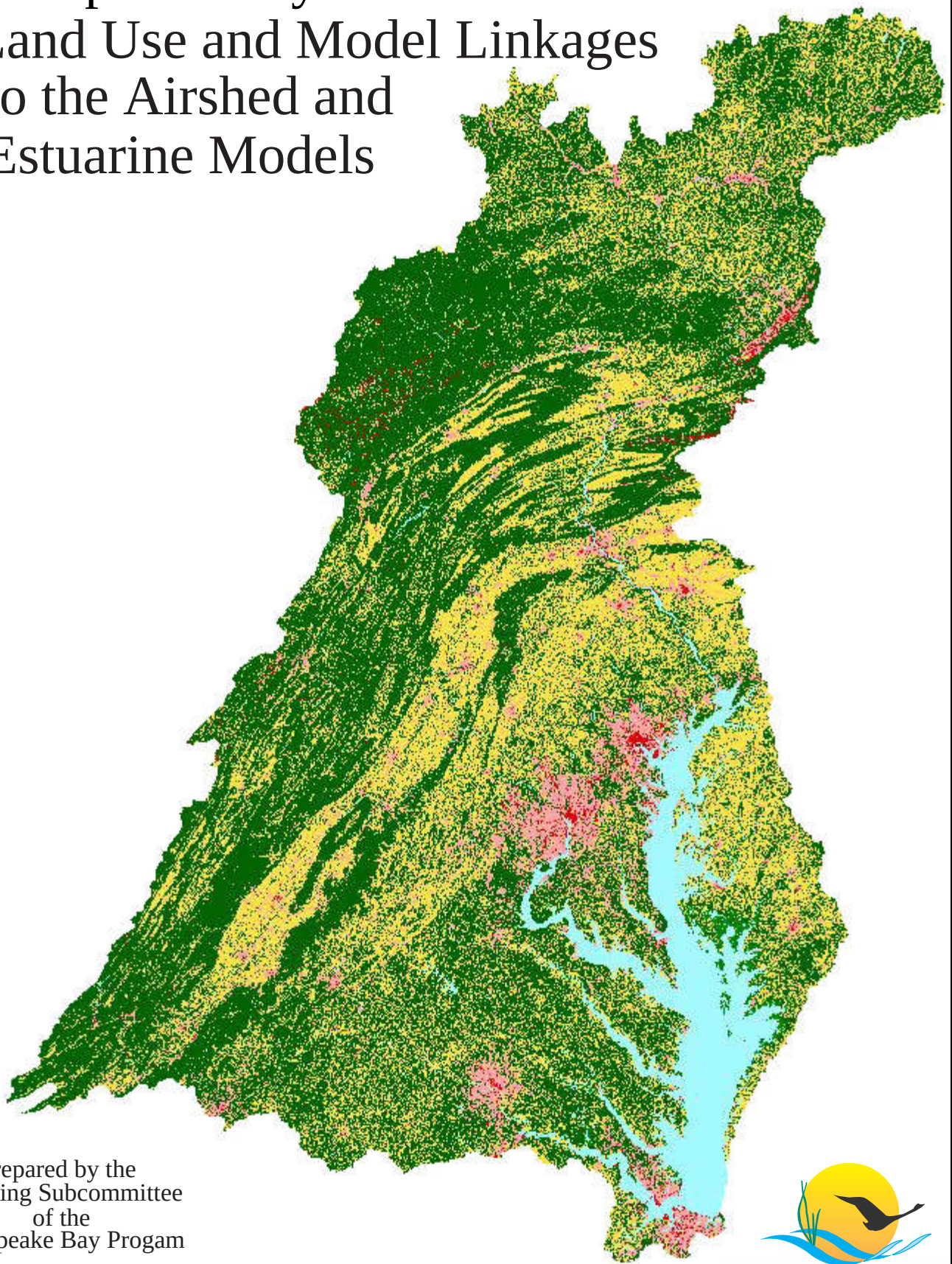


Chesapeake Bay Watershed Model Land Use and Model Linkages to the Airshed and Estuarine Models



Prepared by the
Modeling Subcommittee
of the
Chesapeake Bay Program

January 2000



CHESAPEAKE BAY WATERSHED MODEL LAND USES AND LINKAGES TO THE AIRSHED AND ESTUARINE MODELS

A Report of the
Modeling Subcommittee
Chesapeake Bay Program Office
Annapolis, MD

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Section 1. Phase 4.2 Watershed Model (WSM) Segmentation

The Chesapeake Bay watershed covers just over 41million acres. The area stretches from southern New York, through Pennsylvania, Maryland, and Washington D.C., to southern Virginia. It includes portions of Delaware and West Virginia on its eastern and western borders, respectively (Figure 1). The Chesapeake Bay watershed is comprised of eight major basins or sub-watersheds. These smaller watersheds drain the Susquehanna, Patuxent, Potomac, Rappahannock, York, and James rivers as well as the Eastern and Western Bay shores, which are comprised of many smaller rivers and creeks (Figure 2).

The Chesapeake Bay watershed can be further divided into sub-watersheds based on state hydrologic units, known as HUCS. State, federal, and local government agencies use hydrologic units for hydrologic planning and management. Although hydrologic units are delineated roughly to follow watershed lines, they are intended for administrative use rather than to identify surface water drainage patterns. New York, Pennsylvania, Maryland, Delaware, Virginia, and West Virginia provide hydrologic unit data to the Chesapeake Bay Program. The boundaries provided by Delaware are not officially recognized hydrologic units but are watershed boundaries. Adjacent hydrologic units that terminated at state boundaries were aggregated by the Chesapeake Bay Program to approximate entire sub-watersheds. There are just over 500 hydrologic units at the 11-digit HUCS level (Figure 3).

Small but relatively homogenous hydrologic units are aggregated into larger watershed areas, or model segments, for ease of model calculation. Model segment size is dictated by terrain and soil properties, location of model calibration stations, model computation time, and availability of pertinent model input data. Model segments containing calibration stations are occasionally altered slightly from their original hydrologic boundaries so that their downstream edge coincides with the U.S. Geological Survey (USGS) water quality monitoring station. This process resulted in 89 watershed model segments for the Chesapeake Bay (Figure 4). The tidal shoreline of the model segments come from the National Oceanographic and Atmospheric Administration (NOAA) data and satellite imagery and was delineated at (1:10000 to 1:80000).

Model segments are subdivided into above and below fall line segments. Both above and below fall line segments simulate land processes associated with edge of stream nutrient and sediment loads. Above fall line segments have edge of stream loads which are delivered to the Bay's non-tidal rivers. These model segments also simulate riverine processes through which loads are delivered downstream to the Bay. There are 43 above fall line segments covering 32.5 million acres (Figure 5). Below fall line segments are adjacent to the Bay where free flowing rivers are too small to be simulated. Edge of stream loads in below fall line segments are delivered directly to the Bay. There are 46 below fall line segments that cover 8.5 million acres (Figure 6).

Geographic Information Systems (GIS) data are maintained spatially in a file called a cover or a shape file. Some data are not available in spatial GIS databases, but rather are in traditional tabular format such as the county-based Agricultural Census data from the

U.S. Department of Agriculture (USDA). The Watershed Model requires input data on a segment basis. In order to distribute county based data into segments, a new cover of county-segments (Cosegs) is created, formed by the union of a cover of county lines (from the USGS) and our cover of segment lines. The new cover contains county-segments (Coseg), which are the smallest units that can be formed both with county and segment boundaries (Figure 7). Each county-segment has a unique identifying number devised from the model segment number and the county FIPS code. One model segment, for example, might contain parts of four counties, and thus would be comprised of four cosegs, each with the same segment number but different FIPS codes. Likewise, a county might cross two segments and would be comprised of two cosegs with the same FIPS code but different segment numbers. Figures 8.1 – 8.8 show the segment and county lines by major Chesapeake Bay basin. Table 1 can be used to look up coseg numbers by segment number and county name.

Figure 1

Location of the Chesapeake Bay Watershed in the Mid-Atlantic States



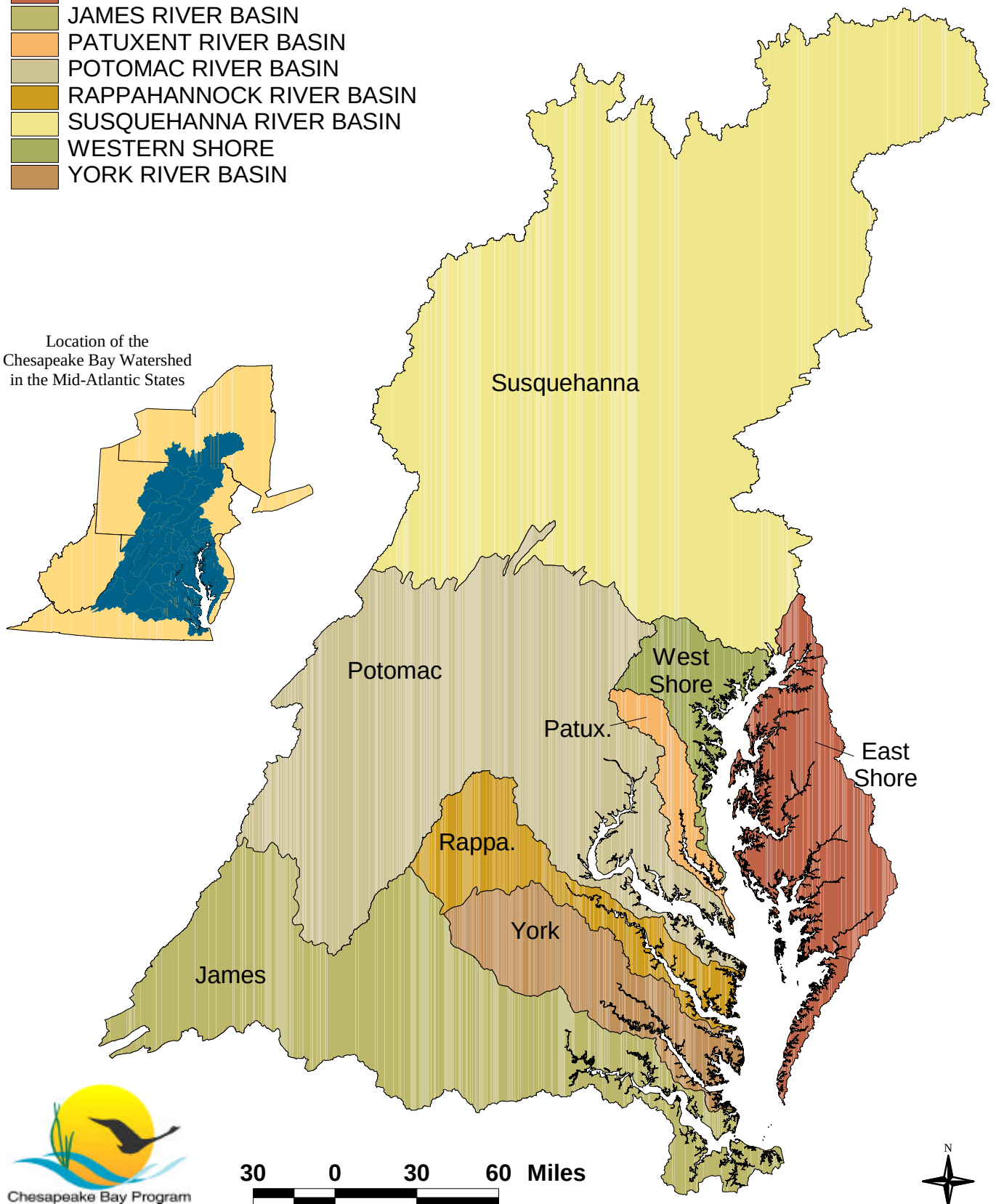
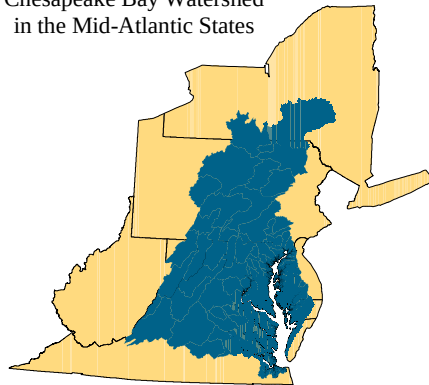
50 0 50 100 Miles



Major Basins of the Chesapeake Bay Watershed

- EASTERN SHORE
- JAMES RIVER BASIN
- PATUXENT RIVER BASIN
- POTOMAC RIVER BASIN
- RAPPAHANNOCK RIVER BASIN
- SUSQUEHANNA RIVER BASIN
- WESTERN SHORE
- YORK RIVER BASIN

Location of the
Chesapeake Bay Watershed
in the Mid-Atlantic States



30 0 30 60 Miles



Chesapeake Bay Program

11 Digit HUCS

Location of the
Chesapeake Bay Watershed
in the Mid-Atlantic States

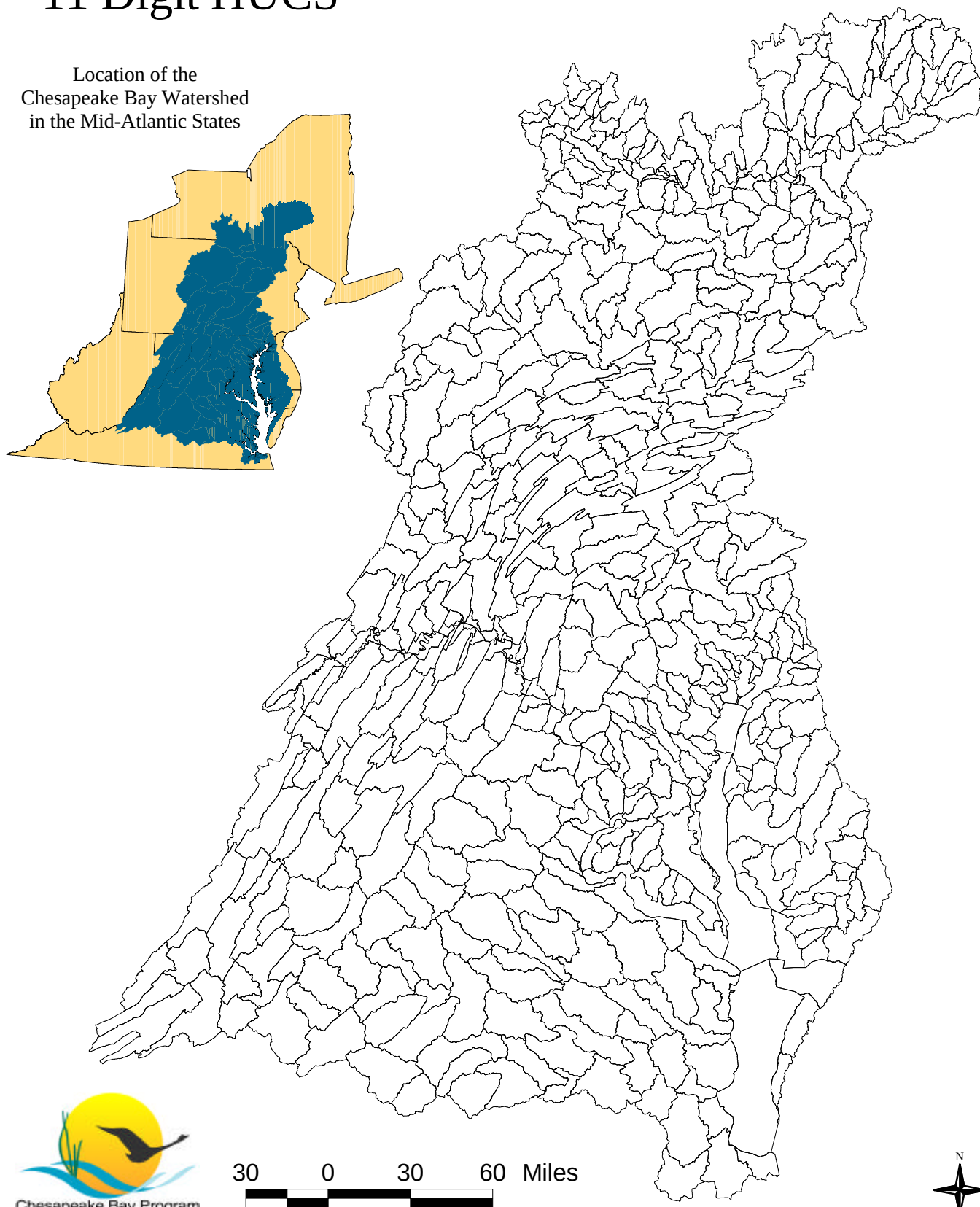


Figure 4

Above and Below Fall Line Segments in the Phase 4.2 Chesapeake Bay Watershed Model

Location of the
Chesapeake Bay Watershed
in the Mid-Atlantic States

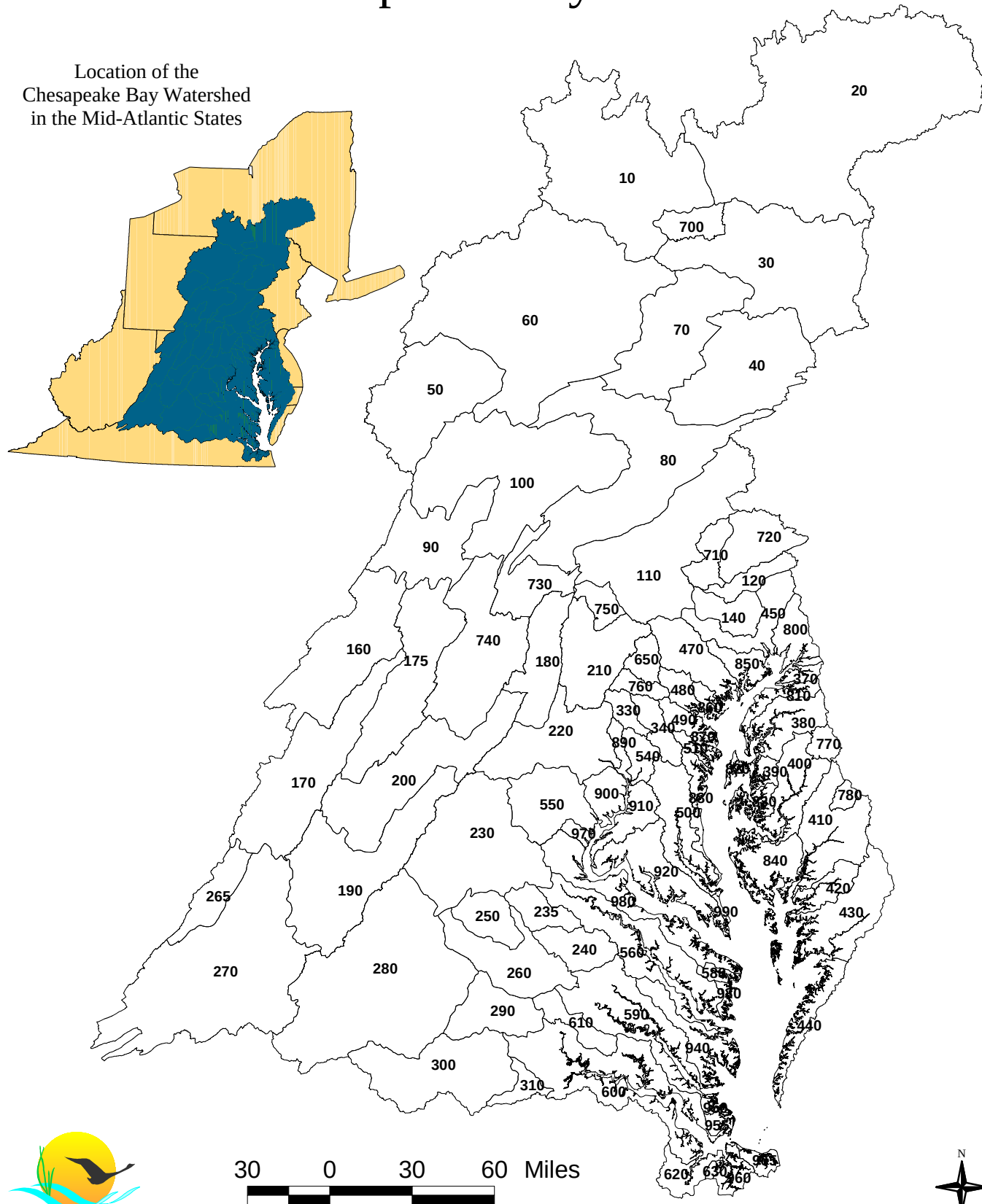
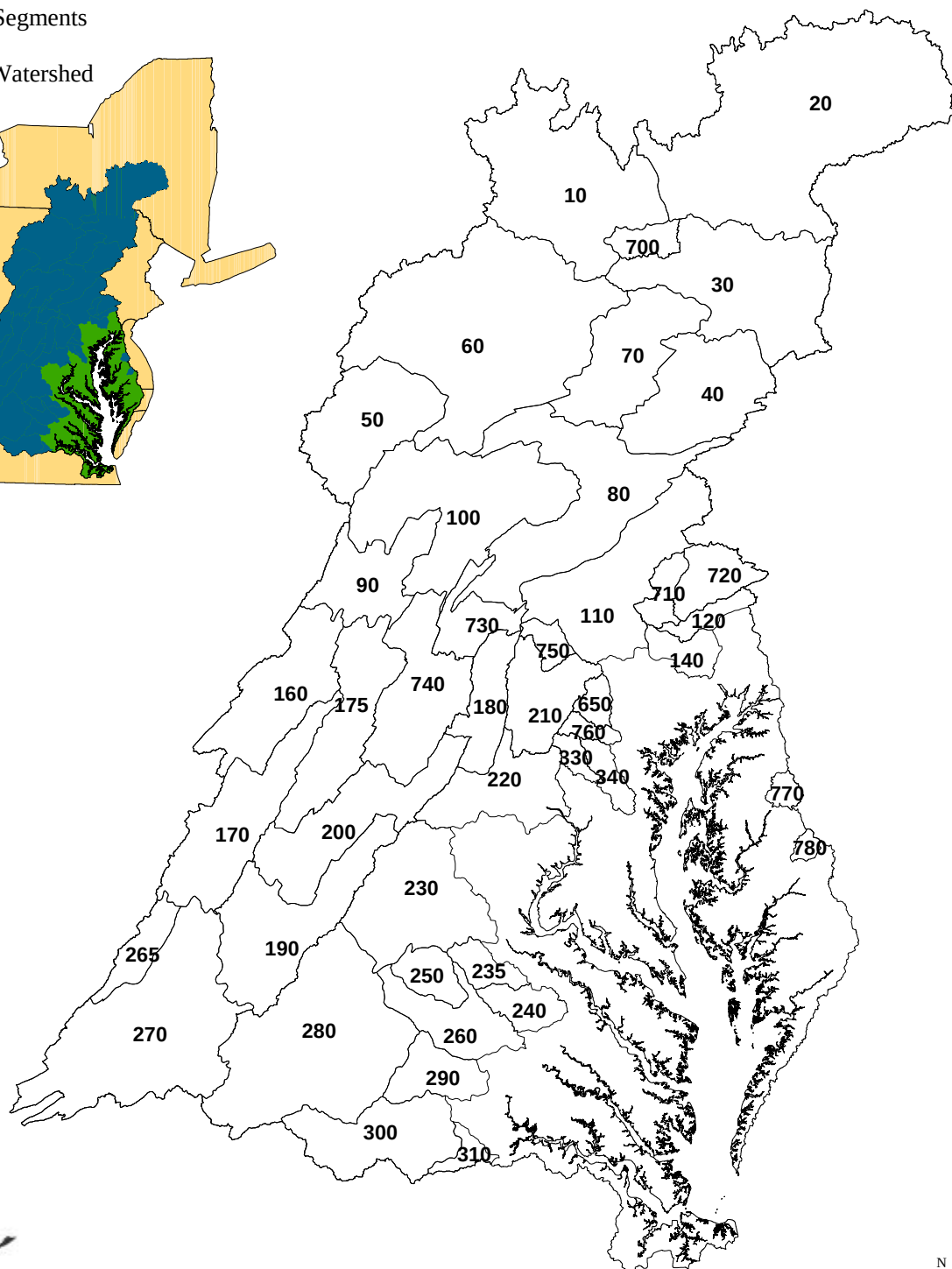
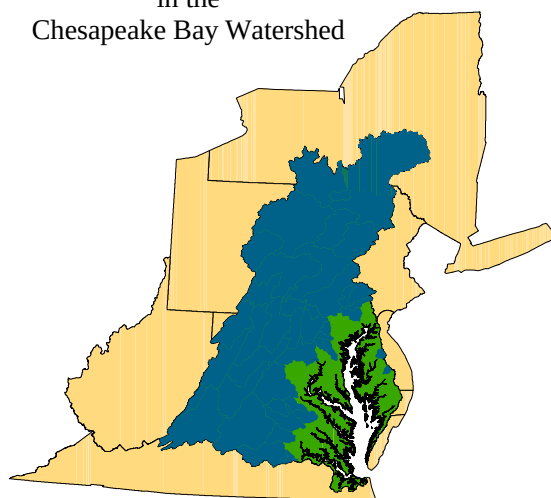


