Model Results

The model was run in the summer of 2010. The results are provided on the following pages for the entire urban area of the county, followed by individual Water Quality Planning Areas.

An estimate of the number of units that are "in the pipeline" or for which plans have been submitted for approval to the county, but have not yet been built, is shown in Figure 13 on page 33.

From the totals, there are roughly between 13,000 and 30,000 potential residential units that can be constructed under the present zoning regulations, with an average of 21,500 units. An additional 10,000 units are currently in the pipeline for construction. It may be reasonable to say that the county can expect that a total of 31,500 residential units to be constructed in the future. With an average household size of 2.4 people, the future population capacity is 75,600. This is more than double the 30,000 increase in population expected by 2030.

Figure 7 below shows the number and rate of new residential units that have been constructed in the county over the past 10 years. Since 2000, when there were nearly 2000 occupancy permits approved, the rate at which new residential permits have been approved has been steadily declining, with the exception of the period from 2004-2006, during the housing boom. In this period, the number of permits held steady, with a slight uptick in 2006. After 2006, the rate declines more steeply, reflecting the economic downturn.

Acomparison between vacant parcels and underdeveloped parcels as depicted in Figure 8 shows that almost half of the potential units come from resubdividing underdeveloped parcels. In terms of land area, however, Figure 9 shows that underdeveloped parcels account for only about a third of the total acreage available for residential development.

In a comparison by parcel size, it was found that the size of the of vacant parcels ranged from less than a tenth of an acre to slightly more than 60 acres. The

Figure 7:

The rate of residential occupancy permits approved over the last ten years has been decreasing.

