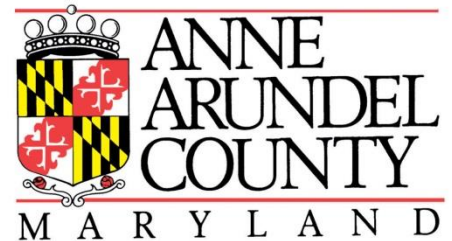


HOLDING CAPACITY ANALYSIS

In Anne Arundel County



HOLDING CAPACITY ANALYSIS

A process of:

- **Finding** all vacant and under-developed land in the County
- **Eliminating** of all land that can not be developed because of:
 - Natural features and conditions
 - State and county policies
 - Ownership and use of the land
- **Calculating** the number of possible buildable units in all developable lots in the county based on existing zoning.

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Step One:

- Define what will be considered “**vacant**”. We created two sets of data using tax account information such as improvement value.
 - **Less** than \$10,000 (potentially vacant lot)
and
 - **More** than \$10,000 but less than the base land value (making it a candidate for redevelopment)

Step Two:

- Understanding how the **developability** of the above lots are affected by their locations in regards to natural constraints, zoning and government policies, availability of infrastructures etc.

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- For natural features and other **constraints** that would **restrict** development, we considered:
 - Steep slopes (>25%)
 - Streams and buffer areas (100 ft)
 - Wetlands & BOGs and buffer areas
 - Schools, parks, cemeteries, homeowners association properties
 - Federal, State, and County property
 - SWM areas
 - BGE Utility corridors and infrastructure
 - Land zoned Open Space
 - Land protected through easements and Trusts
 - Open water and Marshes

Data (GIS layers) with above information were combined together to create a master layer depicting **undevelopable** land.

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Step Three:

ArcGIS Models were developed to generate **two GIS layers** – one for vacant parcels (<\$10k improvement value) and another for re-developable (>\$10k improvement value) parcels taking into consideration **regulatory constraints**:

The Model uses the following information:

- Zoning
- Sewer/water classification
- Critical Area designation
- Configuration of their original area

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Step Four:

We develop **yield factors** and minimum lot sizes for each land use scenario for the two datasets using **historic trends** and current experience. The model takes all the data and provides:

- Potential units that are calculated based on zoning, allowable density, sewer and water service, environmental constraints.
- Add in mixed use and overlay zoned land. Units are calculated manually.

Quality control is done manually:

- Results are randomly checked for accuracy and the need to tweak the yield factors.

Note: yield factors do not take into consideration the physical configuration of the property.

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Yield factor chart:

Zone	Min. Lot Size by Code	Sewer	Critical Area	Yield by Code	Actual Yield (Units/Per Acre) for Min. Acreage for Yield Factor	Min Net. Acreage for Yield Factor	Gross Lot Size for one house (sq ft)	Net Lot Size for two houses (sq ft)	Minimum Net Lot size for redev.	Redevelopment Yield Factor (remember to minus exist. Lot)
R1	40,000 sq.ft.	yes	N/A	1/40,000 sq.ft.	0.7	4 (174,240 sq.ft.)	4000 ≤ > 80,000	80,000 ≤ > 174,240	2.67 (116,160 sf)	0.75
R1	40,000 sq.ft.	yes	RCA	1/ 20 acres	0.05	40	8,000 ≤ > 40ac (1,742,400)	N/A		
R10		no	IDA		9.1					
R10		no	LDA		9.1					
R10	N/A	yes	IDA	10/acre	9.1	0.23 (10,130sq.ft.)	4,000 ≤ > 10,131	N/A	40,000 sf	9.1
R10	N/A	yes	LDA	4/acre	2.2	.91 (39,600 sq.ft.)	4000 ≤ > 39,600	N/A	40,000 sf	2.2
R10	N/A	yes	N/A	10/acre	9.1	0.23 (10,130sq.ft.)	4,000 ≤ > 10,131	N/A	40,000 sf	9.1
R10	N/A	yes	RCA	1/ 20 acres	0.05	40	8,000 ≤ > 40ac (1,742,400)	N/A	40,000 sf	0.05
R15	N/A	no	N/A	4/acre	2.2	.91 (39,600 sq.ft.)	8000 ≤ > 39,600	N/A	40,000 sf	2.2
R15	N/A	yes	IDA	15/acre	12.2	0.18 (7,576sq.ft.)	4000 ≤ > 7,576	N/A	40,000 sf	12.2
R15	N/A	yes	LDA	4/acre	2.2	.91 (39,600 sq.ft.)	4000 ≤ > 39,600	N/A	40,000 sf	2.2
R15	N/A	yes	N/A	15/acre	12.2	0.18 (7,576sq.ft.)	4000 ≤ > 7,576	N/A	40,000 sf	12.2
R15	N/A	yes	RCA	1/ 20 acres	0.05	40	8,000 ≤ > 40ac (1,742,400)	N/A	40,000 sf	0.05
R2	20,000 sq.ft.	no	IDA	1/20,000 sq.ft.	0.6	2.5 (108,900 sf)	4,000 ≤ > 40,000	40,000 ≤ > 108,900	1.67 (72,600 sf)	1.2
R2	20,000 sq.ft.	no	LDA	1/20,000 sq.ft.	0.7	2.5 (108,900 sf)	4,000 ≤ > 40,000	40,000 ≤ > 108,900	1.67 (72,600 sf)	1.2
R2	20,000 sq.ft.	no	N/A	1/20,000 sq.ft.	0.6	2.5 (108,900 sf)	4,000 ≤ > 40,000	40,000 ≤ > 108,900	1.67 (72,600 sf)	1.2
R2	20,000 sq.ft.	no	RCA	1/ 20 acres	0.05	40	8,000 ≤ > 40ac (1,742,400)	N/A		
R2	15,000 sq.ft.	yes	IDA	2.5/acre (17,424 sf)	2	1.67 (72,600 sq.ft.)	4,000 ≤ > 30,000	30,000 ≤ > 72,600	1.12 (48,400 sf)	1.8
R2	15,000 sq.ft.	yes	LDA	2.5/acre (17,424 sf)	1.7	1.67 (72,600 sq.ft.)	4,000 ≤ > 30,000	30,000 ≤ > 72,600	1.12 (48,400 sf)	1.8
R2	15,000 sq.ft.	yes	N/A	2.5/acre (17,424 sf)	2	1.67 (72,600 sq.ft.)	4,000 ≤ > 30,000	30,000 ≤ > 72,600	1.12 (48,400 sf)	1.8
R2	20,000 sq.ft.	yes	RCA	1/ 20 acres	0.05	40	4,000 ≤ > 40ac (1,742,400)	N/A		
R22	N/A	yes	N/A	22/acre	20.9	0.125 (5,445sq.ft.)	4000 ≤ > 5,445	N/A	40,000 sf	20.9
R22	N/A	yes	RCA	22/acre	0.05	40	8,000 ≤ > 40ac (1,742,400)	N/A	40,000 sf	0.05
R22	N/A	no	N/A	22/acre	20.9	0.125 (5,445sq.ft.)	4000 ≤ > 5,445	N/A	40,000 sf	20.9
R5	7,000 sq.ft.	no	IDA	5/acre (174,240 sf)	4.1	1.2 (52,272 sf)	8,000 ≤ > 17,424	17,424 ≤ > 52,272	8 (34,848 sf)	2.5
R5	7,000 sq.ft.	no	LDA	4/acre (174,240 sf)	1.9	1.36 (59,400sq.ft.)	8000 ≤ > 21,780	21,780 ≤ > 59,400	.90 (39,560 sf)	2.2
R5	N/A	no	N/A	5/acre (174,240 sf)	3	1.2 (52,272 sf)	8,000 ≤ > 17,424	17,424 ≤ > 52,272	8 (34,848 sf)	2.5
R5	7,000 sq.ft.	no	RCA	1/ 20 acres	0.05	40	4,000 ≤ > 40ac (1,742,400)	N/A		
R5	7,000 sq.ft.	yes	IDA	5/acre (217,800 sf)	4.1	.8 (34,848 sf)	4000 ≤ > 23,232	23,232 ≤ > 34,848	.53 (23,232 sf)	3.75
R5	7,000 sq.ft.	yes	LDA	4/acre (174,240 sf)	1.9	1.36 (59,241sq.ft.)	8000 ≤ > 21,780	21,780 ≤ > 59,400	.90 (39,560 sf)	2.2