Figure 5

Above Fall Line Segments in the Phase 4.2 Chesapeake Bay Watershed Model

Location of the
Above Fall Line Segments
in the
Chesapeake Bay Watershed



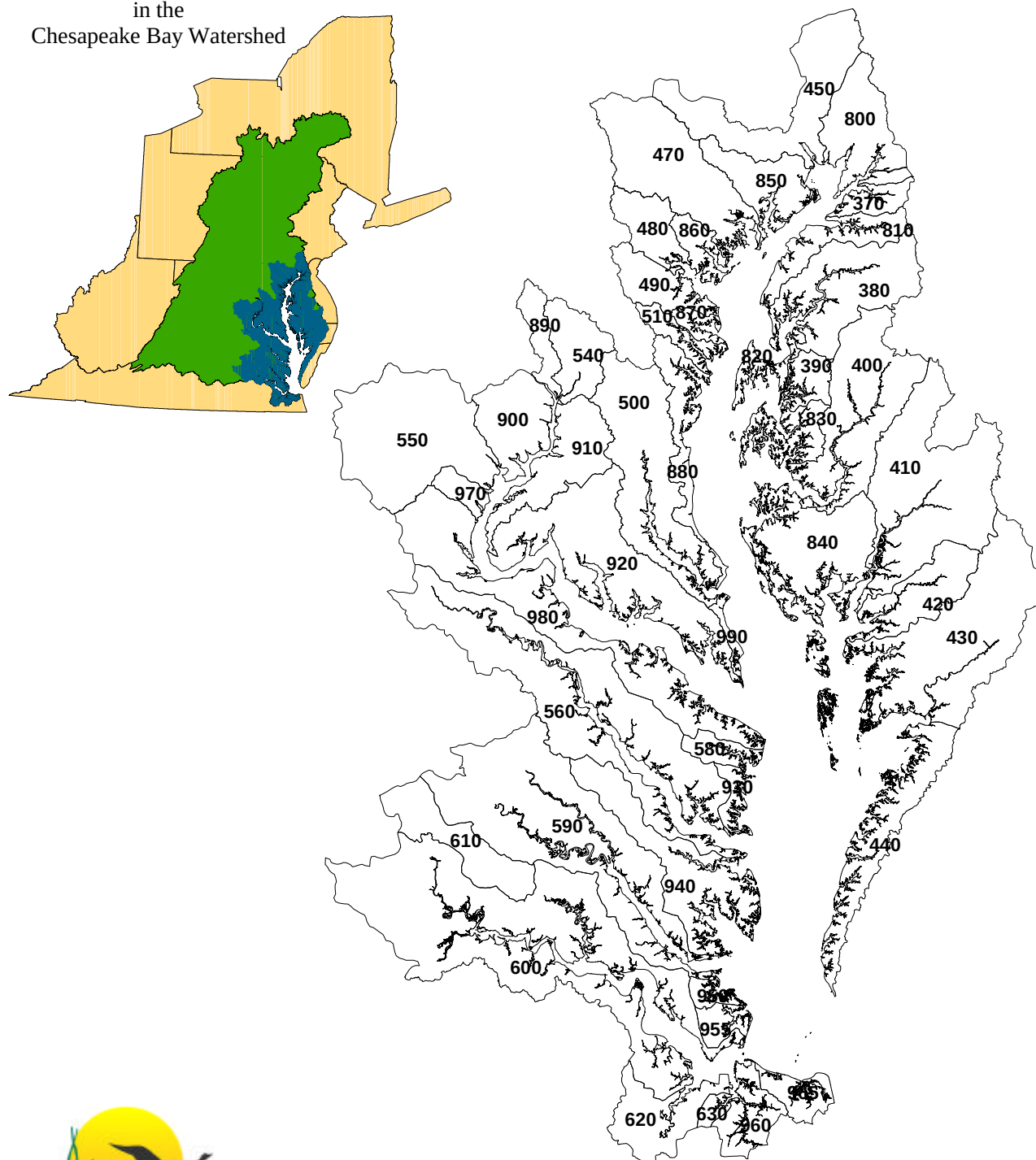
30 0 30 60 Miles



Figure 6

Below Fall Line Segments in the Phase 4.2 Chesapeake Bay Watershed Model

Location of the
Below Fall Line Segments
in the
Chesapeake Bay Watershed



10 0 10 20 Miles



Figure 7

County-Segments in the Phase 4.2 Chesapeake Bay Watershed Model

Location of the
Chesapeake Bay Watershed
in the Mid-Atlantic States

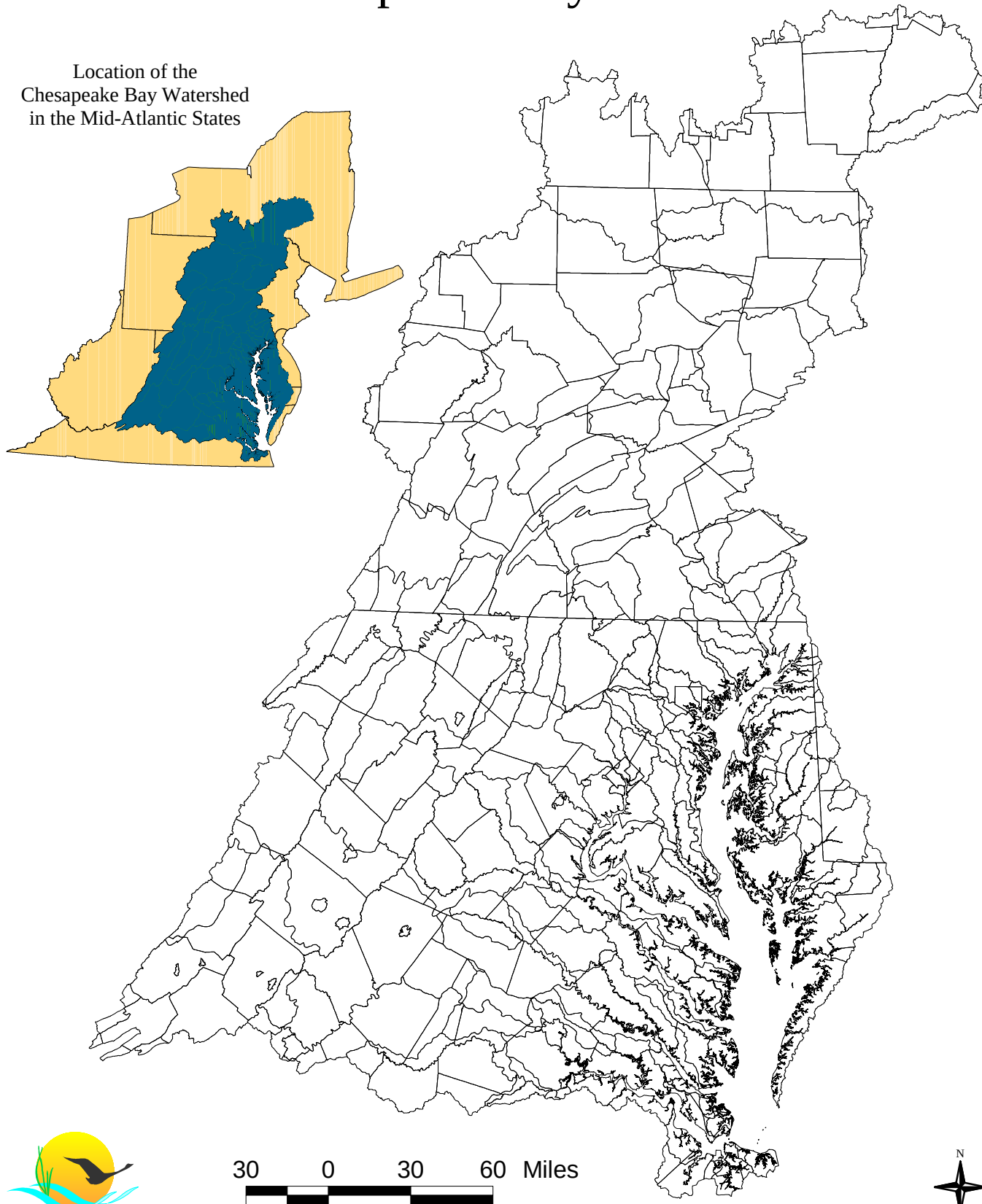


Figure 8.1

Susquehanna River Basin

Watershed Model Segments with State and County Boundaries

-  State Boundary
-  WSM Segments and Contiguous County Lines
-  County Lines

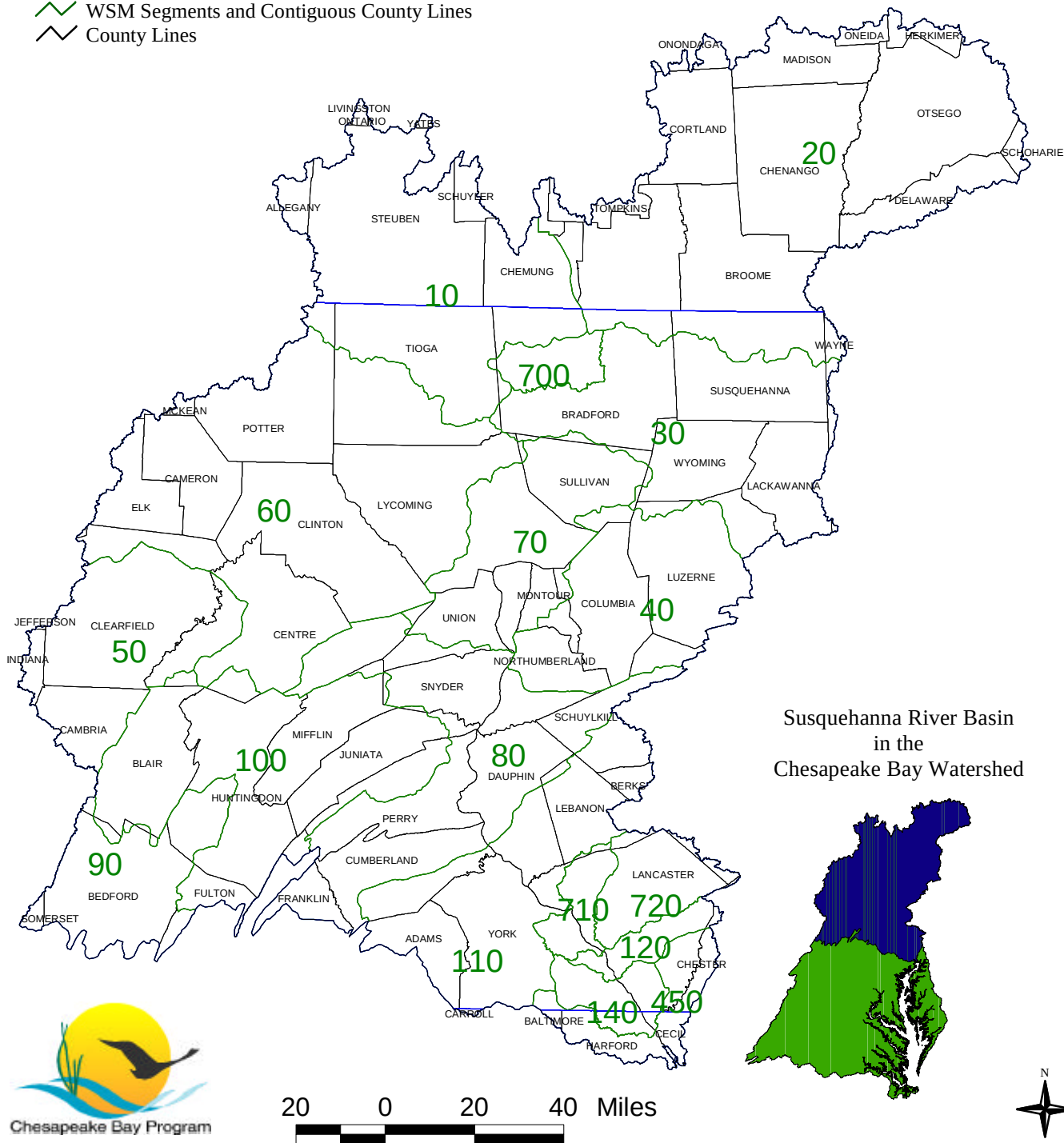


Figure 8.2

Patuxent River Basin

Watershed Model Segments with State and County Boundaries

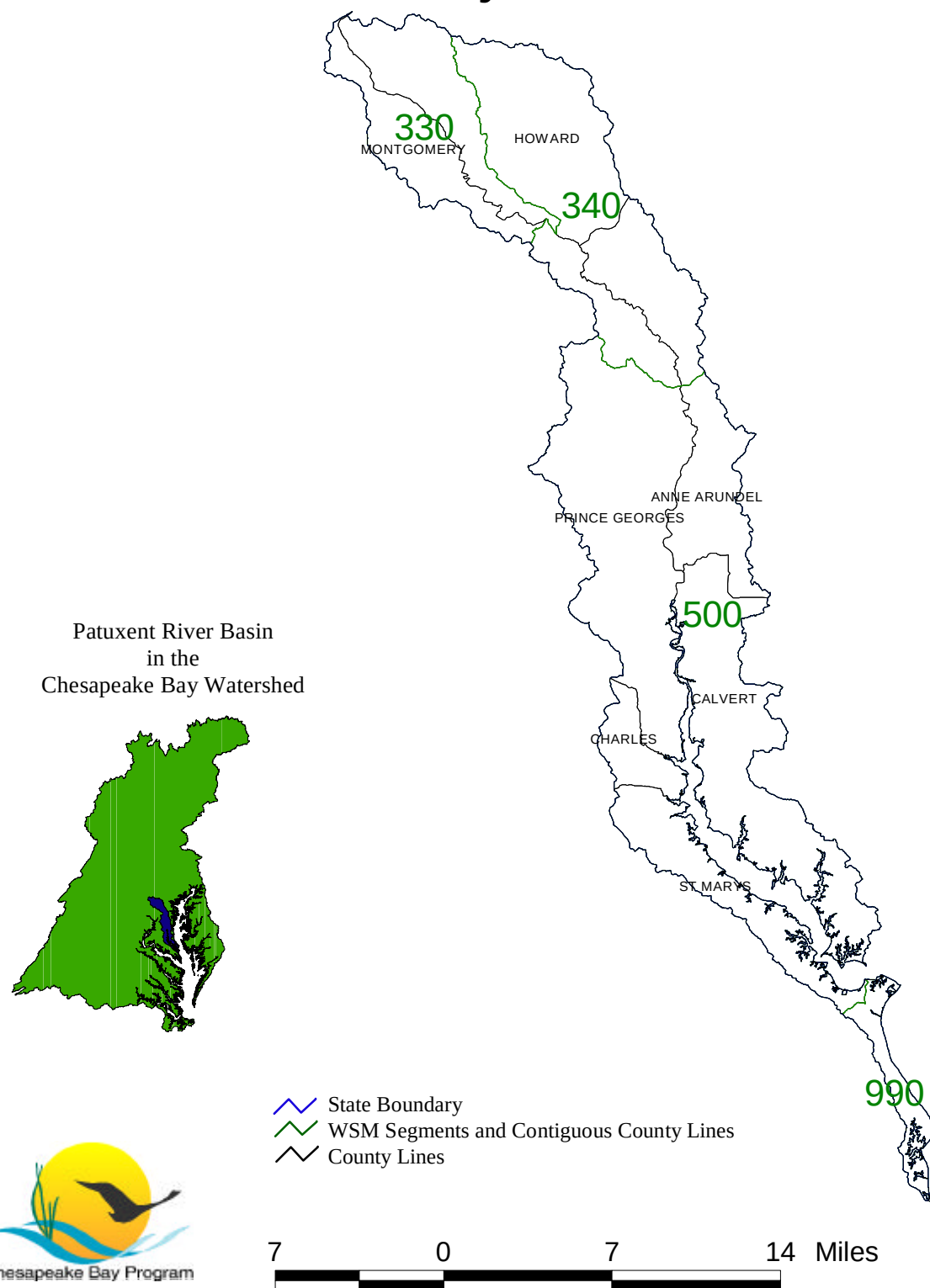


Figure 8.3

Potomac River Basin

Watershed Model Segments with State and County Boundaries

Potomac River Basin
in the
Chesapeake Bay Watershed

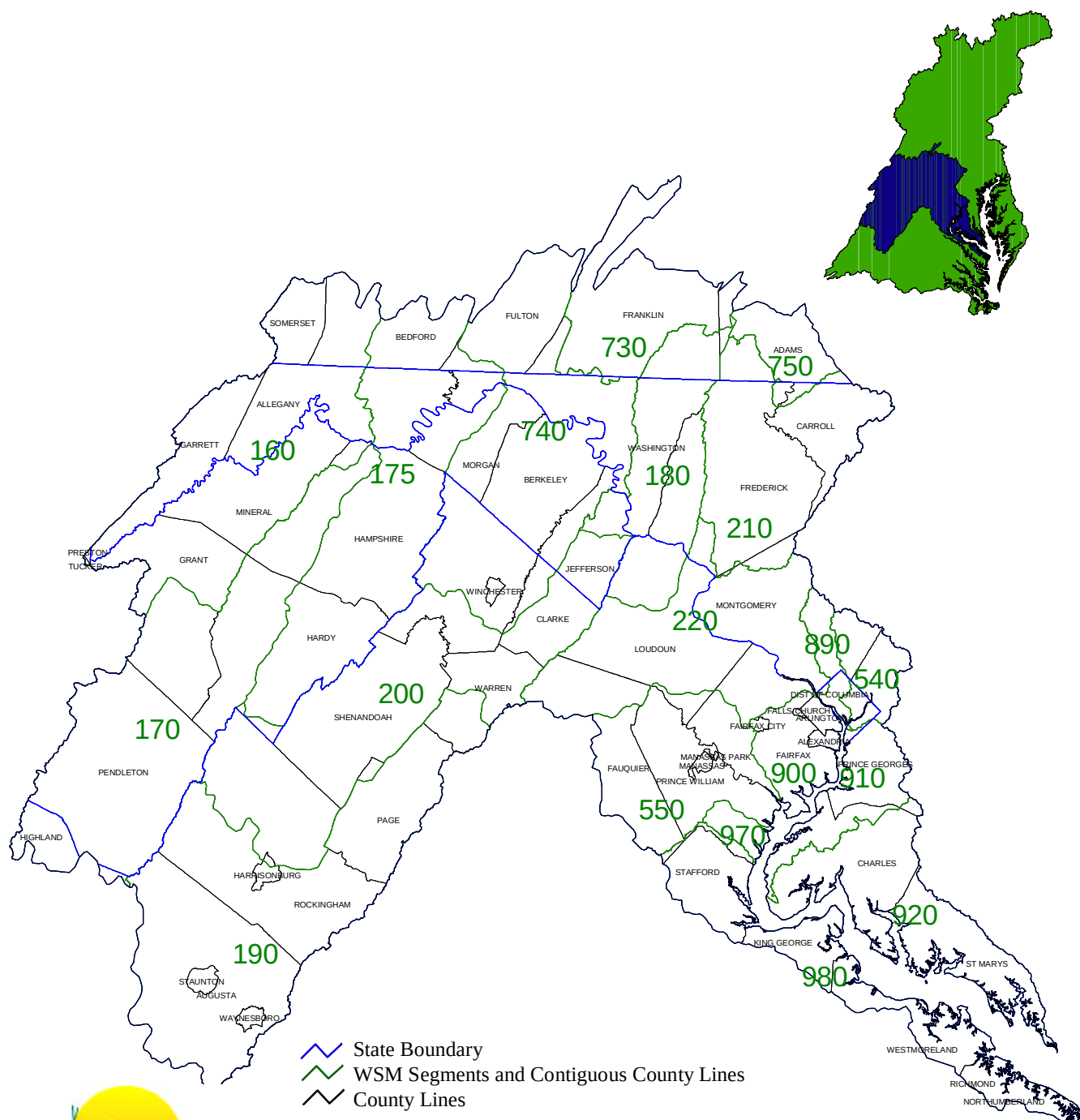
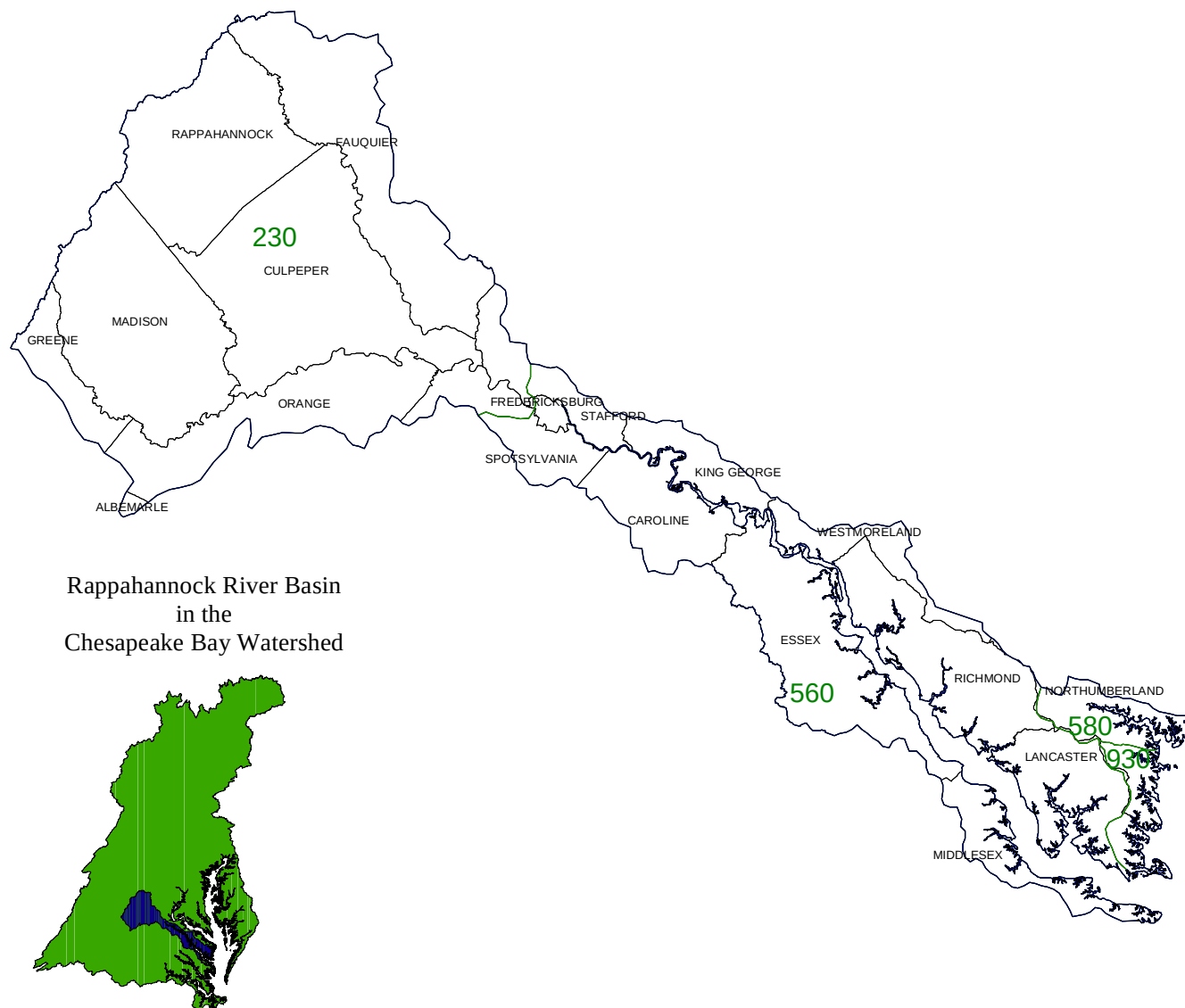


Figure 8.4

Rappahannock River Basin

Watershed Model Segments with State and County Boundaries



-  State Boundary
-  WSM Segments and Contiguous County Lines
-  County Lines

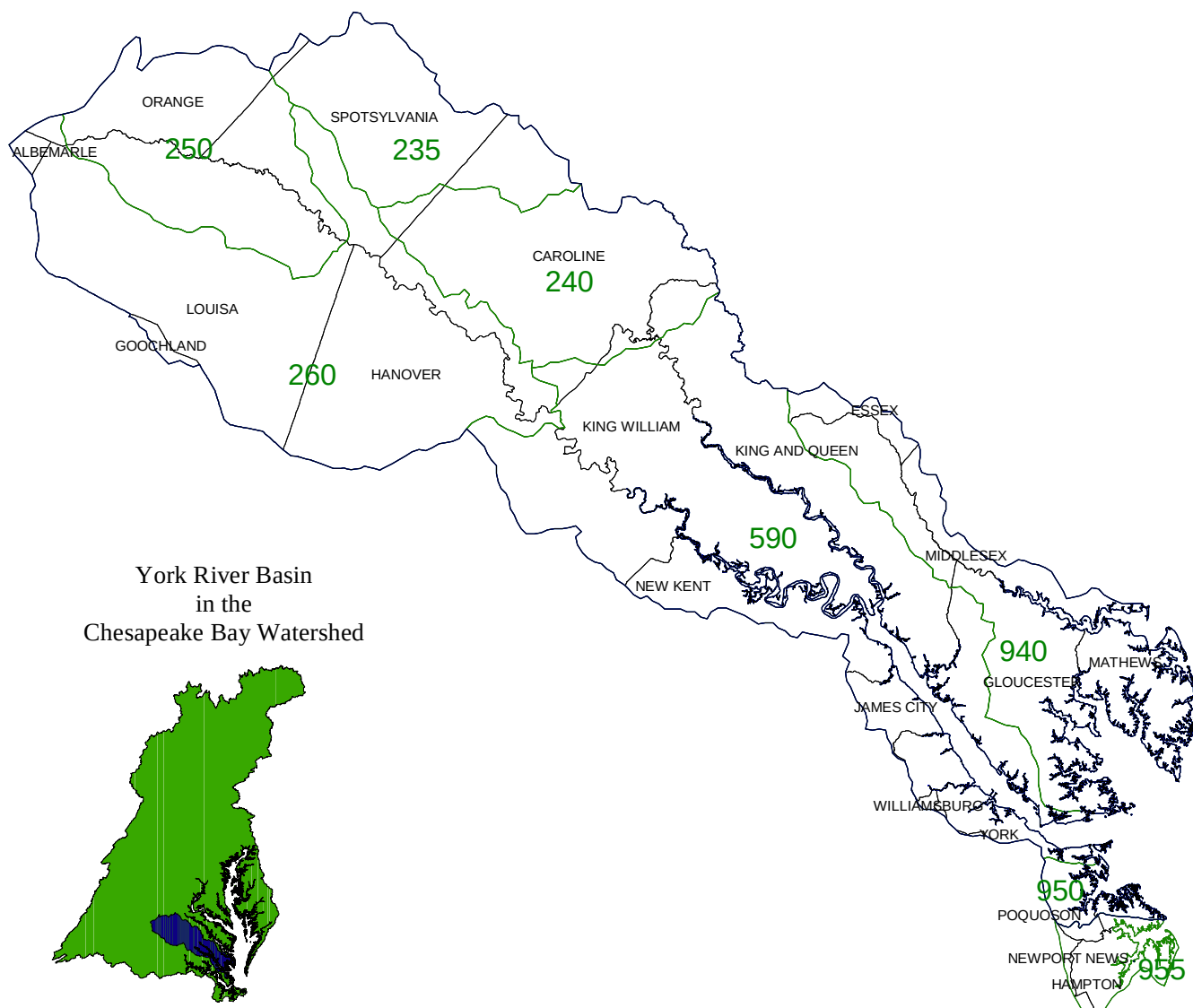
9 0 9 18 Miles



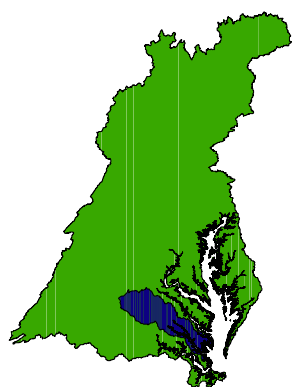

Figure 8.5

York River Basin

Watershed Model Segments with State and County Boundaries



York River Basin
in the
Chesapeake Bay Watershed



-  State Boundary
-  WSM Segments and Contiguous County Lines
-  County Lines



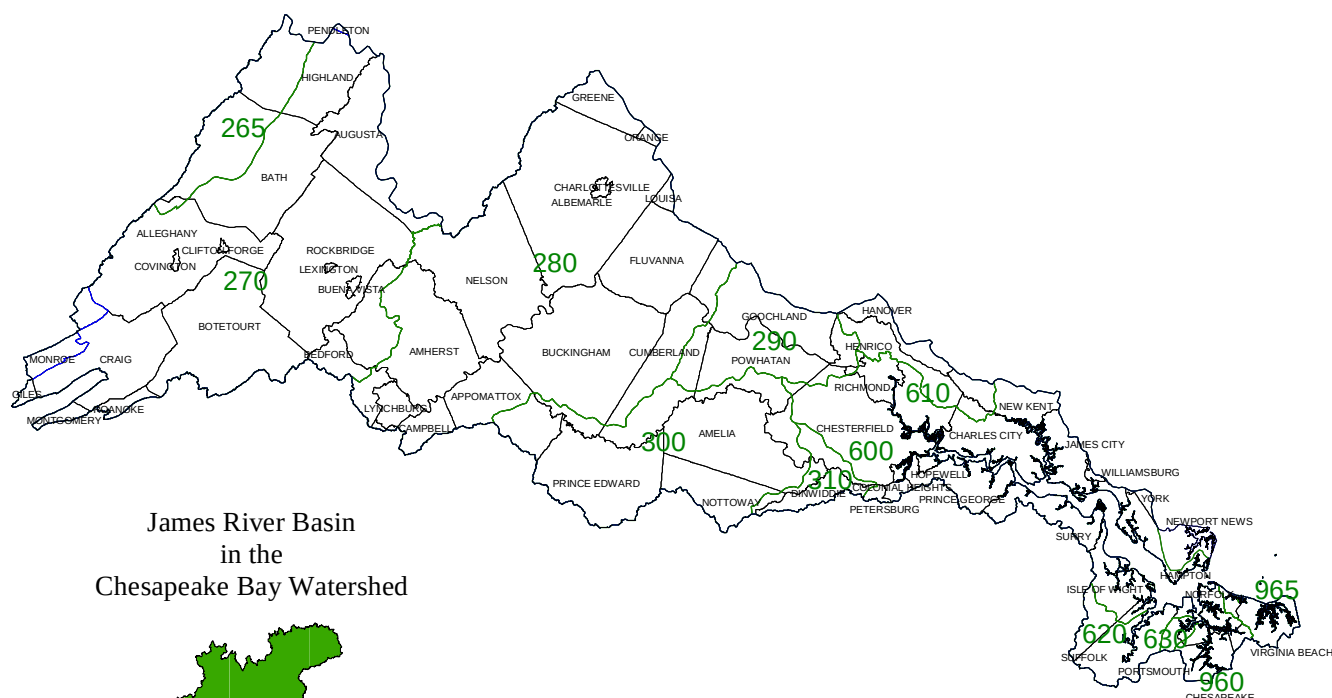
9 0 9 18 Miles



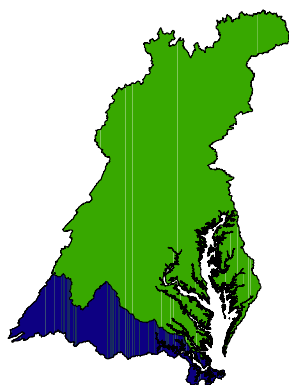

Figure 8.6

James River Basin

Watershed Model Segments with State and County Boundaries



James River Basin
in the
Chesapeake Bay Watershed



- State Boundary
- WSM Segments and Contiguous County Lines
- County Lines



20 0 20 40 Miles



Figure 8.7

Western Shore River Basins

Watershed Model Segments with State and County Boundaries

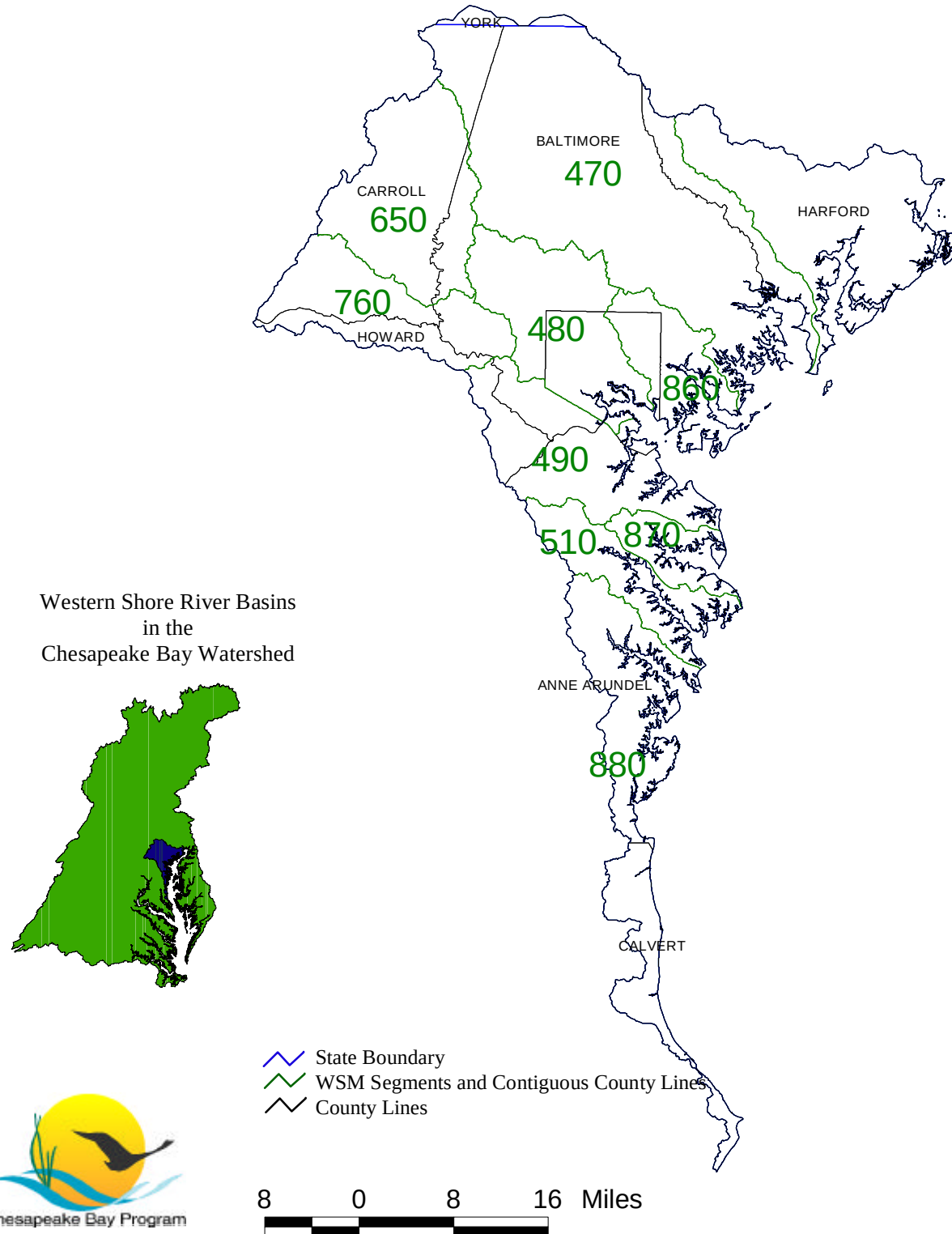
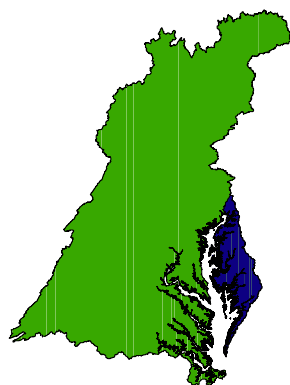


Figure 8.8

Eastern Shore River Basins

Watershed Model Segments with State and County Boundaries

Eastern Shore River Basins
in the
Chesapeake Bay Watershed



-  State Boundary
-  WSM Segments and Contiguous County Lines
-  County Lines

20 0 20 40 Miles

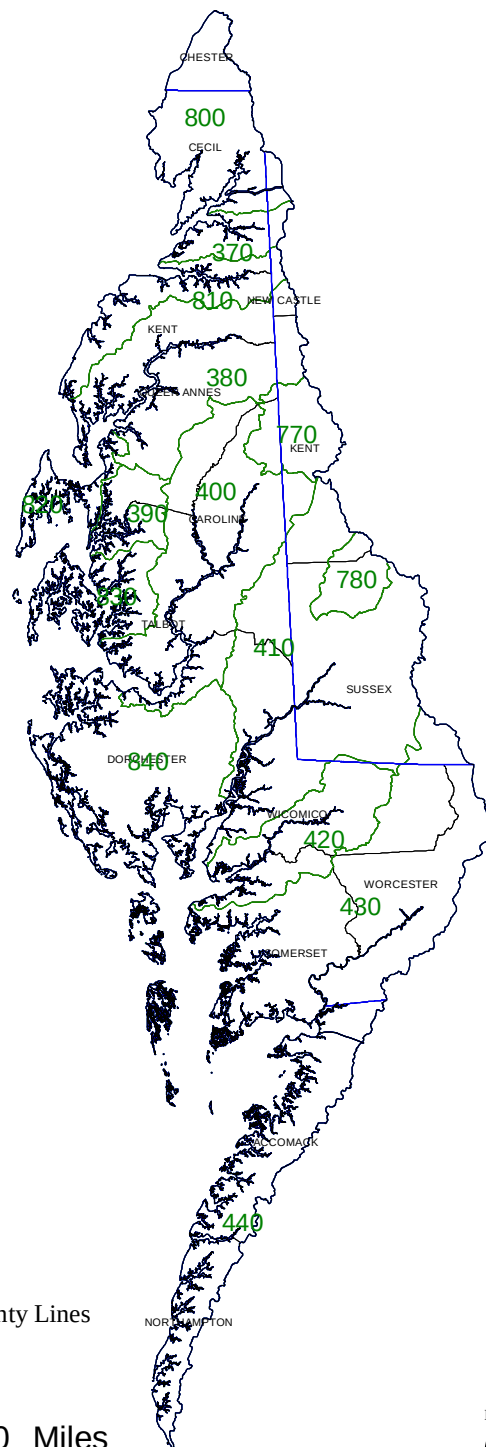



Table 1. County Segments by Basin, State, County, and Segment

Basin	State	County	SEG	COSEG	Basin	State	County	SEG	COSEG	Basin	State	County	SEG	COSEG
Susq. MD	BALTIMORE		450	450024005	Susq. PA	LEBANON		710	710042075	Potomac MD	PRINCE GEORGES		920	920024033
Susq. MD	CARROLL		110	110024013	Susq. PA	LEBANON		720	720042075	Potomac MD	ST MARYS		920	920024037
Susq. MD	CECIL		140	140024015	Susq. PA	LUZERNE		30	30042079	Potomac MD	WASHINGTON		175	175024043
Susq. MD	CECIL		450	450024015	Susq. PA	LUZERNE		40	40042079	Potomac MD	WASHINGTON		180	180024043
Susq. MD	HARFORD		140	140024025	Susq. PA	LYCOMING		30	30042081	Potomac MD	WASHINGTON		730	730024043
Susq. MD	HARFORD		450	450024025	Susq. PA	LYCOMING		60	60042081	Potomac MD	WASHINGTON		740	740024043
Susq. NY	ALLEGANY		10	10036003	Susq. PA	LYCOMING		70	70042081	Potomac PA	ADAMS		180	180042001
Susq. NY	BROOME		20	20036007	Susq. PA	MCKEAN		60	60042083	Potomac PA	ADAMS		210	210042001
Susq. NY	CHEMUNG		10	10036015	Susq. PA	MIFFLIN		80	80042087	Potomac PA	ADAMS		730	730042001
Susq. NY	CHEMUNG		20	20036015	Susq. PA	MIFFLIN		100	100042087	Potomac PA	ADAMS		750	750042001
Susq. NY	CHENANGO		20	20036017	Susq. PA	MONTOUR		40	40042093	Potomac PA	BEDFORD		160	160042009
Susq. NY	CORTLAND		20	20036023	Susq. PA	MONTOUR		70	70042093	Potomac PA	BEDFORD		175	175042009
Susq. NY	DELAWARE		20	20036025	Susq. PA	NORTHUMBERLAND		40	40042097	Potomac PA	FRANKLIN		180	180042055
Susq. NY	HERKIMER		20	20036043	Susq. PA	NORTHUMBERLAND		70	70042097	Potomac PA	FRANKLIN		730	730042055
Susq. NY	LIVINGSTON		10	10036051	Susq. PA	NORTHUMBERLAND		80	80042097	Potomac PA	FRANKLIN		740	740042055
Susq. NY	MADISON		20	20036053	Susq. PA	PERRY		80	80042099	Potomac PA	FULTON		175	175042057
Susq. NY	ONEIDA		20	20036065	Susq. PA	PERRY		100	100042099	Potomac PA	FULTON		740	740042057
Susq. NY	ONONDAGA		20	20036067	Susq. PA	POTTER		10	10042105	Potomac PA	SOMERSET		160	160042111
Susq. NY	ONTARIO		10	10036069	Susq. PA	POTTER		60	60042105	Potomac VA	ALEXANDRIA CITY		900	900051510
Susq. NY	OTSEGO		20	20036077	Susq. PA	SCHUYLKILL		40	40042107	Potomac VA	ARLINGTON CITY		220	220051013
Susq. NY	SCHOHARIE		20	20036095	Susq. PA	SCHUYLKILL		80	80042107	Potomac VA	ARLINGTON CITY		900	900051013
Susq. NY	SCHUYLER		10	10036097	Susq. PA	SCHUYLKILL		110	110042107	Potomac VA	AUGUSTA		190	190051015
Susq. NY	SCHUYLER		20	20036097	Susq. PA	SNYDER		80	80042109	Potomac VA	CLARKE		200	200051043
Susq. NY	STEUBEN		10	10036101	Susq. PA	SNYDER		100	100042109	Potomac VA	CLARKE		740	740051043
Susq. NY	TIOGA		20	20036107	Susq. PA	SOMERSET		90	90042111	Potomac VA	FAIRFAX		220	220051059
Susq. NY	TOMPKINS		20	20036109	Susq. PA	SULLIVAN		30	30042113	Potomac VA	FAIRFAX		550	550051059
Susq. NY	YATES		10	10036123	Susq. PA	SULLIVAN		40	40042113	Potomac VA	FAIRFAX		900	900051059
Susq. PA	ADAMS		110	110042001	Susq. PA	SULLIVAN		60	60042113	Potomac VA	FAIRFAX CITY		900	900051600
Susq. PA	BEDFORD		90	90042009	Susq. PA	SULLIVAN		70	70042113	Potomac VA	FALLS CHURCH CITY		900	900051610
Susq. PA	BEDFORD		100	100042009	Susq. PA	SUSQUEHANNA		20	20042115	Potomac VA	FAUQUIER		220	220051061
Susq. PA	BERKS		110	110042011	Susq. PA	SUSQUEHANNA		30	30042115	Potomac VA	FAUQUIER		550	550051061
Susq. PA	BERKS		720	720042011	Susq. PA	TIOGA		10	10042117	Potomac VA	FAUQUIER		980	980051061
Susq. PA	BLAIR		90	90042013	Susq. PA	TIOGA		30	30042117	Potomac VA	FREDERICK		200	200051069
Susq. PA	BLAIR		100	100042013	Susq. PA	TIOGA		60	60042117	Potomac VA	FREDERICK		740	740051069
Susq. PA	BRADFORD		10	10042015	Susq. PA	TIOGA		700	700042117	Potomac VA	HARRISONBURG CITY		190	190051660
Susq. PA	BRADFORD		20	20042015	Susq. PA	UNION		70	70042119	Potomac VA	HARRISONBURG CITY		200	200051660
Susq. PA	BRADFORD		30	30042015	Susq. PA	UNION		80	80042119	Potomac VA	HIGHLAND		170	170051091
Susq. PA	BRADFORD		70	70042015	Susq. PA	WAYNE		20	20042127	Potomac VA	KING GEORGE		980	980051099
Susq. PA	BRADFORD		700	700042015	Susq. PA	WAYNE		30	30042127	Potomac VA	LOUDOUN		180	180051107
Susq. PA	CAMBRIA		50	50042021	Susq. PA	WYOMING		30	30042131	Potomac VA	LOUDOUN		220	220051107
Susq. PA	CAMBRIA		90	90042021	Susq. PA	WYOMING		70	70042131	Potomac VA	LOUDOUN		550	550051107
Susq. PA	CAMERON		60	60042023	Susq. PA	YORK		110	110042133	Potomac VA	MANASSAS CITY		550	550051683
Susq. PA	CENTRE		50	50042027	Susq. PA	YORK		120	120042133	Potomac VA	MANASSAS PARK CITY		550	550051685
Susq. PA	CENTRE		60	60042027	Susq. PA	YORK		140	140042133	Potomac VA	NORTHUMBERLAND		980	980051133
Susq. PA	CENTRE		70	70042027	Susq. PA	YORK		450	450042133	Potomac VA	PAGE		190	190051139
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Susq. PA	CENTRE		100	100042027	Patuxent MD	ANNE ARUNDEL		340	340024003	Potomac VA	PRINCE WILLIAM		550	550051153
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Susq. PA	CHESTER		450	450042029	Patuxent MD	CALVERT		500	500024009	Potomac VA	PRINCE WILLIAM		980	980051153
Susq. PA	CHESTER		720	720042029	Patuxent MD	CHARLES		500	500024017	Potomac VA	RICHMOND		980	980051159
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Susq. PA	CLINTON		60	60042035	Patuxent MD	MONTGOMERY		330	330024031	Potomac VA	SHENANDOAH		200	200051171
Susq. PA	COLUMBIA		40	40042037	Patuxent MD	PRINCE GEORGES		340	340024033	Potomac VA	STAFFORD		980	980051179
Susq. PA	COLUMBIA		70	70042037	Patuxent MD	PRINCE GEORGES		500	500024033	Potomac VA	STAUNTON CITY		190	190051790
Susq. PA	CUMBERLAND		80	80042041	Patuxent MD	ST MARYS		500	500024037	Potomac VA	WARREN		190	190051187
Susq. PA	CUMBERLAND		110	110042041	Patuxent MD	ST MARYS		990	990024037	Potomac VA	WARREN		200	200051187
Susq. PA	DAUPHIN		80	80042043	Potomac DC	DISTRICT OF COLUMBIA		220	220011001	Potomac VA	WAYNESBORO CITY		190	190051820
Susq. PA	DAUPHIN		110	110042043	Potomac DC	DISTRICT OF COLUMBIA		540	540011001	Potomac VA	WESTMORELAND		980	980051193
Susq. PA	ELK		60	60042047	Potomac DC	DISTRICT OF COLUMBIA		890	890011001	Potomac VA	WINCHESTER CITY		740	740051840
Susq. PA	FRANKLIN		80	80042055	Potomac DC	DISTRICT OF COLUMBIA		900	900011001	Potomac WV	BERKELEY		740	740054003
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Susq. PA	FULTON		90	90042057	Potomac MD	ALLEGANY		160	160024001	Potomac WV	GRANT		170	170054023
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Susq. PA	HUNTINGDON		100	100042061	Potomac MD	CARROLL		750	750024013	Potomac WV	HAMPSHIRE		175	175054027
Susq. PA	INDIANA		50	50042063	Potomac MD	CHARLES		910	910024017	Potomac WV	HARDY		170	170054031
Susq. PA	JEFFERSON		50	50042065	Potomac MD	CHARLES		920	920024017	Potomac WV	HARDY		175	175054031
Susq. PA	JUNIATA		80	80042067	Potomac MD	FREDERICK		180	180024021	Potomac WV	HARDY		200	200054031
Susq. PA	JUNIATA		100	100042067	Potomac MD	FREDERICK		210	210024021	Potomac WV	JEFFERSON		180	180054037
Susq. PA	LACKAWANNA		30	30042069	Potomac MD	FREDERICK		220	220024021	Potomac WV	JEFFERSON		200	200054037
Susq. PA	LANCASTER		110	110042071	Potomac MD	FREDERICK		750	750024021	Potomac WV	JEFFERSON		740	740054037
Susq. PA	LANCASTER		120	120042071	Potomac MD	GARRETT		160	160024023	Potomac WV	MINERAL		160	160054057
Susq. PA	LANCASTER		140	140042071	Potomac MD	MONTGOMERY		210	210024031	Potomac WV	MORGAN		175	175054065
Susq. PA	LANCASTER		450	450042071	Potomac MD	MONTGOMERY		220	220024031	Potomac WV	MORGAN		740	740054065
Susq. PA	LANCASTER		710	710042071	Potomac MD	MONTGOMERY		540	540024031	Potomac WV	PENDLETON		170	170054071
Susq. PA	LANCASTER		720	720042071	Potomac MD	MONTGOMERY		890	890024031	Potomac WV	PRESTON		160	160054077
Susq. PA	LEBANON		80	80042075	Potomac MD	PRINCE GEORGES		540	540024033	Potomac WV	TUCKER		160	160054093
Susq. PA	LEBANON		110	110042075	Potomac MD	PRINCE GEORGES		910	910024033					

Table 1. County Segments by Basin, State, County, and Segment

Basin	State	County	SEG	COSEG	Basin	State	County	SEG	COSEG	Basin	State	County	SEG	COSEG
Rapp. VA	VA	ALBEMARLE	230	230051003	James VA	VA	CHARLES CITY	610	610051036	West Shore MD	MD	BALTIMORE	480	480024005
Rapp. VA	VA	CAROLINE	560	560051033	James VA	VA	CHARLOTTESVILLE CITY	280	280051540	West Shore MD	MD	BALTIMORE	490	490024005
Rapp. VA	VA	CULPEPER	230	230051047	James VA	VA	CHESAPEAKE CITY	630	630051550	West Shore MD	MD	BALTIMORE	650	650024005
Rapp. VA	VA	ESSEX	560	560051057	James VA	VA	CHESAPEAKE CITY	960	960051550	West Shore MD	MD	BALTIMORE	760	760024005
Rapp. VA	VA	FAUQUIER	230	230051061	James VA	VA	CHESTERFIELD	290	290051041	West Shore MD	MD	BALTIMORE	860	860024005
Rapp. VA	VA	FREDERICKSBURG CITY	230	230051630	James VA	VA	CHESTERFIELD	300	300051041	West Shore MD	MD	BALTIMORE CITY	480	480024510
Rapp. VA	VA	FREDERICKSBURG CITY	560	560051630	James VA	VA	CHESTERFIELD	310	310051041	West Shore MD	MD	BALTIMORE CITY	490	490024510
Rapp. VA	VA	GREENE	230	230051079	James VA	VA	CHESTERFIELD	600	600051041	West Shore MD	MD	BALTIMORE CITY	860	860024510
Rapp. VA	VA	KING GEORGE	560	560051099	James VA	VA	CLIFTON FORGE CITY	270	270051560	West Shore MD	MD	CALVERT	880	880024009
Rapp. VA	VA	LANCASTER	560	560051103	James VA	VA	COLONIAL HEIGHTS CITY	600	600051570	West Shore MD	MD	CARROLL	470	470024013
Rapp. VA	VA	LANCASTER	580	580051103	James VA	VA	COVINGTON CITY	270	270051580	West Shore MD	MD	CARROLL	650	650024013
Rapp. VA	VA	LANCASTER	930	930051103	James VA	VA	CRAIG	270	270051045	West Shore MD	MD	CARROLL	760	760024013
Rapp. VA	VA	MADISON	230	230051113	James VA	VA	CUMBERLAND	280	280051049	West Shore MD	MD	HARFORD	470	470024025
Rapp. VA	VA	MIDDLESEX	560	560051119	James VA	VA	CUMBERLAND	290	290051049	West Shore MD	MD	HARFORD	850	850024025
Rapp. VA	VA	NORTHUMBERLAND	560	560051133	James VA	VA	CUMBERLAND	300	300051049	West Shore MD	MD	HOWARD	490	490024027
Rapp. VA	VA	NORTHUMBERLAND	580	580051133	James VA	VA	DINWIDDIE	310	310051053	West Shore MD	MD	HOWARD	760	760024027
Rapp. VA	VA	NORTHUMBERLAND	930	930051133	James VA	VA	DINWIDDIE	600	600051053	West Shore PA	PA	YORK	470	470042133
Rapp. VA	VA	ORANGE	230	230051137	James VA	VA	FLUVANNA	280	280051065	East Shore DE	DE	KENT	380	380010001
Rapp. VA	VA	RAPPAHANNOCK	230	230051157	James VA	VA	GILES	270	270051071	East Shore DE	DE	KENT	400	400010001
Rapp. VA	VA	RICHMOND	560	560051159	James VA	VA	GOOCHLAND	280	280051075	East Shore DE	DE	KENT	410	410010001
Rapp. VA	VA	RICHMOND	580	580051159	James VA	VA	GOOCHLAND	290	290051075	East Shore DE	DE	KENT	770	770010001
Rapp. VA	VA	SPOTSYLVANIA	230	230051177	James VA	VA	GREENE	280	280051079	East Shore DE	DE	KENT	780	780010001
Rapp. VA	VA	SPOTSYLVANIA	560	560051177	James VA	VA	HAMPTON CITY	600	600051650	East Shore DE	DE	NEW CASTLE	370	370010003
Rapp. VA	VA	STAFFORD	230	230051179	James VA	VA	HAMPTON CITY	955	955051650	East Shore DE	DE	NEW CASTLE	380	380010003
Rapp. VA	VA	STAFFORD	560	560051179	James VA	VA	HAMPTON CITY	960	960051650	East Shore DE	DE	NEW CASTLE	800	800010003
Rapp. VA	VA	WESTMORELAND	560	560051193	James VA	VA	HANOVER	610	610051085	East Shore DE	DE	NEW CASTLE	810	810010003
York VA	VA	ALBEMARLE	260	260051003	James VA	VA	HENRICO	290	290051087	East Shore DE	DE	SUSSEX	410	410010001
York VA	VA	CAROLINE	235	235051033	James VA	VA	HENRICO	600	600051087	East Shore DE	DE	SUSSEX	420	420010005
York VA	VA	CAROLINE	240	240051033	James VA	VA	HENRICO	610	610051087	East Shore DE	DE	SUSSEX	430	430010005
York VA	VA	CAROLINE	260	260051033	James VA	VA	HIGHLAND	265	265051091	East Shore DE	DE	SUSSEX	780	780010005
York VA	VA	CAROLINE	590	590051033	James VA	VA	HIGHLAND	270	270051091	East Shore MD	MD	CAROLINE	380	380024011
York VA	VA	ESSEX	940	940051057	James VA	VA	HOPEWELL CITY	600	600051670	East Shore MD	MD	CAROLINE	400	400024011
York VA	VA	GLOUCESTER	590	590051073	James VA	VA	ISLE OF WIGHT	600	600051093	East Shore MD	MD	CAROLINE	410	410024011
York VA	VA	GLOUCESTER	940	940051073	James VA	VA	ISLE OF WIGHT	620	620051093	East Shore MD	MD	CAROLINE	770	770024011
York VA	VA	GOOCHLAND	260	260051075	James VA	VA	JAMES CITY	600	600051095	East Shore MD	MD	CECIL	370	370024015
York VA	VA	HANOVER	260	260051085	James VA	VA	LEXINGTON CITY	270	270051678	East Shore MD	MD	CECIL	800	800024015
York VA	VA	HANOVER	590	590051085	James VA	VA	LOUISA	280	280051109	East Shore MD	MD	CECIL	810	810024015
York VA	VA	JAMES CITY	590	590051095	James VA	VA	LYNCHBURG CITY	280	280051680	East Shore MD	MD	DORCHESTER	400	400024019
York VA	VA	KING AND QUEEN	240	240051097	James VA	VA	MONTGOMERY	270	270051121	East Shore MD	MD	DORCHESTER	410	410024019
York VA	VA	KING AND QUEEN	590	590051097	James VA	VA	NELSON	280	280051125	East Shore MD	MD	DORCHESTER	840	840024019
York VA	VA	KING AND QUEEN	940	940051097	James VA	VA	NEW KENT	600	600051127	East Shore MD	MD	KENT	380	380024029
York VA	VA	KING WILLIAM	240	240051101	James VA	VA	NEW KENT	610	610051127	East Shore MD	MD	KENT	810	810024029
York VA	VA	KING WILLIAM	590	590051101	James VA	VA	NEWPORT NEWS CITY	600	600051700	East Shore MD	MD	QUEEN ANNES	380	380024035
York VA	VA	LOUISA	250	250051109	James VA	VA	NEWPORT NEWS CITY	955	955051700	East Shore MD	MD	QUEEN ANNES	390	390024035
York VA	VA	LOUISA	260	260051109	James VA	VA	NORFOLK CITY	960	960051710	East Shore MD	MD	QUEEN ANNES	400	400024035
York VA	VA	MATHEWS	940	940051115	James VA	VA	NORFOLK CITY	965	965051710	East Shore MD	MD	QUEEN ANNES	770	770024035
York VA	VA	MIDDLESEX	940	940051119	James VA	VA	NORTHAMPTON	960	960051131	East Shore MD	MD	QUEEN ANNES	820	820024035
York VA	VA	NEW KENT	590	590051127	James VA	VA	NOTTOWAY	300	300051135	East Shore MD	MD	SOMERSET	420	420024039
York VA	VA	ORANGE	235	235051137	James VA	VA	NOTTOWAY	310	310051135	East Shore MD	MD	SOMERSET	430	430024039
York VA	VA	ORANGE	250	250051137	James VA	VA	ORANGE	280	280051137	East Shore MD	MD	SOMERSET	840	840024039
York VA	VA	ORANGE	260	260051137	James VA	VA	PETERSBURG CITY	600	600051730	East Shore MD	MD	TALBOT	390	390024041
York VA	VA	POQUOSON CITY	950	950051735	James VA	VA	POQUOSON CITY	955	955051735	East Shore MD	MD	TALBOT	400	400024041
York VA	VA	SPOTSYLVANIA	235	235051177	James VA	VA	PORTSMOUTH CITY	620	620051740	East Shore MD	MD	TALBOT	830	830024041
York VA	VA	SPOTSYLVANIA	240	240051177	James VA	VA	PORTSMOUTH CITY	630	630051740	East Shore MD	MD	WICOMICO	410	410024045
York VA	VA	SPOTSYLVANIA	250	250051177	James VA	VA	PORTSMOUTH CITY	960	960051740	East Shore MD	MD	WICOMICO	420	420024045
York VA	VA	SPOTSYLVANIA	260	260051177	James VA	VA	POWHATAN	290	290051145	East Shore MD	MD	WICOMICO	430	430024045
York VA	VA	WILLIAMSBURG CITY	590	590051830	James VA	VA	POWHATAN	300	300051145	East Shore MD	MD	WORCESTER	420	420024047
York VA	VA	YORK	590	590051199	James VA	VA	POWHATAN	600	600051145	East Shore MD	MD	WORCESTER	430	430024047
York VA	VA	YORK	950	950051199	James VA	VA	PRINCE EDWARD	300	300051147	East Shore PA	PA	CHESTER	800	800042029
James VA	VA	ALBEMARLE	280	280051003	James VA	VA	PRINCE GEORGE	600	600051149	East Shore VA	VA	ACCOMACK	430	430051001
James VA	VA	ALLEGHANY	265	265051005	James VA	VA	RICHMOND CITY	290	290051760	East Shore VA	VA	ACCOMACK	440	440051001
James VA	VA	ALLEGHANY	270	270051005	James VA	VA	RICHMOND CITY	600	600051760	East Shore VA	VA	NORTHAMPTON	440	440051131
James VA	VA	AMELIA	300	300051007	James VA	VA	ROANOKE	270	270051161					
James VA	VA	AMELIA	310	310051007	James VA	VA	ROCKBRIDGE	270	270051163					
James VA	VA	AMHERST	270	270051009	James VA	VA	SUFFOLK	600	600051800					
James VA	VA	AMHERST	280	280051009	James VA	VA	SUFFOLK	620	620051800					
James VA	VA	APPOMATTOX	280	280051011	James VA	VA	SURRY	600	600051181					
James VA	VA	APPOMATTOX	300	300051011	James VA	VA	VIRGINIA BEACH	960	960051810					
James VA	VA	AUGUSTA	270	270051015	James VA	VA	VIRGINIA BEACH	965	965051810					
James VA	VA	BATH	265	265051017	James VA	VA	WILLIAMSBURG CITY	600	600051830					
James VA	VA	BATH	270	270051017	James VA	VA	YORK	600	600051199					
James VA	VA	BEDFORD	270	270051019	James VA	VA	YORK	955	955051199					
James VA	VA	BEDFORD	280	280051019	James WV	WV	MONROE	270	270054063					
James VA	VA	BOTETOURT	270	270051023	James WV	WV	PENDLETON	270	270054071					
James VA	VA	BUCKINGHAM	280	280051029	West Shore MD	MD	ANNE ARUNDEL	490	490024003					
James VA	VA	BUCKINGHAM	300	300051029	West Shore MD	MD	ANNE ARUNDEL	510	510024003					
James VA	VA	BUENA VISTA CITY	270	270051530	West Shore MD	MD	ANNE ARUNDEL	870	870024003					
James VA	VA	CAMPBELL	280	280051031	West Shore MD	MD	ANNE ARUNDEL	880	880024003					
James VA	VA	CHARLES CITY	600	600051036	West Shore MD	MD	BALTIMORE	470	470024005					