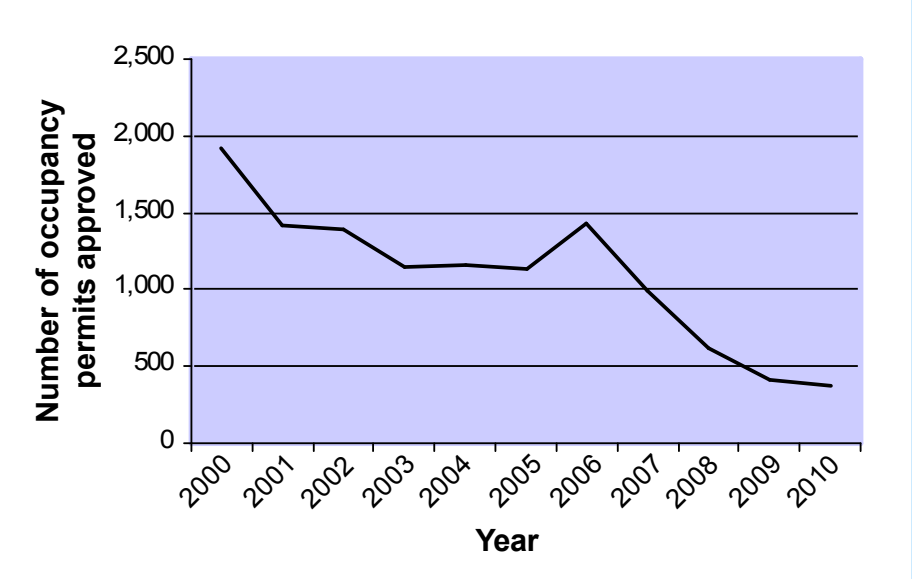


Figure 8: *Potential number of units by development type*

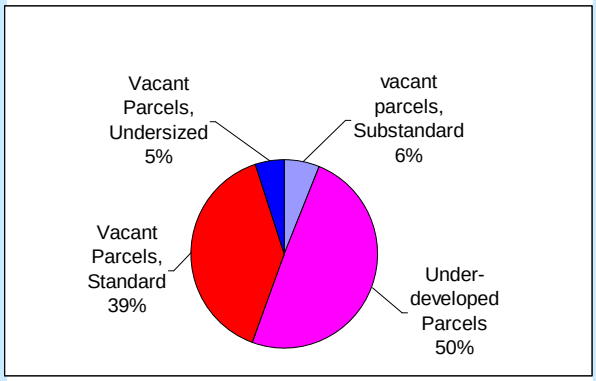


Figure 9: *Potential number of units by land area*

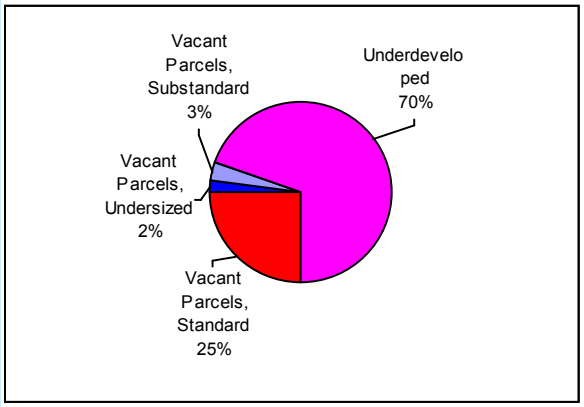


Figure 10: *Number of parcels by parcel size--Vacant Parcels*

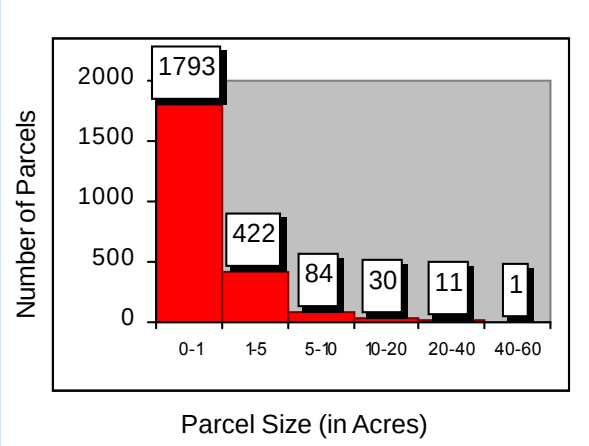
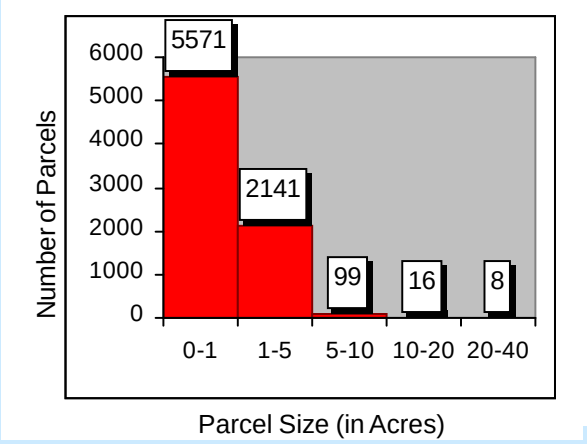


Figure11: *Number of parcels by parcel size--Underdeveloped Parcels*



largest underdeveloped parcel is approximately 40 acres. Figures 10 and 11 show that most of the parcels with development capacity are less than one acre in size, and only a limited number of parcels are greater than 5 acres. The scarcity of large, developable parcels contributes to the sense that the county is "built-out."

It must be kept in mind that the potential capacity figures are based on existing zoning and conventional development processes. However, zoning classifications and designations are not stagnant. Zoning designations can change every four years. New zoning classifications can be created and existing ones can be modified.

Alternative development processes, in particular the Planned Unit Development process, have been, and will continue to be, a major factor in the development of residential units. The PUD process and its effect on the development, and more importantly, the redevelopment, of residential units is discussed in the following section, beginning on page 34.

Figure 12.1 Development Capacity Model Results

Urban County Total

TABLE 1: Total Development Capacity

09/15/10	Total Urban County			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard	3253	2783	6124	12015
Vacant Parcels, Undersized	290	1400	700	1400
Vacant Parcels, Substandard	411	912	992	1984
Subtotal	**3955**	**5095**	**7816**	**15399**
Underdeveloped	8927	8485	7846	21937
Subtotal	**12882**	**13580**	**15662**	**37336**
Less Environmentally Impacted (see Table 2)	1412	1372	1859	4096
TOTAL	**11470**	**12208**	**13804**	**33240**

TABLE 2: Environmentally Impacted Parcels

09/15/10	Total Urban County			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard, Stream	386	438	700	1453
Vacant Parcels, Undersized, Stream	35	172	86	172
Vacant Parcels, Substandard, Stream	70	112	171	341
Underdeveloped, Stream	662	534	775	1845
Underdeveloped, Slope	259	116	127	285
TOTAL ENVIRONMENTALLY IMPACTED	**1412**	**1372**	**1859**	**4096**

