

Table 4. City of Virginia Beach, Virginia Shoreline Attributes - Miles Surveyed and Inventory Dates - River System Summary

RIVER SYSTEM	Field Surveyed (miles)	Remote Surveyed (miles)	Total Miles Surveyed (field + remote)	FIELD SURVEY DATES
Ashville Bridge Creek	0.00	42.26	42.26	VBMP 2011 imagery
Back Bay	0.00	99.27	99.27	VBMP 2009 and 2011 imagery
Blackwater Creek	0.00	20.53	20.53	VBMP 2009 imagery
Broad Bay	77.53	7.12	84.65	May 15-17, 2012 and VBMP 2011 imagery
Chesapeake Bay	0.00	9.84	9.84	VBMP 2011 imagery
Eastern Branch Elizabeth River	10.06	13.91	23.97	April 12, 2012 and VBMP 2011 imagery
Little Creek	0.00	7.78	7.78	VBMP 2011 imagery
Lynnhaven River	111.95	34.98	146.93	2007 Inventory updated using VBMP 2011 imagery
North Bay	0.00	21.92	21.92	VBMP 2011 imagery
North Landing River	24.40	75.02	99.42	May 31, 2012 and VBMP 2009 and 2011 imagery
Pocaty River	0.00	2.56	2.56	VBMP 2011 imagery
Rudee Inlet	7.56	2.01	9.57	May 17, 2012 and VBMP 2011 imagery
Ships Bay	0.00	21.29	21.29	VBMP 2011 imagery
Upper North Landing River	0.37	6.72	7.09	May 31, 2012 and VBMP 2011 imagery
West Neck Creek	0.00	34.99	34.99	VBMP 2011 imagery
Total	231.87	400.20	632.07	

Table 5. City of Virginia Beach, Virginia Shoreline Attributes - Riparian Land Use (miles) - River System Summary

RIVER SYSTEM	TOTAL* MILES SURVEYED	AGRICULTURE				BARE				COMMERCIAL				FOREST			GRASS				INDUSTRIAL				MILITARY				PAVED				
		no tree buffer	tree fringe only	fringe with canopy over- hang	total	no tree buffer	tree fringe only	fringe with canopy over- hang	total	no tree buffer	tree fringe only	fringe with canopy over- hang	total	no canopy over- hang	canopy over- hang	total	no tree buffer	tree fringe only	fringe with canopy over- hang	total	no tree buffer	tree fringe only	fringe with canopy over- hang	total	no tree buffer	tree fringe only	fringe with canopy over- hang	total	no tree buffer	tree fringe only	fringe with canopy over- hang	total	
Ashville Bridge Creek	42.26	4.01	2.65	0.00	6.66	0.00	0.00	0.00	0.00	1.39	0.40	0.00	1.78	15.62	3.44	19.06	0.82	0.40	0.00	1.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.83	0.00	0.00	0.83
Back Bay	99.27	2.88	9.25	0.00	12.13	0.44	0.00	0.00	0.44	0.18	0.00	0.00	0.18	45.79	0.00	45.79	1.66	0.13	0.00	1.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.21	0.05	0.00	6.26	
Blackwater Creek	20.53	0.00	0.13	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.72	0.00	19.72	0.03	0.05	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.05	
Broad Bay	84.65	0.00	0.00	0.00	0.00	0.31	0.05	0.00	0.36	1.67	0.82	0.00	2.49	7.01	0.00	7.01	2.50	0.31	0.00	2.81	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.92	0.81	0.00	4.73	
Chesapeake Bay	9.84	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.12	0.20	0.00	0.00	0.20	1.59	0.00	1.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.01	0.00	0.00	3.01	0.43	0.00	0.43
Eastern Branch Elizabeth River	23.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.36	0.00	0.49	3.05	0.00	3.05	0.40	0.19	0.25	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.14	0.00	0.56	
Little Creek	7.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.78	0.00	0.00	7.78	0.00	0.00	0.00
Lynnhaven River	146.93	0.00	0.00	0.00	0.00	0.50	0.01	0.00	0.51	1.62	4.60	0.00	6.22	17.16	0.00	17.16	2.99	4.05	0.00	7.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.76	0.75	0.00
North Bay	21.92	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.37	0.00	3.37	0.40	0.00	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52	0.00	0.00	0.52	
North Landing River	99.42	0.33	0.01	0.00	0.34	0.15	0.02	0.00	0.17	0.10	0.00	0.00	0.10	93.47	0.00	93.47	2.60	0.36	0.00	2.96	0.06	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.34	0.07	0.00	0.41	
Pocaty River	2.56	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.56	0.00	2.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rudee Inlet	9.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56	0.12	0.00	0.68	3.32	0.00	3.32	0.48	0.13	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.03	0.00	0.93	
Ships Bay	21.29	0.25	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.15	8.64	0.00	8.64	0.17	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.24	
Upper North Landing River	7.09	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.07	0.00	0.00	0.00	0.00	6.43	0.00	6.43	0.12	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.13	
West Neck Creek	34.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.18	33.55	0.00	33.55	0.17	0.29	0.00	0.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.09	0.00	0.20	
Total	632.07	7.48	12.05	0.00	19.53	1.59	0.08	0.00	1.67	6.18	6.30	0.00	12.47	261.28	3.44	264.72	12.34	5.91	0.25	18.50	0.06	0.00	0.00	0.06	10.79	0.00	0.00	10.79	15.87	1.94	0.00	17.80	