Section 2. Chesapeake Bay Program Land Use

The Chesapeake Bay Program Land Use (CBPLU) database is a combination of the EPA Environmental Monitoring and Assessment Program (EMAP)¹, NOAA Coastal Change Assessment Program (C-CAP)², and USGS Geographic Information Retrieval and Analysis System (GIRAS)³ land use databases. The 1990 EMAP database is the primary source of land use data. EMAP Level 2 data is delivered in raster (grid) format with each raster (grid-cell) being approximately 660 square meters (0.165 acres). EMAP employs two levels of detail in classification of land use and the more detailed level was chosen for the CBPLU.

The documentation for the EMAP Chesapeake Bay watershed study showed that using the aggregation scheme detailed below, overall thematic accuracy for the data set was eighty percent and non-transition site (pixels not located on a land use border) accuracy was ninety percent.

<i>Original EMAP Land Use Level 2 Classification Scheme</i>		<i>Final Database Category</i>	
11	High Intensity Developed	11	High Intensity Developed
12	Low Intensity Developed	12	Low Intensity Developed
21	Woody Cultivated	30	Woody
22	Herbaceous Cultivated	20	Herbaceous
31	Herbaceous	20	Herbaceous
41	Deciduous Forest	30	Woody
42	Evergreen Forest	30	Woody
43	Mixed Forest	40	Woody
52	Exposed Sand	40	Exposed
53	Exposed Rock	40	Exposed
71	Deciduous Wetland	30	Woody
72	Evergreen Wetland	30	Woody
73	Mixed Forest Wetland	30	Woody
81	Herbaceous Wetland	20	Herbaceous
91	Non-vegetated Wetland	40	Exposed
100	Water	60	Water

The original EMAP cover has data gaps within the Chesapeake Bay and at the watershed boundary. GIRAS data is used, where possible, to fill these small data gaps around the basin edge and within the watershed. The GIRAS data are reclassified to EMAP land use categories, converted to grid data, and merged with the EMAP data. In some places,

¹ Chesapeake Bay Watershed Pilot Project, EMAP Center, Research Triangle Park, NC 27711 Publication Code: EPA/620/R-94/XXX, March 1994

² Documentation for C-CAP is available from Dr. Kent Hughes, NOAA/NESDID/NODC, 1825 Connecticut Ave., NW, Washington, D.C. 20235

³ Anderson, et. al. A Land Use and Land Cover Classification System for Use with Remote Sensor Data 1976

GIRAS data are unavailable. A GRID: NIBBLE edge expansion algorithm is performed on the EMAP-GIRAS data to fill these data gaps. The GRID: NIBBLE function incrementally fills in raster cells with missing data based upon the value of the nearest neighboring raster, with proximity determined by least Euclidean distance.

To ensure the accuracy of land use assignments between herbaceous agricultural cover and emergent coastal wetlands NOAA Coastal Change Assessment Program (C-CAP) data are used. C-CAP herbaceous emergent wetland types are selected out of the 1989-1990 grid and then merged with the EMAP/GIRAS. The CBPLU grid is classified as wetland wherever the C-CAP data indicates wetland land.

To further enhance the accuracy of the final CBPLU, urban land use categories in GIRAS are selected out, converted to a grid, and merged with the EMAP/GIRAS/C-CAP grid. Herbaceous and woody areas in EMAP that are classified as urban categories in GIRAS were selected out and classified as Herbaceous Urban and Woody Urban, respectively. This enhancement was performed to capture rural residential areas where natural covers dominated the landscape, resulting in them often being misclassified as an undeveloped land cover when they are more accurately classified as pervious urban. To avoid double counting, GIRAS class 14, which is transportation and communication utilities, was not used because EMAP captures transportation networks in its Low Intensity Urban category.

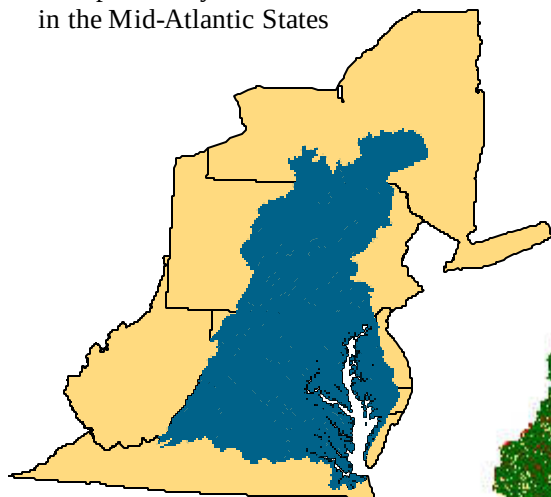
The combination of EMAP, C-CAP, and GIRAS data resulted in the following CBPLU classification scheme:

EMAP High Intensity Urban	⇒	CBPLU High Intensity Urban
EMAP Low Intensity Urban	⇒	CBPLU Low Intensity Urban
GIRAS Urban + EMAP Herbaceous	⇒	CBPLU Herbaceous Urban
GIRAS Urban + EMAP Woody	⇒	CBPLU Woody Urban
EMAP Herbaceous	⇒	CBPLU Herbaceous
EMAP Woody	⇒	CBPLU Woody
EMAP Exposed	⇒	CBPLU Exposed
EMAP Water	⇒	CBPLU Water
C-CAP Emergent Herb. Wetlands	⇒	CBPLU Herbaceous Wetlands

In Phase 4.2 of the Chesapeake Bay Watershed Model, refinements were made to the model segments and watershed boundary covers. Improved data from the states, USGS, and NOAA resulted in high-resolution shoreline and watershed covers. These refinements greatly improved the accuracy of watershed and sub-watershed delineation; however, they resulted in data gaps in the land use cover. Another GRID: NIBBLE edge expansion algorithm is performed on the CBPLU data to fill data gaps where the CBPLU basin boundary does not agree with the CBP watershed model basin boundary. Figure 9 shows the final Chesapeake Bay Program Land Use (CBPLU) cover. Table 2 represents the percent of total land use area by county-segment, from the original EMAP cover to the current high-resolution basin boundary, that contained unassigned land use data. Table 3 lists the final Chesapeake Bay Program Land Use data by county-segment.

Chesapeake Bay Program Land Use

Location of the
Chesapeake Bay Watershed
in the Mid-Atlantic States



- High Intensity Urban
- Low Intensity, Herbaceous, and Woody Urban
- Woody and Wetland
- Herbaceous
- Water

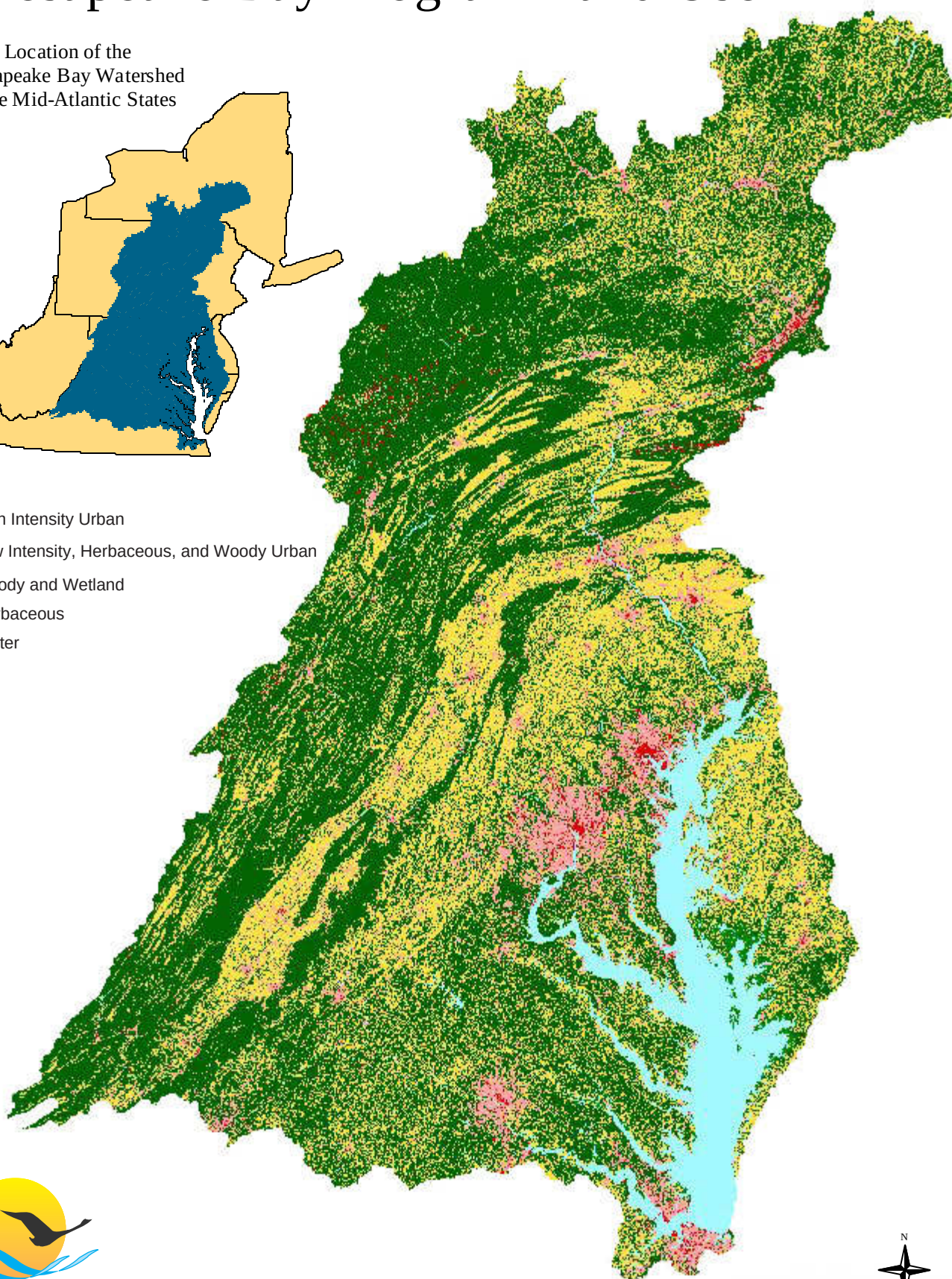


Table 2. Percent Area with Unassigned EMAP Data by County-Segment

<i>Coseg</i>	<i>County Name</i>	<i>SEG</i>	<i>Basin</i>	<i>State</i>	<i>Nibbled Acres</i>	<i>Total Coseg Acres</i>	<i>Percent Nibbled</i>
720042029	CHESTER	720	Susq.	PA	1313.04	1313.04	100.00%
90042021	CAMBRIA	90	Susq.	PA	68.42	68.42	100.00%
50042065	JEFFERSON	50	Susq.	PA	860.72	867.63	99.20%
120042029	CHESTER	120	Susq.	PA	4726.98	5019.59	94.17%
160054077	PRESTON	160	Potomac	WV	576.01	1033.43	55.74%
720042011	BERKS	720	Susq.	PA	10074.87	18661.53	53.99%
10036123	YATES	10	Susq.	NY	3274.46	6505.50	50.33%
10036069	ONTARIO	10	Susq.	NY	338.17	716.14	47.22%
600051053	DINWIDDIE	600	James	VA	3158.01	7096.15	44.50%
20036067	ONONDAGA	20	Susq.	NY	15173.41	35569.87	42.66%
280051019	BEDFORD	280	James	VA	12567.56	29843.02	42.11%
160054093	TUCKER	160	Potomac	WV	219.09	562.03	38.98%
270051071	GILES	270	James	VA	2855.20	7568.53	37.72%
60042083	MCKEAN	60	Susq.	PA	5060.87	15587.90	32.47%
270051019	BEDFORD	270	James	VA	12339.59	38677.06	31.90%
90042013	BLAIR	90	Susq.	PA	2465.71	7836.14	31.47%
10036051	LIVINGSTON	10	Susq.	NY	3165.41	10103.66	31.33%
270054063	MONROE	270	James	WV	14489.34	49765.13	29.12%
160024023	GARRETT	160	Potomac	MD	42909.78	153100.28	28.03%
600051730	PETERSBURG CITY	600	James	VA	2577.23	9724.04	26.50%
50042063	INDIANA	50	Susq.	PA	9863.19	40325.15	24.46%
960051550	CHESAPEAKE CITY	960	James	VA	10561.73	44681.22	23.64%
270051161	ROANOKE	270	James	VA	3882.21	16755.05	23.17%
600051149	PRINCE GEORGE	600	James	VA	17770.71	77795.58	22.84%
20036097	SCHUYLER	20	Susq.	NY	5603.99	25539.25	21.94%
160042111	SOMERSET	160	Potomac	PA	16353.72	77359.22	21.14%
620051800	SUFFOLK	620	James	VA	19343.79	95686.53	20.22%
20036095	SCHOHARIE	20	Susq.	NY	5283.42	26243.88	20.13%
30042127	WAYNE	30	Susq.	PA	3572.00	18025.65	19.82%
280051031	CAMPBELL	280	James	VA	8819.23	44530.89	19.80%
265051005	ALLEGHANY	265	James	VA	1456.80	7649.13	19.05%
450042029	CHESTER	450	Susq.	PA	7672.98	44461.97	17.26%
270051121	MONTGOMERY	270	James	VA	2480.85	14434.57	17.19%
600051181	SURRY	600	James	VA	11931.85	70418.83	16.94%
630051550	CHESAPEAKE CITY	630	James	VA	1945.79	11919.84	16.32%
20036065	ONEIDA	20	Susq.	NY	4570.89	30713.28	14.88%
20036043	HERKIMER	20	Susq.	NY	7171.97	50771.91	14.13%
20042127	WAYNE	20	Susq.	PA	2708.49	20212.90	13.40%
265051091	HIGHLAND	265	James	VA	12201.10	94003.08	12.98%
265051017	BATH	265	James	VA	17009.33	133226.54	12.77%
10036003	ALLEGANY	10	Susq.	NY	6447.77	53041.72	12.16%
965051810	VIRGINIA BEACH	965	James	VA	4760.37	47815.38	9.96%
170051091	HIGHLAND	170	Potomac	VA	5595.76	63312.33	8.84%
20036109	TOMPKINS	20	Susq.	NY	5093.28	59932.76	8.50%
300051135	NOTTOWAY	300	James	VA	8378.92	99660.52	8.41%
800042029	CHESTER	800	E.Shore	MD	3247.98	40485.51	8.02%
280051680	LYNCHBURG CITY	280	James	VA	2389.89	31893.10	7.49%
310051053	DINWIDDIE	310	James	VA	3192.55	43500.92	7.34%
10036097	SCHUYLER	10	Susq.	NY	3792.08	52264.23	7.26%
430024047	WORCESTER	430	E.Shore	MD	13239.62	183681.66	7.21%
300051147	PRINCE EDWARD	300	James	VA	14789.68	216862.96	6.82%
20036053	MADISON	20	Susq.	NY	13765.63	205656.14	6.69%
80042107	SCHUYLKILL	80	Susq.	PA	7712.29	115388.56	6.68%
40042107	SCHUYLKILL	40	Susq.	PA	3442.89	53333.02	6.46%
60042105	POTTER	60	Susq.	PA	24827.71	404388.17	6.14%
620051093	ISLE OF WIGHT	620	James	VA	2043.82	34624.77	5.90%
770010001	KENT	770	E.Shore	MD	2419.17	50422.88	4.80%
270051005	ALLEGHANY	270	James	VA	12809.35	279420.65	4.58%
110042011	BERKS	110	Susq.	PA	1626.70	38190.36	4.26%
310051135	NOTTOWAY	310	James	VA	297.71	7006.17	4.25%
170054071	PENDLETON	170	Potomac	WV	17599.32	446458.78	3.94%

Table 2. Percent Area with Unassigned EMAP Data by County-Segment

Coseg	County Name	SEG	Basin	State	Nibbled Acres	Total Coseg Acres	Percent Nibbled
10036015	CHEMUNG	10	Susq.	NY	7978.09	205293.46	3.89%
720042075	LEBANON	720	Susq.	PA	532.59	14024.52	3.80%
160054023	GRANT	160	Potomac	WV	5341.31	155385.40	3.44%
20036025	DELAWARE	20	Susq.	NY	5954.00	187071.75	3.18%
270051023	BOTETOURT	270	James	VA	9639.66	306378.21	3.15%
170054023	GRANT	170	Potomac	WV	4278.12	152719.35	2.80%
30042079	LUZERNE	30	Susq.	PA	2482.82	99467.58	2.50%
40042079	LUZERNE	40	Susq.	PA	8759.36	395579.79	2.21%
30042069	LACKAWANNA	30	Susq.	PA	5498.55	252004.69	2.18%
50042021	CAMBRIA	50	Susq.	PA	3475.29	186631.10	1.86%
60042047	ELK	60	Susq.	PA	2867.21	173669.62	1.65%
10036101	STEUBEN	10	Susq.	NY	11185.93	784017.55	1.43%
90042009	BEDFORD	90	Susq.	PA	6265.85	446139.85	1.40%
410010005	SUSSEX	410	E.Shore	MD	3233.34	232177.82	1.39%
380010003	NEW CASTLE	380	E.Shore	MD	103.95	7509.98	1.38%
20036023	CORTLAND	20	Susq.	NY	3768.72	280808.20	1.34%
110042075	LEBANON	110	Susq.	PA	2146.95	168309.88	1.28%
430051001	ACCOMACK	430	E.Shore	MD	223.03	19186.71	1.16%
50042033	CLEARFIELD	50	Susq.	PA	5762.38	552028.72	1.04%
720042071	LANCASTER	720	Susq.	PA	2815.73	270210.12	1.04%
370010003	NEW CASTLE	370	E.Shore	MD	66.78	7023.77	0.95%
90042111	SOMERSET	90	Susq.	PA	163.99	17362.31	0.94%
120042071	LANCASTER	120	Susq.	PA	911.22	104912.19	0.87%
160024001	ALLEGANY	160	Potomac	MD	1235.08	168921.09	0.73%
300051011	APPOMATTOX	300	James	VA	422.22	61320.81	0.69%
Total Area of the Chesapeake Bay Watershed					561002.56	9119868.61	1.39%

Table 3. 1990 Chesapeake Bay Program Land Use in Acres by Phase 4.2 Watershed Model County Segments

COSEG	SEG	FIPS	State	County	High Intensity Developed	Low Intensity Developed	Herbaceous Urban	Woody Urban	Herbaceous	Woody	Exposed	Water	Herbaceous Wetland	Total Acreage
10036003	10	36003	NY	ALLEGANY	1	2672	291	298	12596	37090	12	5	0	52964
10036015	10	36015	NY	CHEMUNG	1463	14292	7343	1007	75404	104028	128	1587	0	205251
10036051	10	36051	NY	LIVINGSTON	0	0	0	0	5477	4603	0	0	0	10080
10036069	10	36069	NY	ONTARIO	0	0	0	0	276	440	0	0	0	716
10036097	10	36097	NY	SCHUYLER	0	1748	188	173	11618	36542	0	1976	0	52246
10036101	10	36101	NY	STEUBEN	804	35969	4114	3120	244707	491685	87	3381	0	783867
10036123	10	36123	NY	YATES	0	13	39	1	3365	3038	0	28	0	6484
10042015	10	42015	PA	BRADFORD	83	2040	928	121	52113	55289	101	931	0	111605
10042105	10	42105	PA	POTTER	0	273	39	33	11598	18259	0	103	0	30304
10042117	10	42117	PA	TIOGA	84	10135	1744	714	131960	267995	302	3120	0	416054
20036007	20	36007	NY	BROOME	3635	36392	9692	4554	145556	199742	338	5802	0	405711
20036015	20	36015	NY	CHEMUNG	4	562	103	38	11521	22633	0	23	0	34883
20036017	20	36017	NY	CHENANGO	136	10399	4525	1249	184138	369580	51	3433	0	573511
20036023	20	36023	NY	CORTLAND	7	4610	4098	997	100324	169057	12	1608	0	280712
20036025	20	36025	NY	DELAWARE	135	4042	697	309	61177	119842	0	864	0	187066
20036043	20	36043	NY	HERKIMER	21	1543	310	187	28146	22843	0	254	0	53303
20036053	20	36053	NY	MADISON	0	803	1860	483	71496	129261	0	1672	0	205575
20036065	20	36065	NY	ONEIDA	35	271	118	20	10565	19716	0	116	0	30841
20036067	20	36067	NY	ONONDAGA	0	86	515	223	13107	21140	0	423	0	35494
20036077	20	36077	NY	OTSEGO	27	10775	4601	2041	235309	369748	0	8823	0	631324
20036095	20	36095	NY	SCHOHARIE	0	184	53	7	7980	17877	18	125	0	26244
20036097	20	36097	NY	SCHUYLER	33	475	102	10	6002	18517	6	360	0	25504
20036107	20	36107	NY	TIOGA	400	12230	6230	1236	143175	167122	355	2781	0	333528
20036109	20	36109	NY	TOMPKINS	3	566	207	61	12704	46192	5	122	0	59859
20042015	20	42015	PA	BRADFORD	147	2284	123	46	29386	30608	0	618	0	63212
20042115	20	42115	PA	SUSQUEHANNA	61	5511	401	396	53985	127950	65	3150	0	191519
20042127	20	42127	PA	WAYNE	0	45	1	25	5484	14318	0	338	0	20211
30042015	30	42015	PA	BRADFORD	56	5126	734	260	170719	224041	257	5328	0	406521
30042069	30	42069	PA	LACKAWANNA	8355	24232	6298	20625	41868	142687	4366	3561	0	251991
30042079	30	42079	PA	LUZERNE	6040	12036	1901	3763	9215	63076	1617	1823	0	99470
30042081	30	42081	PA	LYCOMING	0	0	0	0	149	973	0	0	0	1123
30042113	30	42113	PA	SULLIVAN	17	152	28	8	4352	13711	4	101	0	18373
30042115	30	42115	PA	SUSQUEHANNA	0	3113	862	685	146417	185108	160	4517	0	340862
30042117	30	42117	PA	TIOGA	0	70	0	0	2001	3168	0	0	0	5239
30042127	30	42127	PA	WAYNE	0	214	76	61	2502	14698	89	373	0	18014
30042131	30	42131	PA	WYOMING	18	4417	8156	10571	61130	166107	230	4990	0	255620
40042037	40	42037	PA	COLUMBIA	791	8020	2435	1727	126050	157576	1257	2304	0	300162
40042079	40	42079	PA	LUZERNE	6688	20320	3683	6852	75742	266977	9590	5737	0	395587
40042093	40	42093	PA	MONTGOMERY	106	1868	974	2970	14492	9751	8	546	0	30714
40042097	40	42097	PA	NORTHUMBERLAND	897	7251	1658	1314	50405	69157	5861	3171	0	139715
40042107	40	42107	PA	SCHUYLKILL	9	1124	399	1058	9787	39091	1631	237	0	53336
40042113	40	42113	PA	SULLIVAN	0	22	0	0	1265	28015	0	150	0	29453
50042021	50	42021	PA	CAMBRIA	3	3941	944	1415	32123	143093	3108	1962	0	186589
50042027	50	42027	PA	CENTRE	20	1527	87	636	3580	105802	3142	570	0	115364
50042033	50	42033	PA	CLEARFIELD	428	9489	1124	3189	37771	463653	32474	3859	0	551987
50042063	50	42063	PA	INDIANA	0	171	91	146	8366	28188	3260	26	0	40250
50042065	50	42065	PA	JEFFERSON	0	0	0	0	0	8	854	0	0	862
60042023	60	42023	PA	CAMERON	30	1409	493	611	12629	237385	276	1682	0	254514
60042027	60	42027	PA	CENTRE	100	11735	3438	1616	86170	282827	3678	3061	0	392625
60042033	60	42033	PA	CLEARFIELD	0	535	49	170	4443	110356	2063	271	0	117886
60042035	60	42035	PA	CLINTON	351	8006	1226	1100	68322	485993	3929	6239	0	575166
60042047	60	42047	PA	ELK	0	793	263	231	13258	156915	1510	587	0	173557
60042081	60	42081	PA	LYCOMING	395	8386	1490	817	78302	391053	306	4633	0	485382
60042083	60	42083	PA	MCKEAN	0	48	0	7	352	15131	0	4	0	15542
60042105	60	42105	PA	POTTER	9	959	433	574	30848	371012	14	443	0	404291
60042113	60	42113	PA	SULLIVAN	0	11	0	0	744	2808	0	48	0	3611
60042117	60	42117	PA	TIOGA	46	3067	117	353	63550	235195	610	944	0	303883
70042015	70	42015	PA	BRADFORD	0	20	0	0	2592	6088	0	90	0	8790
70042027	70	42027	PA	CENTRE	0	47	0	0	199	9036	0	0	0	9282
70042037	70	42037	PA	COLUMBIA	0	96	22	0	7583	5394	0	0	0	13095
70042081	70	42081	PA	LYCOMING	274	7936	2705	844	91570	203041	42	3377	0	309789
70042093	70	42093	PA	MONTGOMERY	122	927	171	14	39636	12612	188	259	0	53929
70042097	70	42097	PA	NORTHUMBERLAND	291	4341	981	262	43777	17102	19	2607	0	69380
70042113	70	42113	PA	SULLIVAN	18	1772	253	356	43289	190626	323	1398	0	238036
70042119	70	42119	PA	UNION	34	4297	973	472	58071	83512	25	434	0	147817
70042131	70	42131	PA	WYOMING	0	0	0	0	414	3114	0	11	0	3539
80042027	80	42027	PA	CENTRE	4	677	651	65	51831	92596	0	205	0	146028
80042041	80	42041	PA	CUMBERLAND	2718	19392	2997	981	134521	76805	203	1938	0	239556
80042043	80	42043	PA	DAUPHIN	1698	9795	2747	1234	71421	132380	205	14074	0	233555
80042055	80	42055	PA	FRANKLIN	281	2592	1046	2872	38211	41866	0	138	0	87006
80042067	80	42067	PA	JUNIATA	0	57	26	0	9488	10253	0	4	0	19828
80042075	80	42075	PA	LEBANON	0	0	0	0	17	9595	0	0	0	9612
80042087	80	42087	PA	MIFFLIN	0	0	0	0	97	10180	0	26	0	10302
80042097	80	42097	PA	NORTHUMBERLAND	1	455	180	61	47096	42110	69	6376	0	96349
80042099	80	42099	PA	PERRY	32	3360	1099	505	79565	157893	205	1708	0	244368
80042107	80	42107	PA	SCHUYLKILL	375	3738	909	824	31882	67763	9738	157	0	115386

Table 3. 1990 Chesapeake Bay Program Land Use in Acres by Phase 4.2 Watershed Model County Segments

COSEG	SEG	FIPS	State	County	Developed	Developed	Urban	Urban	Herbaceous	Woody	Exposed	Water	Wetland	Acreage
10036003	10	36003	NY	ALLEGANY	1	2672	291	298	12596	37090	12	5	0	52964
10036015	10	36015	NY	CHEMUNG	1463	14292	7343	1007	75404	104028	128	1587	0	205251
10036051	10	36051	NY	LIVINGSTON	0	0	0	0	5477	4603	0	0	0	10080
10036069	10	36069	NY	ONTARIO	0	0	0	0	276	440	0	0	0	716
10036097	10	36097	NY	SCHUYLER	0	1748	188	173	11618	36542	0	1976	0	52246
10036101	10	36101	NY	STEUBEN	804	35969	4114	3120	244707	491685	87	3381	0	783867
10036123	10	36123	NY	YATES	0	13	39	1	3365	3038	0	28	0	6484
10042015	10	42015	PA	BRADFORD	83	2040	928	121	52113	55289	101	931	0	111605
10042105	10	42105	PA	POTTER	0	273	39	33	11598	18259	0	103	0	30304
80042109	80	42109	PA	SNYDER	125	2562	1970	275	101838	96836	0	1572	0	205178
80042119	80	42119	PA	UNION	0	28	320	37	19045	35527	0	498	0	55455
90042009	90	42009	PA	BEDFORD	56	4887	3140	1247	138565	295035	842	2317	0	446088
90042013	90	42013	PA	BLAIR	0	18	45	0	4311	3449	0	0	0	7823
90042021	90	42021	PA	CAMBRIA	0	0	0	0	66	0	0	0	0	66
90042057	90	42057	PA	FULTON	0	240	0	0	4021	18659	0	0	0	22920
90042061	90	42061	PA	HUNTINGDON	0	209	183	121	17259	86493	90	8506	0	112860
90042111	90	42111	PA	SOMERSET	0	277	18	24	1971	15030	6	0	0	17327
1E+08	100	42009	PA	BEDFORD	0	100	171	177	5584	8948	0	5	0	14986
1E+08	100	42013	PA	BLAIR	132	16684	4976	4261	73446	229943	848	1026	0	331316
1E+08	100	42027	PA	CENTRE	0	64	74	51	14934	32833	0	11	0	47967
1E+08	100	42055	PA	FRANKLIN	0	99	11	7	5714	11166	0	0	0	16997
1E+08	100	42057	PA	FULTON	0	629	201	164	12457	57156	161	133	0	70899
1E+08	100	42061	PA	HUNTINGDON	27	3374	1186	871	100836	349044	420	1621	0	457378
1E+08	100	42067	PA	JUNIATA	3	1182	941	118	84965	142947	69	1680	0	231905
1E+08	100	42087	PA	MIFFLIN	204	3544	3595	1386	91585	151634	201	2288	0	254437
1E+08	100	42099	PA	PERRY	0	394	389	49	37086	72787	5	618	0	111327
1E+08	100	42109	PA	SNYDER	0	5	13	0	1609	5956	0	0	0	7583
1.1E+08	110	24013	MD	CARROLL	0	8	15	0	2125	1327	0	0	0	3476
1.1E+08	110	42001	PA	ADAMS	124	3170	1664	177	111284	55512	183	1023	0	173138
1.1E+08	110	42011	PA	BERKS	40	908	293	8	24137	12798	0	5	0	38188
1.1E+08	110	42041	PA	CUMBERLAND	1107	9164	1559	474	41030	59344	249	309	0	113236
1.1E+08	110	42043	PA	DAUPHIN	3166	19947	5133	1569	57711	28906	89	6712	0	123232
1.1E+08	110	42071	PA	LANCASTER	380	3165	533	285	19076	8368	84	3726	0	35618
1.1E+08	110	42075	PA	LEBANON	1357	13118	4922	555	99166	47364	802	1027	0	168311
1.1E+08	110	42107	PA	SCHUYLKILL	30	2382	801	604	24782	57002	1758	164	0	87524
1.1E+08	110	42133	PA	YORK	2409	27651	8261	2543	211104	128596	412	4707	0	385683
1.2E+08	120	42029	PA	CHESTER	0	0	0	0	2183	2833	0	0	0	5016
1.2E+08	120	42071	PA	LANCASTER	338	4367	797	324	66565	29672	62	2787	0	104911
1.2E+08	120	42133	PA	YORK	0	66	79	5	10241	10778	0	78	0	21247
1.4E+08	140	24015	MD	CECIL	0	31	0	0	1232	3260	0	1426	299	6249
1.4E+08	140	24025	MD	HARFORD	2	345	156	199	16587	15532	9	1704	167	34700
1.4E+08	140	42071	PA	LANCASTER	65	513	129	52	32235	13381	88	6694	42	53199
1.4E+08	140	42133	PA	YORK	55	637	221	108	58550	36208	12	480	0	96271
1.6E+08	160	24001	MD	ALLEGANY	163	14088	2749	3511	23183	122246	2066	920	0	168927
1.6E+08	160	24023	MD	GARRETT	52	1394	24	216	22522	125468	2375	896	0	152948
1.6E+08	160	42009	PA	BEDFORD	0	679	148	60	15131	69503	0	415	0	85935
1.6E+08	160	42111	PA	SOMERSET	0	395	41	58	14786	62012	0	5	0	77297
1.6E+08	160	54023	WV	GRANT	0	1696	101	179	43334	105182	3484	1371	0	155346
1.6E+08	160	54027	WV	HAMPSHIRE	88	256	28	10	3634	7841	35	30	0	11922
1.6E+08	160	54057	WV	MINERAL	66	6391	998	749	37708	163107	956	1107	0	211082
1.6E+08	160	54077	WV	PRESTON	0	0	0	0	108	716	203	0	0	1027
1.6E+08	160	54093	WV	TUCKER	0	0	0	0	24	490	43	0	0	557
1.7E+08	170	51091	VA	HIGHLAND	0	290	124	25	23145	39692	0	0	0	63276
1.7E+08	170	54023	WV	GRANT	0	3147	632	239	46116	102057	13	487	0	152691
1.7E+08	170	54027	WV	HAMPSHIRE	0	1870	180	129	23864	88765	300	1755	0	116863
1.7E+08	170	54031	WV	HARDY	17	2511	250	98	48436	115183	52	142	0	166689
1.7E+08	170	54071	WV	PENDLETON	56	3564	1052	221	109228	331487	190	568	0	446365
1.75E+08	175	24001	MD	ALLEGANY	0	918	18	20	14324	90159	20	1040	0	106500
1.75E+08	175	24043	MD	WASHINGTON	0	632	201	193	3406	22893	0	557	0	27881
1.75E+08	175	42009	PA	BEDFORD	0	0	0	0	18625	85183	0	0	0	103808
1.75E+08	175	42057	PA	FULTON	0	37	0	0	3351	12454	0	0	0	15842
1.75E+08	175	54027	WV	HAMPSHIRE	0	2848	382	272	61936	217522	32	1458	0	284449
1.75E+08	175	54031	WV	HARDY	6	1526	312	367	39351	157254	23	144	0	198983
1.75E+08	175	54065	WV	MORGAN	0	2108	434	317	6667	56232	140	1019	0	66917
1.8E+08	180	24021	MD	FREDERICK	128	2726	424	129	52435	34182	38	1133	12	91207
1.8E+08	180	24043	MD	WASHINGTON	1057	12296	1290	395	71497	48183	537	1453	40	136748
1.8E+08	180	42001	PA	ADAMS	0	21	0	0	172	4548	0	32	0	4773
1.8E+08	180	42055	PA	FRANKLIN	263	4959	861	280	34606	22460	9	12	1	63450
1.8E+08	180	51107	VA	LOUDOUN	0	258	409	81	48151	31942	0	146	7	80994
1.8E+08	180	54037	WV	JEFFERSON	5	513	682	138	22103	6179	0	113	5	29738
1.9E+08	190	51015	VA	AUGUSTA	481	10701	15126	3566	221898	205759	22	472	0	458025
1.9E+08	190	51139	VA	PAGE	78	2065	12313	2318	61293	115344	144	1720	0	195275
1.9E+08	190	51165	VA	ROCKINGHAM	484	8991	15960	1959	119515	159890	115	1845	0	308760
1.9E+08	190	51187	VA	WARREN	9	330	2307	819	13425	35951	13	708	0	53561
1.9E+08	190	51660	VA	HARRISONBURG CITY	1370	2934	1194	131	3133	807	0	5	0	9574
1.9E+08	190	51790	VA	STAUNTON CITY	277	3473	1942	817	4536	1627	0	4	0	12676
1.9E+08	190	51820	VA	WAYNESBORO CITY	499	3616	1016	255	2487	1111	16	18	0	9018
2E+08	200	51043	VA	CLARKE	9	1157	492	41	51692	36917	8	926	2	91244

