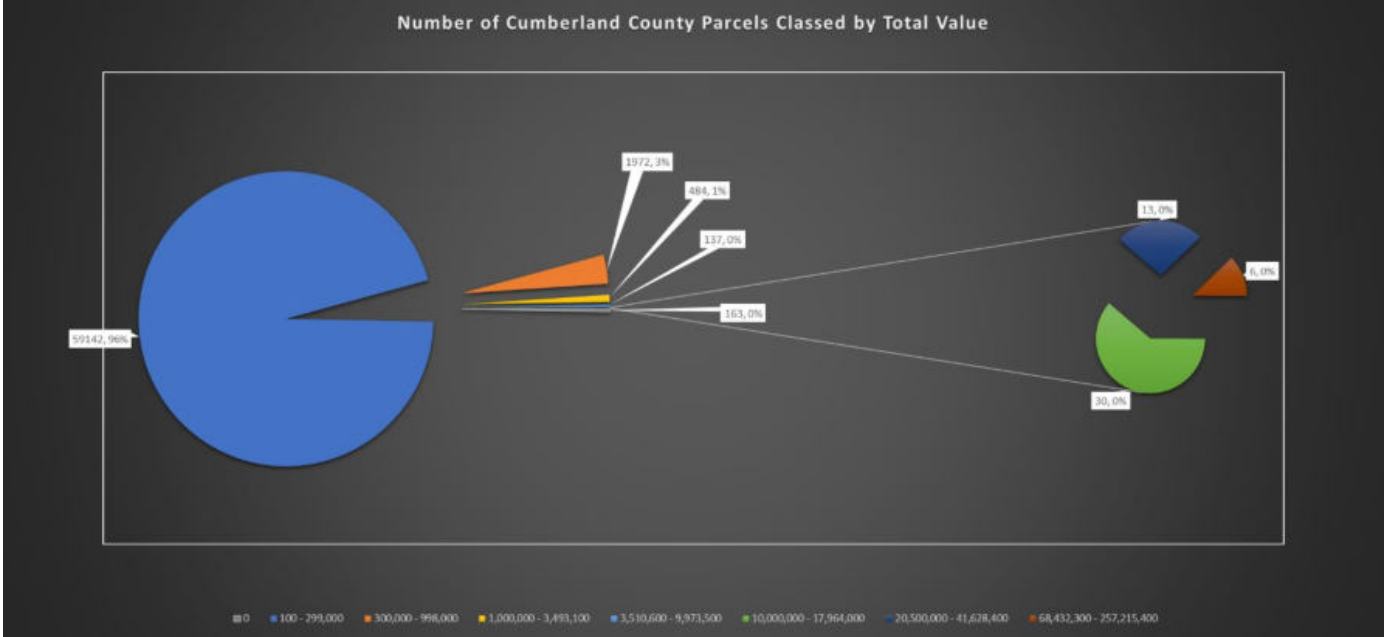


Figure 9 Cumberland County Parcels by Property Value

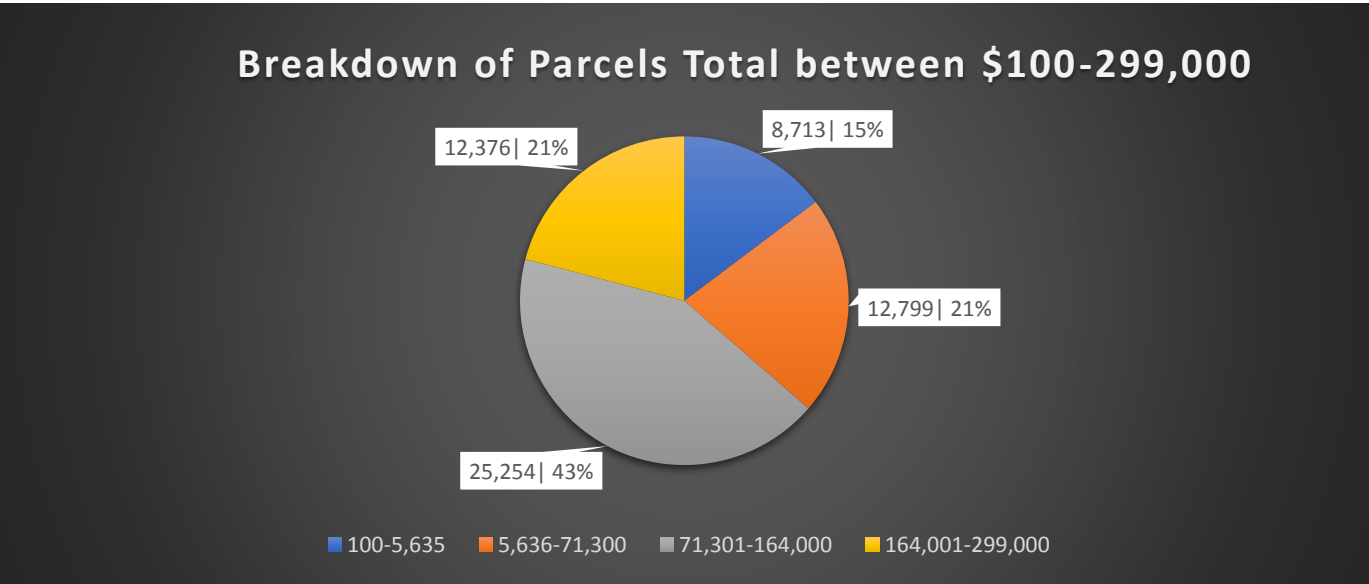


Figure 10 Breakdown of Cumberland County Parcels (this figure is a breakdown of the 59142 parcels (96%) in Figure 9)

There are a few different areas of clustering for parcels over one million dollars in total value within Cumberland County (Figure 12). These include a cluster in the city of Bridgeton, a large cluster within the Millville area and a very large cluster within the Vineland area. Many of these clusters fall along State Highway 47 running north from Millville to the County Line. The Vineland clusters also run along Landis Ave and County Route 555 or Main St.

Some of the Bridgeton clusters run along County Route 67 or North West Ave and State Highway 77 or Pearl St. Additional Vineland Clusters run north of Millville along State Highway 55.

There are a few environmentally protected properties belonging to nature preserves and the NJ Department of Environmental Protection along the coastal region of the Delaware Bay that have a value over 1 million dollars. There is also a cluster of these type of properties in the northeastern part of the County and a cluster just to the south of Millville. The Cluster south of Millville includes industrial properties such as sand, silica and energy production facilities.