RIVER SYSTEM	TOTAL* MILES SURVEYED	RESIDENTIAL				SCRUB-SHRUB			
		no tree buffer	tree fringe only	fringe with canopy over- hang	total	no tree buffer	tree fringe only	fringe with canopy over- hang	total
Ashville Bridge Creek	42.26	4.30	1.69	0.87	6.86	5.84	0.00	0.00	5.84
Back Bay	99.27	2.33	1.95	0.00	4.28	28.40	0.00	0.00	28.40
Blackwater Creek	20.53	0.29	0.22	0.00	0.50	0.00	0.05	0.00	0.05
Broad Bay	84.65	55.72	9.66	0.36	65.74	1.51	0.00	0.00	1.51
Chesapeake Bay	9.84	4.49	0.00	0.00	4.49	0.00	0.00	0.00	0.00
Eastern Branch Elizabeth River	23.97	9.92	8.05	0.22	18.19	0.86	0.00	0.00	0.86
Little Creek	7.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lynnhaven River	146.93	41.95	61.82	0.00	103.78	8.87	0.84	0.00	9.71
North Bay	21.92	9.20	0.00	0.00	9.20	8.42	0.00	0.00	8.42
North Landing River	99.42	0.82	0.40	0.00	1.22	0.69	0.00	0.00	0.69
Pocaty River	2.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rudee Inlet	9.57	3.84	0.19	0.00	4.03	0.00	0.00	0.00	0.00
Ships Bay	21.29	3.02	0.56	0.00	3.58	8.27	0.00	0.00	8.27
Upper North Landing River	7.09	0.19	0.01	0.00	0.20	0.15	0.00	0.00	0.15
West Neck Creek	34.99	0.20	0.02	0.00	0.22	0.39	0.00	0.00	0.39
Total	632.07	136.27	84.57	1.45	222.29	63.40	0.89	0.00	64.29

\*Total = field + remote surveys (does not include marsh island shoreline)

Table 6. City of Virginia Beach, Virginia Shoreline Attributes - Riparian Bank Condition - River System Summary