Figure 12.2: Development Capacity Model Results

Back River Watershed

TABLE 1: Total Development Capacity

Model Run 8/7/2010	Back River Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard	536	711	1181	2598
Vacant Parcels, Undersized	67	399	200	399
Vacant Parcels, Substandard	80	200	227	453
Subtotal	**683**	**1310**	**1607**	**3450**
Underdeveloped	1347	1818	1601	4811
Subtotal	**2030**	**3128**	**3208**	**8261**
Less Environmentally Impacted (see Table 2)	**239**	**344**	**478**	**1073**
TOTAL	**1791**	**2784**	**2730**	**7188**

TABLE 2: Environmentally Impacted Parcels

Model Run 8/7/2010	Back River Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard, Stream	79	110	189	394
Vacant Parcels, Undersized, Stream	10	62	31	62
Vacant Parcels, Substandard, Stream	15	33	39	78
Underdeveloped, Stream	132	135	216	529
Underdeveloped, Slope	3	4	3	10
TOTAL ENVIRONMENTALLY IMPACTED	**239**	**344**	**478**	**1073**

Figure 12.3: Development Capacity Model Results

Baltimore Harbor

Model Run 8/17/2010	Baltimore Harbor Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard	86	241	136	406
Vacant Parcels, Undersized	23	146	73	146
Vacant Parcels, Substandard	21	82	60	120
Subtotal	**131**	**469**	**269**	**672**
Underdeveloped	276	450	273	969
Subtotal	**407**	**919**	**542**	**1641**
Less Environmentally Impacted (see Table 2)	**8**	**20**	**8**	**25**
TOTAL	**399**	**899**	**535**	**1616**

TABLE 2: Environmentally Impacted Parcels

Model Run 8/17/2010	Baltimore Harbor Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard, Stream	2	5	3	7
Vacant Parcels, Undersized, Stream	1	4	2	4
Vacant Parcels, Substandard, Stream	0	1	1	1
Underdeveloped, Stream	5	10	2	13
Underdeveloped, Slope	0	0	0	0
TOTAL ENVIRONMENTALLY IMPACTED	**8**	**20**	**8**	**25**

Figure 12.4: Development Capacity Model Results

Bird River Watershed

TABLE 1: Total Development Capacity

Model Run 9/29/2010	Bird River Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard	797	291	1702	2910
Vacant Parcels, Undersized	19	88	44	88
Vacant Parcels, Substandard	23	49	55	110
Subtotal	**839**	**428**	**1801**	**3108**
Underdeveloped	1103	1159	1157	3236
Subtotal	**1942**	**1587**	**2958**	**6344**
Less Environmentally Impacted (see Table 2)	**175**	**133**	**271**	**537**
TOTAL	**1767**	**1454**	**2688**	**5807**

TABLE 2: Environmentally Impacted Parcels

Model Run 9/29/2010	Bird River Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard, Stream	74	43	126	211
Vacant Parcels, Undersized, Stream	0	3	2	3
Vacant Parcels, Substandard, Stream	5	7	9	18
Underdeveloped, Stream	96	80	134	305
Underdeveloped, Slope	0	0	0	0
TOTAL ENVIRONMENTALLY IMPACTED	**175**	**133**	**271**	**537**

Figure 12.5: Development Capacity Model Results

Gunpowder River Watershed

TABLE 1: Total Development Capacity

Model Run 9/29/2010	Gunpowder River Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard	97	102	203	413
Vacant Parcels, Undersized	3	17	9	17
Vacant Parcels, Substandard	2	9	6	12
Subtotal	**103**	**128**	**218**	**442**
Underdeveloped	210	210	268	661
Subtotal	**312**	**338**	**486**	**1103**
Less Environmentally Impacted (see Table 2)	**21**	**26**	**30**	**74**
TOTAL	**291**	**312**	**456**	**1029**

TABLE 2: Environmentally Impacted Parcels

Model Run 8/17/2010	Gunpowder River Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard, Stream	10	12	17	37
Vacant Parcels, Undersized, Stream	0	1	1	1
Vacant Parcels, Substandard, Stream	0	0	0	0
Underdeveloped, Stream	11	13	12	36
Underdeveloped, Slope	0	0	0	0
TOTAL ENVIRONMENTALLY IMPACTED	**21**	**26**	**30**	**74**