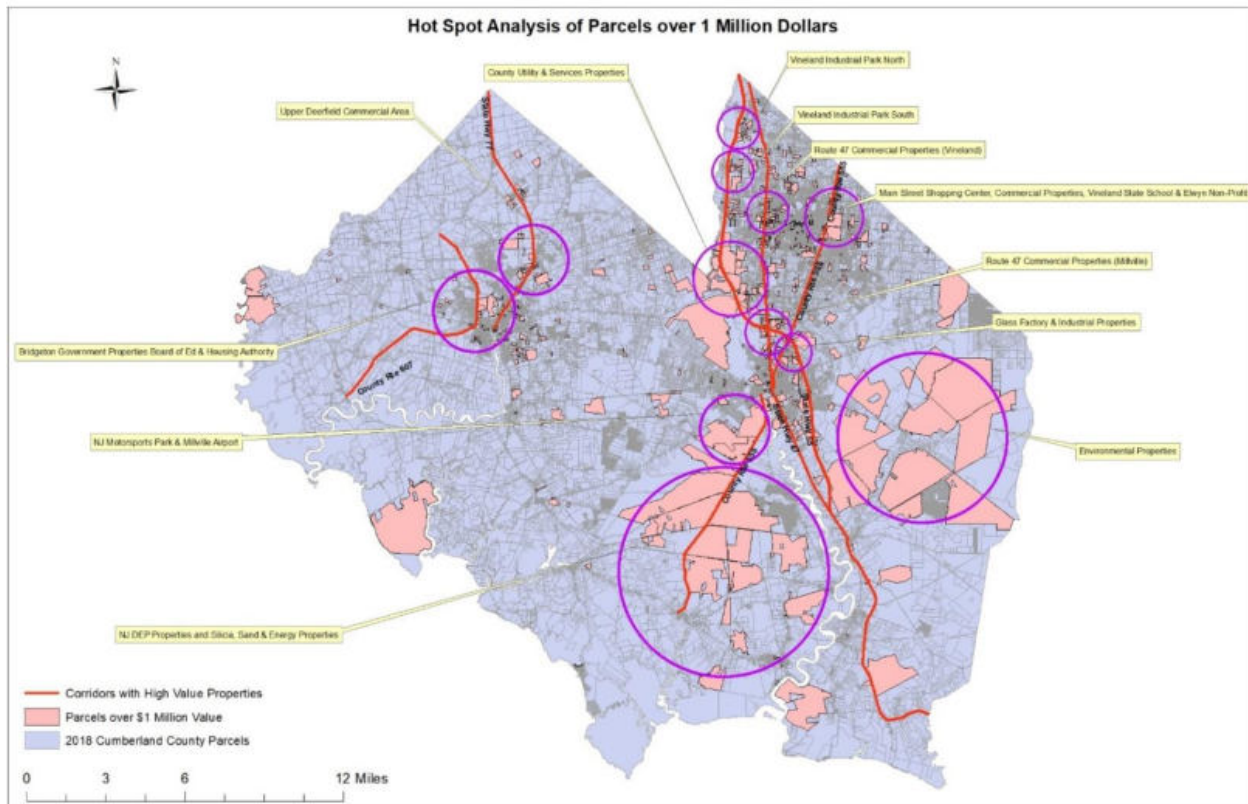


Figure 11 Cumberland County Hot Spot Analysis of Parcels over 1 Million Dollars

The map below shows the spatial distribution of parcels. Low-low parcels are low property value parcels (<\$162,700) surrounded by low value parcels. High-low parcels are high value parcels surrounded by low value parcels. This type of spatial statistics can provide information on parcel patterns and potential location for government services or new developments.