RIVER SYSTEM	TOTAL* MILES SURVEYED	BANK COVER			BANK HEIGHT AND EROSION STATUS (miles of shore)																			
		(miles)			0-5 FEET					5-10 FEET					10-30 FEET					>30 FEET				
		bare	partial	full	erosional	erosional/ undercut	stable	transitional	transitional/ undercut	erosional	erosional/ undercut	stable	transitional	transitional/ undercut	erosional	erosional/ undercut	stable	transitional	transitional/ undercut	erosional	erosional/ undercut	stable	transitional	transitional/ undercut
Ashville Bridge Creek	42.26	0.00	0.00	42.26	0.00	0.00	42.24	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Back Bay	99.27	0.00	0.00	99.27	0.00	0.00	99.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Blackwater Creek	20.53	0.00	0.00	20.53	0.00	0.00	20.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Broad Bay	84.65	0.70	0.61	83.34	1.10	0.50	76.24	0.84	0.24	0.07	0.04	5.08	0.06	0.00	0.00	0.00	0.47	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Chesapeake Bay	9.84	0.54	0.16	9.14	8.87	0.00	0.21	0.59	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Eastern Branch Elizabeth River	23.97	0.09	0.55	23.34	0.08	0.27	22.93	0.05	0.11	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Little Creek	7.78	0.00	0.00	7.78	0.63	0.00	6.05	1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lynnhaven River	146.93	1.91	0.58	144.44	1.44	0.00	110.35	0.00	0.01	1.05	0.00	30.92	0.00	0.06	0.04	0.00	3.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
North Bay	21.92	0.00	0.00	21.92	0.00	0.00	21.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
North Landing River	99.42	0.00	0.97	98.46	0.97	0.00	96.61	1.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pocaty River	2.56	0.00	0.00	2.56	0.00	0.00	2.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rudee Inlet	9.57	0.00	0.00	9.57	0.05	0.00	9.34	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ships Bay	21.29	0.00	0.00	21.29	0.00	0.00	21.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper North Landing River	7.09	0.00	0.00	7.09	0.00	0.00	6.70	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
West Neck Creek	34.99	0.00	0.00	34.99	0.00	0.00	34.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	632.07	3.24	2.87	625.98	13.14	0.77	571.23	4.84	0.36	1.29	0.04	36.46	0.06	0.06	0.04	0.00	3.79	0.01	0.00	0.00	0.00	0.00	0.00	0.00

\*Total = field + remote surveys (does not include marsh island shoreline)

Table 7. City of Virginia Beach, Virginia Shoreline Attributes - Natural Buffers, *Phragmites australis* and Marsh Survey Dates - River System Summary

RIVER SYSTEM	BEACH (miles)	# Wetland Polygons		Marsh Type (acres)					MARSH												PHRAGMITES <sup>3</sup> (percent of field checked marshes)	MARSH SURVEY DATES	
									Community Type <sup>1</sup> (acres)														
		total	field checked	embayed	extensive	fringe	marsh island	total	I	II	III	IV	V	VI	VII	VIII <sup>2</sup>	IX	X	XI	XII			DNS <sup>**</sup>
Ashville Bridge Creek	0.00	70	0	22.30	402.76	215.98	11.85	652.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	652.89	0	DNS
Back Bay	0.00	236	0	0.00	2517.36	579.00	1690.86	4787.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4787.21	0	DNS
Blackwater Creek	0.00	7	6	0.00	267.99	3.74	0.01	271.74	0.00	0.00	0.00	0.00	139.41	0.00	0.00	0.00	0.00	0.00	132.31	0.00	0.01	100	5/31/2012
Broad Bay	5.10	323	302	93.30	54.38	118.49	4.04	270.21	45.60	0.92	28.90	2.98	0.00	0.00	0.00	7.09	0.00	0.00	0.00	116.19	68.52	19	5/15-17/2012
Chesapeake Bay	9.83	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	DNS
Eastern Branch Elizabeth River	0.03	123	69	17.87	123.63	21.94	4.96	168.40	23.38	0.00	0.00	2.99	0.00	0.00	0.00	0.03	0.00	0.00	0.00	86.94	55.07	59	4/11/2012
Little Creek	0.87	15	0	13.57	12.08	9.99	0.76	36.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.41	0	DNS
Lynnhaven River	1.29	1805	1649	142.49	6.69	296.90	122.47	568.55	320.18	0.00	9.94	3.50	5.16	0.00	0.00	36.58	0.00	0.00	0.00	84.53	108.66	29	5/18, 6/19-21, 7/16/2012
North Bay	0.00	39	0	0.00	577.72	22.42	149.65	749.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	749.79	0	DNS
North Landing River	0.50	109	92	53.66	2571.93	7.69	125.26	2758.54	0.00	0.00	0.13	0.00	1034.74	12.00	0.33	187.59	0.00	0.00	808.90	0.00	714.84	70	5/31/2012
Pocaty River	0.00	3	3	0.00	0.00	1.32	0.00	1.32	0.00	0.00	0.00	0.00	1.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33	5/31/2012
Rudee Inlet	0.16	43	36	45.32	0.00	6.88	5.82	58.02	31.34	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.60	17	5/15/2012
Ships Bay	0.00	92	0	0.00	163.77	167.46	644.84	976.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	976.07	0	DNS
Upper North Landing River	0.00	14	14	5.44	2.66	0.87	0.06	9.03	0.00	0.00	0.00	0.00	4.56	0.44	0.00	3.37	0.00	0.00	0.66	0.00	0.00	29	6/1/2012
West Neck Creek	0.00	57	57	3.68	35.35	15.17	0.13	54.33	0.00	0.00	0.00	0.00	22.11	6.42	4.48	0.11	0.00	0.00	21.20	0.00	0.00	42	6/1/2012
Total	17.78	2936	2228	397.63	6736.3	1467.85	2760.71	11362.5	420.5	0.92	38.97	9.55	1207.3	18.86	4.81	234.77	0.00	0.00	963.07	287.66	8176.07		