Figure 12.6: Development Capacity Model Results

Gwynns Falls Watershed

TABLE 1: Total Development Capacity

Model Run 8/17/2010	Gwynns Falls Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard	338	396	860	1871
Vacant Parcels, Undersized	40	218	109	218
Vacant Parcels, Substandard	88	205	236	472
Subtotal	**465**	**819**	**1205**	**2561**
Underdeveloped	1301	1456	1144	3611
Subtotal	**1766**	**2275**	**2349**	**6172**
Less Environmentally Impacted (see Table 2)	**150**	**182**	**300**	**672**
TOTAL	**1616**	**2093**	**2049**	**5500**

TABLE 2: Environmentally Impacted Parcels

Model Run 8/17/2010	Gwynns Falls Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard, Stream	51	57	142	301
Vacant Parcels, Undersized, Stream	4	25	13	25
Vacant Parcels, Substandard, Stream	9	22	26	51
Underdeveloped, Stream	84	73	118	287
Underdeveloped, Slope	3	5	2	8
TOTAL ENVIRONMENTALLY IMPACTED	**150**	**182**	**300**	**672**

Figure 12.7: Development Capacity Model Results

Jones Falls Watershed

TABLE 1: Total Development Capacity

Model Run 8/26/2010	Jones Falls Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard	320	182	291	533
Vacant Parcels, Undersized	41	137	69	137
Vacant Parcels, Substandard	21	38	24	47
Subtotal	**383**	**357**	**383**	**717**
Underdeveloped	1357	714	648	1566
Subtotal	**1740**	**1071**	**1031**	**2283**
Less Environmentally Impacted (see Table 2)	**257**	**158**	**162**	**338**
TOTAL	**1483**	**913**	**869**	**1945**

TABLE 2: Environmentally Impacted Parcels

Model Run 8/26/2010	Jones Falls Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard, Stream	24	24	19	39
Vacant Parcels, Undersized, Stream	7	31	16	31
Vacant Parcels, Substandard, Stream	2	2	2	3
Underdeveloped, Stream	126	68	82	179
Underdeveloped, Slope	99	33	44	86
TOTAL ENVIRONMENTALLY IMPACTED	**257**	**158**	**162**	**338**

Figure 12.7: Development Capacity Model Results

Liberty Reservoir Watershed

TABLE 1: Total Development Capacity

Model Run 8/25/2010	Liberty Reservoir Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard	6	5	4	10
Vacant Parcels, Undersized	1	3	2	3
Vacant Parcels, Substandard	2	2	1	2
Subtotal	**8**	**10**	**7**	**15**
Underdeveloped	45	38	36	94
Subtotal	**54**	**48**	**43**	**109**
Less Environmentally Impacted (see Table 2)	**1**	**1**	**1**	**3**
TOTAL	**53**	**47**	**42**	**106**

TABLE 2: Environmentally Impacted Parcels

Model Run 8/25/2010	Liberty Reservoir Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard, Stream	0	0	0	0
Vacant Parcels, Undersized, Stream	0	0	0	0
Vacant Parcels, Substandard, Stream	0	0	0	0
Underdeveloped, Stream	1	1	1	3
Underdeveloped, Slope	0	0	0	0
TOTAL ENVIRONMENTALLY IMPACTED	**1**	**1**	**1**	**3**

Figure 12.8: Development Capacity Model Results

Loch Raven Reservoir Watershed

TABLE 1: Total Development Capacity

Model Run 8/26/2010	Loch Raven Reservoir Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard	162	75	185	307
Vacant Parcels, Undersized	14	32	16	32
Vacant Parcels, Substandard	30	46	45	89
Subtotal	**206**	**153**	**246**	**428**
Underdeveloped	765	434	409	1021
Subtotal	**971**	**587**	**655**	**1449**
Less Environmentally Impacted (see Table 2)	**151**	**85**	**99**	**218**
TOTAL	**820**	**502**	**556**	**1231**

TABLE 2: Environmentally Impacted Parcels

Model Run 8/26/2010	Loch Raven Reservoir Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard, Stream	32	14	25	40
Vacant Parcels, Undersized, Stream	4	6	3	6
Vacant Parcels, Substandard, Stream	2	2	4	8
Underdeveloped, Stream	44	32	32	87
Underdeveloped, Slope	69	31	35	77
TOTAL ENVIRONMENTALLY IMPACTED	**151**	**85**	**99**	**218**