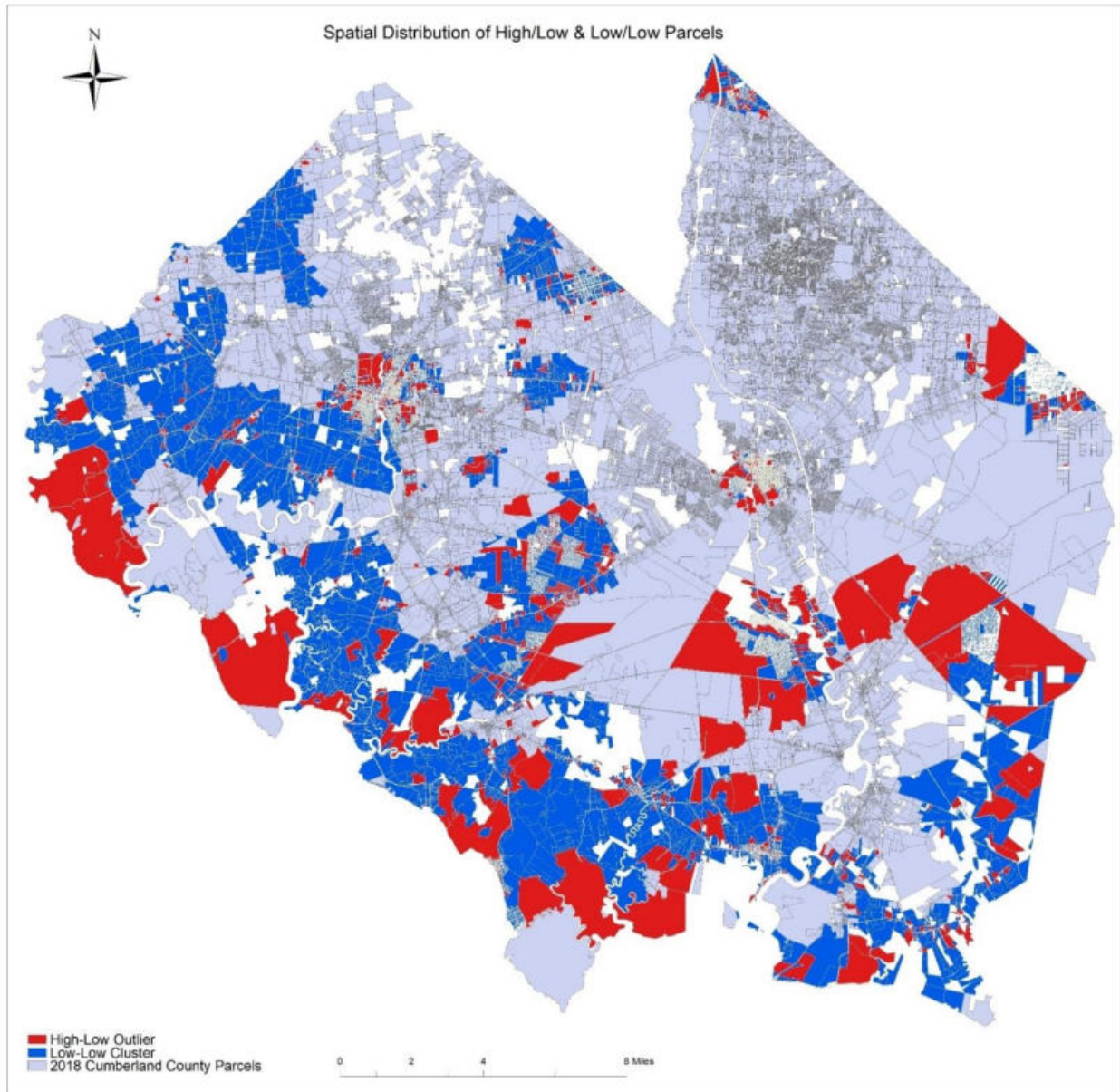


Figure 12 Spatial Distribution of Parcels

The southern and western sections of the County have large swathes of low value buildings surrounded by low value buildings (Figure 13). The southern and western sections of the County have a large amount of high value parcels surrounded by low value parcels. Within Bridgeton there are a large amount of high value parcels surrounded by low value parcels in the southwestern section of the city and the north section of the city along Commerce Street (Figure 14) Within Millville, there are high value properties surrounded by lower value properties along High Street and properties along the Maurice River (Figure 14).





Figure 13 Spatial Distribution of Parcel within Millville and Bridgeton

### 4.3. Developmental Pressure

Farmland on the Northeast side of the County along the border with Atlantic County could be under developmental pressure as only a handful of properties are preserved agricultural properties. Any additional developmental in this location would put pressure on State Highway 55 and Landis Avenue. Also, the northwest side of the County along the border with Salem County could be under developmental pressure as there is ample agricultural land and most of the properties that are preserved are located in the southwest and northwest corner of the County. Any additional development in this location would put pressure on Landis Ave and State Highway 77. Specifically, if there was developmental pressure in Deerfield Township, Landis Avenue may have to be expanded into four (4) lanes. (*Landis Ave is a state highway and no NJDOT state maps or township tax maps showed a future right of way for Landis Ave in the Deerfield area*). The existing ROW of 66 will have to suffice if developmental materializes or other methods of expanding the roadway will have to be explored especially if the roadway needs to be expanded. Both locations are within the commuting threshold for Philadelphia. Forested land within these locations is also potentially at risk for developmental pressure.