Table 3. 1990 Chesapeake Bay Program Land Use in Acres by Phase 4.2 Watershed Model County Segments

COSEG	SEG	FIPS	State	County	Developed	Developed	Urban	Urban	Herbaceous	Woody	Exposed	Water	Wetland	Acreage
10036003	10	36003	NY	ALLEGANY	1	2672	291	298	12596	37090	12	5	0	52964
10036015	10	36015	NY	CHEMUNG	1463	14292	7343	1007	75404	104028	128	1587	0	205251
10036051	10	36051	NY	LIVINGSTON	0	0	0	0	5477	4603	0	0	0	10080
10036069	10	36069	NY	ONTARIO	0	0	0	0	276	440	0	0	0	716
10036097	10	36097	NY	SCHUYLER	0	1748	188	173	11618	36542	0	1976	0	52246
10036101	10	36101	NY	STEUBEN	804	35969	4114	3120	244707	491685	87	3381	0	783867
10036123	10	36123	NY	YATES	0	13	39	1	3365	3038	0	28	0	6484
10042015	10	42015	PA	BRADFORD	83	2040	928	121	52113	55289	101	931	0	111605
10042105	10	42105	PA	POTTER	0	273	39	33	11598	18259	0	103	0	30304
2E+08	200	51069	VA	FREDERICK	30	947	404	35	35970	40378	166	173	0	78103
2E+08	200	51139	VA	PAGE	0	0	0	0	17	6010	0	0	0	6028
2E+08	200	51165	VA	ROCKINGHAM	193	5032	7102	868	90337	134654	66	229	0	238481
2E+08	200	51171	VA	SHENANDOAH	235	6972	12079	3280	118750	184812	263	2144	0	328535
2E+08	200	51187	VA	WARREN	280	3082	5588	3990	30543	40492	4	1061	0	85040
2E+08	200	51660	VA	HARRISONBURG CITY	235	717	221	10	517	11	0	0	0	1711
2E+08	200	54031	WV	HARDY	0	43	0	0	1398	7699	0	0	0	9141
2E+08	200	54037	WV	JEFFERSON	61	1545	1880	2769	36234	18650	361	1383	9	62893
2.1E+08	210	24013	MD	CARROLL	191	2381	929	293	94378	32552	242	190	12	131169
2.1E+08	210	24021	MD	FREDERICK	687	18226	3237	908	165233	118454	1002	1602	75	309422
2.1E+08	210	24031	MD	MONTGOMERY	31	609	239	109	9792	9411	0	5	1	20197
2.1E+08	210	42001	PA	ADAMS	35	1630	207	154	14130	24786	135	72	4	41153
2.2E+08	220	11001	DC	DISTRICT OF COLUMBIA	121	898	43	203	0	79	6	25	0	1376
2.2E+08	220	24021	MD	FREDERICK	164	873	175	20	12104	5401	8	742	1	19488
2.2E+08	220	24031	MD	MONTGOMERY	4687	29212	6222	7743	72194	60460	41	5351	51	185959
2.2E+08	220	51013	VA	ARLINGTON CITY	0	9	0	33	0	34	0	0	0	76
2.2E+08	220	51059	VA	FAIRFAX	4605	22711	5121	9416	8637	23209	3	252	78	74033
2.2E+08	220	51061	VA	FAUQUIER	0	1053	4148	902	50685	40600	39	102	16	97546
2.2E+08	220	51107	VA	LOUDOUN	1910	11952	4619	1541	122460	92601	282	1042	77	236484
2.3E+08	230	51003	VA	ALBEMARLE	0	0	0	0	710	2148	0	3	0	2860
2.3E+08	230	51047	VA	CULPEPER	79	3169	8794	2891	132182	96416	286	909	145	244873
2.3E+08	230	51061	VA	FAUQUIER	38	1730	6136	1488	86549	85517	109	422	103	182090
2.3E+08	230	51079	VA	GREENE	0	126	1102	318	14573	23449	32	39	0	39638
2.3E+08	230	51113	VA	MADISON	0	475	7021	2538	86134	109813	63	160	0	206204
2.3E+08	230	51137	VA	ORANGE	44	2106	3239	1844	60776	59292	102	674	45	128123
2.3E+08	230	51157	VA	RAPPAHANNOCK	0	665	4092	1134	63553	101361	49	122	0	170975
2.3E+08	230	51177	VA	SPOTSYLVANIA	9	453	249	135	6232	19517	22	364	17	26997
2.3E+08	230	51179	VA	STAFFORD	0	278	482	294	5462	18059	0	410	15	25001
2.3E+08	230	51630	VA	FREDERICKSBURG CITY	0	0	0	0	156	216	4	21	0	398
2.35E+08	235	51033	VA	CAROLINE	0	328	422	300	9492	25219	0	94	4	35859
2.35E+08	235	51137	VA	ORANGE	0	2	0	0	1004	1701	0	0	2	2708
2.35E+08	235	51177	VA	SPOTSYLVANIA	3	971	1207	720	31527	90392	105	882	65	125871
2.4E+08	240	51033	VA	CAROLINE	0	2758	2021	1295	56162	127231	0	987	130	190583
2.4E+08	240	51097	VA	KING AND QUEEN	0	3	13	105	4427	9627	0	13	0	14189
2.4E+08	240	51101	VA	KING WILLIAM	0	8	0	0	1253	2952	0	21	0	4234
2.4E+08	240	51177	VA	SPOTSYLVANIA	0	7	87	22	2031	4880	0	12	3	7041
2.5E+08	250	51109	VA	LOUISA	42	1305	850	1056	26280	56716	181	8481	13	94923
2.5E+08	250	51137	VA	ORANGE	0	171	1674	556	37712	38693	83	373	10	79274
2.5E+08	250	51177	VA	SPOTSYLVANIA	0	119	30	0	13345	20525	366	5291	4	39681
2.6E+08	260	51003	VA	ALBEMARLE	0	26	0	0	3111	2167	6	10	0	5320
2.6E+08	260	51033	VA	CAROLINE	0	565	366	172	8309	23273	0	151	12	32848
2.6E+08	260	51075	VA	GOOCHLAND	0	336	2	0	1177	3304	0	7	0	4827
2.6E+08	260	51085	VA	HANOVER	0	1637	3075	2068	62228	102192	298	728	69	172296
2.6E+08	260	51109	VA	LOUISA	22	2471	2666	1649	76140	137698	0	945	43	221633
2.6E+08	260	51137	VA	ORANGE	0	176	379	25	2253	964	0	18	0	3815
2.6E+08	260	51177	VA	SPOTSYLVANIA	0	44	199	48	7468	21077	0	7	1	28845
2.65E+08	265	51005	VA	ALLEGHANY	0	0	0	0	2	7141	0	502	0	7644
2.65E+08	265	51017	VA	BATH	0	553	206	154	12172	116989	814	2114	0	133002
2.65E+08	265	51091	VA	HIGHLAND	10	380	426	25	32394	60750	99	0	0	94083
2.7E+08	270	51005	VA	ALLEGHANY	191	4804	2008	2105	25850	243249	0	1136	0	279343
2.7E+08	270	51009	VA	AMHERST	0	829	9	55	11049	77512	79	826	0	90359
2.7E+08	270	51015	VA	AUGUSTA	42	1901	961	416	30326	132011	0	63	0	165722
2.7E+08	270	51017	VA	BATH	42	1437	1238	1633	28318	176926	8	506	0	210108
2.7E+08	270	51019	VA	BEDFORD	34	788	231	238	5196	31728	0	448	0	38665
2.7E+08	270	51023	VA	BOTETOURT	32	8350	5068	2286	68083	220596	17	1927	0	306361
2.7E+08	270	51045	VA	CRAIG	0	452	364	85	22363	160053	50	19	0	183386
2.7E+08	270	51071	VA	GILES	0	0	0	0	18	7520	0	0	0	7538
2.7E+08	270	51091	VA	HIGHLAND	3	322	203	19	27996	81140	0	0	0	109682
2.7E+08	270	51121	VA	MONTGOMERY	0	15	0	0	466	13923	0	0	0	14404
2.7E+08	270	51161	VA	ROANOKE	0	61	62	46	4990	11581	0	0	0	16740
2.7E+08	270	51163	VA	ROCKBRIDGE	327	13169	5689	2880	105114	256488	73	2042	0	385784
2.7E+08	270	51530	VA	BUENA VISTA CITY	355	1142	178	141	661	1808	0	102	0	4386
2.7E+08	270	51560	VA	CLIFTON FORGE CITY	288	661	39	242	24	687	0	48	0	1989
2.7E+08	270	51580	VA	COVINGTON CITY	288	1173	153	181	265	618	0	170	0	2848
2.7E+08	270	51678	VA	LEXINGTON CITY	203	856	281	104	72	75	0	8	0	1599
2.7E+08	270	54063	WV	MONROE	0	42	69	0	7088	42489	0	0	0	49688
2.7E+08	270	54071	WV	PENDLETON	0	0	0	0	595	1124	0	0	0	1719
2.8E+08	280	51003	VA	ALBEMARLE	634	9282	10466	9395	141257	283608	37	2660	0	457339
2.8E+08	280	51009	VA	AMHERST	254	8531	3545	4923	50584	147114	51	1874	0	216876

Table 3. 1990 Chesapeake Bay Program Land Use in Acres by Phase 4.2 Watershed Model County Segments

COSEG	SEG	FIPS	State	County	Developed	Developed	Urban	Urban	Herbaceous	Woody	Exposed	Water	Wetland	Acreage
10036003	10	36003	NY	ALLEGANY	1	2672	291	298	12596	37090	12	5	0	52964
10036015	10	36015	NY	CHEMUNG	1463	14292	7343	1007	75404	104028	128	1587	0	205251
10036051	10	36051	NY	LIVINGSTON	0	0	0	0	5477	4603	0	0	0	10080
10036069	10	36069	NY	ONTARIO	0	0	0	0	276	440	0	0	0	716
10036097	10	36097	NY	SCHUYLER	0	1748	188	173	11618	36542	0	1976	0	52246
10036101	10	36101	NY	STEUBEN	804	35969	4114	3120	244707	491685	87	3381	0	783867
10036123	10	36123	NY	YATES	0	13	39	1	3365	3038	0	28	0	6484
10042015	10	42015	PA	BRADFORD	83	2040	928	121	52113	55289	101	931	0	111605
10042105	10	42105	PA	POTTER	0	273	39	33	11598	18259	0	103	0	30304
2.8E+08	280	51011	VA	APPOMATTOX	26	1337	808	883	29395	57314	6	590	0	90360
2.8E+08	280	51019	VA	BEDFORD	39	7362	140	413	4241	17223	40	352	0	29809
2.8E+08	280	51029	VA	BUCKINGHAM	9	2604	2359	2356	99899	242283	297	2690	0	352497
2.8E+08	280	51031	VA	CAMPBELL	195	6624	614	1309	7549	27905	0	318	0	44515
2.8E+08	280	51049	VA	CUMBERLAND	40	816	924	460	31178	60028	0	469	0	93915
2.8E+08	280	51065	VA	FLUVANNA	24	3313	3497	2285	62713	111423	0	2717	0	185972
2.8E+08	280	51075	VA	GOOCHLAND	0	363	184	212	16329	22332	0	689	0	40108
2.8E+08	280	51079	VA	GREENE	0	327	3193	584	20798	35877	24	168	0	60971
2.8E+08	280	51109	VA	LOUISA	0	170	368	265	3074	6729	0	39	0	10644
2.8E+08	280	51125	VA	NELSON	128	1715	4349	3759	66080	226549	47	1565	0	304192
2.8E+08	280	51137	VA	ORANGE	0	4	348	152	2267	3296	0	3	0	6071
2.8E+08	280	51540	VA	CHARLOTTESVILLE CITY	770	3408	1478	478	282	151	0	11	0	6578
2.8E+08	280	51680	VA	LYNCHBURG CITY	1069	14361	196	1270	1782	12992	0	224	0	31895
2.9E+08	290	51041	VA	CHESTERFIELD	14	1516	319	602	1470	5765	0	64	1	9751
2.9E+08	290	51049	VA	CUMBERLAND	0	379	176	160	12532	19560	0	65	0	32872
2.9E+08	290	51075	VA	GOOCHLAND	64	2940	1920	1599	53513	77187	0	3526	74	140822
2.9E+08	290	51087	VA	HENRICO	601	8971	1031	1338	3266	5990	0	630	11	21839
2.9E+08	290	51145	VA	POWHATAN	4	2160	939	1182	40249	76569	0	1200	113	122416
2.9E+08	290	51760	VA	RICHMOND CITY	1	563	58	517	123	680	0	60	0	2002
3E+08	300	51007	VA	AMELIA	49	1918	856	478	86507	125304	0	950	69	216132
3E+08	300	51011	VA	APPOMATTOX	26	1248	602	762	15116	43313	0	118	0	61185
3E+08	300	51029	VA	BUCKINGHAM	0	111	3	33	6072	15406	0	82	0	21706
3E+08	300	51041	VA	CHESTERFIELD	0	376	14	1	5758	25987	0	298	4	32437
3E+08	300	51049	VA	CUMBERLAND	11	525	851	254	27959	35269	0	419	0	65288
3E+08	300	51135	VA	NOTTOWAY	156	1929	986	579	35663	59724	124	466	13	99640
3E+08	300	51145	VA	POWHATAN	12	192	160	81	15409	24532	0	244	15	40646
3E+08	300	51147	VA	PRINCE EDWARD	258	4371	3162	1657	71478	134093	114	1688	0	216822
3.1E+08	310	51007	VA	AMELIA	0	29	0	0	3322	9653	0	540	10	13555
3.1E+08	310	51041	VA	CHESTERFIELD	6	460	226	140	4701	23778	0	1611	2	30924
3.1E+08	310	51053	VA	DINWIDDIE	21	392	61	36	12194	29423	0	1344	19	43491
3.1E+08	310	51135	VA	NOTTOWAY	0	44	0	0	2332	4603	0	27	0	7006
3.3E+08	330	24027	MD	HOWARD	10	857	562	376	22889	19450	0	820	18	44983
3.3E+08	330	24031	MD	MONTGOMERY	112	1693	897	670	17857	17387	0	634	13	39264
3.4E+08	340	24003	MD	ANNE ARUNDEL	1269	8462	2541	1360	5016	19413	13	26	97	38198
3.4E+08	340	24027	MD	HOWARD	2253	17591	3304	2944	26018	24387	13	188	33	76733
3.4E+08	340	24033	MD	PRINCE GEORGES	1277	9075	1619	1840	2325	9470	3	90	49	25749
3.7E+08	370	10003	DE	NEW CASTLE	0	28	21	0	6119	768	0	16	70	7023
3.7E+08	370	24015	MD	CECIL	5	433	326	83	25485	9628	0	596	1790	38344
3.8E+08	380	10001	DE	KENT	0	20	302	96	10384	8477	0	0	21	19299
3.8E+08	380	10003	DE	NEW CASTLE	0	0	0	0	3071	4437	0	0	0	7508
3.8E+08	380	24011	MD	CAROLINE	0	0	0	0	15	6	0	0	0	21
3.8E+08	380	24029	MD	KENT	3	1242	986	421	75758	20967	8	1317	3146	103848
3.8E+08	380	24035	MD	QUEEN ANNES	13	1431	1404	552	85480	32968	0	724	1909	124481
3.9E+08	390	24035	MD	QUEEN ANNES	0	579	1039	152	20233	6696	0	475	473	29648
3.9E+08	390	24041	MD	TALBOT	0	74	460	98	14995	4578	0	410	341	20954
4E+08	400	10001	DE	KENT	0	0	117	11	9190	5140	0	0	0	14459
4E+08	400	24011	MD	CAROLINE	14	1803	3135	1044	95654	39885	6	563	3390	145494
4E+08	400	24019	MD	DORCHESTER	346	1665	1383	335	20636	5146	0	474	1080	31064
4E+08	400	24035	MD	QUEEN ANNES	0	70	216	81	33747	11898	0	9	86	46107
4E+08	400	24041	MD	TALBOT	22	634	1648	392	51840	17880	0	724	3146	76286
4.1E+08	410	10001	DE	KENT	0	51	172	31	23484	14007	0	0	12	37757
4.1E+08	410	10005	DE	SUSSEX	846	4188	4842	2129	126836	90551	46	1146	1594	232177
4.1E+08	410	24011	MD	CAROLINE	99	980	508	380	23687	14410	0	48	248	40361
4.1E+08	410	24019	MD	DORCHESTER	82	556	630	152	36910	23557	0	748	2956	65590
4.1E+08	410	24045	MD	WICOMICO	78	954	1495	517	32612	32120	0	601	7410	75786
4.2E+08	420	10005	DE	SUSSEX	56	248	80	29	874	263	0	0	0	1550
4.2E+08	420	24039	MD	SOMERSET	31	111	1264	510	12417	15038	0	666	7148	37186
4.2E+08	420	24045	MD	WICOMICO	1740	7914	4575	1803	42757	34310	0	641	6612	100352
4.2E+08	420	24047	MD	WORCESTER	0	0	0	0	45	25	0	0	0	69
4.3E+08	430	10005	DE	SUSSEX	0	0	102	0	11201	11151	0	0	0	22454
4.3E+08	430	24039	MD	SOMERSET	16	1718	3107	1923	55464	63961	250	3015	41811	171266
4.3E+08	430	24045	MD	WICOMICO	14	414	1506	224	33400	29348	0	17	41	64963
4.3E+08	430	24047	MD	WORCESTER	75	1721	1375	629	68868	108863	0	507	1650	183687
4.3E+08	430	51001	VA	ACCOMACK	0	64	325	232	7749	8777	0	38	2004	19189
4.4E+08	440	51001	VA	ACCOMACK	0	936	2919	1762	48478	48056	228	2205	21058	125640
4.4E+08	440	51131	VA	NORTHAMPTON	227	1656	1702	444	40400	15897	662	1792	1186	63965
4.5E+08	450	24005	MD	BALTIMORE	0	29	18	17	4317	2822	0	0	0	7203
4.5E+08	450	24015	MD	CECIL	278	1950	485	854	15300	14760	4	1134	586	35351
4.5E+08	450	24025	MD	HARFORD	214	1350	754	664	47635	42406	82	892	345	94341

Table 3. 1990 Chesapeake Bay Program Land Use in Acres by Phase 4.2 Watershed Model County Segments

COSEG	SEG	FIPS	State	County	Developed	Developed	Urban	Urban	Herbaceous	Woody	Exposed	Water	Wetland	Acreage
10036003	10	36003	NY	ALLEGANY	1	2672	291	298	12596	37090	12	5	0	52964
10036015	10	36015	NY	CHEMUNG	1463	14292	7343	1007	75404	104028	128	1587	0	205251
10036051	10	36051	NY	LIVINGSTON	0	0	0	0	5477	4603	0	0	0	10080
10036069	10	36069	NY	ONTARIO	0	0	0	0	276	440	0	0	0	716
10036097	10	36097	NY	SCHUYLER	0	1748	188	173	11618	36542	0	1976	0	52246
10036101	10	36101	NY	STEUBEN	804	35969	4114	3120	244707	491685	87	3381	0	783867
10036123	10	36123	NY	YATES	0	13	39	1	3365	3038	0	28	0	6484
10042015	10	42015	PA	BRADFORD	83	2040	928	121	52113	55289	101	931	0	111605
10042105	10	42105	PA	POTTER	0	273	39	33	11598	18259	0	103	0	30304
4.5E+08	450	42029	PA	CHESTER	119	868	319	244	22964	19457	0	331	157	44458
4.5E+08	450	42071	PA	LANCASTER	25	906	350	133	52377	15417	29	437	60	69733
4.5E+08	450	42133	PA	YORK	3	843	265	23	12490	4107	37	20	0	17788
4.7E+08	470	24005	MD	BALTIMORE	3807	20715	5340	4672	87077	112410	1525	4468	810	240824
4.7E+08	470	24013	MD	CARROLL	22	397	307	99	13782	6895	32	0	0	21533
4.7E+08	470	24025	MD	HARFORD	458	3226	2038	1075	10629	10364	33	359	836	29018
4.7E+08	470	42133	PA	YORK	0	92	53	23	4504	1178	0	0	0	5850
4.8E+08	480	24005	MD	BALTIMORE	2794	19009	4280	5831	7972	13304	147	69	51	53458
4.8E+08	480	24510	MD	BALTIMORE CITY	17352	12740	2505	1568	310	1396	15	217	33	36137
4.9E+08	490	24003	MD	ANNE ARUNDEL	4999	21970	2655	2131	4379	13853	243	827	236	51294
4.9E+08	490	24005	MD	BALTIMORE	1511	8082	1307	1421	680	4106	95	172	209	17583
4.9E+08	490	24027	MD	HOWARD	612	4518	794	1010	3302	8823	4	27	19	19109
4.9E+08	490	24510	MD	BALTIMORE CITY	1539	861	17	6	95	35	0	60	14	2626
5E+08	500	24003	MD	ANNE ARUNDEL	56	1309	3868	1089	18398	16067	310	660	550	42308
5E+08	500	24009	MD	CALVERT	200	2768	12400	6395	25246	50455	86	1569	1713	100832
5E+08	500	24017	MD	CHARLES	5	625	1445	952	3577	11325	5	36	126	18096
5E+08	500	24033	MD	PRINCE GEORGES	2114	14384	12467	6453	40844	54310	172	583	2322	133649
5E+08	500	24037	MD	ST MARYS	423	2120	3617	4099	7911	23678	26	482	742	43098
5.1E+08	510	24003	MD	ANNE ARUNDEL	1834	13376	1850	4252	4426	16401	141	953	138	43370
5.4E+08	540	11001	DC	DISTRICT OF COLUMBIA	7408	7018	1988	728	435	345	0	299	0	18221
5.4E+08	540	24031	MD	MONTGOMERY	1550	16907	2984	4305	4278	8131	176	5	15	38352
5.4E+08	540	24033	MD	PRINCE GEORGES	6758	25762	5692	3294	3216	8561	963	63	29	54337
5.5E+08	550	51059	VA	FAIRFAX	1996	11722	6799	5135	12892	29258	54	734	75	68665
5.5E+08	550	51061	VA	FAUQUIER	265	6211	10558	3888	61303	52213	117	580	81	135216
5.5E+08	550	51107	VA	LOUDOUN	105	1435	671	249	6870	6771	50	16	23	16190
5.5E+08	550	51153	VA	PRINCE WILLIAM	1946	22157	14722	9344	52900	69911	209	1765	302	173256
5.5E+08	550	51683	VA	MANASSAS CITY	707	2788	971	26	1714	208	0	0	5	6420
5.5E+08	550	51685	VA	MANASSAS PARK CITY	89	436	176	3	211	255	0	0	1	1171
5.6E+08	560	51033	VA	CAROLINE	0	1287	1428	654	15685	56193	0	398	437	76082
5.6E+08	560	51057	VA	ESSEX	0	1303	1073	387	53093	87884	0	967	4366	149072
5.6E+08	560	51099	VA	KING GEORGE	60	328	452	301	17064	21981	78	302	489	41056
5.6E+08	560	51103	VA	LANCASTER	0	410	1447	1140	20850	46344	13	1414	1497	73116
5.6E+08	560	51119	VA	MIDDLESEX	0	222	1491	773	16698	26737	97	988	1167	48173
5.6E+08	560	51133	VA	NORTHUMBERLAND	0	34	21	25	946	655	0	0	5	1686
5.6E+08	560	51159	VA	RICHMOND	0	581	2640	842	40982	72284	3	992	4095	122419
5.6E+08	560	51177	VA	POTTSYLVANIA	317	4817	1389	416	10597	17619	50	254	37	35497
5.6E+08	560	51179	VA	STAFFORD	240	3588	1881	880	8642	9899	47	207	27	25410
5.6E+08	560	51193	VA	WESTMORELAND	0	86	1198	366	15809	22613	0	234	684	40990
5.6E+08	560	51630	VA	FREDERICKSBURG CITY	303	2540	540	363	901	1620	5	83	9	6362
5.8E+08	580	51103	VA	LANCASTER	0	0	21	6	313	226	0	0	3	570
5.8E+08	580	51133	VA	NORTHUMBERLAND	0	126	1277	790	9534	26352	20	734	801	39634
5.8E+08	580	51159	VA	RICHMOND	0	0	0	0	78	79	0	0	0	157
5.9E+08	590	51033	VA	CAROLINE	0	32	229	124	2027	5220	0	0	4	7635
5.9E+08	590	51073	VA	GLOUCESTER	88	4084	66	94	15930	23993	25	807	2702	47789
5.9E+08	590	51085	VA	HANOVER	36	4132	4181	2803	26545	47988	0	1044	28	86759
5.9E+08	590	51095	VA	JAMES CITY	90	1513	56	31	4927	13906	0	81	872	21476
5.9E+08	590	51097	VA	KING AND QUEEN	25	569	805	291	46085	89874	0	1045	4005	142700
5.9E+08	590	51101	VA	KING WILLIAM	20	1024	694	434	56132	106770	0	2426	4793	172292
5.9E+08	590	51127	VA	NEW KENT	3	580	148	53	14358	42214	2	1242	4796	63399
5.9E+08	590	51199	VA	YORK	519	6854	1633	1445	5418	21797	78	1124	2209	41076
5.9E+08	590	51830	VA	WILLIAMSBURG CITY	22	921	63	75	42	326	0	1	53	1504
6E+08	600	51036	VA	CHARLES CITY	14	571	275	264	28296	71421	103	1800	3200	105943
6E+08	600	51041	VA	CHESTERFIELD	2895	36958	6106	7564	33267	111927	118	4278	749	203861
6E+08	600	51053	VA	DINWIDDIE	1391	1055	860	277	1840	1518	61	86	2	7091
6E+08	600	51087	VA	HENRICO	838	7405	3585	2302	19315	22379	181	1364	280	57650
6E+08	600	51093	VA	ISLE OF WIGHT	565	4125	2606	947	26798	25536	957	956	5142	67632
6E+08	600	51095	VA	JAMES CITY	382	9650	640	1042	13661	37419	108	2397	6476	71775
6E+08	600	51127	VA	NEW KENT	21	1644	118	102	8338	36699	0	1827	295	49045
6E+08	600	51145	VA	POWHATAN	0	69	117	85	1559	3178	0	9	1	5018
6E+08	600	51149	VA	PRINCE GEORGE	625	2774	1072	383	32185	38522	0	1267	949	77778
6E+08	600	51181	VA	SURRY	171	403	1225	1901	24733	38419	185	1026	2318	70380
6E+08	600	51199	VA	YORK	62	1076	409	244	651	5085	2	22	70	7621
6E+08	600	51570	VA	COLONIAL HEIGHTS CITY	324	2305	283	116	687	909	0	201	71	4896
6E+08	600	51650	VA	HAMPTON CITY	612	5233	602	91	98	16	0	162	102	6915
6E+08	600	51670	VA	HOPEWELL CITY	796	3456	606	255	375	1028	0	90	32	6638
6E+08	600	51700	VA	NEWPORT NEWS CITY	4469	17258	1535	1453	2456	8843	77	1270	2588	39948
6E+08	600	51730	VA	PETERSBURG CITY	1169	3412	1152	534	1202	2056	37	152	8	9723
6E+08	600	51760	VA	RICHMOND CITY	5696	19139	4230	3858	1221	2041	16	1169	36	37406
6E+08	600	51800	VA	SUFFOLK	127	876	856	339	3262	1995	51	362	787	8656

Table 3. 1990 Chesapeake Bay Program Land Use in Acres by Phase 4.2 Watershed Model County Segments

COSEG	SEG	FIPS	State	County	Developed	Developed	Urban	Urban	Herbaceous	Woody	Exposed	Water	Wetland	Acreage
10036003	10	36003	NY	ALLEGANY	1	2672	291	298	12596	37090	12	5	0	52964
10036015	10	36015	NY	CHEMUNG	1463	14292	7343	1007	75404	104028	128	1587	0	205251
10036051	10	36051	NY	LIVINGSTON	0	0	0	0	5477	4603	0	0	0	10080
10036069	10	36069	NY	ONTARIO	0	0	0	0	276	440	0	0	0	716
10036097	10	36097	NY	SCHUYLER	0	1748	188	173	11618	36542	0	1976	0	52246
10036101	10	36101	NY	STEUBEN	804	35969	4114	3120	244707	491685	87	3381	0	783867
10036123	10	36123	NY	YATES	0	13	39	1	3365	3038	0	28	0	6484
10042015	10	42015	PA	BRADFORD	83	2040	928	121	52113	55289	101	931	0	111605
10042105	10	42105	PA	POTTER	0	273	39	33	11598	18259	0	103	0	30304
6E+08	600	51830	VA	WILLIAMSBURG CITY	43	1299	163	179	156	2133	1	57	24	4055
6.1E+08	610	51036	VA	CHARLES CITY	20	140	0	0	3208	8271	0	57	10	11707
6.1E+08	610	51085	VA	HANOVER	313	4867	4058	2138	11673	20911	0	238	14	44211
6.1E+08	610	51087	VA	HENRICO	2381	22438	5651	4136	11666	27445	12	389	65	74183
6.1E+08	610	51127	VA	NEW KENT	0	1442	157	247	4872	16271	0	364	25	23378
6.2E+08	620	51093	VA	ISLE OF WIGHT	99	650	792	202	17404	14478	93	824	17	34559
6.2E+08	620	51740	VA	PORTSMOUTH CITY	461	1989	305	240	658	371	1582	664	314	6583
6.2E+08	620	51800	VA	SUFFOLK	1712	10291	5109	1979	33766	33882	53	4717	4163	95671
6.3E+08	630	51550	VA	CHESAPEAKE CITY	359	4900	724	553	1609	3084	0	169	523	11920
6.3E+08	630	51740	VA	PORTSMOUTH CITY	723	3972	582	431	171	45	0	314	230	6470
6.5E+08	650	24005	MD	BALTIMORE	14	608	244	185	5695	9553	196	1144	19	17659
6.5E+08	650	24013	MD	CARROLL	594	3295	1852	746	47573	31588	2	1441	38	87128
7E+08	700	42015	PA	BRADFORD	92	4264	415	146	59260	86437	0	1815	0	152429
7E+08	700	42117	PA	TIOGA	0	54	0	0	1273	1293	0	35	0	2655
7.1E+08	710	42071	PA	LANCASTER	825	5441	1317	339	65072	12721	43	7924	0	93682
7.1E+08	710	42075	PA	LEBANON	0	148	9	24	504	5067	0	0	0	5751
7.1E+08	710	42133	PA	YORK	355	3257	1306	335	30455	19721	30	139	0	55599
7.2E+08	720	42011	PA	BERKS	274	579	229	67	5380	12044	0	61	0	18633
7.2E+08	720	42029	PA	CHESTER	22	74	2	0	255	962	0	0	0	1315
7.2E+08	720	42071	PA	LANCASTER	5528	34103	7053	2286	167625	51071	733	1822	0	270221
7.2E+08	720	42075	PA	LEBANON	0	247	111	17	6530	7080	0	25	0	14009
7.3E+08	730	24043	MD	WASHINGTON	0	18	0	0	1500	318	0	103	0	1940
7.3E+08	730	42001	PA	ADAMS	3	167	1	2	506	14178	27	251	0	15135
7.3E+08	730	42055	PA	FRANKLIN	1333	12104	3212	2140	166137	118378	298	757	3	304362
7.4E+08	740	24043	MD	WASHINGTON	582	9274	1028	318	64668	52720	134	4055	45	132825
7.4E+08	740	42055	PA	FRANKLIN	0	27	0	0	4499	18421	0	0	0	22947
7.4E+08	740	42057	PA	FULTON	0	1081	471	75	41849	127249	0	214	0	170939
7.4E+08	740	51043	VA	CLARKE	0	107	22	0	18500	4249	0	19	0	22897
7.4E+08	740	51069	VA	FREDERICK	160	6777	2227	532	89599	88128	275	521	0	188218
7.4E+08	740	51840	VA	WINCHESTER CITY	182	3179	925	121	1278	291	3	0	0	5978
7.4E+08	740	54003	WV	BERKELEY	374	7720	3641	737	97044	95850	0	625	4	205996
7.4E+08	740	54037	WV	JEFFERSON	3	264	939	142	31503	9999	0	58	1	42909
7.4E+08	740	54065	WV	MORGAN	0	855	122	158	24202	54793	16	87	0	80233
7.5E+08	750	24013	MD	CARROLL	0	21	33	1	5346	1392	0	178	5	6976
7.5E+08	750	24021	MD	FREDERICK	0	29	5	3	4982	2023	0	69	3	7114
7.5E+08	750	42001	PA	ADAMS	247	5208	773	151	57582	35028	142	476	9	99616
7.6E+08	760	24005	MD	BALTIMORE	183	1463	481	456	5312	8691	210	34	24	16853
7.6E+08	760	24013	MD	CARROLL	89	2015	1060	281	21152	14323	0	299	13	39233
7.6E+08	760	24027	MD	HOWARD	7	1048	248	166	9501	10369	0	49	45	21432
7.7E+08	770	10001	DE	KENT	0	4	1019	194	26874	22178	0	42	111	50422
7.7E+08	770	24011	MD	CAROLINE	0	6	548	112	11300	7258	0	14	47	19284
7.7E+08	770	24035	MD	QUEEN ANNES	0	0	39	0	1067	835	0	0	1	1942
7.8E+08	780	10001	DE	KENT	0	35	180	27	4367	3242	0	0	0	7851
7.8E+08	780	10005	DE	SUSSEX	42	458	1132	128	22735	13322	0	0	24	37841
8E+08	800	10003	DE	NEW CASTLE	4	104	263	80	6123	2975	8	107	69	9733
8E+08	800	24015	MD	CECIL	428	6994	3857	3747	47330	57312	469	861	2224	123223
8E+08	800	42029	PA	CHESTER	53	994	651	208	25120	12984	55	406	27	40497
8.1E+08	810	10003	DE	NEW CASTLE	0	19	28	0	3405	1271	0	0	5	4727
8.1E+08	810	24015	MD	CECIL	0	192	87	16	11897	4072	0	257	753	17274
8.1E+08	810	24029	MD	KENT	0	1078	507	332	50579	18821	0	1522	3011	75848
8.2E+08	820	24035	MD	QUEEN ANNES	0	4265	1728	1009	17892	7694	27	1865	1621	36101
8.3E+08	830	24041	MD	TALBOT	364	4958	4464	1860	39904	19102	0	3009	1643	75306
8.4E+08	840	24019	MD	DORCHESTER	523	797	3887	991	90624	78965	282	12650	80111	268829
8.4E+08	840	24039	MD	SOMERSET	0	0	1	0	8	2	0	12	0	25
8.5E+08	850	24025	MD	HARFORD	1517	16480	6988	3361	39902	50246	590	772	5783	125638
8.6E+08	860	24005	MD	BALTIMORE	8386	15887	2663	1027	2203	3373	0	743	211	34493
8.6E+08	860	24510	MD	BALTIMORE CITY	3614	7352	1664	396	124	40	0	67	4	13261
8.7E+08	870	24003	MD	ANNE ARUNDEL	481	9926	892	2387	1955	6393	21	587	67	22710
8.8E+08	880	24003	MD	ANNE ARUNDEL	989	11839	3726	3041	15190	31760	35	1292	483	68354
8.8E+08	880	24009	MD	CALVERT	155	1828	2703	2797	4199	24273	32	163	933	37083
8.9E+08	890	11001	DC	DISTRICT OF COLUMBIA	5077	6487	1068	1367	87	2029	11	220	4	16349
8.9E+08	890	24031	MD	MONTGOMERY	2987	16771	2006	3576	6644	7192	0	140	9	39324
9E+08	900	11001	DC	DISTRICT OF COLUMBIA	34	36	24	0	63	0	0	50	0	207
9E+08	900	51013	VA	ARLINGTON CITY	3125	10027	1614	1009	376	385	0	68	1	16606
9E+08	900	51059	VA	FAIRFAX	6092	48084	13883	17852	7248	16802	109	847	344	111262
9E+08	900	51510	VA	ALEXANDRIA CITY	3065	4994	731	472	199	197	0	25	2	9684
9E+08	900	51600	VA	FAIRFAX CITY	641	2214	571	332	45	190	0	0	3	3996
9E+08	900	51610	VA	FALLS CHURCH CITY	233	897	46	92	3	0	0	0	0	1271
9.1E+08	910	11001	DC	DISTRICT OF COLUMBIA	641	1959	549	120	56	97	0	36	0	3458

Table 3. 1990 Chesapeake Bay Program Land Use in Acres by Phase 4.2 Watershed Model County Segments

COSEG	SEG	FIPS	State	County	Developed	Developed	Urban	Urban	Herbaceous	Woody	Exposed	Water	Wetland	Acreage
10036003	10	36003	NY	ALLEGANY	1	2672	291	298	12596	37090	12	5	0	52964
10036015	10	36015	NY	CHEMUNG	1463	14292	7343	1007	75404	104028	128	1587	0	205251
10036051	10	36051	NY	LIVINGSTON	0	0	0	0	5477	4603	0	0	0	10080
10036069	10	36069	NY	ONTARIO	0	0	0	0	276	440	0	0	0	716
10036097	10	36097	NY	SCHUYLER	0	1748	188	173	11618	36542	0	1976	0	52246
10036101	10	36101	NY	STEUBEN	804	35969	4114	3120	244707	491685	87	3381	0	783867
10036123	10	36123	NY	YATES	0	13	39	1	3365	3038	0	28	0	6484
10042015	10	42015	PA	BRADFORD	83	2040	928	121	52113	55289	101	931	0	111605
10042105	10	42105	PA	POTTER	0	273	39	33	11598	18259	0	103	0	30304
9.1E+08	910	24017	MD	CHARLES	485	7291	3921	5769	7202	40059	47	665	468	65906
9.1E+08	910	24033	MD	PRINCE GEORGES	3459	19871	13380	8369	14526	33338	63	248	51	93304
9.2E+08	920	24017	MD	CHARLES	539	9024	11677	8704	52188	123919	101	1551	2951	210655
9.2E+08	920	24033	MD	PRINCE GEORGES	5	122	396	218	1081	2815	12	0	6	4655
9.2E+08	920	24037	MD	ST MARYS	453	4683	11957	6190	53633	89767	264	2760	1673	171381
9.3E+08	930	51103	VA	LANCASTER	0	74	495	295	4079	6102	85	561	419	12110
9.3E+08	930	51133	VA	NORTHUMBERLAND	0	64	337	121	6567	9940	38	522	565	18155
9.4E+08	940	51057	VA	ESSEX	0	93	6	1	6549	9824	0	50	2	16525
9.4E+08	940	51073	VA	GLOUCESTER	58	4343	1074	908	24187	56651	28	1364	4049	92663
9.4E+08	940	51097	VA	KING AND QUEEN	0	84	0	0	11557	34077	0	24	20	45761
9.4E+08	940	51115	VA	MATHEWS	38	1598	1056	476	17426	29111	417	1836	2941	54898
9.4E+08	940	51119	VA	MIDDLESEX	0	147	275	277	10004	24247	9	265	518	35741
9.5E+08	950	51199	VA	YORK	537	5713	273	463	2010	6407	0	554	497	16453
9.5E+08	950	51735	VA	POQUOSON CITY	43	1511	157	49	1152	631	0	395	2402	6340
9.55E+08	955	51199	VA	YORK	171	1413	48	26	263	1409	6	95	154	3584
9.55E+08	955	51650	VA	HAMPTON CITY	2731	12652	2315	365	2160	4060	5	596	1395	26280
9.55E+08	955	51700	VA	NEWPORT NEWS CITY	410	3103	215	57	123	331	0	66	8	4313
9.55E+08	955	51735	VA	POQUOSON CITY	43	896	40	40	449	776	0	54	1379	3677
9.6E+08	960	51131	VA	NORTHAMPTON	9	1	0	0	0	0	0	5	0	15
9.6E+08	960	51550	VA	CHESAPEAKE CITY	3940	16699	3072	1479	7906	9954	29	999	584	44663
9.6E+08	960	51650	VA	HAMPTON CITY	11	8	6	0	0	0	0	3	0	27
9.6E+08	960	51710	VA	NORFOLK CITY	7022	13977	2399	1057	415	183	8	749	444	26254
9.6E+08	960	51740	VA	PORTSMOUTH CITY	1632	5489	916	87	137	12	0	141	114	8527
9.6E+08	960	51810	VA	VIRGINIA BEACH	1184	5613	452	361	231	394	8	397	334	8974
9.65E+08	965	51710	VA	NORFOLK CITY	1199	5141	493	277	347	205	79	538	201	8480
9.65E+08	965	51810	VA	VIRGINIA BEACH	5172	23148	2654	4159	2674	5594	947	2223	1235	47805
9.7E+08	970	51153	VA	PRINCE WILLIAM	357	4071	917	1407	2720	26611	101	239	163	36587
9.8E+08	980	51061	VA	FAUQUIER	0	41	52	117	389	1986	0	0	0	2586
9.8E+08	980	51099	VA	KING GEORGE	100	1551	2869	2461	14110	51470	26	755	650	73992
9.8E+08	980	51133	VA	NORTHUMBERLAND	0	219	1316	490	27777	31636	148	1478	1205	64269
9.8E+08	980	51153	VA	PRINCE WILLIAM	13	556	136	221	547	7379	0	288	10	9150
9.8E+08	980	51159	VA	RICHMOND	0	5	32	0	147	26	0	0	0	210
9.8E+08	980	51179	VA	STAFFORD	238	7631	4494	7000	19718	82426	89	1285	795	123677
9.8E+08	980	51193	VA	WESTMORELAND	87	1820	3370	2418	37366	58530	55	1835	1264	106745
9.9E+08	990	24037	MD	ST MARYS	735	817	1612	1678	3663	7171	45	635	354	16711
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					247696	1762463	731338	466449	13415169	23626639	132425	423311	306906	41112397

Section 3. Phase 4.2 Watershed Model Land Use Classification

Agricultural Land Use Classification

The Phase 4.2 Chesapeake Bay Watershed Model employs the U.S. Agricultural Census data¹ to determine agricultural land use. Various categories from several different tables in the U.S. Agricultural Census are used in the calculation of conventionally tilled cropland (*High Till*), conservation tilled cropland (*Low Till*), *Pasture*, and *Hayland*². Conservation tillage is defined as all tillage practices that have 30% plant residue cover at the time of planting. This section will review the data and methodology used in the calculation of each land use.