\*\*DNS = Did Not Survey

- <sup>1</sup>Community Type:
- I = Saltmarsh Cordgrass / low marsh  
II = Saltmeadow / high marsh  
III = Black Needlerush  
IV = Saltbush  
V = Big Cordgrass  
VI = Cattail

VII = Arrow Arum – Pickerel Weed  
VIII = Reed Grass (*Phragmites australis*)  
IX = Yellow Pond Lily  
X = Saltwort  
XI = Freshwater mix  
XII = Brackish mix

<sup>2</sup>Type VIII - Field checked marshes where *Phragmites australis* was estimated to cover >50% marsh area.

<sup>3</sup>Phragmites - percent of field checked marshes where *Phragmites australis* is present in any amount.

Table 8. City of Virginia Beach, Virginia Shoreline Attributes - Shoreline Features and Inventory Survey Dates - River System Summary

RIVER SYSTEM	TOTAL* MILES SURVEYED	No.																
		No. docks	dilapidated docks	No. boathouses	No. ramps		No. groinfields	No. marinas		No. jetties	No. breakwater <sup>1</sup>	Miles of debris	Miles of unconventional	Miles of bulkhead	Miles of dilapidated bulkhead	Miles of marsh toe revetment	Miles of riprap	Miles of wharf
Ashville Bridge Creek	42.26	161	0	2	13	2	0	0	0	0	0	0.00	0.05	2.13	0.00	0.05	0.20	0.00
Back Bay	99.27	25	3	2	2	2	0	1	0	0	2	0.00	0.06	0.28	0.00	0.00	0.00	0.01
Blackwater Creek	20.53	13	0	1	1	0	0	0	0	0	0	0.00	0.00	0.12	0.00	0.00	0.00	0.00
Broad Bay	84.65	1241	5	61	38	1	2	12	5	0	0	0.43	0.43	35.14	0.24	0.80	20.24	1.83
Chesapeake Bay	9.84	2	0	0	0	0	0	0	0	3	2	0.00	0.00	0.49	0.00	0.00	0.28	0.00
Eastern Branch Elizabeth River	23.97	146	8	14	31	0	0	0	0	1	0	0.05	0.77	2.65	0.18	0.00	1.76	0.00
Little Creek	7.78	8	0	0	0	0	0	2	4	2	0	0.00	0.00	0.14	0.00	0.00	1.50	0.00
Lynnhaven River	146.93	1203	41	126	58	3	1	2	0	2	1	0.50	1.37	20.76	1.47	0.12	12.41	0.20
North Bay	21.92	320	0	11	90	0	0	0	0	0	2	0.00	0.18	4.88	0.00	0.00	1.71	0.00
North Landing River	99.42	34	4	1	7	1	0	0	0	0	1	0.34	0.19	1.03	0.22	0.00	0.26	0.04
Pocaty River	2.56	0	0	0	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rudee Inlet	9.57	131	0	0	0	4	0	1	2	0	0	0.16	0.00	1.71	0.00	0.21	2.13	0.04
Ships Bay	21.29	74	0	0	2	2	0	1	0	0	0	0.00	0.00	1.90	0.00	0.00	0.00	0.03
Upper North Landing River	7.09	6	1	0	0	2	0	0	0	0	0	0.00	0.32	0.12	0.06	0.00	0.00	0.03
West Neck Creek	34.99	1	0	0	0	1	0	1	0	0	0	0.00	0.08	0.04	0.00	0.00	0.00	0.00
Total	632.07	3365	62	218	242	18	3	20	11	8	8	1.48	3.45	71.39	2.17	1.18	40.49	2.18

\*Total = field + remote surveys (does not include marsh island shoreline)

<sup>1</sup> number of breakwater groups (one or more breakwaters within a group)