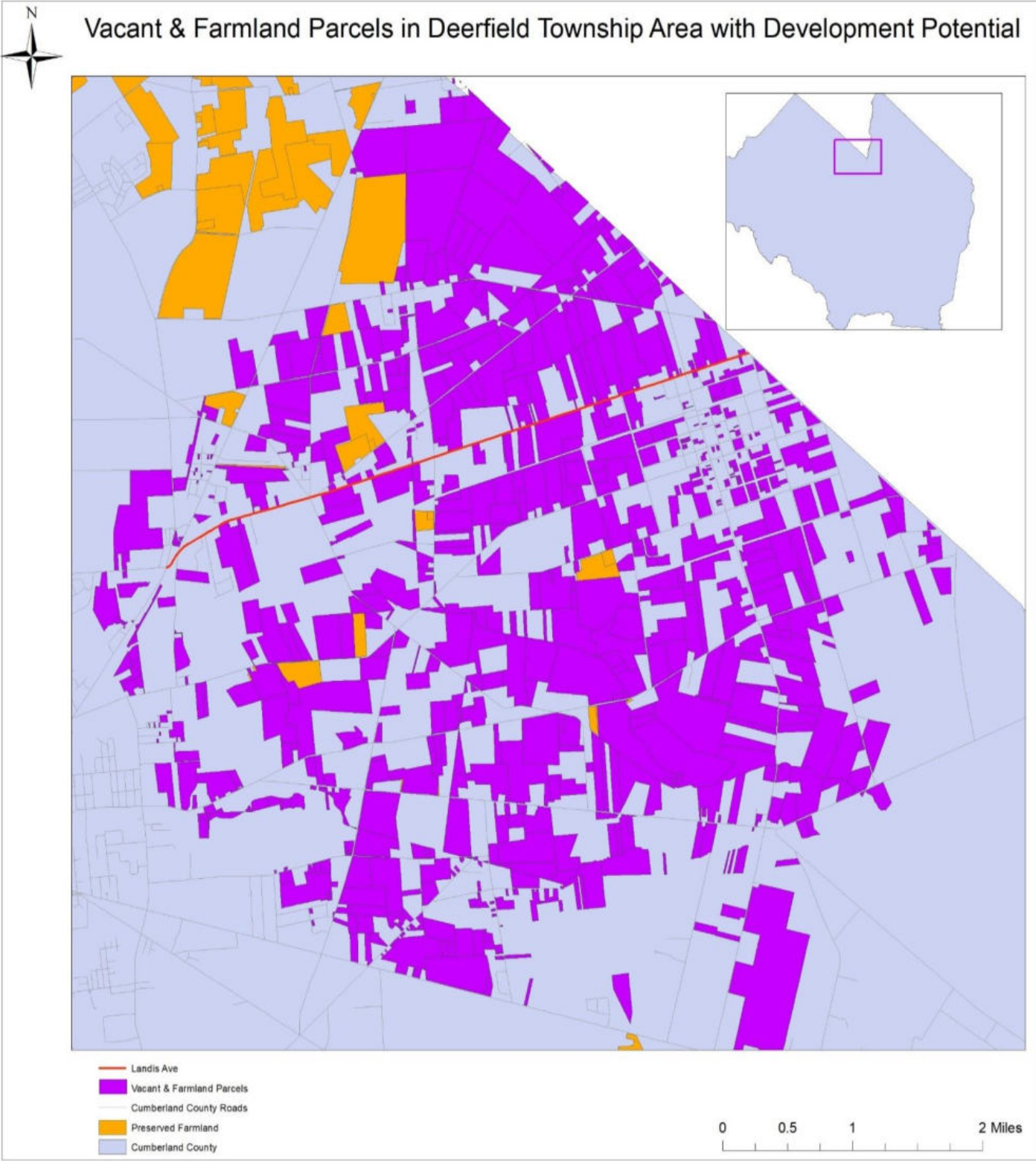


Figure 14 Vacant & Farmland Parcels in Deerfield Township with Development Potential

#### 4.4. Transportation

Currently, Cumberland County has limited public transportation services. New Jersey Transit runs three commuter bus lines through the County with two (2) Philadelphia bound from Millville and Bridgeton and Atlantic City bound. Cumberland County has its own transit services which runs a few to work shuttles, however, residents have to be registered for the program rather than simply paying the fee and catching the bus. The County will have to plan to expand roads when more developments occurs. Unless the County has a major developmental project in the works, the form of the development will be exurbs in which residents' commute to their jobs in Philadelphia, Atlantic City, Wilmington or other suburb cities outside Philadelphia such as Cherry Hill. Therefore, the County must be ready to deal with an increase in commuters and an increase in road maintenance/projects.

There is the mention of Vineland secondary rail line which would run into Cumberland County through Vineland, but this commuter rail line has yet to be funded.

2016 CUMBERLAND COUNTY AMERICAN COMMUNITY SURVEY TRANSPORTATION DATA	
Commuting to Work	Total Population
Total Labor Force	69,044
Workers 16 Years and Over (That Commute)	60,412
Car, Truck, or Van (Drove Alone)	49,506
Car, Truck, or Van (Car Pooled)	5,736
Public Transportation (Excluding Taxi Cab)	1,203
Walked	1,380
Other Means	1,577
Worked at Home	1,010
Mean Travel Time to Work (Minutes)	23.4

*Table 14 2016 Cumberland County American Community Survey Transportation Data*

Approximately 91% of people in Cumberland County use a personal automobile to travel to work. Also, the mean travel time is 23 and a half minutes, thus most people have a commute that is 23 minutes or longer. Therefore, Cumberland County should attempt to prioritize public transportation as many people could benefit from it while reducing the amount of congestion on roads. The high automobile usage rate should also be evidence to why the County should invest in road building or understanding where new roads may be needed, reduce automobile usage and be aware of where road expansion could potentially be needed throughout the County.