Table 4 summarizes the county-based land use data contained in the U.S. Agricultural Census and the table in which the data are found. Data for census years 1982, 1987, 1992 and 1997 have been collected with the 1990 Base Land Use being determined by linear interpolation between the 1987 and 1992 data.

Table 4. Agricultural Land Use Data in U.S. Agricultural Census

<i>U.S. Agricultural Census Data Category</i>	<i>U.S. Agricultural Census Table</i>
<i>Total cropland</i>	<i>Table 6; Farms, Land in Farms</i>
<i>Hay-alfalfa, other tame, small grain, wild, grass silage, green chop, etc.</i>	<i>Table 13; Selected Crops</i>
<i>Other cropland, cropland in cover crops, legumes, and soil-improvement grasses</i>	<i>Table 6; Farms, Land in Farms</i>
<i>Other cropland, cropland idle</i>	<i>Table 6; Farms, Land in Farms</i>
<i>Total cropland, cropland used only for pasture and grazing</i>	<i>Table 6; Farms, Land in Farms</i>
<i>Other land, pastureland, and rangeland other than cropland and woodland pasture</i>	<i>Table 6; Farms, Land in Farms</i>
<i>Total woodland, woodland pastured</i>	<i>Table 6; Farms, Land in Farms</i>
<i>Grass silage, haylage, and green chop hay³</i>	<i>Table 28; Seed, hay, forage, and silage</i>
<i>Land in orchards</i>	<i>Table 30; Land in Orchards</i>

¹ Census of Agriculture, Volume 1, Geographic Area Series, published by the U.S. Department of Commerce, Washington, D.C., 1982, 1987, 1992, and 1997.

² Italics are used to differentiate Phase 4.2 WSM land uses from CBPLU or Ag. Census land use categories.

³ David Knopf, Deputy State Statistician, Maryland Agricultural Statistics Service, recommended through communication with the Tributary Strategy Workgroup that this category be subtracted from 'Hay-alfalfa, other tame, small grain, wild, grass silage, green chop, etc. (acres)' to avoid double-counting in *Hayland* acres.

High/Low Till, Pasture and Hayland are calculated as follows:

Total Hayland =

(Hay-alfalfa, other tame, small grain, wild, grass silage, green chop, etc.) –
(Grass silage, haylage and green chop hay) + (Land in orchards)

High/Low Till =

(Total *Cropland*) – (Total Hayland (as calculated above)) –
(Total *Cropland*, *Cropland* used only for pasture and grazing)

Pasture =

(Total cropland, cropland used only for pasture and grazing) +
(Total woodland, woodland pasture) + (Other land, pastureland and
rangeland other than cropland and woodland pasture)

Assigning County Based Agricultural Census Data

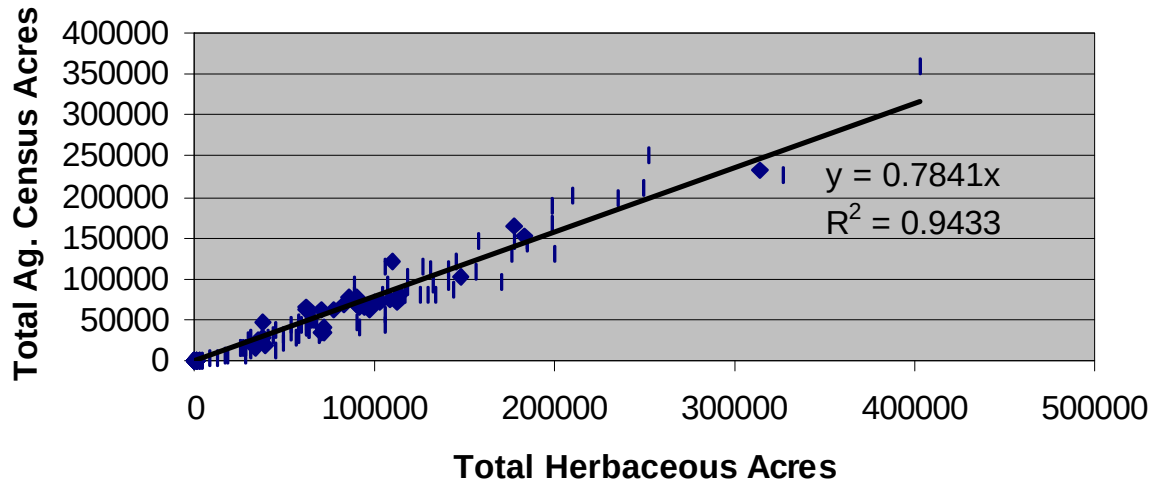
As previously discussed, county-based land use data available in the U.S. Agricultural Census was used to calculate the area of *High/Low Till Cropland*, *Hayland*, and *Pasture* for each county. The following method for disaggregating the data to the county-segment level was then developed. For counties fully contained in the watershed, the fraction of the total Agricultural Census county data assigned to a particular county-segment is determined by the ratio of CBPLU Herbaceous Acres found in a county-segment to the total CBPLU Herbaceous Acres in the county. The following equation illustrates the method for distributing Agricultural Census data to County-Segment 1 located in County X:

Fraction of Agricultural Land of County X in County-segment 1 =
$$\frac{(\text{CBPLU Herbaceous Acres in County-Segment 1})}{(\text{CBPLU Herbaceous Acres in County X})}$$

This method distributes county based Agricultural Census data into county-segments based on the spatial distribution of herbaceous land in the CBPLU data set.

In counties not fully within the watershed, the total county herbaceous acres are not known due to the unavailability of CBPLU data beyond the watershed boundary. Therefore, a method for the estimation of total herbaceous acres in counties not fully within the watershed is needed. The relationship between Total CBPLU Herbaceous acres and Total Agricultural Land from the U.S. Agricultural Census by county (Figure 10) is examined for the 134 counties fully contained in the watershed. This relationship (Total County Herbaceous Acres = Total Agricultural Census County Agricultural Land / 0.7841) was then applied to the 63 counties not fully contained in the Chesapeake Bay Watershed to estimate Total County Herbaceous acres. The method described previously for disaggregating the Agricultural Census county data to the county-segment level was then applied to these counties.

Figure 10. CBPLU Herbaceous Acres by County vs. U.S. Agricultural Census Agricultural Land by County



The final step in the calculation of the agricultural land use for 1990 is the split of the *High /Low Till* cropland category into its separate components. This is accomplished using information from the Conservation Technology Information Center (CTIC)¹ regarding the fraction of cropland under conservation and conventional tillage on a county basis.

Non-Agricultural Land Use Classification

After the disaggregation of the county-based U.S. Agricultural Census data to the county-segment level is complete, the full land use data set is developed for the remaining land uses at the county-segment level. *Impervious Urban*, *Pervious Urban*, and *Water* are determined based on CBPLU data at the county-segment level in the following manner:

Impervious Urban =

$$\begin{aligned} & (0.85 * \text{CBPLU High Intensity Urban}) + \\ & (0.4 * \text{CBPLU Low Intensity Urban}) + \\ & (0.1 * \text{CBPLU Herbaceous Urban}) + \\ & (0.1 * \text{CBPLU Woody Urban}) + \\ & (0.4 * \text{CBPLU Exposed}) \end{aligned}$$

Pervious Urban =

$$\begin{aligned} & (0.15 * \text{CBPLU High Intensity Urban}) + \\ & (0.6 * \text{CBPLU Low Intensity Urban}) + \\ & (0.9 * \text{CBPLU Herbaceous Urban}) + \\ & (0.9 * \text{CBPLU Woody Urban}) + \\ & (0.6 * \text{CBPLU Exposed}) \end{aligned}$$

¹ Conservation Technology Information Center, West Lafayette, IL

Water = CBPLU Water

Forest acres in the previous version of the WSM may have been over estimated by the inclusion of wooded pastureland that appears to be forest in the image processing procedure performed on the EMAP satellite data, but has a land use and a stocking rate more like *Pasture*. The US Agricultural Census data includes a category for wooded pasture, which can now be distinguished from *Forest*. The ‘Woodland Pasture’ acres, from the U.S. Agricultural Census data, are removed from CBPLU Woody and added to CBPLU Herbaceous. The final *Forest* land use for Phase 4.2 will be:

Forest =
(CBPLU Woody + CBPLU Herbaceous Wetlands) –
(Agricultural Census Woodland Pasture)

And the new Herbaceous becomes:

Herbaceous =
(CBPLU Herbaceous) + (Agricultural Census Woodland Pasture)

The use, in Phase 4.2, of Agricultural Census data leaves residual acres, representing the difference between Herbaceous and Total Agricultural Census Agricultural Land. A new land use category called *Non-Agricultural Herbaceous* is created in Phase 4.2 to account for these residual herbaceous acres not in agricultural production. *Non-Agricultural Herbaceous* land will have an application rate set at 25% of the *Pervious Urban* application rate.

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Animal Numbers and Manure Acres

The final land use category in the Phase 4.2 Chesapeake Bay Watershed Model is *Manure Acres*. The *Manure Acres* land use category simulates the high nutrient content runoff from animal operations in unconfined (pasture) or confined areas where a portion of the manure nutrient content is assumed to be lost in runoff prior to collection. A more detailed description of the calculation of Manure acres, and manure handling in the Chesapeake Bay Watershed Model, can be found in the report, *Tracking Best Management Practice Nutrient Reductions in the Chesapeake Bay Program* (1999.)

Manure Acres are based upon the population of different animal types present within each model segment. Animal populations were gathered from the U.S. Agricultural Census for 1982, 1987, 1992, and 1997 for use in the estimation of *Manure Acres* as well as application of manure to cropland and pasture. The Watershed Model calculation includes manure generated by beef cattle, dairy cows, swine, layers (2), broilers, and turkeys. Table 5 shows the animal numbers used to estimate the population of each species by county.

Table 5. U.S. Agricultural Census Animal Population Data

<i>Animal Type</i>	<i>Agricultural Census Table Number</i>	<i>Agricultural Census Table Name</i>	<i>Data heading</i>
<i>Beef Cattle</i>	<i>14</i>	<i>Cattle and calves – inventory & sales</i>	<i>(Cattle and calves inventory) – (Cows and heifers that had calved, milk cows)</i>
<i>Dairy</i>	<i>14</i>	<i>Cattle and calves – inventory & sales</i>	<i>Cows and heifers that had calved, milk cows</i>
<i>Swine</i>	<i>15</i>	<i>Hogs and pigs – inventory, litters & sales</i>	<i>Hogs and pigs</i>
<i>Layers > 3 lbs.</i>	<i>16</i>	<i>Poultry – inventory & sales</i>	<i>Any poultry, layers and pullets 13 weeks old and older</i>
<i>Layers < 3 lbs.</i>	<i>16</i>	<i>Poultry – inventory & sales</i>	<i>Any poultry, pullet chicks and pullets less than 13 weeks old</i>
<i>Broilers</i>	<i>16</i>	<i>Poultry – inventory & sales</i>	<i>Any poultry, broilers and other meat-type chickens</i>
<i>Turkeys</i>	<i>16</i>	<i>Poultry – inventory & sales</i>	<i>Any poultry, turkeys</i>

County based animal populations for 1990 are estimated using an interpolation between the 1987 and 1992 U.S. Agricultural Census values; whereas, the 1985 populations use the 1982 and 1987 Census years. However, as was the case with the land use data taken from the Census, these data must be disaggregated to the county-segment level for use in the Phase 4.2 Watershed Model. The disaggregation is accomplished in a manner similar to that used in determining county-segment land use. The fraction of the county animal population in a given county-segment is equal to the ratio of total agricultural land (*High Till, Low Till, Pasture, and Hayland*) in the county-segment to the total agricultural land in the county as determined from the Agricultural Census. The animal population in the county is multiplied by this ratio to estimate the animal population in the county-segment. Table 6 shows the final Phase 4.2 Watershed Model 1990 base land use data set by major tributary basin.

Table 6. 1990 Phase 4.2 Watershed Model Land Use Sorted by Major Tributary Basin

Basin	State	COSEG	County	SEG	Forest	Hi Till	Lo Till	Pasture	PervUrban	Hay	Non-Ag. Herb.	Imperv. Urb	Manure	Water
E.Shore MD	DE	370010003	NEW CASTLE	370	807	2039	2293	232	35	234	1353	13	1	16
E.Shore MD	DE	380010001	KENT	380	8391	2159	5306	447	370	228	2348	48	3	0
E.Shore MD	DE	380010003	NEW CASTLE	380	4421	1023	1151	116	0	117	679	0	0	0
E.Shore MD	DE	400010001	KENT	400	5047	1910	4696	395	115	202	2078	13	2	0
E.Shore MD	DE	410010001	KENT	410	13779	4882	12000	1010	214	516	5310	41	6	0
E.Shore MD	DE	410010005	SUSSEX	410	91337	31980	63410	2511	8941	1489	28191	3110	61	1146
E.Shore MD	DE	420010005	SUSSEX	420	258	220	437	17	255	10	194	158	0	0
E.Shore MD	DE	430010005	SUSSEX	430	11080	2824	5600	222	92	132	2489	10	5	0
E.Shore MD	DE	770010001	KENT	770	22014	5586	13733	1156	1095	590	6077	123	7	42
E.Shore MD	DE	780010001	KENT	780	3197	908	2231	188	208	96	987	35	1	0
E.Shore MD	DE	780010005	SUSSEX	780	13201	5732	11366	450	1415	267	5053	345	11	0
E.Shore MD	DE	800010003	NEW CASTLE	800	3012	2040	2294	232	377	234	1354	82	1	107
E.Shore MD	DE	810010003	NEW CASTLE	810	1257	1134	1276	129	37	130	753	11	0	0
E.Shore MD	MD	370024015	CECIL	370	11130	3972	7496	3413	628	2135	8746	218	10	596
E.Shore MD	MD	380024011	CAROLINE	380	6	4	8	0	0	0	2	0	0	0
E.Shore MD	MD	380024029	KENT	380	23624	36605	26540	2927	2017	2265	7881	643	29	1317
E.Shore MD	MD	380024035	QUEEN ANNES	380	33619	23693	49850	3596	2621	1493	8089	779	16	724
E.Shore MD	MD	390024035	QUEEN ANNES	390	6872	5608	11799	851	1420	353	1915	351	4	475
E.Shore MD	MD	390024041	TALBOT	390	4852	4239	8444	371	546	201	1806	85	2	410
E.Shore MD	MD	400024011	CAROLINE	400	42242	23831	51897	3175	4848	2053	15701	1154	30	563
E.Shore MD	MD	400024019	DORCHESTER	400	6041	6637	7009	416	2597	129	6625	1132	5	474
E.Shore MD	MD	400024035	QUEEN ANNES	400	11488	9354	19681	1420	309	589	3194	58	6	9
E.Shore MD	MD	400024041	TALBOT	400	20796	14653	29192	1281	2219	694	6242	476	7	724
E.Shore MD	MD	410024011	CAROLINE	410	14403	5901	12851	786	1402	508	3888	565	7	48
E.Shore MD	MD	410024019	DORCHESTER	410	26181	11871	12537	743	1050	231	11850	370	9	748
E.Shore MD	MD	410024045	WICOMICO	410	38998	15869	4531	1188	2395	346	11194	649	15	601
E.Shore MD	MD	420024039	SOMERSET	420	22086	1242	6075	335	1668	224	4635	249	6	666
E.Shore MD	MD	420024045	WICOMICO	420	40224	20806	5941	1558	10749	453	14677	5282	20	641
E.Shore MD	MD	420024047	WORCESTER	420	24	30	2	3	0	0	11	0	0	0
E.Shore MD	MD	430024039	SOMERSET	430	105326	5548	27137	1494	5710	1001	20703	1304	28	3015
E.Shore MD	MD	430024045	WICOMICO	430	28844	16253	4641	1217	1807	354	11465	350	16	17
E.Shore MD	MD	430024047	WORCESTER	430	109014	45811	3486	4085	2847	577	16367	952	41	507
E.Shore MD	MD	770024011	CAROLINE	770	7182	2815	6131	375	597	243	1855	68	4	14
E.Shore MD	MD	770024035	QUEEN ANNES	770	820	296	622	45	35	19	101	4	0	0
E.Shore MD	MD	800024015	CECIL	800	59002	7377	13921	6339	11386	3965	16243	4110	19	861
E.Shore MD	MD	810024015	CECIL	810	4691	1854	3499	1593	208	997	4083	87	5	257
E.Shore MD	MD	810024029	KENT	810	21505	24439	17719	1954	1401	1512	5262	515	19	1522
E.Shore MD	MD	820024035	QUEEN ANNES	820	9052	4959	10434	753	5038	312	1693	1990	3	1865
E.Shore MD	MD	830024041	TALBOT	830	20569	11280	22470	986	8721	534	4805	2925	6	3009
E.Shore MD	MD	840024019	DORCHESTER	840	158264	29146	30782	1825	5116	566	29094	1364	23	12650
E.Shore MD	MD	840024039	SOMERSET	840	2	1	4	0	1	0	3	0	0	12
E.Shore MD	PA	800042029	CHESTER	900	12740	0	10489	4215	1410	4968	5695	550	25	406
E.Shore MD	VA	430051001	ACCOMACK	430	10744	5826	23	195	540	31	1710	81	1	38
BASIN SUBTOTAL					1028140	402357	531005	54246	92442	30999	282401	30301	456	33479
E.Shore VA	VA	440051001	ACCOMACK	440	68882	36444	142	1222	4911	197	10697	933	6	2205
E.Shore VA	VA	440051131	NORTHAMPTON	440	16829	26390	3989	1169	3356	129	8977	1335	0	1792
BASIN SUBTOTAL					85711	62834	4131	2391	8267	326	19674	2268	6	3996
James VA		265051005	ALLEGHANY	265	7140	0	0	1	0	0	1	0	0	502
James VA		265051017	BATH	265	116233	211	235	5326	1144	1827	5330	583	0	2114
James VA		265051091	HIGHLAND	265	55657	47	399	23023	695	3448	10569	245	1	0
James VA		270051005	ALLEGHANY	270	239485	533	335	11369	6613	3107	14267	2495	1	1136
James VA		270051009	AMHERST	270	74597	105	437	9129	602	2031	2261	369	0	826
James VA		270051015	AUGUSTA	270	129540	1263	3209	20393	2387	5499	2418	934	14	63
James VA		270051017	BATH	270	175166	490	547	12390	3457	4250	12401	901	0	506
James VA		270051019	BEDFORD	270	30996	213	127	2736	900	998	1854	391	1	448
James VA		270051023	BOTETOURT	270	213202	1110	3157	38136	11644	10968	22094	4110	13	1927
James VA		270051045	CRAIG	270	157775	476	476	12523	705	4059	7106	246	1	19
James VA		270051071	GILES	270	7517	0	1	12	0	2	7	0	0	0
James VA		270051091	HIGHLAND	270	76739	40	345	19897	393	2980	9134	153	1	0
James VA		270051121	MONTGOMERY	270	13868	5	27	262	9	71	155	6	0	0
James VA		270051161	ROANOKE	270	10972	176	179	2546	134	1009	1687	35	1	0
James VA		270051163	ROCKBRIDGE	270	240121	0	6669	86060	15707	22036	6702	6432	13	2042
James VA		270051530	BUENA VISTA CITY	270	1808	0	0	0	1026	0	661	790	0	102
James VA		270051560	CLIFTON FORGE CITY	270	687	0	0	0	693	0	24	537	0	48
James VA		270051580	COVINGTON CITY	270	618	0	0	0	1048	0	265	747	0	170
James VA		270051678	LEXINGTON CITY	270	75	0	0	0	890	0	72	553	0	8
James VA		280051003	ALBEMARLE	280	269974	4895	3437	76337	23561	33476	36736	6252	10	2660
James VA		280051009	AMHERST	280	133772	481	2000	41795	12809	9298	10350	4496	2	1874
James VA		280051011	APPOMATTOX	280	53524	2212	1197	14258	2332	5378	10136	728	4	590
James VA		280051019	BEDFORD	280	16626	174	104	2233	4945	814	1513	3049	1	352
James VA		280051029	BUCKINGHAM	280	235484	0	6030	23942	5985	11517	65201	1640	8	2690
James VA		280051031	CAMPBELL	280	26919	898	312	3466	5735	1242	2615	3008	1	318
James VA		280051049	CUMBERLAND	280	57663	420	2446	10301	1741	3820	16545	499	9	469
James VA		280051065	FLUVANNA	280	106975	785	2719	22618	7195	9704	31333	1924	1	2717
James VA		280051075	GOOCHLAND	280	21595	1687	882	3605	574	1817	9073	185	1	689
James VA		280051079	GREENE	280	33853	712	1133	9441	3610	3897	7635	518	4	168
James VA		280051109	LOUISA	280	6542	66	255	832	672	433	1674	131	0	39
James VA		280051125	NELSON	280	217475	352	2729	35194	8373	12208	24670	1625	2	1565
James VA		280051137	ORANGE	280	3163	241	84	947	453	469	657	52	0	3
James VA		280051540	CHARLOTTESVILLE CITY	280	151	0	0	0	3921	0	282	2213	0	11
James VA		280051680	LYNCHBURG CITY	280	12992	0	0	0	10096	0	1782	6800	0	224
James VA		290051041	CHESTERFIELD	290	57119	122	47	138	1741	59	1151	710	0	64
James VA		290051049	CUMBERLAND	290	18609	169	983	4141	530	1536	6651	185	4	65
James VA		290051075	GOOCHLAND	290	74845	5528	2891	11815	4941	5955	29735	1583	4	3526
James VA		290051087	HENRICO	290	5307	401	1226	414	7605	178	1741	4337	0	630
James VA		290051145	POWHATAN	290	74724	2329	3084	10213	3205	5623	20947	1079	11	1200
James VA		290051760	RICHMOND CITY	290	680	0	0	0	856	0	123	284	0	60
James VA		300051007	AMELIA	300	120276	10333	7639	17704	2359	7684	48223	942	22	950
James VA		300051011	APPOMATTOX	300	41364	1137	616	7332	1980	2765	5212	658	2	118
James VA		300051029	BUCKINGHAM	300	14993	0	366	1455	99	700	3963	48	0	82
James VA		300051041	CHESTERFIELD	300	25807	476	184	542	238	230	4510	152	0	298
James VA		300051049	CUMBERLAND	300	33149	377	2194	9238	1311	3426	14838	330	8	419
James VA		300051135	NOTTOWAY	300	55780	3179	3226	15341	2664	6206	11167	11		

Table 6. 1990 Phase 4.2 Watershed Model Land Use Sorted by Major Tributary Basin

Basin	State	COSEG	County	SEG	Forest	Hi Till	Lo Till	Pasture	PervUrban	Hay	Non-Ag. Herb.	Imperv. Urb	Manure	Water
James VA		310051041	CHESTERFIELD	310	23630	389	150	443	607	188	3682	225	0	1611
James VA		310051053	DINWIDDIE	310	28584	4978	798	3017	326	765	3490	184	4	1344
James VA		310051135	NOTTOWAY	310	4344	208	211	1003	27	406	762	18	1	27
James VA		600051036	CHARLES CITY	600	74330	7049	7049	1372	891	882	12232	335	1	1800
James VA		600051041	CHESTERFIELD	600	111615	2750	1062	3132	34983	1330	26054	18658	1	4278
James VA		600051053	DINWIDDIE	600	1391	751	120	455	1902	115	527	1743	1	86
James VA		600051087	HENRICO	600	18551	2369	7250	2449	9975	1053	10303	4336	0	1364
James VA		600051093	ISLE OF WIGHT	600	29905	10373	8081	2261	6332	272	6560	2868	24	956
James VA		600051095	JAMES CITY	600	43679	1262	2019	843	7426	640	9112	4396	1	2397
James VA		600051127	NEW KENT	600	36810	1712	1956	478	1188	183	4192	698	0	1827
James VA		600051145	POWHATAN	600	3103	90	119	396	223	218	812	48	0	9
James VA		600051149	PRINCE GEORGE	600	38134	13108	6680	4191	3068	1255	8286	1787	4	1267
James VA		600051181	SURRY	600	40187	9052	7180	2875	3192	259	5890	693	26	1026
James VA		600051199	YORK	600	5155	46	23	38	1244	17	528	549	0	22
James VA		600051570	COLONIAL HEIGHTS CITY	600	981	0	0	0	1790	0	687	1237	0	201
James VA		600051650	HAMPTON CITY	600	118	0	0	0	3855	0	98	2683	0	162
James VA		600051670	HOPEWELL CITY	600	1059	0	0	0	2968	0	375	2145	0	90
James VA		600051700	NEWPORT NEWS CITY	600	11430	0	0	0	13760	0	2456	11031	0	1270
James VA		600051730	PETERSBURG CITY	600	2063	0	0	0	3763	0	1202	2542	0	152
James VA		600051760	RICHMOND CITY	600	2076	0	0	0	19626	0	1221	13312	0	1169
James VA		600051800	SUFFOLK	600	2727	1061	1257	201	1651	38	760	598	1	362
James VA		600051830	WILLIAMSBURG CITY	600	2157	0	0	0	1094	0	156	591	0	57
James VA		610051036	CHARLES CITY	610	8248	799	799	156	87	100	1387	73	0	57
James VA		610051085	HANOVER	610	20427	2934	1535	2295	8543	1371	4033	2832	2	238
James VA		610051087	HENRICO	610	25032	1431	4379	1480	22636	636	6217	11983	0	389
James VA		610051127	NEW KENT	610	16188	1001	1143	279	1229	107	2449	617	0	364
James VA		620051093	ISLE OF WIGHT	620	13992	6737	5249	1469	1355	177	4260	480	16	824
James VA		620051740	PORTSMOUTH CITY	620	684	0	0	0	2702	0	658	1874	0	664
James VA		620051800	SUFFOLK	620	37469	10978	13015	2078	12842	397	7866	6301	8	4717
James VA		630051550	CHESAPEAKE CITY	630	3601	0	1192	41	4143	28	353	2393	0	169
James VA		630051740	PORTSMOUTH CITY	630	276	0	0	0	3404	0	171	2305	0	314
James VA		955051199	YORK	955	1563	18	9	15	943	7	213	720	0	95
James VA		955051650	HAMPTON CITY	955	5456	0	0	0	10416	0	2160	7652	0	596
James VA		955051700	NEWPORT NEWS CITY	955	340	0	0	0	2167	0	123	1617	0	66
James VA		955051735	POQUOSON CITY	955	2155	0	0	0	617	0	449	403	0	54
James VA		960051131	NORTHAMPTON	960	0	0	0	0	2	0	0	8	0	5
James VA		960051550	CHESAPEAKE CITY	960	10510	0	5858	201	14724	139	1735	10496	1	999
James VA		960051650	HAMPTON CITY	960	0	0	0	0	11	0	0	13	0	3
James VA		960051710	NORFOLK CITY	960	627	0	0	0	12555	0	415	11909	0	749
James VA		960051740	PORTSMOUTH CITY	960	126	0	0	0	4441	0	137	3683	0	141
James VA		960051810	VIRGINIA BEACH	960	726	0	171	8	4282	2	52	3336	0	397
James VA		965051710	NORFOLK CITY	965	406	0	0	0	4005	0	347	3184	0	538
James VA		965051810	VIRGINIA BEACH	965	6805	0	1979	90	21364	27	601	14715	0	2223
James WV		270054063	MONROE	270	41471	273	398	4070	87	816	2548	24	1	0
James WV		270054071	PENDLETON	270	949	9	19	548	0	75	118	0	0	0
BASIN SUBTOTAL					4057173	132855	146036	630644	427440	215014	645512	223980	271	69710
Patuxent MD		330024027	HOWARD	330	19109	1578	6932	4079	1361	2629	8024	445	6	820
Patuxent MD		330024031	MONTGOMERY	330	17042	179	6796	3039	2443	2135	6062	930	4	634
Patuxent MD		340024003	ANNE ARUNDEL	340	19343	1218	542	842	8786	504	2077	4859	0	26
Patuxent MD		340024027	HOWARD	340	24012	1794	7880	4636	16524	2988	9121	9582	7	188
Patuxent MD		340024033	PRINCE GEORGES	340	9376	742	163	398	8752	169	997	5063	0	90
Patuxent MD		500024003	ANNE ARUNDEL	500	16001	4467	1990	3090	5441	1848	7619	1191	1	660
Patuxent MD		500024009	CALVERT	500	50379	12343	2002	4858	18658	1869	5962	3191	1	1569
Patuxent MD		500024017	CHARLES	500	11318	587	889	480	2536	214	1540	496	1	36
Patuxent MD		500024033	PRINCE GEORGES	500	54127	13036	2855	6984	26079	2963	17508	9511	4	583
Patuxent MD		500024037	ST MARYS	500	23977	2938	1527	1211	8295	516	2157	1989	3	482
Patuxent MD		990024037	ST MARYS	990	7320	1360	707	561	3589	239	999	1299	2	635
BASIN SUBTOTAL					252004	40242	32283	30178	102464	16074	62066	38557	29	5724
Potomac DC		220011001	DISTRICT OF COLUMBIA	220	79	0	0	0	782	0	0	489	0	25
Potomac DC		540011001	DISTRICT OF COLUMBIA	540	345	0	0	0	7766	0	435	9376	0	299
Potomac DC		890011001	DISTRICT OF COLUMBIA	890	2033	0	0	0	6852	0	87	7158	0	220
Potomac DC		900011001	DISTRICT OF COLUMBIA	900	0	0	0	0	48	0	63	46	0	50
Potomac DC		910011001	DISTRICT OF COLUMBIA	910	98	0	0	0	1874	0	56	1395	0	36
Potomac MD		160024001	ALLEGANY	160	117958	2528	342	10989	15351	4319	9285	7227	7	920
Potomac MD		160024023	GARRETT	160	123004	2752	1546	8436	2485	4908	7327	1576	17	896
Potomac MD		175024001	ALLEGANY	175	87510	1562	211	6790	598	2668	5737	379	5	1040
Potomac MD		175024043	WASHINGTON	175	22793	186	1142	795	733	591	788	292	5	557
Potomac MD		180024021	FREDERICK	180	32902	1213	20309	12363	2176	10538	9238	1270	65	1133
Potomac MD		180024043	WASHINGTON	180	46115	3901	23968	16709	9374	12404	16548	6200	77	1453
Potomac MD		210024013	CARROLL	210	31362	20038	24475	14808	2703	12982	23226	1334	53	190
Potomac MD		210024021	FREDERICK	210	114459	3823	63997	38959	15369	33208	29110	8690	206	1602
Potomac MD		210024031	MONTGOMERY	210	9215	98	3727	1667	684	1171	3324	305	2	5
Potomac MD		220024021	FREDERICK	220	5104	280	4688	2854	729	2433	2132	511	15	742
Potomac MD		220024031	MONTGOMERY	220	59062	725	27475	12287	30823	8632	24507	17081	16	5351
Potomac MD		540024031	MONTGOMERY	540	8060	43	1628	728	17043	511	1452	8880	1	5
Potomac MD		540024033	PRINCE GEORGES	540	8393	1026	225	550	25136	233	1378	17333	0	63
Potomac MD		730024043	WASHINGTON	730	274	82	503	351	11	260	347	7	2	103
Potomac MD		740024043	WASHINGTON	740	50857	3528	21678	15113	6944	11219	14967	4393	69	4055
Potomac MD		750024013	CARROLL	750	1328	1135	1386	839	44	735	1316	12	3	178
Potomac MD		750024021	FREDERICK	750	1903	115	1930	1175	25	1001	878	12	6	69
Potomac MD		890024031	MONTGOMERY	890	7067	67	2529	1131	15534	794	2255	9805	2	140
Potomac MD		910024017	CHARLES	910	40259	1182	1789	967	13196	431	3100	4317	1	665
Potomac MD		910024033	PRINCE GEORGES	910	32497	4636	1015	2484	32053	1054	6226	13088	2	248
Potomac MD		920024017	CHARLES	920	124929	8563	12965	7009	23899	3122	22463	6146	7	1551
Potomac MD		920024033	PRINCE GEORGES	920	2755	345	76	185	634	78	463	119	0	0
Potomac MD		920024037	ST MARYS	920	88437	19920	10354	8213	19369	3501	14625	4179	23	2760
Potomac PA		160042009	BEDFORD	160	68465	1724	2947	3908	594	3873	3698	292	17	415
Potomac PA		160042111	SOMERSET	160	60682	2978	1672	3840	327	3089	4522	168	14	5
Potomac PA		175042009	BEDFORD	175	83906	2123	3628	4810	0	4768	4552	0	21	0
Potomac PA		175042057	FULTON	175	12313	493	799	908	22	1093	195	15	5	0
Potomac PA		180042001	ADAMS	180	4545	33	33	25	13	49	33	9	0	32
Potomac PA		180042055	FRANKLIN	180	21881	7049	8996	5111	4047	8244	5727	2324	59	12
Potomac PA		210042001	ADAMS	210	24550	2744	2754	2091	1389	4035	2738	772	9	72
Potomac PA		730042001	ADAMS	730	14170	98	99	75	120</					

Table 6. 1990 Phase 4.2 Watershed Model Land Use Sorted by Major Tributary Basin

Basin	State	COSEG	County	SEG	Forest	Hi Till	Lo Till	Pasture	PervUrban	Hay	Non-Ag. Herb.	Imperv. Urb	Manure	Water
Potomac	PA	740042057	FULTON	740	125483	6152	9979	11354	1140	13646	2435	487	49	214
Potomac	PA	750042001	ADAMS	750	34060	11184	11222	8520	4079	16441	11156	2443	36	476
Potomac	VA	170051091	HIGHLAND	170	36053	33	285	16445	308	2464	7551	131	5	0
Potomac	VA	180051107	LOUDOUN	180	29970	6544	7483	19910	596	10530	5658	152	5	146
Potomac	VA	190051015	AUGUSTA	190	187683	9244	23477	149215	23329	40237	17695	6567	104	472
Potomac	VA	190051139	PAGE	190	111254	1243	7089	33391	14505	12404	11232	2413	25	1720
Potomac	VA	190051165	ROCKINGHAM	190	152824	6785	18481	63850	21663	25932	11372	5846	161	1845
Potomac	VA	190051187	WARREN	190	35153	202	196	6327	3020	2832	4665	457	0	708
Potomac	VA	190051660	HARRISONBURG CITY	190	807	0	0	0	3158	0	3133	2470	0	5
Potomac	VA	190051790	STAUNTON CITY	190	1627	0	0	0	4609	0	4536	1900	0	4
Potomac	VA	190051820	WAYNESBORO CITY	190	1111	0	0	0	3397	0	2487	2004	0	18
Potomac	VA	200051043	CLARKE	200	35249	2453	4986	26524	1180	12803	6583	527	13	926
Potomac	VA	200051069	FREDERICK	200	38512	932	1694	12370	1068	8179	14659	515	2	173
Potomac	VA	200051139	PAGE	200	6009	0	2	9	0	3	3	0	0	0
Potomac	VA	200051165	ROCKINGHAM	200	129313	5129	13969	48262	10261	19601	8596	3000	122	229
Potomac	VA	200051171	SHENANDOAH	200	178611	7308	11285	59038	18199	25541	21743	4629	37	2144
Potomac	VA	200051187	WARREN	200	38677	459	447	14394	10513	6442	10614	2430	1	1061
Potomac	VA	200051660	HARRISONBURG CITY	200	11	0	0	0	674	0	517	510	0	0
Potomac	VA	220051013	ARLINGTON CITY	220	34	0	0	0	35	0	0	7	0	0
Potomac	VA	220051059	FAIRFAX	220	23174	38	323	1438	27403	417	6533	14453	1	252
Potomac	VA	220051061	FAUQUIER	220	37288	2196	6454	28927	5201	10563	5860	942	13	102
Potomac	VA	220051107	LOUDOUN	220	87646	16643	19031	50636	13171	26781	14389	7133	12	1042
Potomac	VA	550051059	FAIRFAX	550	29165	57	482	2147	18105	623	9751	7601	1	734
Potomac	VA	550051061	FAUQUIER	550	48268	2656	7806	34987	16838	12777	7088	4201	16	580
Potomac	VA	550051107	LOUDOUN	550	6512	934	1068	2841	1735	1502	807	776	1	16
Potomac	VA	550051153	PRINCE WILLIAM	550	68788	1521	6170	11883	35371	7451	27291	13007	10	1765
Potomac	VA	550051683	MANASSAS CITY	550	213	0	0	0	2677	0	1714	1816	0	0
Potomac	VA	550051685	MANASSAS PARK CITY	550	256	0	0	0	437	0	211	268	0	0
Potomac	VA	740051043	CLARKE	740	3651	878	1785	9493	84	4582	2356	45	5	19
Potomac	VA	740051069	FREDERICK	740	83480	2322	4220	30812	6739	20373	36514	3232	6	521
Potomac	VA	740051840	WINCHESTER CITY	740	291	0	0	0	2877	0	1278	1532	0	0
Potomac	VA	900051013	ARLINGTON CITY	900	386	0	0	0	8846	0	376	6930	0	68
Potomac	VA	900051059	FAIRFAX	900	17051	32	271	1207	58392	350	5482	27629	1	847
Potomac	VA	900051510	ALEXANDRIA CITY	900	199	0	0	0	4539	0	199	4723	0	25
Potomac	VA	900051600	FAIRFAX CITY	900	193	0	0	0	2237	0	45	1521	0	0
Potomac	VA	900051610	FALLS CHURCH CITY	900	0	0	0	0	698	0	3	571	0	0
Potomac	VA	970051153	PRINCE WILLIAM	970	26701	78	317	611	4648	383	1403	2205	1	239
Potomac	VA	980051061	FAUQUIER	980	1961	17	49	222	177	81	45	33	0	0
Potomac	VA	980051099	KING GEORGE	980	51274	4312	3088	3295	5758	1448	2814	1249	0	755
Potomac	VA	980051133	NORTHUMBERLAND	980	31901	16839	3394	1872	1846	224	6387	327	1	1478
Potomac	VA	980051153	PRINCE WILLIAM	980	7374	16	64	123	657	77	282	270	0	288
Potomac	VA	980051159	RICHMOND	980	24	66	26	5	31	4	49	5	0	0
Potomac	VA	980051179	STAFFORD	980	82107	1802	1097	4008	15012	2190	11733	4440	1	1285
Potomac	VA	980051193	WESTMORELAND	980	59060	20062	5630	2943	6347	1166	8297	1403	2	1835
Potomac	WV	160054023	GRANT	160	95136	1072	181	30965	3360	5600	15549	2100	12	1371
Potomac	WV	160054027	HAMPSHIRE	160	7217	158	150	2170	222	826	954	195	1	30
Potomac	WV	160054057	MINERAL	160	154296	1463	2271	31281	5990	10298	1192	3170	14	1107
Potomac	WV	160054077	PRESTON	160	701	4	4	52	122	24	38	81	0	0
Potomac	WV	160054093	TUCKER	160	486	0	0	14	26	5	9	17	0	0
Potomac	WV	170054023	GRANT	170	91366	1141	192	32954	2680	5960	16548	1351	13	487
Potomac	WV	170054027	HAMPSHIRE	170	84663	1036	983	14250	1580	5423	6267	899	7	1755
Potomac	WV	170054031	HARDY	170	103394	4766	1087	38856	1853	6555	8933	1075	28	142
Potomac	WV	170054071	PENDLETON	170	299499	1614	3514	100637	3406	13718	21687	1676	47	568
Potomac	WV	175054027	HAMPSHIRE	175	206876	2690	2552	36983	2316	14075	16265	1217	17	1458
Potomac	WV	175054031	HARDY	175	147676	3872	883	31568	1542	5326	7258	693	23	144
Potomac	WV	175054065	MORGAN	175	55948	256	322	1249	2025	840	4284	974	1	1019
Potomac	WV	180054037	JEFFERSON	180	5703	1103	5885	6369	1046	3771	5447	291	9	113
Potomac	WV	200054031	HARDY	200	7359	138	31	1122	26	189	258	17	0	0
Potomac	WV	200054037	JEFFERSON	200	17871	1808	9647	10441	5338	6181	8930	1279	15	1383
Potomac	WV	740054003	BERKELEY	740	92540	5724	7949	26185	8628	22308	38165	28	625	
Potomac	WV	740054037	JEFFERSON	740	9316	1572	8387	9078	1132	5374	7764	216	13	58
Potomac	WV	740054065	MORGAN	740	53760	929	1170	4535	775	3048	15552	376	1	87
BASIN SUBTOTAL					4686465	287230	510326	1247132	674846	580306	721776	304192	1859	58237
Rapp.	VA	230051003	ALBEMARLE	230	2079	25	17	383	0	168	185	0	0	3
Rapp.	VA	230051047	CULPEPER	230	92397	5547	18502	44403	12602	24901	42966	2618	28	909
Rapp.	VA	230051061	FAUQUIER	230	79936	3750	11021	49395	7970	18038	10007	1530	22	422
Rapp.	VA	230051079	GREENE	230	22031	499	794	6615	1372	2731	5349	205	3	39
Rapp.	VA	230051113	MADISON	230	102944	5232	7914	46420	8926	18076	15333	1171	27	160
Rapp.	VA	230051137	ORANGE	230	55786	6473	2241	25403	5906	12572	17626	1429	12	674
Rapp.	VA	230051157	RAPPAHANNOCK	230	95995	719	2213	34813	5132	16602	14571	808	1	122
Rapp.	VA	230051177	SPOTSYLVANIA	230	19246	486	429	1399	632	779	3425	236	1	364
Rapp.	VA	230051179	STAFFORD	230	17765	499	304	1110	866	607	3250	189	0	410
Rapp.	VA	230051630	FREDERICKSBURG CITY	230	216	0	0	0	2	0	156	2	0	21
Rapp.	VA	560051033	CAROLINE	560	56289	3898	1153	1071	2647	539	9363	723	1	398
Rapp.	VA	560051057	ESSEX	560	91289	28819	7063	2040	2095	560	15568	667	4	967
Rapp.	VA	560051099	KING GEORGE	560	21446	5215	3735	3984	930	1751	3403	288	0	302
Rapp.	VA	560051103	LANCASTER	560	47656	8300	2787	1039	2583	79	8829	428	1	1414
Rapp.	VA	560051119	MIDDLESEX	560	27904	6406	1314	611	2229	728	7636	354	2	988
Rapp.	VA	560051133	NORTHUMBERLAND	560	628	574	116	64	62	8	218	18	0	0
Rapp.	VA	560051159	RICHMOND	560	75690	18381	7193	1500	3484	1098	13498	582	2	992
Rapp.	VA	560051177	SPOTSYLVANIA	560	17167	827	730	2380	4592	1325	5824	2397	2	254
Rapp.	VA	560051179	STAFFORD	560	9437	790	481	1757	4702	960	5142	1934	1	207
Rapp.	VA	560051193	WESTMORELAND	560	22987	8488	2382	1245	1459	493	3510	191	1	234
Rapp.	VA	560051630	FREDERICKSBURG CITY	560	1628	0	0	0	2384	0	901	1366	0	83
Rapp.	VA	580051103	LANCASTER	580	227	125	42	16	25	1	133	3	0	0
Rapp.	VA	580051133	NORTHUMBERLAND	580	26830	5780	1165	643	1948	77	2192	265	0	734
Rapp.	VA	580051159	RICHMOND	580	78	35	14	3	0	2	26	0	0	0
Rapp.	VA	930051103	LANCASTER	930	6485	1624	545	203	807	15	1727	143	0	561
Rapp.	VA	930051133	NORTHUMBERLAND	930	10283	3981	802	443	474	53	1510	87	0	522
BASIN SUBTOTAL					904421	116473	72956	226938	73828	102165	192348	17632	107	10781
Susq.	MD	110024013	CARROLL	110	1300	451	551	333	18	292	523	5	1	0
Susq.	MD	140024015	CECIL	140	3545	192	362	165	19	103	423</			