Figure 12.9: Development Capacity Model Results

Lower Gunpowder Falls Watershed

TABLE 1: Total Development Capacity

Model Run 8/20/2010	Lower Gunpowder Falls Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard	359	153	576	937
Vacant Parcels, Undersized	13	42	21	42
Vacant Parcels, Substandard	20	22	51	101
Subtotal	**391**	**217**	**648**	**1080**
Underdeveloped	969	746	758	1838
Subtotal	**1361**	**963**	**1406**	**2918**
Less Environmentally Impacted (see Table 2)	**166**	**114**	**176**	**365**
TOTAL	**1195**	**849**	**1230**	**2553**

TABLE 2: Environmentally Impacted Parcels

Model Run 8/20/2010	Lower Gunpowder Falls Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard, Stream	40	33	57	102
Vacant Parcels, Undersized, Stream	1	3	2	3
Vacant Parcels, Substandard, Stream	11	8	31	61
Underdeveloped, Stream	69	46	68	148
Underdeveloped, Slope	46	24	19	51
TOTAL ENVIRONMENTALLY IMPACTED	**166**	**114**	**176**	**365**

Figure 12.10: Development Capacity Model Results

Middle River Watershed

TABLE 1: Total Development Capacity

Model Run 8/20/2010	Middle River Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard	263	252	489	981
Vacant Parcels, Undersized	32	143	72	143
Vacant Parcels, Substandard	38	55	72	144
Subtotal	**332**	**450**	**633**	**1268**
Underdeveloped	569	562	620	1723
Subtotal	**901**	**1012**	**1253**	**2991**
Less Environmentally Impacted (see Table 2)	**36**	**64**	**74**	**189**
TOTAL	**865**	**948**	**1179**	**2802**

TABLE 2: Environmentally Impacted Parcels

Model Run 8/20/2010	Middle River Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard, Stream	11	20	31	89
Vacant Parcels, Undersized, Stream	4	22	11	22
Vacant Parcels, Substandard, Stream	4	6	7	13
Underdeveloped, Stream	17	16	25	65
Underdeveloped, Slope	0	0	0	0
TOTAL ENVIRONMENTALLY IMPACTED	**36**	**64**	**74**	**189**

Figure 12.11: Development Capacity Model Results

Patapsco River Watershed

TABLE 1: Total Development Capacity

Model Run 8/23/2010	Patapsco River Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard	290	375	497	1049
Vacant Parcels, Undersized	36	175	88	175
Vacant Parcels, Substandard	87	204	217	434
Subtotal	**413**	**754**	**802**	**1658**
Underdeveloped	984	898	932	2407
Subtotal	**1397**	**1652**	**1734**	**4065**
Less Environmentally Impacted (see Table 2)	**207**	**245**	**262**	**602**
TOTAL	**1191**	**1407**	**1472**	**3463**

TABLE 2: Environmentally Impacted Parcels

Model Run 8/23/2010	Patapsco River Watershed			
	Acres	No. of Parcels	MODERATE ESTIMATE	HIGH ESTIMATE
Vacant Parcels, Standard, Stream	64	120	91	233
Vacant Parcels, Undersized, Stream	3	15	8	15
Vacant Parcels, Substandard, Stream	22	31	54	108
Underdeveloped, Stream	77	60	85	193
Underdeveloped, Slope	40	19	24	53
TOTAL ENVIRONMENTALLY IMPACTED	**207**	**245**	**262**	**602**

Figure 13: *Current Number of Units in the Development "Pipeline"*

WATERSHED	NO. OF PROJECTS	UNITS IN PIPELINE
BACK RIVER	51	672
BALTIMORE HARBOR	14	637
BIRD RIVER	63	1474
GUNPOWDER RIVER	8	30
GWYNNS FALLS	90	4136
JONES FALLS	33	751
LIBERTY RESERVOIR	2	5
LOCH RAVEN RESERVOIR	13	1189
LOWER GUNPOWDER FALLS	42	224
MIDDLE RIVER	18	177
PATAPSCO RIVER	47	818
TOTAL	382	10,262