## 5. Conclusion

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Cumberland County is experiencing a few different trends. There is an increase in property values across all property class with the exception of vacants. This is a good sign as this indicates growth in the real estate economy however, the County also experienced a net population decline of 4,090 between 2010 and 2017.

More births were experienced than deaths in the County however for the period of this analysis the County experienced a wave in migration with a net decrease of 8,476 (11,894 domestic citizens emigrated from the County and 3,418 immigrated into the County from international places). Therefore, the population decrease from 2010-2017 is being mitigated by international immigration. By working together, Synergy suggests, Cumberland County can develop ways to increase economic efficiency and policy innovations that will benefit minorities/international populations.

Even though Cumberland County has experienced a relatively small decline in population from 2010-2017 compared to the total population, this decrease should still be considered as domestic residents of the County are emigrating. Most likely these could be younger adults moving to bigger town and cities. Effects of population decline may include the following:

- Reduced property development
- A decline in property values because more properties are unoccupied
- Less demand for rented accommodation
- Fewer people going to the mall for example (a valuable property) which may result in an eventual cut back

It is important to point out that this migration has not affected the value of parcels.

In summary, the southern region of Cumberland County has significant flood impacts from both coastal flooding and the low-lying elevation of this region of the County located along the Delaware Bay. There are also many roads that would be impacted by flood events in the southern region [adjacent to the Delaware Bay where land elevations are very low (under 10 ft)] and in the city centers (Bridgeton, Millville and North/East Vineland). The impact of the flood risk on residents particularly economically challenged residents in the floodplain zones as analyzed in this report should be taken in consideration and strategic response to the flood risk types (100/500- year) should be devised to reduce the consequences of the flood risk. Flood risk could potentially affect property values.

Impacts on development as evidenced by the potential for development in Deerfield township could put pressure on Landis Avenue. Landis Avenue may have to be expanded into four (4) lanes eventually to accommodate this demand.

Cumberland County can explore the present property exemptions and deductions based of property classifications taking advantage of by home owners to lower annual property tax bills or at the time of purchase or sale. This information could inform changes such as tax rates for future considerations that will stimulate growth and/or benefit the County.

## 6. Appendix

Synergy deemed the list below as vital information that could be of value to support the ability to understand this report and/or provide more information.

1. **Acreage** – Acreage values obtained from the MOD4 database for properties are typically one property with one acreage value however, a significant amount of properties have aggregated acreage values for a group of properties therefore, acreage values for individual properties recorded as a group of properties cannot be guaranteed to have accurate acreage values.
  - Acreage value for one property may be the overall value for 2-3 properties but the record may only be linked to one parcel polygon.

### 2. New Jersey Property Class Definitions

NEW JERSEY PROPERTY CLASS DEFINITIONS	
Property Class	Property Class Description
1	Vacant Land
2	Residential (four families or less)
3A	Farm (regular)
3B	Farm (qualified)
4A	Commercial
4B	Industrial
4C	Apartment
5A	Class I Railroad Property
5B	Class II Railroad Property
6A	Personal Property Telephone (classification of tangible personal property of public utilities and oil refineries)
15A	Public School Property
15B	Other School Property
15C	Public Property
15D	Church & Charitable Property
15E	Cemeteries & Graveyards
15F	Other Exempt Properties

3. **Property Class 6A Ongoing Law Suit** – The Bridgeton tax assessor’s office informed Synergy that there is an ongoing lawsuit regarding 6A properties and whether they should be assessed a land value and subsequently pay taxes on these land values. Therefore, some municipalities have instructed their tax assessors to enter a zero (o) land value into the MOD4 database to limit municipal liability in the event that the lawsuit’s outcome rules in favor of the 6A property owners. These municipalities do not want to tax the properties and have to remit the taxes to the owners of the 6A properties in the event that lawsuit’s outcome favors 6A property owners. *This is the reason for the difference in land values.*
4. **Limit of Moderate Wave Action (LiMWA)** – This is the inland limit of the area expected to receive 1.5-foot or greater breaking waves during the 1-percent-annual-chance flood event. The addition of the LiMWA area to FIRMs allows communities and individuals to better understand the flood risks to their property.
5. **Land Cover Overview** – The chart below illustrates the Cumberland County land cover with 29% wetlands, 29% Forest which are the highest percentage, 21% agriculture, 16% agriculture, 14% urban, 6% water and 1% barren land. In Summary, the total area of Cumberland County has 6% water and 94% land.