Table 6. 1990 Phase 4.2 Watershed Model Land Use Sorted by Major Tributary Basin

Basin	State	COSEG	County	SEG	Forest	Hi Till	Lo Till	Pasture	PervUrban	Hay	Non-Ag. Herb.	Imperv. Urb	Manure	Water
Susq.	NY	10036003	ALLEGANY	10	36426	2820	155	3614	2140	3277	3384	1133	11	5
Susq.	NY	10036015	CHEMUNG	10	94247	18635	716	11838	16386	12221	41717	7846	57	1587
Susq.	NY	10036051	LIVINGSTON	10	4508	2621	265	689	0	716	1277	0	4	0
Susq.	NY	10036069	ONTARIO	10	436	128	29	23	0	36	63	0	0	0
Susq.	NY	10036097	SCHUYLER	10	36231	2292	906	2945	1374	2960	2820	735	7	1976
Susq.	NY	10036101	STEBEN	10	480110	73831	1871	55678	28264	60320	64408	15829	175	3381
Susq.	NY	10036123	YATES	10	2988	1194	314	384	44	744	777	9	2	28
Susq.	NY	20036007	BROOME	20	182828	27522	2009	30696	35404	24435	77670	19206	139	5802
Susq.	NY	20036015	CHEMUNG	20	21138	2847	109	1809	464	1867	6374	243	9	23
Susq.	NY	20036017	CHENANGO	20	358644	37893	1297	57256	11487	48074	50326	4872	228	3433
Susq.	NY	20036023	CORTLAND	20	162604	27563	2537	25478	7360	22943	28112	2364	143	1608
Susq.	NY	20036025	DELAWARE	20	115009	7062	93	23781	3351	16965	18041	1832	68	864
Susq.	NY	20036043	HERKIMER	20	21114	6017	654	8237	1376	7128	7806	685	34	254
Susq.	NY	20036053	MADISON	20	126644	24797	1026	16396	2591	13746	18053	556	95	1672
Susq.	NY	20036065	ONEIDA	20	19114	2614	277	2876	292	2507	2883	151	11	116
Susq.	NY	20036067	ONONDAGA	20	20980	4558	1355	1742	715	2608	2990	108	13	423
Susq.	NY	20036077	OTSEGO	20	356213	49057	1953	72141	12447	61094	64338	4997	261	8823
Susq.	NY	20036095	SCHOHARIE	20	17574	1364	417	1970	176	2499	2025	87	7	125
Susq.	NY	20036097	SCHUYLER	20	18356	1184	468	1521	394	1529	1457	231	4	360
Susq.	NY	20036107	TIOGA	20	162106	27270	1937	29062	14330	27313	62496	6120	112	2781
Susq.	NY	20036109	TOMPKINS	20	45952	5160	309	2018	584	2463	2982	258	12	122
Susq.	PA	10042015	BRADFORD	10	53311	10850	767	12162	2241	14988	15264	1032	60	931
Susq.	PA	10042105	POTTER	10	17568	3225	0	3284	228	2576	3195	116	10	103
Susq.	PA	10042117	TIOGA	10	259558	15650	13388	41067	8487	39918	30249	4492	123	3120
Susq.	PA	20042015	BRADFORD	20	29492	6118	432	6858	1544	8451	8607	1055	34	618
Susq.	PA	20042115	SUSQUEHANNA	20	124333	4200	2166	15748	4072	12880	22563	2362	46	3150
Susq.	PA	20042127	WAYNE	20	13719	275	269	2112	51	1639	1783	21	5	338
Susq.	PA	30042015	BRADFORD	30	217559	35544	2512	39843	4133	49099	50005	2301	198	5328
Susq.	PA	30042069	LACKAWANNA	30	139850	6985	3677	8606	42642	12035	13375	21233	26	3561
Susq.	PA	30042079	LUZERNE	30	61239	3419	668	706	14195	1105	5149	11161	5	1823
Susq.	PA	30042081	LYCOMING	30	970	12	34	16	0	23	67	0	0	0
Susq.	PA	30042113	SULLIVAN	30	13586	425	49	607	129	728	2665	80	2	101
Susq.	PA	30042115	SUSQUEHANNA	30	175298	11391	5873	42712	3357	34932	61195	1464	124	4517
Susq.	PA	30042117	TIOGA	30	3040	237	203	623	42	605	459	28	2	0
Susq.	PA	30042127	WAYNE	30	14425	125	123	964	306	748	813	135	2	373
Susq.	PA	30042131	WYOMING	30	162758	9627	5205	15019	19646	15875	18703	3747	51	4990
Susq.	PA	40042037	COLUMBIA	40	156085	29010	23090	9423	9432	15665	50301	4800	52	2304
Susq.	PA	40042079	LUZERNE	40	251873	28104	5494	5803	28430	9086	42320	18702	40	5737
Susq.	PA	40042093	MONTOUR	40	9547	4441	2081	1068	4691	1605	5492	1235	9	546
Susq.	PA	40042097	NORTHUMBERLAND	40	68808	15121	12425	2947	10677	4097	16130	6305	34	3171
Susq.	PA	40042107	SCHUYLKILL	40	38957	3017	1807	1245	2966	1598	2247	1256	6	237
Susq.	PA	40042113	SULLIVAN	40	27979	124	14	177	13	212	775	9	1	150
Susq.	PA	50042021	CAMBRIA	50	141592	9283	2910	5697	6353	7281	8436	3058	17	1962
Susq.	PA	50042027	CENTRE	50	105757	803	530	487	3455	635	1167	1956	3	570
Susq.	PA	50042033	CLEARFIELD	50	461950	8136	3602	7382	29124	10476	9858	17580	21	3859
Susq.	PA	50042063	INDIANA	50	27943	1898	1167	1578	2273	1910	2052	1396	6	26
Susq.	PA	50042065	JEFFERSON	50	8	0	0	0	512	0	0	342	0	0
Susq.	PA	60042023	CAMERON	60	237301	211	0	645	2009	726	11130	810	1	1682
Susq.	PA	60042027	CENTRE	60	281736	19315	12761	11724	13812	15290	28090	6756	81	3061
Susq.	PA	60042033	CLEARFIELD	60	110155	957	424	868	1756	1232	1160	1061	2	271
Susq.	PA	60042035	CLINTON	60	484972	11168	6954	5801	9307	7895	37481	5305	46	6239
Susq.	PA	60042047	ELK	60	156069	3309	61	3489	1826	3530	3708	971	7	587
Susq.	PA	60042081	LYCOMING	60	389504	6436	17745	8188	7351	12294	35142	4043	45	4633
Susq.	PA	60042083	MCKEAN	60	15096	49	0	129	35	98	111	20	0	4
Susq.	PA	60042105	POTTER	60	369173	8578	0	8734	1491	6851	8499	498	25	443
Susq.	PA	60042113	SULLIVAN	60	2786	73	8	104	7	125	456	4	0	48
Susq.	PA	60042117	TIOGA	60	231132	7537	6447	19777	2637	19224	14568	1558	59	944
Susq.	PA	70042015	BRADFORD	70	5990	540	38	605	12	745	759	8	3	90
Susq.	PA	70042027	CENTRE	70	9034	45	29	27	28	35	65	19	0	0
Susq.	PA	70042037	COLUMBIA	70	5305	1745	1389	567	78	942	3026	41	3	0
Susq.	PA	70042081	LYCOMING	70	201230	7527	20753	9575	8022	14377	41097	3779	52	3377
Susq.	PA	70042093	MONTOUR	70	12056	12147	5690	2921	854	4390	15020	568	24	259
Susq.	PA	70042097	NORTHUMBERLAND	70	16799	13133	10791	2559	3778	3559	14009	2115	30	2607
Susq.	PA	70042113	SULLIVAN	70	189382	4231	486	6042	1808	7243	26510	914	22	1398
Susq.	PA	70042119	UNION	70	80671	18154	10952	4545	3898	10472	16713	1902	76	434
Susq.	PA	70042131	WYOMING	70	3091	65	35	102	0	108	127	0	0	11
Susq.	PA	80042027	CENTRE	80	91939	11618	7676	7052	1051	9197	16896	345	48	205
Susq.	PA	80042041	CUMBERLAND	80	75713	16704	41963	16630	15746	25296	34853	10546	168	1938
Susq.	PA	80042043	DAUPHIN	80	132050	17717	11816	5374	9838	9333	27459	5842	53	14074
Susq.	PA	80042055	FRANKLIN	80	41225	7783	9933	5633	5124	9103	6324	1667	76	138
Susq.	PA	80042067	JUNIATA	80	10019	2255	1276	1132	58	1746	3303	25	10	4
Susq.	PA	80042075	LEBANON	80	9595	6	3	2	0	2	4	0	0	0
Susq.	PA	80042087	MIFFLIN	80	10177	17	16	16	0	19	32	0	0	26
Susq.	PA	80042097	NORTHUMBERLAND	80	41784	14129	11609	2753	532	3828	15071	235	32	6376
Susq.	PA	80042099	PERRY	80	157047	8494	22797	8661	3588	14250	26140	1614	70	1708
Susq.	PA	80042107	SCHUYLKILL	80	67327	9829	5886	4056	9702	5207	7320	5882	21	157
Susq.	PA	80042109	SNYDER	80	95156	20871	21535	8914	3576	17627	34440	1356	131	1572
Susq.	PA	80042119	UNION	80	34595	5954	3592	1490	338	3434	5481	47	25	498
Susq.	PA	90042009	BEDFORD	90	285537	15791	26991	35787	7394	35472	33867	2778	156	2317
Susq.	PA	90042013	BLAIR	90	3334	1681	193	602	51	1032	910	12	7	0
Susq.	PA	90042021	CAMBRIA	90	0	19	6	12	0	15	17	0	0	0
Susq.	PA	90042057	FULTON	90	18489	591	959	1090	144	1311	234	96	6	0
Susq.	PA	90042061	HUNTINGDON	90	85732	2887	2850	3668	453	3899	4697	150	19	8506
Susq.	PA	90042111	SOMERSET	90	14853	397	223	512	208	412	603	118	2	0
Susq.	PA	100042009	BEDFORD	100	8565	636	1088	1442	374	1430	1365	75	6	5
Susq.	PA	100042013	BLAIR	100	228000	28643	3284	10260	18852	17578	15498	8049	125	1026
Susq.	PA	100042027	CENTRE	100	32644	3347	2211	2032	151	2650	4868	38	14	11
Susq.	PA	100042055	FRANKLIN	100	11070	1164	1485	842	75	1361	946	41	11	0
Susq.	PA	100042057	FULTON	100	56630	1831	2970	3377	802	4062	725	352	18	133
Susq.	PA	100042061	HUNTINGDON	100	344598	16865	16654	21432	4131	22780	27441	1746	111	1621
Susq.	PA	100042067	JUNIATA	100	140855	20196	11422	10134	1704	15638	29578	609	90	1680
Susq.	PA	100042087	MIFFLIN	100	151634	16115	14756	14887	6760	17769	27921	2169	137	2288
Susq.	PA	100042099	PERRY	100	72392									

Table 6. 1990 Phase 4.2 Watershed Model Land Use Sorted by Major Tributary Basin

Basin	State	COSEG	County	SEG	Forest	Hi Till	Lo Till	Pasture	PervUrban	Hay	Non-Ag. Herb.	Imperv. Urb	Manure	Water
Susq.	PA	110042071	LANCASTER	110	8214	6327	4836	2553	2743	3214	2238	1705	61	3726
Susq.	PA	110042075	LEBANON	110	46716	33865	17683	11723	13485	14287	22058	7269	198	1027
Susq.	PA	110042107	SCHUYLKILL	110	56663	7640	4575	3156	3754	4048	5689	1822	13	164
Susq.	PA	110042133	YORK	110	126915	34867	67886	19401	26923	24571	65928	14353	132	4707
Susq.	PA	120042029	CHESTER	120	2810	0	911	366	0	432	495	0	2	0
Susq.	PA	120042071	LANCASTER	120	29134	22079	16874	8908	3717	11216	7810	2171	215	2787
Susq.	PA	120042133	YORK	120	10696	1691	3293	941	115	1192	3198	35	6	78
Susq.	PA	140042071	LANCASTER	140	13163	10692	8172	4314	533	5432	3782	314	104	6694
Susq.	PA	140042133	YORK	140	35742	9671	18828	5381	693	6815	18285	339	37	480
Susq.	PA	450042029	CHESTER	450	19365	0	9589	3853	1046	4541	5206	505	23	331
Susq.	PA	450042071	LANCASTER	450	15054	17373	13277	7009	999	8826	6146	443	169	437
Susq.	PA	450042133	YORK	450	4008	2063	4016	1148	788	1454	3901	384	8	20
Susq.	PA	700042015	BRADFORD	700	84187	12338	872	13830	3077	17043	17358	1840	69	1815
Susq.	PA	700042117	TIOGA	700	1211	151	129	396	32	385	292	22	1	35
Susq.	PA	710042071	LANCASTER	710	12195	21584	16495	8708	4905	10965	7635	3060	210	7924
Susq.	PA	710042075	LEBANON	710	5064	172	90	60	118	73	112	63	1	0
Susq.	PA	710042133	YORK	710	19479	5030	9794	2799	3503	3545	9511	1781	19	139
Susq.	PA	720042011	BERKS	720	12004	1321	1432	512	654	948	1202	494	6	61
Susq.	PA	720042029	CHESTER	720	959	0	106	43	50	50	58	49	0	0
Susq.	PA	720042071	LANCASTER	720	49717	55601	42492	22432	30136	28245	19668	19567	540	1822
Susq.	PA	720042075	LEBANON	720	7037	2230	1164	772	264	941	1452	112	13	25
Basin Subtotal					10682927	1178334	757831	996750	621608	1113238	1718466	324426	6149	197363
West.Shore	MD	470024005	BALTIMORE	470	111608	8518	22686	16371	22926	7863	33225	13133	25	4468
West.Shore	MD	470024013	CARROLL	470	6719	2926	3574	2162	625	1896	3392	230	8	0
West.Shore	MD	470024025	HARFORD	470	10984	619	3710	2025	4826	1249	3239	2004	4	359
West.Shore	MD	480024005	BALTIMORE	480	13207	780	2077	1499	21013	720	3042	11049	2	69
West.Shore	MD	480024510	BALTIMORE CITY	480	1429	0	0	0	13922	0	310	20259	0	217
West.Shore	MD	490024003	ANNE ARUNDEL	490	13943	1063	474	735	18385	440	1813	13613	0	827
West.Shore	MD	490024005	BALTIMORE	490	4302	67	177	128	7588	61	259	4828	0	172
West.Shore	MD	490024027	HOWARD	490	8790	228	1000	588	4429	379	1158	2509	1	27
West.Shore	MD	490024510	BALTIMORE CITY	490	49	0	0	0	768	0	95	1655	0	60
West.Shore	MD	510024003	ANNE ARUNDEL	510	16391	1074	479	743	13877	444	1833	7576	0	953
West.Shore	MD	650024005	BALTIMORE	650	9467	557	1484	1071	871	514	2173	376	2	1144
West.Shore	MD	650024013	CARROLL	650	31020	10100	12337	7464	4405	6544	11707	2084	27	1441
West.Shore	MD	760024005	BALTIMORE	760	8616	520	1384	999	1874	480	2027	918	2	34
West.Shore	MD	760024013	CARROLL	760	14067	4491	5485	3319	2430	2910	5205	1016	12	299
West.Shore	MD	760024027	HOWARD	760	10265	655	2877	1693	1002	1091	3331	466	2	49
West.Shore	MD	850024025	HARFORD	850	55216	2325	13927	7603	19784	4687	12159	9152	15	772
West.Shore	MD	860024005	BALTIMORE	860	3543	215	574	414	14111	199	841	13852	1	743
West.Shore	MD	860024510	BALTIMORE CITY	860	44	0	0	0	6807	0	124	6218	0	67
West.Shore	MD	870024003	ANNE ARUNDEL	870	6395	475	211	328	8992	196	810	4715	0	587
West.Shore	MD	880024003	ANNE ARUNDEL	880	31734	3688	1643	2551	13363	1525	6290	6267	1	1292
West.Shore	MD	880024009	CALVERT	880	24909	2053	333	808	6089	311	992	1426	0	163
West.Shore	PA	470042133	YORK	470	1142	744	1448	414	124	524	1407	44	3	0
Basin Subtotal					383840	41097	75880	50916	188211	32034	95430	123391	105	13741
York	VA	235051033	CAROLINE	235	25018	2359	698	648	847	326	5666	203	1	94
York	VA	235051137	ORANGE	235	1644	107	37	420	1	208	291	1	0	0
York	VA	235051177	SPOTSYLVANIA	235	89000	2460	2171	7080	2380	3943	17325	625	5	882
York	VA	240051033	CAROLINE	240	126144	13958	4127	3834	4639	1930	33526	1435	3	987
York	VA	240051097	KING AND QUEEN	240	9506	2095	404	236	108	81	1732	13	1	13
York	VA	240051101	KING WILLIAM	240	2921	501	326	164	5	32	261	3	0	21
York	VA	240051177	SPOTSYLVANIA	240	4789	158	140	456	102	254	1116	14	0	12
York	VA	250051109	LOUISA	250	55133	560	2183	7113	2613	3705	14312	821	2	8481
York	VA	250051137	ORANGE	250	36500	4016	1390	15763	2160	7801	10937	325	8	373
York	VA	250051177	SPOTSYLVANIA	250	19913	1041	919	2997	318	1669	7334	197	2	5291
York	VA	260051003	ALBEMARLE	260	1867	108	76	1681	19	737	809	13	0	10
York	VA	260051033	CAROLINE	260	23104	2065	611	567	823	286	4960	280	0	151
York	VA	260051075	GOOCHLAND	260	3251	122	64	260	204	131	654	135	0	7
York	VA	260051085	HANOVER	260	99607	15644	8186	12232	5790	7309	21502	1288	10	728
York	VA	260051109	LOUISA	260	133119	1623	6325	20609	5369	10736	41465	1438	6	945
York	VA	260051137	ORANGE	260	833	240	83	942	469	466	653	111	0	18
York	VA	260051177	SPOTSYLVANIA	260	20733	583	514	1677	249	934	4104	42	1	7
York	VA	590051033	CAROLINE	590	5180	504	149	138	337	70	1210	48	0	0
York	VA	590051073	GLOUCESTER	590	26370	4929	1565	724	2623	365	8671	1735	1	807
York	VA	590051085	HANOVER	590	46884	6673	3492	5218	8771	3118	9172	2382	4	1044
York	VA	590051095	JAMES CITY	590	14700	455	728	304	1000	231	3286	691	1	81
York	VA	590051097	KING AND QUEEN	590	92616	21811	4201	2461	1332	844	18026	359	6	1045
York	VA	590051101	KING WILLIAM	590	110152	22446	14619	7346	1633	1449	11673	539	9	2426
York	VA	590051127	NEW KENT	590	46693	2949	3369	823	531	316	7219	256	0	1242
York	VA	590051199	YORK	590	24006	380	191	316	7007	139	4391	3522	0	1124
York	VA	590051830	WILLIAMSBURG CITY	590	379	0	0	0	680	0	42	401	0	1
York	VA	940051057	ESSEX	940	9708	3555	871	252	62	69	1920	38	0	50
York	VA	940051073	GLOUCESTER	940	60206	7484	2376	1099	4416	555	13166	1996	1	1364
York	VA	940051097	KING AND QUEEN	940	33780	5469	1054	617	50	212	4520	34	1	24
York	VA	940051115	MATHEWS	940	31898	4345	162	825	2593	341	11905	992	0	1836
York	VA	940051119	MIDDLESEX	940	24765	3838	787	366	590	436	4575	117	1	265
York	VA	950051199	YORK	950	6904	141	71	117	4170	51	1629	2815	0	554
York	VA	950051735	POQUOSON CITY	950	3033	0	0	0	1099	0	1152	661	0	395
Basin Subtotal					1190354	132619	61887	97286	62989	48745	269206	23529	63	30280

Section 4. Land Use Hindcasting and Forecasting

Agricultural land uses for 1998 and 2000 are estimated by extending the trends of the 1992-1997 Agricultural Census data for *High/Low Till*, *Pasture*, and *Hayland* on a county-segment basis. Change in agricultural land acres between 1992 and 1997 is assumed to occur in equal annual increments. The rate of annual change is then applied at the county-segment level to forecast the 1998 and 2000 agricultural land use categories.

Impervious Urban and *Pervious Urban* are projected to increase by the percent increase in population predicted for each county-segment. Population projections were acquired from the U.S. Census Bureau web site for 1985 through 1998. The year 2000 population is estimated by extending the population trend for 1996-1998 through 2000.

The net change in agricultural and urban land from the base 1990 land use is applied to *Non-Agricultural Herbaceous* and *Forest* land uses while maintaining the 1990 ratio between these land uses. It was decided that the *Forest* in any given county-segment should never be less than 2% of the county-segment area. In some areas however, there are not enough base *Forest* acres to accommodate the increase in urban acres. This occurs in urban areas, such as Baltimore City and incorporated towns in Virginia, where there are no losses in agricultural land to offset the urban increases. If the increase in urban land results in a violation of the 2% forest threshold, *Forest* is held to 2% of the total county-segment area. The remaining change in acres is applied to the *Pervious Urban* and *Non-Agricultural Herbaceous* land use categories while maintaining the 1990 ratio between these land uses. Tables 7, 8, and 9 show the hindcasted and forecasted Phase 4.2 Chesapeake Bay Watershed Model land use data sets for 1985, 1998, and 2000 respectively.

Animal Projections

Animal populations are projected for the scenarios employing 1998 and 2000 land use. Industry trends are collected from representatives for each jurisdiction. Each source is asked for an estimated industry trend for the year 2000. This trend is assumed to occur in equal annual increments, thus providing a method for the estimation of 1998 animal numbers. Table 10 shows the data collected from each state. Unless otherwise noted, the figures shown in Table 11 are the percent increase in animal population by the over the three year period from 1997-2000.

Table 10. Expected annual state trends by animal species used to project 1998 and 2000 populations (%)

State	Beef	Dairy	Swine	Layers > 3 lbs.	Layers < 3 lbs.	Broilers	Turkeys
PA ¹	-0.83	+0.54	+2.75	-1.93	-9.77	+5.18	+13.97
MD ²	nc	nc	nc	nc	nc	+1.5/year	nc
VA	nc ³	-3 ³	nc ⁴	nc ⁵	nc ⁵	nc ⁵	nc ⁵
NY ⁶	nc	-4	-20	-2.5/year	-2.5/year	-2.5/year	-2.5/year
WV	nc ⁷	nc ⁷	nc ⁷	nc ⁸	nc ⁸	nc ⁸	nc ⁸
DE ⁹	nc	+10	nc	+7.5	+7.5	+7.5	+7.5

1. Data unavailable – 1992-1997 trend continued through 2000
2. Dr. Thomas W. Simpson, University of Maryland, Department of Agriculture and Natural Resources
3. Dr. Charles Stallings, Extension Dairy Project Leader, Dairy Scientist, VPISU (aka VA Tech)
4. Dr. Allen Harper, Extension Swine Specialist, Tidewater AREC
5. Mr. Phil Clauer, Animal & Poultry Science Dept., VPISU (aka VA Tech)
6. Keith Severson, Otsego County Cooperative Extension
7. Wayne Wagner, Extension Dairy Specialist, West Virginia University
8. Casey Ritz, Extension Poultry Specialist, West Virginia University
9. Tom Feurer, State Agricultural Statistician, Delaware Agricultural Statistics Service

Table 7. Hindcasted 1985 Phase 4.2 Chesapeake Bay Watershed Model Land Use in Acres by County Segment

State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious	Urban	Hay	Herb.	Urban	Manure	Acres	Water
NY	ALLEGANY	10036003	10	36003	34984	3139	108	4286	2167	3865	3250	1147	1147		12	5
NY	CHEMUNG	10036015	10	36015	99478	12212	943	11808	16598	13393	41246	7948	7948		39	1587
NY	LIVINGSTON	10036051	10	36051	4222	2794	268	809	0	787	1196	0	0		4	0
NY	ONTARIO	10036069	10	36069	422	151	20	25	0	37	61	0	0		0	0
NY	SCHUYLER	10036097	10	36097	35286	3895	121	3126	1338	3033	2746	716	716		8	1976
NY	STEUBEN	10036101	10	36101	471529	77497	4080	57868	28283	61951	63257	15840	15840		182	3381
NY	YATES	10036123	10	36123	2862	1478	229	380	43	710	744	9	9		2	28
PA	BRADFORD	10042015	10	42015	51537	11616	253	13501	2277	15623	14756	1048	1048		63	931
PA	POTTER	10042105	10	42105	16720	3219	38	3971	235	2847	3041	120	120		10	103
PA	TIOGA	10042117	10	42117	254655	29193	646	43936	8471	41738	29678	4484	4484		132	3120
NY	BROOME	20036007	20	36007	183631	18148	2491	36376	35528	28757	75596	19274	19274		108	5802
NY	CHEMUNG	20036015	20	36015	21952	1874	136	1804	470	2046	6326	246	246		6	23
NY	CHENANGO	20036017	20	36017	346341	47691	1199	58813	11218	51214	48600	4758	4758		243	3433
NY	CORTLAND	20036023	20	36023	156925	33889	2154	24674	7349	24459	27130	2361	2361		162	1608
NY	DELAWARE	20036025	20	36025	105868	13262	189	26160	3337	18869	16607	1824	1824		85	864
NY	HERKIMER	20036043	20	36043	19507	8063	611	7724	1385	7820	7212	690	690		38	254
NY	MADISON	20036053	20	36053	122333	25439	442	18512	2516	16580	17438	540	540		103	1672
NY	ONEIDA	20036065	20	36065	18174	3082	171	3401	294	2696	2741	152	152		13	116
NY	ONONDAGA	20036067	20	36067	20242	5630	852	1965	711	2662	2885	108	108		14	423
NY	OTSEGO	20036077	20	36077	334357	56995	270	84041	12299	68908	60391	4938	4938		304	8823
NY	SCHOHARIE	20036095	20	36095	16862	2200	105	2041	170	2705	1943	84	84		9	125
NY	SCHUYLER	20036097	20	36097	17858	2016	59	1615	383	1567	1417	225	225		4	360
NY	TIOGA	20036107	20	36107	158160	33536	696	27995	13985	29221	60975	5973	5973		206	2781
NY	TOMPKINS	20036109	20	36109	44770	5224	951	2349	563	2715	2906	248	248		13	122
PA	BRADFORD	20042015	20	42015	28486	6559	134	7613	1569	8810	8314	1072	1072		35	618
PA	SUSQUEHANNA	20042115	20	42115	122038	5009	1912	17391	3946	13588	22146	2289	2289		50	3150
PA	WAYNE	20042127	20	42127	13112	317	274	2559	48	1834	1704	20	20		6	338
PA	BRADFORD	30042015	30	42015	211537	38021	863	44229	4199	51181	48620	2338	2338		206	5328
PA	LACKAWANNA	30042069	30	42069	137138	5745	3397	10423	43506	13429	13099	21663	21663		31	3561
PA	LUZERNE	30042079	30	42079	61789	2235	597	732	14518	1250	5108	11415	11415		4	1823
PA	LYCOMING	30042081	30	42081	964	19	31	18	0	24	67	0	0		0	0
PA	SULLIVAN	30042113	30	42113	13428	502	61	725	131	706	2634	82	82		2	101
PA	SUSQUEHANNA	30042115	30	42115	169556	13185	5586	47167	3252	36855	59190	1419	1419		135	4517
PA	TIOGA	30042117	30	42117	2968	328	124	666	42	633	448	28	28		2	0
PA	WAYNE	30042127	30	42127	14151	138	132	1168	288	837	798	127	127		3	373
PA	WYOMING	30042131	30	42131	160007	10762	4426	17528	19071	16748	18387	3637	3637		62	4990
PA	COLUMBIA	40042037	40	42037	152123	41712	13887	10000	9339	16963	49024	4753	4753		56	2304
PA	LUZERNE	40042079	40	42079	260132	18373	4907	6013	29077	10271	41920	19127	19127		31	5737
PA	MONTOUR	40042093	40	42093	7787	6536	2956	923	4551	1728	4479	1198	1198		9	546
PA	NORTHUMBERLAND	40042097	40	42097	67246	15715	12256	3319	10876	4909	15764	6422	6422		36	3171
PA	SCHUYLKILL	40042107	40	42107	38579	3043	2101	1162	3044	1651	2225	1289	1289		7	237
PA	SULLIVAN	40042113	40	42113	27926	146	18	211	14	205	773	9	9		1	150
PA	CAMBRIA	50042021	50	42021	139965	12051	923	5872	6748	7464	8339	3248	3248		17	1962
PA	CENTRE	50042027	50	42027	105874	698	681	523	3301	676	1168	1869	1869		3	570
PA	CLEARFIELD	50042033	50	42033	458371	10092	2355	7813	30147	11347	9782	18198	18198		24	3859
PA	INDIANA	50042063	50	42063	27431	2414	867	1800	2302	1975	2014	1414	1414		6	26
PA	JEFFERSON	50042065	50	42065	17	0	0	0	503	0	0	342	342		0	0
PA	CAMERON	60042023	60	42023	237084	231	0	645	2139	750	11120	862	862		1	1682
PA	CENTRE	60042027	60	42027	279892	16787	16387	12588	13197	16273	27906	6455	6455		80	3061
PA	CLEARFIELD	60042033	60	42033	109822	1187	277	919	1818	1335	1156	1099	1099		3	271
PA	CLINTON	60042035	60	42035	482060	12956	7359	5968	9531	8316	37256	5433	5433		48	6239
PA	ELK	60042047	60	42047	155700	2700	10	4007	1917	3911	3699	1019	1019		8	587
PA	LYCOMING	60042081	60	42081	386627	9763	16308	9228	7342	12515	34882	4038	4038		46	4633
PA	MCKEAN	60042083	60	42083	15075	40	0	127	36	128	110	20	20		0	4
PA	POTTER	60042105	60	42105	366536	8559	104	10563	1536	7574	8438	513	513		26	443
PA	SULLIVAN	60042113	60	42113	2759	86	10	124	7	121	451	4	4		0	48
PA	TIOGA	60042117	60	42117	228648	10422	3948	21159	2632	20100	14411	1555	1555		64	944
PA	BRADFORD	70042015	70	42015	5891	577	13	672	12	777	747	8	8		3	90
PA	CENTRE	70042027	70	42027	9027	39	38	29	28	38	65	19	19		0	0
PA	COLUMBIA	70042037	70	42037	5099	2509	835	602	77	1020	2909	40	40		3	0
PA	LYCOMING	70042081	70	42081	198182	11418	19072	10791	8012	14636	40474	3774	3774		54	3377
PA	MONTOUR	70042093	70	42093	8483	17876	8086	2525	829	4726	10568	551	551		25	259
PA	NORTHUMBERLAND	70042097	70	42097	15976	13648	10645	2883	3849	4263	13323	2155	2155		31	2607
PA	SULLIVAN	70042113	70	42113	187726	4992	603	7216	1844	7023	26278	933	933		23	1398
PA	UNION	70042119	70	42119	81077	17342	10361	6323	3720	10249	16405	1815	1815		92	434
PA	WYOMING	70042131	70	42131	3067	73	30	119	0	114	126	0	0		0	11
PA	CENTRE	80042027	80	42027	90496	10108	9846	7572	1004	9788	16631	330	330		48	205
PA	CUMBERLAND	80042041	80	42041	72416	21552	41241	17544	15072	26198	33336	10094	10094		165	1938
PA	DAUPHIN	80042043	80	42043	127872	25929	6441	7003	9724	10089	26590	5774	5774		58	14074
PA	FRANKLIN	80042055	80	42055	40440	8070	10387	6129	4966	8988	6203	1616	1616		69	138
PA	JUNIATA	80042067														

Table 7. Hindcasted 1985 Phase 4.2 Chesapeake Bay Watershed Model Land Use in Acres by County Segment