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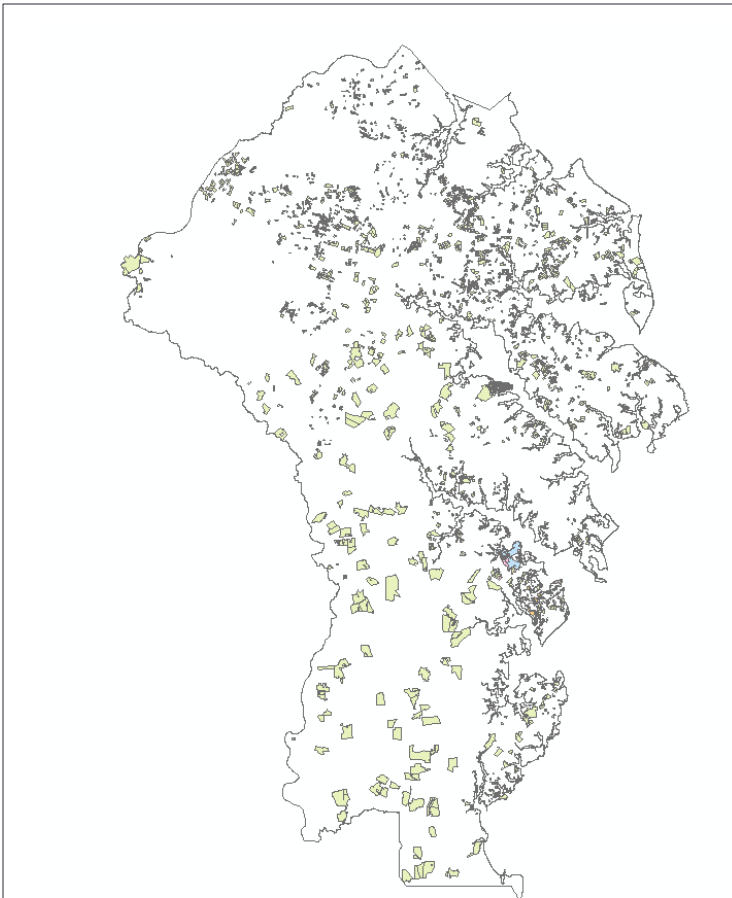
Final Result:

Holding Capacity												
Residential												
	2008			2010			2012			2015		
			Zoning actually from May 2011									
Vacant												
Zoned	Acreage	Units	Zoned	Acreage	Units	Zoned	Acreage	Units	Zoned	Acreage	Units	
R1	2908.70723	1864	R1	2347.681	1998	R1	2167.03	1884	R1	2197.75	2234	
R10	139.8256662	938	R10	408.3699	3268	R10	426.0911	3433	R10	357.82	2520	
R15	113.7929316	1158	R15	60.84216	696	R15	69.65653	796	R15	79.07	788	
R2	1443.229161	2299	R2	1860.359	4319	R2	1795.572	4338	R2	1865.79	4703	
			R22	16.44441	337	R22	14.03669	289	R22	9.22	199	
R5	1050.42075	3140	R5	946.4385	3170	R5	981.6764	3282	R5	953.88	3709	
RA	11807.22613	1482	RA	9335.722	1699	RA	9634.016	1697	RA	8821.90	1621	
RLD	2273.068642	441	RLD	1939.163	765	RLD	1947.385	762	RLD	1735.88	775	
	19736.27051	11322		16915.02	16252		17035.46	16481		16021.32	16549	
Redev												
Zoned	Acreage	Units	Zoned	Acreage	Units	Zoned	Acreage	Units	Zoned	Acreage	Units	
R1	4562.022562	2242	R1	3167.36	1640	R1	2973.711	1515	R1	2859.91	1363	
			R10	61.69224	473	R10	87.15006	698	R10			
			R15	220.3281	2530	R15	228.3004	2624	R15			
R2	2920.202914	2826	R2	2903.792	3605	R2	2829.271	3492	R2	2391.13	2581	
			R22	56.98632	1176	R22	96.44822	2001	R22			
R5	2630.763131	6279	R5	1997.373	4936	R5	2012.057	5021	R5	1965.26	4634	
RA	13681.42412	395	RA	7087.385	221	RA	7149.089	230	RA	6106.28	173	
RLD	1463.059583	163	RLD	1028.999	128	RLD	1127.463	150	RLD	1098.00	141	
	25257.47231	11905		16523.92	14709		16503.49	15731		14420.58	8892	