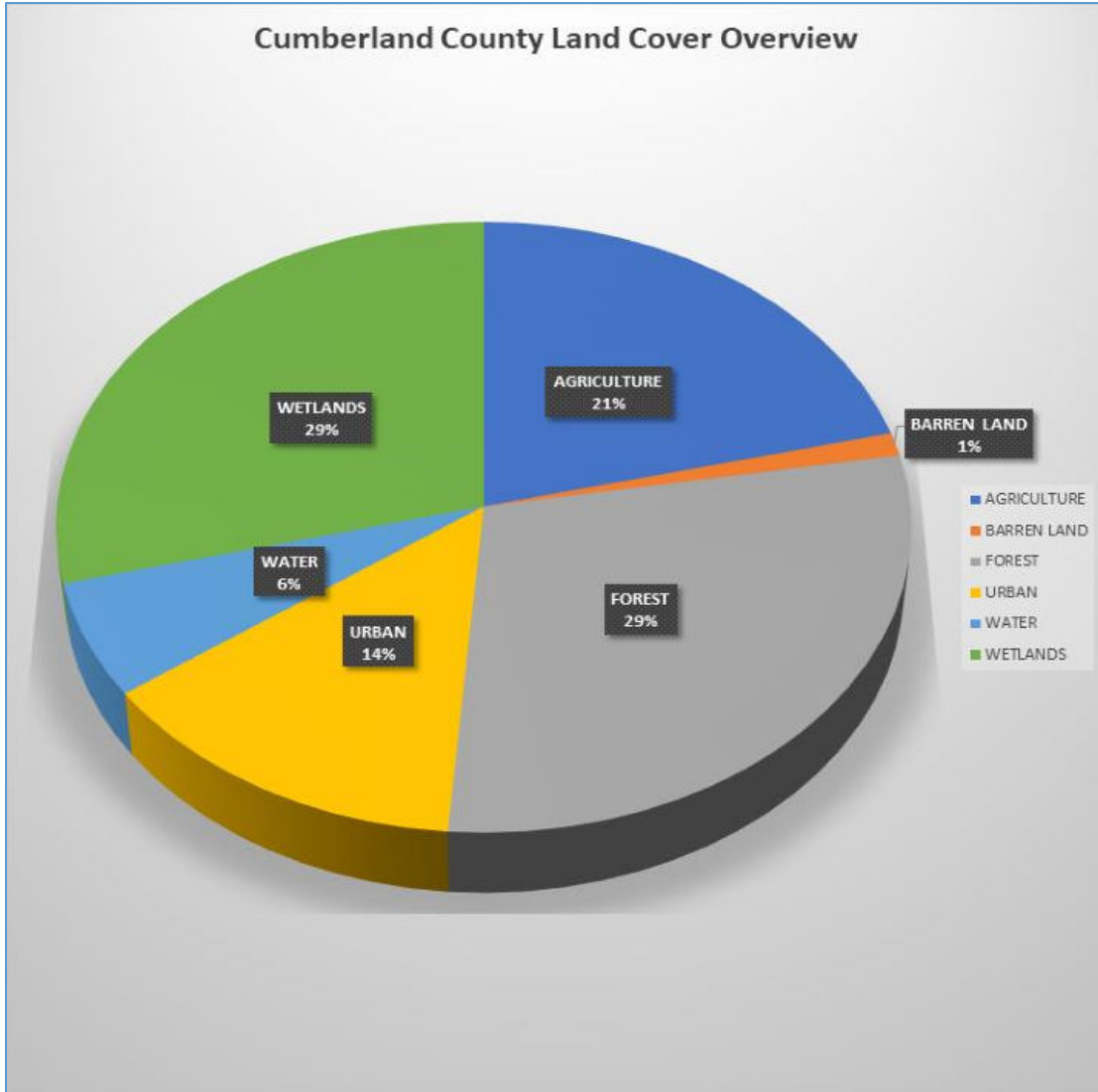


Figure 15 Cumberland County Land Cover Overview