State	County	COSEQ	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious Urban	Hay	Non-Ag. Herb.	Impervious Urban	Manure	Acres	Water
PA	BLAIR	100042013	100	42013	224435	23771	7546	12814	19291	18819	15256	8236		120	1026
PA	CENTRE	100042027	100	42027	32208	2924	2825	2182	144	2820	4803	36		14	11
PA	FRANKLIN	100042055	100	42055	10920	1212	1548	916	73	1344	933	40		10	0
PA	FULTON	100042057	100	42057	56140	2545	2768	3692	773	3776	718	340		14	133
PA	HUNTINGDON	100042061	100	42061	344617	19044	15035	21668	4042	22099	27443	1708		102	1621
PA	JUNIATA	100042067	100	42067	139064	24003	9995	10216	1644	15422	29202	588		90	1680
PA	MIFFLIN	100042087	100	42087	149813	16829	14208	16978	6812	17597	27585	2186		140	2288
PA	PERRY	100042099	100	42099	71441	5583	9592	4256	591	7003	12024	190		29	618
PA	SNYDER	100042109	100	42109	5907	354	303	179	14	279	542	3		2	0
MD	CARROLL	110024013	110	24013	1256	376	664	351	16	301	505	4		1	0
PA	ADAMS	110042001	110	42001	49759	13569	36983	14012	3453	32738	20007	1527		68	1023
PA	BERKS	110042011	110	42011	11856	6822	5979	2612	792	4617	5068	412		26	5
PA	CUMBERLAND	110042041	110	42041	57931	6468	12684	5359	7317	7991	10436	4699		42	309
PA	DAUPHIN	110042043	110	42043	26454	20848	5308	5668	18313	8153	20495	11244		37	6712
PA	LANCASTER	110042071	110	42071	8084	6518	5009	2568	2547	3322	2203	1583		59	3726
PA	LEBANON	110042075	110	42075	43857	39892	13925	12636	13179	15802	20708	7104		181	1027
PA	SCHUYLKILL	110042107	110	42107	55867	7634	5390	2944	3853	4179	5610	1870		14	164
PA	YORK	110042133	110	42133	120952	37123	71957	22321	25868	26008	62830	13791		125	4707
PA	CHESTER	120042029	120	42029	2659	309	667	412	0	498	468	0		2	0
PA	LANCASTER	120042071	120	42071	28137	22961	17260	8960	3451	11591	7543	2015		206	2787
PA	YORK	120042133	120	42133	10302	1827	3464	1083	111	1262	3080	34		6	78
MD	CECIL	140024015	140	24015	3490	196	403	177	17	111	416	12		1	1426
MD	HARFORD	140024025	140	24025	14850	1670	5386	3498	479	2057	4886	161		8	1704
PA	LANCASTER	140042071	140	42071	12575	11122	8356	4339	495	5613	3614	291		100	6694
PA	YORK	140042133	140	42133	33810	10450	19804	6191	666	7213	17296	326		35	480
MD	ALLEGANY	160024001	160	24001	115179	2475	1005	12190	15925	4662	9066	7497		8	920
MD	GARRETT	160024023	160	24023	122205	3189	1370	9227	2413	4822	7279	1530		17	896
PA	BEDFORD	160042009	160	42009	67836	2074	2796	4432	587	3825	3664	289		17	415
PA	SOMERSET	160042111	160	42111	60434	2647	1942	4073	333	3175	4504	171		14	5
WV	GRANT	160054023	160	54023	92910	1106	521	33516	3325	5323	15185	2078		12	1371
WV	HAMPSHIRE	160054027	160	54027	7129	177	158	2307	210	781	943	185		1	30
WV	MINERAL	160054057	160	54057	154580	2567	1370	31582	6051	9416	1194	3201		15	1107
WV	PRESTON	160054077	160	54077	735	2	3	31	122	13	40	81		0	0
WV	TUCKER	160054093	160	54093	493	0	0	9	26	3	9	17		0	0
VA	HIGHLAND	170051091	170	51091	35434	258	154	17193	326	2346	7422	139		4	0
WV	GRANT	170054023	170	54023	89017	1176	555	35668	2651	5664	16122	1337		12	487
WV	HAMPSHIRE	170054027	170	54027	84045	1162	1038	15149	1501	5130	6221	854		7	1755
WV	HARDY	170054031	170	54031	103469	4864	791	39431	1774	6223	8940	1028		28	142
WV	PENDLETON	170054071	170	54071	294915	4013	1841	104965	3376	13628	21355	1661		43	568
MD	ALLEGANY	175024001	175	24001	86227	1529	621	7532	620	2880	5653	393		5	1040
MD	WASHINGTON	175024043	175	24043	22622	368	1028	882	708	648	782	282		5	557
PA	BEDFORD	175042009	175	42009	83120	2551	3444	5455	0	4708	4509	0		21	0
PA	FULTON	175042057	175	42057	12172	681	748	993	21	1016	193	14		4	0
WV	HAMPSHIRE	175054027	175	54027	205144	3018	2692	39317	2202	13315	16129	1157		17	1458
WV	HARDY	175054031	175	54031	147733	3952	642	32035	1475	5056	7260	663		23	144
WV	MORGAN	175054065	175	54065	56056	486	196	1249	1907	794	4292	918		1	1019
MD	FREDERICK	180024021	180	24021	31619	3021	18849	13345	1919	11249	8878	1121		74	1133
MD	WASHINGTON	180024043	180	24043	43237	7587	21709	18526	9053	13598	15515	5988		81	1453
PA	ADAMS	180042001	180	42001	4538	21	57	22	12	51	33	8		0	32
PA	FRANKLIN	180042055	180	42055	21236	7205	9511	5559	3922	8140	5558	2253		54	12
VA	LOUDOUN	180051107	180	51107	28739	1143	15931	19329	497	9649	5425	127		8	146
WV	JEFFERSON	180054037	180	54037	4998	871	8387	5480	965	3872	4773	268		11	113
VA	AUGUSTA	190051015	190	51015	181800	9220	24888	155773	23127	38986	17141	6511		106	472
VA	PAGE	190051139	190	51139	111302	2299	7547	33896	13740	11227	11237	2286		22	1720
VA	ROCKINGHAM	190051165	190	51165	150271	10653	15459	66919	21580	24873	11182	5823		154	1845
VA	WARREN	190051187	190	51187	34960	213	543	6651	2735	2695	4640	414		1	708
VA	HARRISONBURG CITY	190051660	190	51660	1014	0	0	0	2591	0	3937	2026		0	5
VA	STAUNTON CITY	190051790	190	51790	1718	0	0	0	4364	0	4791	1799		0	4
VA	WAYNESBORO CITY	190051820	190	51820	1256	0	0	0	3102	0	2811	1830		0	18
VA	CLARKE	200051043	200	51043	32227	2417	7239	28809	1076	12037	6018	480		15	926
VA	FREDERICK	200051069	200	51069	37213	1260	1978	14178	932	7752	14164	450		3	173
VA	PAGE	200051139	200	51139	6009	1	2	10	0	3	3	0		0	0
VA	ROCKINGHAM	200051165	200	51165	127341	7667	12070	50582	10221	18801	8465	2988		116	229
VA	SHENANDOAH	200051171	200	51171	175679	13411	7457	63166	17027	23889	21386	4331		45	2144
VA	WARREN	200051187	200	51187	38661	458	1263	15133	9519	6133	10610	2200		1	1061
VA	HARRISONBURG CITY	200051660	200	51660	34	0	0	0	544	0	714	418		0	0
WV	HARDY	200054031	200	54031	7360	139	24	1139	25	180	258	16		0	0
WV	JEFFERSON	200054037	200	54037	16595	1355	13821	8983	4920	6348	8292	1179		18	1383
MD	CARROLL	210024013	210	24013	29979	16971	29197	15595	2407	13380	22202	1188		60	190
MD	FREDERICK	210024021	210	24021	111571	9743	59174	42054	13558	35449	28376	7665		232	1602
MD	MONTGOMERY	210024031	210	24031	8630	397	4399	2007	603	770	3113	269		3	5
PA	ADAMS	210042001	210	42001	24016	1756	4663	1779	1300	4157	2678	723		9	72
DC	DISTRICT OF COLUMBIA	220011001	220	11001	46	0	0	0	802	0	0	502		0	25
MD	FREDERICK	220024021	220	24021	4873	707	4341	3081	643	2597	2036	451		17	742
MD	MONTGOMERY	220024031	220	24031	58286	2902	32463	14799	27200	5676	24185	15073		24	5351
VA	ARLINGTON CITY	220051013	220	51013	36	0	0	0	33	0	0	7		0	0
VA	FAIRFAX	220051059	220	51059	27104	284	462	1583	23692	517	7641	12496		1	252
VA	FAUQUIER	220051061	220	51061	37932	1798	7867	28237	4515	10302	5961	818		14	102
VA	LOUDOUN	220051107	220	51107	87081	2951	40473	49159	10977	24541	14296	5944		20	1042
VA	ALBEMARLE	230051003	230	51003	2052	27	20	421	0	156	182	0		0	3
VA	CULPEPER	230051047	230	51047	87887	7882	18218	51498	11430	23773	40869	2375		33	909
VA	FAUQUIER	230051061	230	51061	80950	3089	13415	48217	6919	17592	10134	1328		24	422
VA	GREENE	230051079	230	51079	21390	985	777	7296	1194	2581	5194	179		3	39
VA	MADISON	230051113	230	51113	100342	9430	6174	48612	8285	17138	14946	1087		31	160
VA	ORANGE	230051137	230	51137	54778	7768	2555	26978	5444	11286	17307	1317		16	674

Table 7. Hindcasted 1985 Phase 4.2 Chesapeake Bay Watershed Model Land Use in Acres by County Segment

State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious		Non-Ag.	Impervious		Manure Acres	Water
									Urban	Hay	Herb.	Urban			
VA	RAPPAHANNOCK	230051157	230	51157	94340	1175	2780	36677	4927	15858	14319	776		1	122
VA	SPOTSYLVANIA	230051177	230	51177	19076	920	405	1386	505	757	3394	189		1	364
VA	STAFFORD	230051179	230	51179	17523	374	794	1228	719	589	3206	157		0	410
VA	FREDERICKSBURG CITY	230051630	230	51630	216	0	0	0	2	0	156	2		0	21
VA	CAROLINE	235051033	235	51033	24602	296	3154	822	818	304	5572	196		1	94
VA	ORANGE	235051137	235	51137	1617	128	42	446	1	186	286	1		0	0
VA	SPOTSYLVANIA	235051177	235	51177	87921	4649	2051	7011	1904	3831	17115	500		7	882
VA	CAROLINE	240051033	240	51033	123758	1756	18659	4862	4480	1800	32892	1386		4	987
VA	KING AND QUEEN	240051097	240	51097	9600	1479	988	184	106	56	1749	13		1	13
VA	KING WILLIAM	240051101	240	51101	2946	424	404	128	4	40	263	3		0	21
VA	SPOTSYLVANIA	240051177	240	51177	4709	300	132	452	81	247	1097	11		0	12
VA	LOUISA	250051109	250	51109	54919	1383	1908	7317	2452	3434	14256	770		3	8481
VA	ORANGE	250051137	250	51137	35742	4819	1586	16740	1991	7003	10710	300		10	373
VA	SPOTSYLVANIA	250051177	250	51177	19404	1969	867	2968	255	1621	7146	158		3	5291
VA	ALBEMARLE	260051003	260	51003	1778	119	86	1844	18	682	771	12		0	10
VA	CAROLINE	260051033	260	51033	22742	260	2761	719	795	266	4882	270		1	151
VA	GOOCHLAND	260051075	260	51075	3235	92	124	293	186	116	651	123		0	7
VA	HANOVER	260051085	260	51085	97465	8568	17369	14066	5199	6690	21040	1157		13	728
VA	LOUISA	260051109	260	51109	132374	4005	5530	21199	5039	9950	41233	1350		9	945
VA	ORANGE	260051137	260	51137	819	288	95	1000	432	418	642	102		1	18
VA	SPOTSYLVANIA	260051177	260	51177	20408	1102	485	1661	199	907	4040	34		2	7
VA	ALLEGHANY	265051005	265	51005	7140	0	0	1	0	0	1	0		0	502
VA	BATH	265051017	265	51017	114830	45	478	6278	1271	2073	5266	647		0	2114
VA	HIGHLAND	265051091	265	51091	54761	362	216	24069	735	3283	10399	259		1	0
VA	ALLEGHANY	270051005	270	51005	236080	0	793	14515	6904	3244	14064	2605		1	1136
VA	AMHERST	270051009	270	51009	74203	235	490	9640	608	1734	2249	373		0	826
VA	AUGUSTA	270051015	270	51015	128670	1247	3414	21289	2367	5328	2402	926		15	63
VA	BATH	270051017	270	51017	171943	103	1113	14606	3839	4824	12172	1001		0	506
VA	BEDFORD	270051019	270	51019	31062	152	302	2828	795	872	1858	346		1	448
VA	BOTETOURT	270051023	270	51023	175869	674	3802	79681	11243	10957	18225	3968		14	1927
VA	CRAIG	270051045	270	51045	156254	321	883	14283	671	3682	7038	234		1	19
VA	GILES	270051071	270	51071	7517	0	1	12	0	2	7	0		0	0
VA	HIGHLAND	270051091	270	51091	75929	311	188	20801	415	2838	9038	162		1	0
VA	MONTGOMERY	270051121	270	51121	13871	12	24	261	8	67	155	6		0	0
VA	ROANOKE	270051161	270	51161	10320	212	208	3124	128	1126	1586	34		2	0
VA	ROCKBRIDGE	270051163	270	51163	236225	0	6877	91074	15520	21083	6594	6355		13	2042
VA	BUENA VISTA CITY	270051530	270	51530	1808	0	0	0	1026	0	661	790		0	102
VA	CLIFTON FORGE CITY	270051560	270	51560	687	0	0	0	693	0	24	537		0	48
VA	COVINGTON CITY	270051580	270	51580	432	0	0	0	1203	0	185	858		0	170
VA	LEXINGTON CITY	270051678	270	51678	75	0	0	0	890	0	72	553		0	8
WV	MONROE	270054063	270	54063	41519	323	294	4101	89	785	2551	24		1	0
WV	PENDLETON	270054071	270	54071	925	22	10	572	0	74	115	0		0	0
VA	ALBEMARLE	280051003	280	51003	267143	5409	3896	83748	21439	30989	36351	5689		15	2660
VA	AMHERST	280051009	280	51009	131932	1084	2237	44133	12931	7938	10208	4538		2	1874
VA	APPOMATTOX	280051011	280	51011	53975	2501	1595	13863	2301	4589	10222	719		5	590
VA	BEDFORD	280051019	280	51019	17425	125	246	2308	4364	712	1586	2691		1	352
VA	BUCKINGHAM	280051029	280	51029	231071	1985	7684	27041	5724	10746	63979	1568		8	2690
VA	CAMPBELL	280051031	280	51031	26989	1046	424	3510	5605	1060	2622	2940		1	318
VA	CUMBERLAND	280051049	280	51049	57314	386	3516	10062	1747	3467	16445	501		8	469
VA	FLUVANNA	280051065	280	51065	106046	739	2888	24193	6563	10007	31061	1755		2	2717
VA	GOOCHLAND	280051075	280	51075	21166	1271	1724	4061	525	1608	8893	169		2	689
VA	GREENE	280051079	280	51079	33124	1404	1111	10414	3142	3684	7470	451		4	168
VA	LOUISA	280051109	280	51109	6536	162	223	856	631	402	1672	123		0	39
VA	NELSON	280051125	280	51125	213744	1584	2620	38465	8373	11966	24247	1625		4	1565
VA	ORANGE	280051137	280	51137	3138	290	95	1006	417	421	652	48		1	3
VA	CHARLOTTESVILLE CITY	280051540	280	51540	162	0	0	0	3900	0	303	2201		0	11
VA	LYNCHBURG CITY	280051680	280	51680	12914	0	0	0	10149	0	1772	6835		0	224
VA	CHESTERFIELD	290051041	290	51041	6023	142	48	147	1458	60	1213	595		0	64
VA	CUMBERLAND	290051049	290	51049	18476	156	1412	4045	532	1394	6603	186		3	65
VA	GOOCHLAND	290051075	290	51075	73661	4180	5636	13309	4522	5269	29265	1448		6	3526
VA	HENRICO	290051087	290	51087	6537	300	1029	441	6957	143	1834	3967		0	630
VA	POWHATAN	290051145	290	51145	71426	4277	2898	12427	2968	6181	20022	1000		16	1200
VA	RICHMOND CITY	290051760	290	51760	680	0	0	0	856	0	123	284		0	60
VA	AMELIA	300051007	300	51007	116537	10925	12555	18882	2307	6301	46724	922		28	950
VA	APPOMATTOX	300051011	300	51011	41622	1287	820	7128	1954	2360	5245	649		3	118
VA	BUCKINGHAM	300051029	300	51029	14711	121	467	1644	95	653	3888	46		1	82
VA	CHESTERFIELD	300051041	300	51041	25753	557	189	577	200	236	4500	127		0	298
VA	CUMBERLAND	300051049	300	51049	32871	347	3153	9024	1316	3109	14713	331		7	419
VA	NOTTOWAY	300051135	300	51135	56051	1294	6238	15216	2635	4916	11713	1099		12	466
VA	POWHATAN	300051145	300	51145	22522	1634	1113	4758	309	2366	7590	103		6	244
VA	PRINCE EDWARD	300051147	300	51147	124066	8369	5326	25111	6891	9579	33340	2434		18	1688
VA	AMELIA	310051007	310	51007	9298	419	483	725	17	242	1819	11		1	540
VA	CHESTERFIELD	310051041	310	51041	23658	454	154	471	508	192	3686	189		0	1611
VA	DINWIDDIE	310051053	310	51053	28402	6019	287	2796	339	641	3468	192		4	1344
VA	NOTTOWAY	310051135	310	51135	4360	84	408	995	26	321	765	18		1	27
MD	HOWARD	330024027	330	24027	17979	2584	6955	4774	1111	2837	7550	364		9	

Table 7. Hindcasted 1985 Phase 4.2 Chesapeake Bay Watershed Model Land Use in Acres by County Segment

State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious	Hay	Herb.	Urban	Manure	Acres	Water
									Urban						
MD	KENT	380024029	380	24029	24052	17989	43770	3274	1952	2817	8024	623		30	1317
MD	QUEEN ANNES	380024035	380	24035	35149	22140	49593	3603	2295	1818	8457	682		20	724
MD	QUEEN ANNES	390024035	390	24035	7317	5249	11730	853	1243	430	2039	307		5	475
MD	TALBOT	390024041	390	24041	4683	5012	7661	573	502	289	1743	78		3	410
DE	KENT	400010001	400	10001	4964	1970	4787	333	109	239	2044	12		2	0
MD	CAROLINE	400024011	400	24011	42104	42060	34602	2948	4499	1967	15650	1071		31	563
MD	DORCHESTER	400024019	400	24019	6009	5548	8067	463	2613	153	6591	1139		6	474
MD	QUEEN ANNES	400024035	400	24035	11979	8748	19572	1423	271	718	3330	50		8	9
MD	TALBOT	400024041	400	24041	20213	17316	26499	1982	2039	998	6067	438		10	724
DE	KENT	410010001	410	10001	13559	5004	12261	851	201	610	5226	39		6	0
DE	SUSSEX	410010005	410	10005	90566	23946	71375	4094	8340	1801	27953	2901		56	1146
MD	CAROLINE	410024011	410	24011	14393	10377	8607	730	1301	487	3885	525		8	48
MD	DORCHESTER	410024019	410	24019	26124	9876	14477	828	1056	274	11824	373		11	748
MD	WICOMICO	410024045	410	24045	38310	16144	5195	1375	2237	303	10997	606		17	601
DE	SUSSEX	420010005	420	10005	266	164	493	28	238	12	201	147		0	0
MD	SOMERSET	420024039	420	24039	21887	2339	5284	416	1517	251	4593	226		7	666
MD	WICOMICO	420024045	420	24045	39956	21124	6855	1803	10041	398	14579	4934		22	641
MD	WORCESTER	420024047	420	24047	23	6	27	2	0	1	11	0		0	0
DE	SUSSEX	430010005	430	10005	10954	2108	6309	361	86	159	2461	10		5	0
MD	SOMERSET	430024039	430	24039	104308	10481	23572	1856	5192	1120	20503	1186		33	3015
MD	WICOMICO	430024045	430	24045	28151	16518	5337	1408	1688	311	11189	327		17	17
MD	WORCESTER	430024047	430	24047	108833	9461	40879	3263	2679	787	16340	896		43	507
VA	ACCOMACK	430051001	430	51001	10518	4031	2075	189	536	46	1674	81		1	38
VA	ACCOMACK	440051001	440	51001	67477	25320	12876	1183	4877	289	10479	927		7	2205
VA	NORTHAMPTON	440051131	440	51131	15285	15898	16289	1398	3557	179	8153	1415		0	1792
MD	BALTIMORE	450024005	450	24005	2542	664	1075	880	48	451	1527	15		2	0
MD	CECIL	450024015	450	24015	14787	2435	4998	2199	2234	1375	5117	1064		8	1134
MD	HARFORD	450024025	450	24025	40411	4804	15461	10045	1952	5908	14039	807		24	892
PA	CHESTER	450042029	450	42029	17991	3261	7017	4331	963	5238	4836	465		25	331
PA	LANCASTER	450042071	450	42071	14185	18088	13561	7050	928	9121	5791	412		162	437
PA	YORK	450042133	450	42133	3711	2232	4221	1321	757	1539	3612	369		7	20
MD	BALTIMORE	470024005	470	24005	107339	13383	21694	17751	22321	9097	31954	12787		31	4468
MD	CARROLL	470024013	470	24013	6505	2474	4268	2277	557	1954	3284	205		9	0
MD	HARFORD	470024025	470	24025	11137	1071	3451	2241	4346	1318	3284	1805		5	359
PA	YORK	470042133	470	42133	1043	804	1523	476	119	555	1284	43		3	0
MD	BALTIMORE	480024005	480	24005	13411	1225	1987	1625	20459	833	3089	10757		3	69
MD	BALTIMORE CITY	480024510	480	24510	723	0	0	0	14141	0	98	20957		0	217
MD	ANNE ARUNDEL	490024003	490	24003	15903	470	1119	626	17171	396	2068	12713		0	827
MD	BALTIMORE	490024005	490	24005	4563	105	169	139	7388	71	275	4701		0	172
MD	HOWARD	490024027	490	24027	9669	373	1004	689	3616	409	1273	2048		1	27
MD	BALTIMORE CITY	490024510	490	24510	53	0	0	0	764	0	38	1712		0	60
MD	ANNE ARUNDEL	500024003	500	24003	16584	1978	4698	2631	5082	1665	7896	1112		2	660
MD	CALVERT	500024009	500	24009	51704	10354	5918	5278	15619	1598	6119	2671		1	1569
MD	CHARLES	500024017	500	24017	11388	1442	296	563	2180	214	1549	426		1	36
MD	PRINCE GEORGES	500024033	500	24033	52925	15872	1119	8754	24931	3249	17119	9092		6	583
MD	ST MARYS	500024037	500	24037	24601	2546	2210	1322	7417	523	2214	1779		3	482
MD	ANNE ARUNDEL	510024003	510	24003	17757	475	1131	633	12960	401	1985	7075		0	953
DC	DISTRICT OF COLUMBIA	540011001	540	11001	364	0	0	0	7756	0	182	9619		0	299
MD	MONTGOMERY	540024031	540	24031	10304	185	1910	877	15040	336	1856	7836		1	5
MD	PRINCE GEORGES	540024033	540	24033	9785	1255	82	689	24030	256	1607	16570		0	63
VA	FAIRFAX	550051059	550	51059	31069	425	688	2363	15654	772	10388	6571		1	734
VA	FAUQUIER	550051061	550	51061	50618	2186	9505	34152	14618	12460	7433	3647		17	580
VA	LOUDOUN	550051107	550	51107	6683	167	2269	2758	1446	1377	828	646		1	16
VA	PRINCE WILLIAM	550051153	550	51153	69592	1327	10395	13894	29550	8242	27610	10866		13	1765
VA	MANASSAS CITY	550051683	550	51683	323	0	0	0	2077	0	2609	1410		0	0
VA	MANASSAS PARK CITY	550051685	550	51685	256	0	0	0	437	0	211	268		0	0
VA	CAROLINE	560051033	560	51033	55615	491	5210	1358	2557	503	9251	699		1	398
VA	ESSEX	560051057	560	51057	86153	25817	15164	2695	2116	787	14692	674		7	967
VA	KING GEORGE	560051099	560	51099	21369	3960	4824	4592	828	1534	3390	257		0	302
VA	LANCASTER	560051103	560	51103	46919	9583	2494	1006	2492	100	8692	413		2	1414
VA	MIDDLESEX	560051119	560	51119	27367	7857	626	833	2109	568	7489	335		3	988
VA	NORTHUMBERLAND	560051133	560	51133	632	527	191	33	59	8	219	17		0	0
VA	RICHMOND	560051159	560	51159	75179	24110	2433	1384	3408	934	13407	569		4	992
VA	SPOTSYLVANIA	560051177	560	51177	17736	1565	688	2357	3674	1288	6017	1917		2	254
VA	STAFFORD	560051179	560	51179	9688	592	1256	1944	3905	932	5279	1606		1	207
VA	WESTMORELAND	560051193	560	51193	22571	9285	2390	1080	1391	410	3447	182		1	234
VA	FREDERICKSBURG CITY	560051630	560	51630	1628	0	0	0	2384	0	901	1366		0	83
VA	LANCASTER	580051103	580	51103	217	144	38	15	25	2	127	3		0	0
VA	NORTHUMBERLAND	580051133	580	51133	26919	5308	1925	333	1883	76	2200	256		1	734
VA	RICHMOND	580051159	580	51159	77	46	5	3	0	2	25	0		0	0
VA	CAROLINE	590051033	590	51033	5096	63	673	175	325	65	1190	46		0	0
VA	GLOUCESTER	590051073	590	51073	26426	5262	1727	871	2187	371	8690	1446		1	807
VA	HANOVER	590051085	590	51085	46649	3654	7410	6000	7877	2854	9126	2140		5	1044
VA	JAMES CITY	590051095	590	51095	14440	657	1060	321	826	291	3228	571		1	81
VA	KING AND QUEEN	5900510													

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State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious	Hay	Herb.	Urban	Manure Acres	Water
									Urban					
VA	NEW KENT	600051127	600	51127	36602	1295	2612	627	1093	177	4168	642	0	1827
VA	POWHATAN	600051145	600	51145	2980	165	113	481	207	239	779	44	1	9
VA	PRINCE GEORGE	600051149	600	51149	39049	13959	4413	4947	2975	947	8485	1733	4	1267
VA	SURRY	600051181	600	51181	40205	5503	11187	2478	3167	227	5893	688	9	1026
VA	YORK	600051199	600	51199	5259	64	23	39	1141	29	539	504	0	22
VA	COLONIAL HEIGHTS CITY	600051570	600	51570	956	0	0	0	1815	0	670	1254	0	201
VA	HAMPTON CITY	600051650	600	51650	267	0	0	0	3694	0	222	2571	0	162
VA	HOPEWELL CITY	600051670	600	51670	1035	0	0	0	2987	0	367	2159	0	90
VA	NEWPORT NEWS CITY	600051700	600	51700	11430	0	0	0	13760	0	2456	11031	0	1270
VA	PETERSBURG CITY	600051730	600	51730	1925	0	0	0	3894	0	1121	2630	0	152
VA	RICHMOND CITY	600051760	600	51760	2076	0	0	0	19626	0	1221	13312	0	1169
VA	SUFFOLK	600051800	600	51800	2817	824	1490	186	1579	39	785	573	1	362
VA	WILLIAMSBURG CITY	600051830	600	51830	2157	0	0	0	1094	0	156	591	0	57
VA	CHARLES CITY	610051036	610	51036	8322	770	762	162	90	68	1399	76	0	57
VA	HANOVER	610051085	610	51085	20875	1619	3246	2638	7672	1255	4122	2543	2	238
VA	HENRICO	610051087	610	51087	28879	1075	3672	1575	20706	513	6413	10961	0	389
VA	NEW KENT	610051127	610	51127	16122	762	1521	366	1131	104	2439	568	0	364
VA	ISLE OF WIGHT	620051093	620	51093	13619	6854	5489	1798	1262	109	4146	447	10	824
VA	PORTSMOUTH CITY	620051740	620	51740	677	0	0	0	2711	0	651	1880	0	664
VA	SUFFOLK	620051800	620	51800	38316	8528	15416	1921	12285	407	8044	6028	10	4717
VA	CHESAPEAKE CITY	630051550	630	51550	4344	538	644	40	3632	29	426	2098	0	169
VA	PORTSMOUTH CITY	630051740	630	51740	265	0	0	0	3415	0	164	2312	0	314
MD	BALTIMORE	650024005	650	24005	9148	874	1420	1161	848	595	2100	367	2	1144
MD	CARROLL	650024013	650	24013	30494	8527	14744	7861	3923	6744	11509	1856	30	1441
PA	BRADFORD	700042015	700	42015	82020	13198	299	15353	3126	17766	16911	1869	72	1815
PA	TIOGA	700042117	700	42117	1168	209	79	424	32	403	282	22	1	35
PA	LANCASTER	710042071	710	42071	11531	22445	16874	8759	4554	11331	7220	2841	201	7924
PA	LEBANON	710042075	710	42075	5044	204	70	64	116	80	112	61	1	0
PA	YORK	710042133	710	42133	18583	5433	10303	3220	3365	3752	9074	1711	18	139
PA	BERKS	720042011	720	42011	11812	1537	1317	582	631	1029	1183	476	6	61
PA	CHESTER	720042029	720	42029	947	36	78	48	46	58	57	45	0	0
PA	LANCASTER	720042071	720	42071	49221	57839	43447	22563	27981	29189	19472	18168	519	1822
PA	LEBANON	720042075	720	42075	6789	2642	902	832	258	1041	1401	109	12	25
MD	WASHINGTON	730024043	730	24043	233	162	453	389	11	285	295	7	2	103
PA	ADAMS	730042001	730	42001	14156	63	167	64	112	149	98	75	0	251
PA	FRANKLIN	730042055	730	42055	112155	35041	45209	26690	12075	39078	26676	6425	257	757
MD	WASHINGTON	740024043	740	24043	48052	6542	19955	16757	6707	12299	14141	4243	73	4055
PA	FRANKLIN	740042055	740	42055	18221	903	1270	723	16	1058	739	11	7	0
PA	FULTON	740042057	740	42057	123769	8117	9732	12412	1099	12686	2402	470	38	214
VA	CLARKE	740051043	740	51043	2845	860	2595	10310	77	4308	1836	41	5	19
VA	FREDERICK	740051069	740	51069	80903	3126	4939	35317	5886	19308	35387	2823	7	521
VA	WINCHESTER CITY	740051840	740	51840	323	0	0	0	2764	0	1420	1471	0	0
WV	BERKELEY	740054003	740	54003	91223	5372	11088	26404	7720	22477	37622	3439	26	625
WV	JEFFERSON	740054037	740	54037	8220	1171	12023	7810	1043	5519	6850	199	15	58
WV	MORGAN	740054065	740	54065	53647	1720	757	4537	730	2881	15519	354	1	87
MD	CARROLL	750024013	750	24013	1250	957	1658	883	39	758	1238	11	3	178
MD	FREDERICK	750024021	750	24021	1773	292	1786	1268	22	1069	818	11	7	69
PA	ADAMS	750042001	750	42001	32129	7120	19037	7250	3819	16939	10524	2287	35	476
MD	BALTIMORE	760024005	760	24005	8355	853	1287	1083	1825	555	1966	894	2	34
MD	CARROLL	760024013	760	24013	13876	3972	6376	3495	2164	2999	5135	905	13	299
MD	HOWARD	760024027	760	24027	9862	1129	2830	1982	818	1178	3200	381	4	49
DE	KENT	770010001	770	10001	21782	5761	13997	974	1032	698	6013	116	7	42
MD	CAROLINE	770024011	770	24011	7162	4970	4087	348	554	232	1850	63	4	14
MD	QUEEN ANNES	770024035	770	24035	841	277	619	45	31	23	104	3	0	0
DE	KENT	780010001	780	10001	3162	936	2274	158	196	113	977	33	1	0
DE	SUSSEX	780010005	780	10005	13051	4321	12765	734	1320	323	4996	322	10	0
DE	NEW CASTLE	800010003	800	10003	2774	1527	3000	319	358	321	1247	78	1	107
MD	CECIL	800024015	800	24015	58009	7522	15472	6801	10515	4253	15970	3795	24	861
PA	CHESTER	800042029	800	42029	11437	3598	7646	4737	1298	5730	5112	506	28	406
DE	NEW CASTLE	810010003	810	10003	1131	850	1667	177	35	179	677	10	1	0
MD	CECIL	810024015	810	24015	4373	1893	3886	1710	192	1069	3806	80	6	257
MD	KENT	810024029	810	24029	21815	1040	40192	2186	1356	1881	5337	498	20	1522
MD	QUEEN ANNES	820024035	820	24035	10049	4640	10375	754	4412	380	1880	1743	4	1865
MD	TALBOT	830024041	830	24041	20723	13334	20392	1526	8015	768	4841	2688	8	3009
MD	DORCHESTER	840024019	840	24019	158074	24375	35418	2033	5149	672	29059	1372	26	12650
MD	SOMERSET	840024039	840	24039	2	2	3	0	1	0	3	0	0	12
MD	HARFORD	850024025	850	24025	56097	4018	12957	8414	17817	4949	12353	8243	20	772
MD	BALTIMORE	860024005	860	24005	4007	338	549	449	13739	230	951	13486	1	743
MD	BALTIMORE CITY	860024510	860	24510	265	0	0	0	6693	0	-198	6433	0	67
MD	ANNE ARUNDEL	870024003	870	24003	7238	210	500	280	8398	177	917	4404	0	587
MD	ANNE ARUNDEL	880024003	880	24003	33107	1629	3884	2172	12480	1375	6562	5853	2	1292
MD	CALVERT	880024009	880	24009	25754	1719	987	878	5097	266	1025	1194	0	163
DC	DISTRICT OF COLUMBIA	890011001	890	11001	1685	0	0	0	7029	0	72	7343	0	220
MD	MONTGOMERY	890024031	890	24031	8856	271	2984	1362	13708	522	2826	8653	2	140
DC	DISTRICT OF COLUMBIA	900011001	900	11001	4	0	0	0	46	0	61	46	0	50
VA	ARLINGTON CITY	900051013	900	51013	814	0	0	0	8371	0	794	6558	0	68
VA	FAIRFAX	900051059	900	51059	25466	239	387	1328	50485	434	8187	23882		

Table 7. Hindcasted 1985 Phase 4.2 Chesapeake Bay Watershed Model Land Use in Acres by County Segment

State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious		Non-Ag.		Impervious		Manure Acres	Water
									Urban	Hay	Herb.	Urban				
MD	ST MARYS	920024037	920	24037	88203	17223	15024	8960	17319	3546	14586	3737			22	2760
VA	LANCASTER	930051103	930	51103	6360	1874	489	197	778	20	1694	138			0	561
VA	NORTHUMBERLAND	930051133	930	51133	10313	3655	1326	229	458	52	1514	84			0	522
VA	ESSEX	940051057	940	51057	9091	3181	1874	332	63	97	1798	38			1	50
VA	GLOUCESTER	940051073	940	51073	60272	7990	2623	1323	3681	563	13181	1664			2	1364
VA	KING AND QUEEN	940051097	940	51097	34033	3861	2579	481	49	147	4554	33			2	24
VA	MATHEWS	940051115	940	51115	31049	4885	504	1196	2539	329	11589	971			1	1836
VA	MIDDLESEX	940051119	940	51119	24380	4706	376	499	558	340	4504	111			2	265
VA	YORK	950051199	950	51199	7286	198	72	122	3828	89	1720	2584			0	554
VA	POQUOSON CITY	950051735	950	51735	3033	0	0	0	1099	0	1152	661			0	395
VA	YORK	955051199	955	51199	1671	26	10	16	866	12	228	661			0	95
VA	HAMPTON CITY	955051650	955	51650	5996	0	0	0	9981	0	2374	7332			0	596
VA	NEWPORT NEWS CITY	955051700	955	51700	340	0	0	0	2167	0	123	1617			0	66
VA	POQUOSON CITY	955051735	955	51735	2155	0	0	0	617	0	449	403			0	54
VA	NORTHAMPTON	960051131	960	51131	0	0	0	0	2	0	0	8			0	5
VA	CHESAPEAKE CITY	960051550	960	51550	13222	2832	2977	198	12908	142	2183	9201			1	999
VA	HAMPTON CITY	960051650	960	51650	1	0	0	0	11	0	0	13			0	3
VA	NORFOLK CITY	960051710	960	51710	525	0	0	0	12634	0	306	12040			0	749
VA	PORTSMOUTH CITY	960051740	960	51740	171	0	0	0	4399	0	121	3695			0	141
VA	VIRGINIA BEACH	960051810	960	51810	1910	0	171	8	3569	2	137	2781			0	397
VA	NORFOLK CITY	965051710	965	51710	364	0	0	0	4049	0	310	3219			0	538
VA	VIRGINIA BEACH	965051810	965	51810	12332	0	1974	91	17807	23	1088	12266			0	2223
VA	PRINCE WILLIAM	970051153	970	51153	27439	63	540	714	3883	424	1442	1842			1	239
VA	FAUQUIER	980051061	980	51061	1988	14	60	216	154	79	46	29			0	0
VA	KING GEORGE	980051099	980	51099	51830	3282	3981	3798	5123	1268	2844	1111			0	755
VA	NORTHUMBERLAND	980051133	980	51133	32016	15489	5583	969	1785	222	6410	316			2	1478
VA	PRINCE WILLIAM	980051153	980	51153	7453	14	107	144	549	85	285	225			0	288
VA	RICHMOND	980051159	980	51159	23	87	9	5	31	3	47	5			0	0
VA	STAFFORD	980051179	980	51179	83522	1355	2863	4435	12467	2127	11935	3687			1	1285
VA	WESTMORELAND	980051193	980	51193	58223	21964	5630	2552	6052	970	8179	1337			3	1835
MD	ST MARYS	990024037	990	24037	7609	1177	1025	612	3209	242	1038	1162			2	635
					=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
					22965595	2445596	2411226	3598986	2122906	2173009	3929173	1033253			9344	423311

Table 8. Forecasted 1998 Phase 4.2 Chesapeake Bay Watershed Model Land Use in Acres by County Segment

State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious Urban	Hay	Non-Ag. Herb.	Impervious Urban	Manure Acres	Water
NY	ALLEGANY	10036003	10	36003	36426	3257	48	2810	2163	2757	4343	1145	11	5
NY	CHEMUNG	10036015	10	36015	101865	13439	716	12417	16386	11180	39785	7846	29	1587
NY	LIVINGSTON	10036051	10	36051	4508	2321	413	539	0	521	1773	0	4	0
NY	ONTARIO	10036069	10	36069	436	102	59	22	0	32	65	0	0	0
NY	SCHUYLER	10036097	10	36097	36231	2098	461	2759	1409	2872	3680	754	7	1976
NY	STEUBEN	10036101	10	36101	480110	66910	606	48179	28264	61528	78899	15829	160	3381
NY	YATES	10036123	10	36123	2988	1064	422	331	47	773	819	10	2	28
PA	BRADFORD	10042015	10	42015	55102	11088	176	9695	2296	15430	15777	1057	55	931
PA	POTTER	10042105	10	42105	18158	3127	65	2511	235	2675	3302	120	8	103
PA	TIOGA	10042117	10	42117	268672	21839	2068	31001	8586	44793	31311	4544	117	3120
NY	BROOME	20036007	20	36007	193066	18864	1951	18328	35404	19657	93362	19206	70	5802
NY	CHEMUNG	20036015	20	36015	22302	2053	109	1897	464	1708	6078	243	4	23
NY	CHENANGO	20036017	20	36017	358644	38972	613	42983	11487	44513	67788	4872	205	3433
NY	CORTLAND	20036023	20	36023	162604	25399	1031	21274	7360	18627	40335	2364	109	1608
NY	DELAWARE	20036025	20	36025	115009	7167	71	19314	3351	16626	22780	1832	52	864
NY	HERKIMER	20036043	20	36043	21114	4213	2292	5439	1376	5620	12283	685	29	254
NY	MADISON	20036053	20	36053	126644	19322	1878	12423	2664	15819	24503	571	79	1672
NY	ONEIDA	20036065	20	36065	19114	2226	392	1812	292	2075	4652	151	10	116
NY	ONONDAGA	20036067	20	36067	20980	5346	1291	1260	715	1924	3432	108	13	423
NY	OTSEGO	20036077	20	36077	356213	40840	6070	55824	12503	54726	91103	5019	203	8823
NY	SCHOHARIE	20036095	20	36095	17574	1433	325	1403	179	2080	3030	89	6	125
NY	SCHUYLER	20036097	20	36097	18356	1084	238	1425	403	1484	1913	237	4	360
NY	TIOGA	20036107	20	36107	162106	26838	2542	21978	14368	21343	75335	6137	100	2781
NY	TOMPKINS	20036109	20	36109	45952	4897	468	1731	597	2161	3659	263	11	122
PA	BRADFORD	20042015	20	42015	30483	6253	99	5467	1582	8701	8897	1081	31	618
PA	SUSQUEHANNA	20042115	20	42115	127120	5919	759	11941	4250	12802	23069	2465	44	3150
PA	WAYNE	20042127	20	42127	14450	317	196	1353	57	1594	1878	24	4	338
PA	BRADFORD	30042015	30	42015	223781	36324	577	31759	4234	50546	51435	2357	181	5328
PA	LACKAWANNA	30042069	30	42069	149916	3353	2992	5456	42642	8690	14128	21233	20	3561
PA	LUZERNE	30042079	30	42079	62117	2187	869	695	14195	1300	5119	11161	2	1823
PA	LYCOMING	30042081	30	42081	971	42	4	14	0	24	67	0	0	0
PA	SULLIVAN	30042113	30	42113	13739	374	78	383	129	791	2695	80	3	101
PA	SUSQUEHANNA	30042115	30	42115	182326	16053	2059	32388	3503	34721	63648	1528	120	4517
PA	TIOGA	30042117	30	42117	3176	335	28	470	43	679	479	28	2	0
PA	WAYNE	30042127	30	42127	14730	144	90	617	347	728	831	153	2	373
PA	WYOMING	30042131	30	42131	166465	9018	5597	10090	20396	16003	19129	3890	41	4990
PA	COLUMBIA	40042037	40	42037	151589	38725	21581	8101	9569	14505	48853	4870	66	2304
PA	LUZERNE	40042079	40	42079	259309	17980	7146	5711	28430	10688	41864	18702	20	5737
PA	MONTOUR	40042093	40	42093	10121	2901	2971	735	4691	1686	5822	1235	6	546
PA	NORTHUMBERLAND	40042097	40	42097	69214	12808	13383	3383	10677	4518	16225	6305	32	3171
PA	SCHUYLKILL	40042107	40	42107	39087	3811	1579	687	2966	1451	2254	1256	8	237
PA	SULLIVAN	40042113	40	42113	28030	109	23	111	13	230	776	9	1	150
PA	CAMBRIA	50042021	50	42021	138607	10130	5036	4536	6353	8633	8258	3058	16	1962
PA	CENTRE	50042027	50	42027	105492	612	606	453	3704	662	1164	2097	3	570
PA	CLEARFIELD	50042033	50	42033	463648	9194	660	4570	30114	11847	9894	18178	22	3859
PA	INDIANA	50042063	50	42063	28656	1844	1156	1188	2273	1602	2104	1396	5	26
PA	JEFFERSON	50042065	50	42065	17	0	0	0	503	0	0	342	0	0
PA	CAMERON	60042023	60	42023	237451	285	0	347	2009	793	11137	810	0	1682
PA	CENTRE	60042027	60	42027	283054	14741	14583	10909	14806	15924	28222	7242	82	3061
PA	CLEARFIELD	60042033	60	42033	110448	1082	78	538	1815	1394	1163	1097	3	271
PA	CLINTON	60042035	60	42035	484358	6352	10774	7350	9307	7999	37433	5305	49	6239
PA	ELK	60042047	60	42047	156169	2558	60	3563	1826	4106	3710	971	7	587
PA	LYCOMING	60042081	60	42081	390163	22156	2246	7090	7351	12453	35201	4043	45	4633
PA	MCKEAN	60042083	60	42083	15113	58	1	110	35	90	111	20	0	4
PA	POTTER	60042105	60	42105	370957	8319	174	6678	1532	7116	8540	511	21	443
PA	SULLIVAN	60042113	60	42113	2813	64	13	65	7	135	460	4	0	48
PA	TIOGA	60042117	60	42117	235765	10636	877	14930	2668	21572	14860	1576	56	944
PA	BRADFORD	70042015	70	42015	6095	552	9	485	12	767	772	8	0	90
PA	CENTRE	70042027	70	42027	9040	34	34	25	28	37	65	19	0	0
PA	COLUMBIA	70042037	70	42037	5084	2330	1298	487	79	873	2900	41	4	0
PA	LYCOMING	70042081	70	42081	201928	25911	2626	8291	8022	14563	41239	3779	53	3377
PA	MONTOUR	70042093	70	42093	13157	7934	8126	2010	854	4612	16392	568	18	259
PA	NORTHUMBERLAND	70042097	70	42097	17036	11124	11623	2938	3778	3924	14207	2115	27	2607
PA	SULLIVAN	70042113	70	42113	190976	3724	780	3806	1809	7870	26733	915	25	1398
PA	UNION	70042119	70	42119	81592	22749	6884	4018	4406	9020	16486	2150	78	434
PA	WYOMING	70042131	70	42131	3124	61	38	68	0	108	128	0	0	11
PA	CENTRE	80042027	80	42027	93343	8867	8772	6562	1127	9578	17154	370	50	205
PA	CUMBERLAND	80042041	80	42041	76102	23392	35268	15043	16824	24524	35032	11268	165	1938
PA	DAUPHIN	80042043	80	42043	135078	12545	13101	4779	10159	9652	28089	6032	47	14074
PA	FRANKLIN	80042055	80	42055	42098	6271	11760	5017	5417	7997	6457	1763	88	138
PA	JUNIATA	80042067	80	42067	10017	2477	1049	1250	62	1629	3302	27	12	4
PA	LEBANON	80042075	80	42075	9594	6	3	2	0	2	4	0	0	0
PA	MIFFLIN	80042087	80	42087	10182	21	10	14	0	17	32	0	0	26
PA	NORTHUMBERLAND	80042097	80	42097	42128	11967	12504	3161	532	4222	15195	235	30	6376
PA	PERRY	80042099	80	42099	152112	12715	18014	10067	3868	18739	25318	1739	87	1708
PA	SCHUYLKILL	80042107	80	42107	67732	12416	5143	2238	9702	4727	7364	5882	26	157
PA	SNYDER	80042109	80	42109	92238	16553	26637	11337	3727	18129	33384	1413	188	1572
PA	UNION	80042119	80	42119	35058	7461	2258	1318	382	2958	5443	53	26	498
PA	BEDFORD	90042009	90	42009	286723	23444	17015	31248	7618	40693	34007	2862	161	2317
PA	BLAIR	90042013	90	42013	3210	1052	981	615	51	1018	876	12	9	0
PA	CAMBRIA	90042021	90	42021	1	21	10	9	0	18	9	0	0	0
PA	FULTON	90042057	90	42057	18662	1086	212	987	151	1480	236	101	5	0
PA	HUNTINGDON	90042061	90	42061	86511	2786	3150	3035	457	3504	4740	151	20	8506
PA	SOMERSET	90042111	90	42111	15016	372	126	395	214	472	609	121	2	0