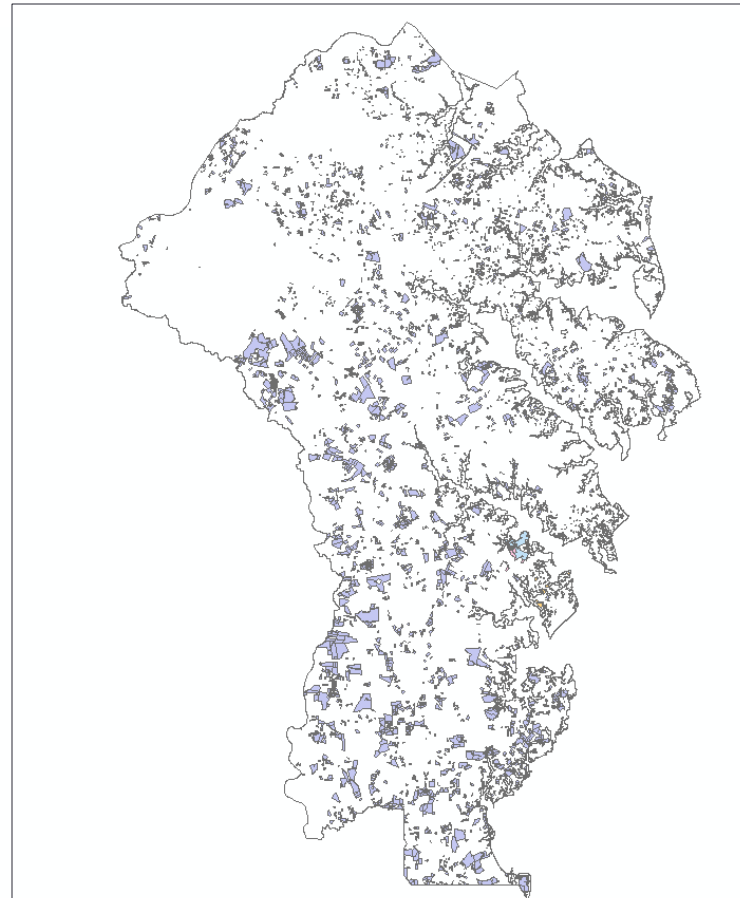
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Output also provides layers of vacant and re-developable parcels.

Distribution of re-developable parcels:

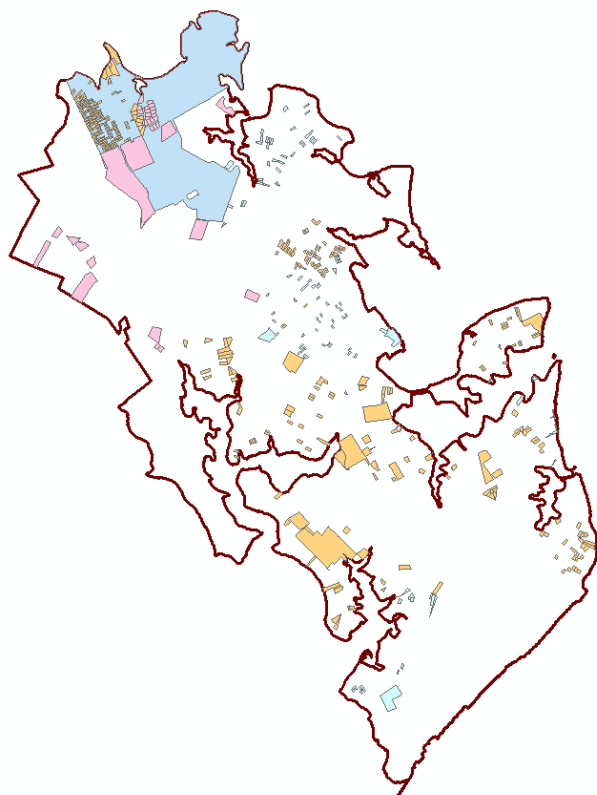


Distribution of vacant parcels:



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The layers help us to find the number of developable units in any given area in the County.



Total parcels	Total areas (arces)	Total Units	Zone
538	272.75	618	all
Only in Glebe Heights			
208	83.27	208	
Capacity by zoning (including Glebe Heights)			
41	109.23	75	R1
405	171	451	R2
102	29.7	116	R5

Number of vacant parcels and developable units in Mayo-Glebe Heights area.

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Questions?

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<http://annearundelmd.maps.arcgis.com/apps/webappviewer/index.html?id=c257da9a1ded4e52ab16f0788494f0f6>