Table 8. Forecasted 1998 Phase 4.2 Chesapeake Bay Watershed Model Land Use in Acres by County Segment

State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious Urban	Non-Ag. Hay	Herb.	Impervious Urban	Manure Acres	Water
PA	BEDFORD	100042009	100	42009	8610	945	686	1259	385	1640	1372	77	6	5
PA	BLAIR	100042013	100	42013	225454	17926	16711	10474	18863	17335	15325	8053	148	1026
PA	CENTRE	100042027	100	42027	33074	2555	2527	1891	162	2760	4932	41	14	11
PA	FRANKLIN	100042055	100	42055	11256	938	1759	750	80	1196	962	44	13	0
PA	FULTON	100042057	100	42057	57147	3364	658	3059	840	4584	731	369	14	133
PA	HUNTINGDON	100042061	100	42061	349028	16274	18406	17732	4172	20473	27794	1763	115	1621
PA	JUNIATA	100042067	100	42067	140736	22178	9392	11193	1826	14589	29553	653	106	1680
PA	MIFFLIN	100042087	100	42087	155635	19462	9489	13190	6872	16466	28657	2205	172	2288
PA	PERRY	100042099	100	42099	70201	5927	8396	4692	683	8735	11815	219	41	618
PA	SNYDER	100042109	100	42109	5874	262	421	179	15	286	539	3	3	0
MD	CARROLL	110024013	110	24013	1334	324	663	310	22	279	536	6	1	0
PA	ADAMS	110042001	110	42001	53817	26766	14784	13870	4077	35295	21639	1803	66	1023
PA	BERKS	110042011	110	42011	13246	5714	5887	2200	869	4126	5662	452	27	5
PA	CUMBERLAND	110042041	110	42041	58894	7135	10757	4597	8167	7480	10609	5246	42	309
PA	DAUPHIN	110042043	110	42043	29988	10137	10586	3868	19132	7799	23232	11747	31	6712
PA	LANCASTER	110042071	110	42071	8070	9421	1756	2575	2961	3008	2199	1840	63	3726
PA	LEBANON	110042075	110	42075	44920	35780	20015	11086	13922	12609	21211	7505	235	1027
PA	SCHUYLKILL	110042107	110	42107	56980	9651	3998	1743	3754	3674	5721	1822	17	164
PA	YORK	110042133	110	42133	121997	68754	37944	18700	29593	24729	63373	15777	108	4707
PA	CHESTER	120042029	120	42029	2839	306	601	338	0	430	500	0	2	0
PA	LANCASTER	120042071	120	42071	29232	32873	6126	8986	4012	10498	7836	2343	218	2787
PA	YORK	120042133	120	42133	10559	3335	1841	907	127	1200	3157	38	5	78
MD	CECIL	140024015	140	24015	3519	203	370	182	22	92	420	15	0	1426
MD	HARFORD	140024025	140	24025	15646	2840	4326	2540	628	1652	5148	211	6	1704
PA	LANCASTER	140042071	140	42071	13333	15920	2967	4352	575	5084	3831	338	106	6694
PA	YORK	140042133	140	42133	35054	19069	10524	5186	762	6858	17933	373	30	480
MD	ALLEGANY	160024001	160	24001	118895	1108	620	9200	15351	6240	9359	7227	7	920
MD	GARRETT	160024023	160	24023	123720	3726	982	7423	2582	4595	7369	1637	16	896
PA	BEDFORD	160042009	160	42009	68609	2560	1858	3412	612	4444	3706	301	18	415
PA	SOMERSET	160042111	160	42111	61917	2794	942	2964	335	3540	4614	173	13	5
WV	GRANT	160054023	160	54023	91377	1105	286	34088	3575	6362	14935	2234	13	1371
WV	HAMPSHIRE	160054027	160	54027	7143	107	43	2248	256	923	945	225	1	30
WV	MINERAL	160054057	160	54057	155510	2380	1720	28062	5999	11915	1201	3174	13	1107
WV	PRESTON	160054077	160	54077	689	4	5	54	122	35	37	81	0	0
WV	TUCKER	160054093	160	54093	481	0	0	18	26	5	9	17	0	0
VA	HIGHLAND	170051091	170	51091	36740	0	353	15537	308	2505	7695	131	6	0
WV	GRANT	170054023	170	54023	87521	1176	305	36277	2852	6770	15852	1438	14	487
WV	HAMPSHIRE	170054027	170	54027	84192	705	285	14766	1823	6060	6232	1037	7	1755
WV	HARDY	170054031	170	54031	104827	3279	950	37517	1997	7732	9057	1158	31	142
WV	PENDLETON	170054071	170	54071	304232	3446	949	94811	3410	15194	22029	1678	49	568
MD	ALLEGANY	175024001	175	24001	88096	685	383	5684	598	3855	5775	379	4	1040
MD	WASHINGTON	175024043	175	24043	22762	441	1028	751	769	475	787	306	4	557
PA	BEDFORD	175042009	175	42009	84115	3151	2287	4200	0	5470	4563	0	22	0
PA	FULTON	175042057	175	42057	12465	905	177	823	23	1233	197	15	4	0
WV	HAMPSHIRE	175054027	175	54027	206073	1830	741	38322	2673	15727	16202	1405	18	1458
WV	HARDY	175054031	175	54031	148892	2664	772	30480	1661	6282	7317	746	25	144
WV	MORGAN	175054065	175	54065	55225	360	194	1386	2277	1132	4229	1096	1	1019
MD	FREDERICK	180024021	180	24021	34155	9944	12390	10060	2705	9599	9590	1580	51	1133
MD	WASHINGTON	180024043	180	24043	45848	9249	21581	15781	9834	9973	16452	6504	74	1453
PA	ADAMS	180042001	180	42001	4544	41	23	21	14	54	33	9	0	32
PA	FRANKLIN	180042055	180	42055	22593	5680	10650	4554	4278	7243	5913	2457	70	12
VA	LOUDOUN	180051107	180	51107	32539	2999	4617	21533	996	11765	6143	255	1	146
WV	JEFFERSON	180054037	180	54037	6287	803	6110	5305	1205	3567	6005	335	7	113
VA	AUGUSTA	190051015	190	51015	196625	6401	23164	134481	26358	44473	18538	7420	94	472
VA	PAGE	190051139	190	51139	109114	3030	5163	31609	15373	15659	11016	2558	34	1720
VA	ROCKINGHAM	190051165	190	51165	154539	16223	9743	57357	23824	27134	11500	6429	165	1845
VA	WARREN	190051187	190	51187	33875	234	341	6872	3481	3027	4496	527	0	708
VA	HARRISONBURG CITY	190051660	190	51660	705	0	0	0	3439	0	2736	2690	0	5
VA	STAUNTON CITY	190051790	190	51790	1627	0	0	0	4609	0	4536	1900	0	4
VA	WAYNESBORO CITY	190051820	190	51820	1110	0	0	0	3400	0	2484	2005	0	18
VA	CLARKE	200051043	200	51043	35192	4992	3359	23929	1246	14466	6572	556	7	926
VA	FREDERICK	200051069	200	51069	38891	1561	1091	11445	1290	8225	14803	622	2	173
VA	PAGE	200051139	200	51139	6009	1	1	9	0	4	3	0	0	0
VA	ROCKINGHAM	200051165	200	51165	131323	12263	7364	43355	11284	20510	8730	3299	125	229
VA	SHENANDOAH	200051171	200	51171	178830	12823	6020	56484	19941	25412	21770	5072	40	2144
VA	WARREN	200051187	200	51187	35491	533	775	15635	12115	6887	9740	2800	1	1061
VA	HARRISONBURG CITY	200051660	200	51660	34	0	0	0	717	0	404	555	0	0
WV	HARDY	200054031	200	54031	7405	95	27	1084	28	223	260	19	0	0
WV	JEFFERSON	200054037	200	54037	18672	1316	10017	8697	6146	5847	9330	1473	11	1383
MD	CARROLL	210024013	210	24013	32182	14399	29460	13782	3280	12376	23833	1619	48	190
MD	FREDERICK	210024021	210	24021	115929	31337	39044	31700	19111	30250	29484	10805	162	1602
MD	MONTGOMERY	210024031	210	24031	9723	463	3170	1207	759	1023	3507	338	1	5
PA	ADAMS	210042001	210	42001	24440	3399	1877	1761	1536	4482	2725	853	8	72
DC	DISTRICT OF COLUMBIA	220011001	220	11001	79	0	0	0	782	0	0	489	0	25
MD	FREDERICK	220024021	220	24021	5289	2295	2860	2322	907	2216	2210	636	12	742
MD	MONTGOMERY	220024031	220	24031	59484	3412	23368	8899	34237	7543	24682	18973	10	5351
VA	ARLINGTON CITY	220051013	220	51013	33	0	0	0	36	0	0	7	0	0
VA	FAIRFAX	220051059	220	51059	19008	126	251	999	31107	523	5358	16407	0	252
VA	FAUQUIER	220051061	220	51061	38114	4545	4949	26940	5774	10076	5990	1046	12	102
VA	LOUDOUN	220051107	220	51107	83709	7627	11742	54763	22012	29922	13743	11920	4	1042
VA	ALBEMARLE	230051003	230	51003	2158	9	18	306	0	175	191	0	0	3
VA	CULPEPER	230051047	230	51047	91584	7549	13052	44876	15002	26168	42588	3117	28	909
VA	FAUQUIER	230051061	230	51061	81483	7761	8450	46003	8848	17205	10201	1698	20	422
VA	GREENE	230051079	230	51079	21899	268	487	6709	1864	2775	5317	279	2	39

Table 8. Forecasted 1998 Phase 4.2 Chesapeake Bay Watershed Model Land Use in Acres by County Segment

State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious Urban	Hay	Non-Ag. Herb.	Impervious Urban	Manure Acres	Water
VA	MADISON	230051113	230	51113	101344	4576	11973	44559	9485	17747	15095	1245	21	160
VA	ORANGE	230051137	230	51137	56149	3035	4629	25208	7005	11980	17740	1695	7	674
VA	RAPPAHANNOCK	230051157	230	51157	98199	1586	1208	31636	5633	16800	14905	887	0	122
VA	SPOTSYLVANIA	230051177	230	51177	19421	288	457	994	921	751	3456	344	1	364
VA	STAFFORD	230051179	230	51179	17841	210	277	728	1231	772	3264	269	0	410
VA	FREDERICKSBURG CITY	230051630	230	51630	216	0	0	0	2	0	156	2	0	21
VA	CAROLINE	235051033	235	51033	24580	2334	1050	698	972	330	5567	233	0	94
VA	ORANGE	235051137	235	51137	1669	50	76	416	1	198	296	1	0	0
VA	SPOTSYLVANIA	235051177	235	51177	90404	1458	2314	5029	3470	3801	17599	912	3	882
VA	CAROLINE	240051033	240	51033	123653	13813	6211	4131	5323	1953	32864	1646	1	987
VA	KING AND QUEEN	240051097	240	51097	9789	811	1449	158	112	60	1783	14	0	13
VA	KING WILLIAM	240051101	240	51101	3098	169	579	59	5	22	276	4	0	21
VA	SPOTSYLVANIA	240051177	240	51177	4906	94	149	324	148	245	1143	20	0	12
VA	LOUISA	250051109	250	51109	55071	329	2127	6295	3173	4154	14295	997	2	8481
VA	ORANGE	250051137	250	51137	37023	1883	2873	15642	2562	7434	11094	386	4	373
VA	SPOTSYLVANIA	250051177	250	51177	20685	617	979	2129	464	1609	7618	288	1	5291
VA	ALBEMARLE	260051003	260	51003	2125	42	79	1342	22	766	921	15	0	10
VA	CAROLINE	260051033	260	51033	22696	2044	919	611	945	289	4872	321	0	151
VA	GOOCHLAND	260051075	260	51075	3229	68	54	237	256	156	650	169	0	7
VA	HANOVER	260051085	260	51085	97281	19807	4050	12693	7497	7567	21000	1668	5	728
VA	LOUISA	260051109	260	51109	133458	953	6161	18239	6518	12037	41571	1746	6	945
VA	ORANGE	260051137	260	51137	811	112	172	934	556	444	636	131	0	18
VA	SPOTSYLVANIA	260051177	260	51177	21226	345	548	1191	363	900	4201	62	1	7
VA	ALLEGHANY	265051005	265	51005	7140	0	0	1	0	0	1	0	0	502
VA	BATH	265051017	265	51017	112644	195	224	8126	1166	2774	5166	594	0	2114
VA	HIGHLAND	265051091	265	51091	56635	0	494	21753	695	3507	10755	245	1	0
VA	ALLEGHANY	270051005	270	51005	232349	558	441	16968	6613	4940	13842	2495	0	1136
VA	AMHERST	270051009	270	51009	74989	141	108	8568	633	2432	2273	388	0	826
VA	AUGUSTA	270051015	270	51015	130951	875	3166	18379	2697	6078	2445	1055	13	63
VA	BATH	270051017	270	51017	167005	453	521	18904	3523	6454	11823	918	0	506
VA	BEDFORD	270051019	270	51019	30892	148	50	2633	1102	1063	1848	479	1	448
VA	BOTETOURT	270051023	270	51023	213822	929	2578	34152	13307	12780	22158	4697	11	1927
VA	CRAIG	270051045	270	51045	157251	391	376	13174	788	4030	7083	274	1	19
VA	GILES	270051071	270	51071	7518	0	0	10	0	2	7	0	0	0
VA	HIGHLAND	270051091	270	51091	77637	0	427	18799	393	3031	9241	153	1	0
VA	MONTGOMERY	270051121	270	51121	13904	3	20	229	9	76	156	6	0	0
VA	ROANOKE	270051161	270	51161	11166	90	154	2331	136	1110	1716	36	1	0
VA	ROCKBRIDGE	270051163	270	51163	240176	462	4724	82188	16741	25878	6704	6855	14	2042
VA	BUENA VISTA CITY	270051530	270	51530	1808	0	0	0	1026	0	661	790	0	102
VA	CLIFTON FORGE CITY	270051560	270	51560	687	0	0	0	693	0	24	537	0	48
VA	COVINGTON CITY	270051580	270	51580	618	0	0	0	1048	0	265	747	0	170
VA	LEXINGTON CITY	270051678	270	51678	75	0	0	0	890	0	72	553	0	8
WV	MONROE	270054063	270	54063	42324	171	148	3479	93	847	2601	25	1	0
WV	PENDLETON	270054071	270	54071	974	19	5	517	0	83	121	0	0	0
VA	ALBEMARLE	280051003	280	51003	280929	1889	3579	60924	27149	34773	38227	7204	5	2660
VA	AMHERST	280051009	280	51009	134878	646	494	39224	13465	11133	10436	4726	1	1874
VA	APPOMATTOX	280051011	280	51011	54700	1139	1150	13672	2490	5479	10359	778	2	590
VA	BEDFORD	280051019	280	51019	15119	121	41	2149	6051	868	1376	3731	1	352
VA	BUCKINGHAM	280051029	280	51029	229692	801	3404	27444	6806	16175	63598	1865	23	2690
VA	CAMPBELL	280051031	280	51031	26467	900	228	3417	6068	1361	2571	3183	1	318
VA	CUMBERLAND	280051049	280	51049	58385	803	1479	9248	1747	4526	16753	501	4	469
VA	FLUVANNA	280051065	280	51065	102846	691	1778	21969	10753	12219	30123	2875	0	2717
VA	GOOCHLAND	280051075	280	51075	22047	949	752	3293	722	2160	9263	232	1	689
VA	GREENE	280051079	280	51079	33112	382	695	9575	4905	3961	7467	704	2	168
VA	LOUISA	280051109	280	51109	6467	38	249	736	816	486	1655	159	0	39
VA	NELSON	280051125	280	51125	216636	1362	2388	34650	8373	13018	24575	1625	1	1565
VA	ORANGE	280051137	280	51137	3143	113	173	940	537	447	653	61	0	3
VA	CHARLOTTESVILLE CITY	280051540	280	51540	151	0	0	0	3921	0	282	2213	0	11
VA	LYNCHBURG CITY	280051680	280	51680	12992	0	0	0	10096	0	1782	6800	0	224
VA	CHESTERFIELD	290051041	290	51041	5322	168	7	155	2045	84	1071	834	0	64
VA	CUMBERLAND	290051049	290	51049	18884	323	595	3717	532	1819	6749	186	2	65
VA	GOOCHLAND	290051075	290	51075	75603	3111	2463	10792	6217	7078	30036	1992	4	3526
VA	HENRICO	290051087	290	51087	4572	774	260	311	8589	261	1545	4897	0	630
VA	POWHATAN	290051145	290	51145	75571	1571	2949	9021	4590	4775	21184	1546	9	1200
VA	RICHMOND CITY	290051760	290	51760	680	0	0	0	856	0	123	284	0	60
VA	AMELIA	300051007	300	51007	119832	6922	9140	17947	2783	9383	48046	1112	19	950
VA	APPOMATTOX	300051011	300	51011	41938	586	591	7030	2115	2817	5285	702	1	118
VA	BUCKINGHAM	300051029	300	51029	14672	49	207	1668	113	983	3878	54	1	82
VA	CHESTERFIELD	300051041	300	51041	25588	658	28	607	280	327	4472	178	0	298
VA	CUMBERLAND	300051049	300	51049	33725	720	1327	8293	1316	4059	15095	331	4	419
VA	NOTTOWAY	300051135	300	51135	53397	2939	1781	17473	2665	8640	11159	1111	10	466
VA	POWHATAN	300051145	300	51145	24495	602	1129	3454	478	1828	8254	159	3	244
VA	PRINCE EDWARD	300051147	300	51147	121204	4634	3776	28628	7764	13561	32800	2742	26	1688
VA	AMELIA	310051007	310	51007	9463	266	351	689	20	360	1851	14	1	540
VA	CHESTERFIELD	310051041	310	51041	23371	537	23	495	713	267	3641	265	0	1611
VA	DINWIDDIE	310051053	310	51053	28457	3905	1868	2919	384	920	3475	217	2	1344
VA	NOTTOWAY	310051135	310	51135	4184	192	116	1142	27	565	734	18	1	27
MD	HOWARD	330024027	330	24027	20881	693	6255	3144	1717	2137	8768	562	5	820
MD	MONTGOMERY	330024031	330	24031	17844	844	5780	2201	2714	1866	6347	1032	3	634
MD	ANNE ARUNDEL	340024003	340	24003	18523	1020	545	537	9790	353	1989	5414	0	26
MD	HOWARD	340024027	340	24027	21520	788	7110	3574	20851	2429	8175	12092	5	188
MD	PRINCE GEORGES	340024033	340	24033	8855	571	95	290	9334	172	941	5400	0	90
DE	NEW CASTLE	370010003	370	10003	1045	2283	1428	214	39	228	1754	15	1	16
MD	CECIL	370024015	370	24015	10779	4188	7655	3756	726	1911	8471	252	9	596

Table 8. Forecasted 1998 Phase 4.2 Chesapeake Bay Watershed Model Land Use in Acres by County Segment

State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious Urban	Hay	Non-Ag. Herb.	Impervious Urban	Manure Acres	Water
DE	KENT	380010001	380	10001	8436	3953	3404	371	414	305	2361	53	3	0
DE	NEW CASTLE	380010003	380	10003	4701	1146	717	108	0	114	722	0	0	0
MD	CAROLINE	380024011	380	24011	7	6	4	0	0	0	3	0	0	0
MD	KENT	380024029	380	24029	30463	28720	24732	3713	2140	1889	10163	682	30	1317
MD	QUEEN ANNES	380024035	380	24035	32422	19796	57068	1389	3063	1298	7801	910	11	724
MD	QUEEN ANNES	390024035	390	24035	6469	4686	13508	329	1659	307	1803	410	3	475
MD	TALBOT	390024041	390	24041	4783	3677	9033	471	591	116	1780	92	2	410
DE	KENT	400010001	400	10001	5104	3498	3013	328	129	270	2101	14	2	0
MD	CAROLINE	400024011	400	24011	50738	39220	26273	1822	5288	1447	18859	1258	24	563
MD	DORCHESTER	400024019	400	24019	6139	4876	8769	294	2597	49	6733	1132	2	474
MD	QUEEN ANNES	400024035	400	24035	11157	7815	22530	548	362	512	3102	67	4	9
MD	TALBOT	400024041	400	24041	20514	12712	31226	1628	2402	401	6157	516	6	724
DE	KENT	410010001	410	10001	13932	8939	7698	839	239	689	5369	46	6	0
DE	SUSSEX	410010005	410	10005	90068	35952	58135	3088	10795	1391	27799	3755	48	1146
MD	CAROLINE	410024011	410	24011	16641	9712	6506	451	1529	358	4492	617	6	48
MD	DORCHESTER	410024019	410	24019	26436	8721	15684	526	1050	87	11965	370	3	748
MD	WICOMICO	410024045	410	24045	38911	15502	4549	1039	2557	755	11169	693	10	601
DE	SUSSEX	420010005	420	10005	212	248	400	21	308	10	160	191	0	0
MD	SOMERSET	420024039	420	24039	22399	4412	2450	365	1729	204	4700	258	3	666
MD	WICOMICO	420024045	420	24045	39520	20324	5964	1362	11476	990	14420	5640	14	641
MD	WORCESTER	420024047	420	24047	24	18	14	2	0	0	11	0	0	0
DE	SUSSEX	430010005	430	10005	11123	3175	5134	273	111	123	2499	12	4	0
MD	SOMERSET	430024039	430	24039	106784	19707	10946	1629	5919	911	20989	1352	15	3015
MD	WICOMICO	430024045	430	24045	28808	15876	4659	1064	1929	773	11451	374	11	17
MD	WORCESTER	430024047	430	24047	109333	27201	22029	2827	3478	715	16415	1163	19	507
VA	ACCOMACK	430051001	430	51001	10570	5363	667	200	549	35	1682	83	1	38
VA	ACCOMACK	440051001	440	51001	67764	33550	4175	1253	4994	220	10524	949	6	2205
VA	NORTHAMPTON	440051131	440	51131	13413	34958	842	1047	3356	68	7155	1335	0	1792
MD	BALTIMORE	450024005	450	24005	3021	317	1058	604	51	320	1815	16	1	0
MD	CECIL	450024015	450	24015	14537	2515	4596	2255	2798	1147	5031	1333	6	1134
MD	HARFORD	450024025	450	24025	42453	8157	12425	7294	2555	4744	14749	1056	18	892
PA	CHESTER	450042029	450	42029	19503	3216	6325	3559	1171	4524	5243	565	20	331
PA	LANCASTER	450042071	450	42071	15303	25867	4820	7071	1079	8260	6247	478	172	437
PA	YORK	450042133	450	42133	3847	4068	2245	1106	866	1463	3745	422	6	20
MD	BALTIMORE	470024005	470	24005	117399	6394	21347	12186	23911	6452	34949	13697	20	4468
MD	CARROLL	470024013	470	24013	6820	2103	4302	2013	759	1807	3443	279	7	0
MD	HARFORD	470024025	470	24025	10292	1820	2773	1628	5688	1059	3035	2363	4	359
PA	YORK	470042133	470	42133	1102	1467	810	399	136	528	1358	49	2	0
MD	BALTIMORE	480024005	480	24005	12762	585	1954	1116	21916	591	2939	11524	2	69
MD	BALTIMORE CITY	480024510	480	24510	1429	0	0	0	13922	0	310	20259	0	217
MD	ANNE ARUNDEL	490024003	490	24003	11211	891	476	469	20486	308	1458	15168	0	827
MD	BALTIMORE	490024005	490	24005	3866	50	167	95	7914	50	233	5035	0	172
MD	HOWARD	490024027	490	24027	7566	100	902	454	5589	308	996	3166	1	27
MD	BALTIMORE CITY	490024510	490	24510	53	0	0	0	765	0	95	1655	0	60
MD	ANNE ARUNDEL	500024003	500	24003	17107	3741	2000	1968	6063	1295	8146	1327	1	660
MD	CALVERT	500024009	500	24009	45996	8434	3147	4167	26106	1505	5443	4465	0	1569
MD	CHARLES	500024017	500	24017	11055	417	944	345	2957	259	1504	578	0	36
MD	PRINCE GEORGES	500024033	500	24033	56898	10026	1660	5088	27814	3030	18404	10144	2	583
MD	ST MARYS	500024037	500	24037	23074	2888	1272	851	9572	585	2076	2296	2	482
MD	ANNE ARUNDEL	510024003	510	24003	14703	900	481	474	15462	311	1644	8441	0	953
DC	DISTRICT OF COLUMBIA	540011001	540	11001	364	0	0	0	7748	0	434	9376	0	299
MD	MONTGOMERY	540024031	540	24031	5923	202	1385	527	18931	447	1067	9863	1	5
MD	PRINCE GEORGES	540024033	540	24033	6373	789	131	401	26809	239	1047	18487	0	63
VA	FAIRFAX	550051059	550	51059	26915	188	375	1492	20553	781	8999	8628	0	734
VA	FAUQUIER	550051061	550	51061	47969	5497	5985	32584	18692	12187	7044	4664	14	580
VA	LOUDOUN	550051107	550	51107	5465	428	659	3072	2899	1679	677	1296	0	16
VA	PRINCE WILLIAM	550051153	550	51153	60065	2080	7079	10556	42609	9594	23831	15669	8	1765
VA	MANASSAS CITY	550051683	550	51683	128	0	0	0	3344	0	652	2296	0	0
VA	MANASSAS PARK CITY	550051685	550	51685	256	0	0	0	437	0	211	268	0	0
VA	CAROLINE	560051033	560	51033	55323	3858	1735	1154	3037	545	9202	830	0	398
VA	ESSEX	560051057	560	51057	88859	11458	24340	4213	2201	1182	15153	701	0	967
VA	KING GEORGE	560051099	560	51099	23634	3970	2919	2525	1185	2402	3750	368	0	302
VA	LANCASTER	560051103	560	51103	48131	8468	2356	524	2696	164	8917	447	0	1414
VA	MIDDLESEX	560051119	560	51119	26873	5023	3954	696	2481	410	7354	394	0	988
VA	NORTHUMBERLAND	560051133	560	51133	692	396	228	30	67	13	240	20	0	0
VA	RICHMOND	560051159	560	51159	76869	17363	5823	2005	4151	814	13708	693	1	992
VA	SPOTSYLVANIA	560051177	560	51177	15543	490	778	1690	6696	1278	5273	3494	1	254
VA	STAFFORD	560051179	560	51179	8172	332	438	1152	6685	1221	4453	2750	0	207
VA	WESTMORELAND	560051193	560	51193	21441	8862	2954	2088	1535	401	3274	201	0	234
VA	FREDERICKSBURG CITY	560051630	560	51630	1628	0	0	0	2384	0	901	1366	0	83
VA	LANCASTER	580051103	580	51103	233	127	35	8	25	2	136	3	0	0
VA	NORTHUMBERLAND	580051133	580	51133	27510	3990	2298	301	2130	133	2248	290	0	734
VA	RICHMOND	580051159	580	51159	81	33	11	4	0	2	27	0	0	0
VA	CAROLINE	590051033	590	51033	5068	498	224	149	386	70	1184	55	0	0
VA	GLOUCESTER	590051073	590	51073	26095	4292	1997	648	3054	295	8581	2020	0	807
VA	HANOVER	590051085	590	51085	43869	8449	1728	5414	11358	3228	8582	3085	2	1044
VA	JAMES CITY	590051095	590	51095	14336	676	407	354	1269	270	3205	877	0	81
VA	KING AND QUEEN	590051097	590	51097	95514	8438	15079	1647	1383	627	18590	372	4	1045
VA	KING WILLIAM	590051101	590	51101	117692	7562	25956	2656	1910	980	12472	631	7	2426
VA	NEW KENT	590051127	590	51127	47563	2967	2321	675	664	294	7353	320	0	1242
VA	YORK	590051199	590	51199	21058	196	32	171	9711	52	3852	4880	0	1124
VA	WILLIAMSBURG CITY	590051830	590	51830	379	0	0	0	680	0	42	401	0	1
VA	CHARLES CITY	600051036	600	51036	75789	7138	5878	1021	1006	454	12472	379	7	1800
VA	CHESTERFIELD	600051041	600	51041	103118	3803	163	3504	41108	1892	24071	21925	1	4278

Table 8. Forecasted 1998 Phase 4.2 Chesapeake Bay Watershed Model Land Use in Acres by County Segment

State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious Urban	Hay	Non-Ag. Herb.	Impervious Urban	Manure Acres	Water
VA	DINWIDDIE	600051053	600	51053	919	589	282	441	2237	139	348	2050	0	86
VA	HENRICO	600051087	600	51087	20662	4572	1539	1835	11265	1544	9972	4896	1	1364
VA	ISLE OF WIGHT	600051093	600	51093	28270	16475	3088	1508	7393	361	6201	3349	31	956
VA	JAMES CITY	600051095	600	51095	41071	1875	1130	983	9423	749	8568	5578	0	2397
VA	NEW KENT	600051127	600	51127	37013	1723	1348	392	1484	171	4215	872	0	1827
VA	POWHATAN	600051145	600	51145	3101	61	114	349	319	185	811	68	0	9
VA	PRINCE GEORGE	600051149	600	51149	43027	13021	2493	2050	3375	1227	9349	1966	2	1267
VA	SURRY	600051181	600	51181	41458	10454	5659	1054	3362	523	6076	730	40	1026
VA	YORK	600051199	600	51199	4590	24	4	21	1724	6	470	761	0	22
VA	COLONIAL HEIGHTS CITY	600051570	600	51570	882	0	0	0	1890	0	618	1306	0	201
VA	HAMPTON CITY	600051650	600	51650	138	0	0	0	3842	0	27	2746	0	162
VA	HOPEWELL CITY	600051670	600	51670	1059	0	0	0	2968	0	375	2145	0	90
VA	NEWPORT NEWS CITY	600051700	600	51700	11430	0	0	0	13760	0	2456	11031	0	1270
VA	PETERSBURG CITY	600051730	600	51730	2063	0	0	0	3763	0	1202	2542	0	152
VA	RICHMOND CITY	600051760	600	51760	2076	0	0	0	19626	0	1221	13312	0	1169
VA	SUFFOLK	600051800	600	51800	2610	1667	354	216	1985	13	728	720	0	362
VA	WILLIAMSBURG CITY	600051830	600	51830	2157	0	0	0	1094	0	156	591	0	57
VA	CHARLES CITY	610051036	610	51036	8411	809	666	116	98	51	1414	83	1	57
VA	HANOVER	610051085	610	51085	17510	3715	760	2381	11063	1419	3457	3667	1	238
VA	HENRICO	610051087	610	51087	23199	2763	930	1109	25562	933	5765	13532	0	389
VA	NEW KENT	610051127	610	51127	16141	1007	788	229	1536	100	2442	771	0	364
VA	ISLE OF WIGHT	620051093	620	51093	13532	10700	2006	979	1582	235	4120	561	20	824
VA	PORTSMOUTH CITY	620051740	620	51740	684	0	0	0	2702	0	658	1874	0	664
VA	SUFFOLK	620051800	620	51800	36894	17254	3667	2237	15443	132	7745	7578	4	4717
VA	CHESAPEAKE CITY	630051550	630	51550	1607	1176	97	81	5441	50	158	3142	0	169
VA	PORTSMOUTH CITY	630051740	630	51740	276	0	0	0	3404	0	171	2305	0	314
MD	BALTIMORE	650024005	650	24005	9906	418	1396	797	908	422	2274	393	1	1144
MD	CARROLL	650024013	650	24013	30853	7258	14850	6947	5345	6238	11644	2528	24	1441
PA	BRADFORD	700042015	700	42015	86334	12609	200	11024	3153	17545	17800	1885	63	1815
PA	TIOGA	700042117	700	42117	1291	213	18	299	33	432	311	22	1	35
PA	LANCASTER	710042071	710	42071	12161	32136	5989	8784	5294	10262	7614	3303	213	7924
PA	LEBANON	710042075	710	42075	5048	182	102	56	122	64	112	65	1	0
PA	YORK	710042133	710	42133	18799	9919	5474	2698	3850	3568	9179	1957	16	139
PA	BERKS	720042011	720	42011	12140	1274	1312	490	692	920	1216	522	6	61
PA	CHESTER	720042029	720	42029	951	36	70	40	56	50	57	54	0	0
PA	LANCASTER	720042071	720	42071	47954	82782	15426	22628	32530	26435	18971	21121	550	1822
PA	LEBANON	720042075	720	42075	6920	2356	1318	730	272	830	1428	115	15	25
MD	WASHINGTON	730024043	730	24043	277	194	453	331	12	209	351	8	2	103
PA	ADAMS	730042001	730	42001	14152	122	67	63	133	161	98	89	0	251
PA	FRANKLIN	730042055	730	42055	119612	27267	51130	21862	13170	34772	28450	7008	334	757
MD	WASHINGTON	740024043	740	24043	50708	8366	19520	14273	7285	9020	14923	4609	67	4055
PA	FRANKLIN	740042055	740	42055	18502	738	1385	592	17	942	751	12	9	0
PA	FULTON	740042057	740	42057	127314	11302	2210	10286	1195	15400	2470	510	37	214
VA	CLARKE	740051043	740	51043	3653	1787	1202	8564	89	5177	2357	48	3	19
VA	FREDERICK	740051069	740	51069	83516	3888	2717	28508	8139	20488	36530	3904	5	521
VA	WINCHESTER CITY	740051840	740	51840	265	0	0	0	2971	0	1162	1581	0	0
WV	BERKELEY	740054003	740	54003	92757	4054	7505	23860	10335	23983	38255	4604	18	625
WV	JEFFERSON	740054037	740	54037	10249	1144	8709	7562	1303	5084	8541	249	10	58
WV	MORGAN	740054065	740	54065	52510	1306	703	5034	871	4109	15190	423	0	87
MD	CARROLL	750024013	750	24013	1388	816	1669	781	53	701	1374	14	3	178
MD	FREDERICK	750024021	750	24021	2056	945	1177	956	31	912	948	16	5	69
PA	ADAMS	750042001	750	42001	33865	13849	7649	7177	4510	18262	11093	2701	34	476
MD	BALTIMORE	760024005	760	24005	8967	390	1302	743	1955	394	2109	958	1	34
MD	CARROLL	760024013	760	24013	13904	3227	6603	3089	2948	2774	5145	1233	11	299
MD	HOWARD	760024027	760	24027	10912	288	2596	1305	1265	887	3540	589	2	49
DE	KENT	770010001	770	10001	22119	10229	8809	960	1224	788	6106	138	7	42
MD	CAROLINE	770024011	770	24011	8280	4633	3104	215	651	171	2138	75	3	14
MD	QUEEN ANNES	770024035	770	24035	804	247	713	17	41	16	99	5	0	0
DE	KENT	780010001	780	10001	3210	1662	1431	156	232	128	991	39	1	0
DE	SUSSEX	780010005	780	10005	13046	6444	10420	553	1708	249	4994	416	9	0
DE	NEW CASTLE	800010003	800	10003	3427	2285	1429	214	412	228	1541	90	1	107
MD	CECIL	800024015	800	24015	56380	7779	14217	6976	13169	3549	15521	4754	17	861
PA	CHESTER	800042029	800	42029	12850	3518	6919	3894	1580	4949	5744	616	21	406
DE	NEW CASTLE	810010003	810	10003	1479	1270	795	119	40	127	885	11	0	0
MD	CECIL	810024015	810	24015	4543	1955	3574	1753	241	892	3954	101	4	257
MD	KENT	810024029	810	24029	26391	21618	14068	2479	1486	1261	6457	546	20	1522
MD	QUEEN ANNES	820024035	820	24035	7894	4144	11945	291	5887	272	1477	2326	2	1865
MD	TALBOT	830024041	830	24041	19700	9785	24037	1253	9440	309	4602	3166	5	3009
MD	DORCHESTER	840024019	840	24019	159031	21412	38508	1291	5116	215	29235	1364	8	12650
MD	SOMERSET	840024039	840	24039	3	3	2	0	1	0	3	0	0	12
MD	HARFORD	850024025	850	24025	51977	6832	10408	6110	23318	3974	11445	10787	15	772
MD	BALTIMORE	860024005	860	24005	2757	162	540	308	14717	163	654	14447	1	743
MD	BALTIMORE CITY	860024510	860	24510	265	0	0	0	6590	0	120	6218	0	67
MD	ANNE ARUNDEL	870024003	870	24003	5230	398	213	209	10019	138	662	5254	0	587
MD	ANNE ARUNDEL	880024003	880	24003	31509	3089	1651	1625	14890	1069	6246	6983	1	1292
MD	CALVERT	880024009	880	24009	22635	1403	523	693	8519	250	901	1995	0	163
DC	DISTRICT OF COLUMBIA	890011001	890	11001	2033	0	0	0	6852	0	87	7158	0	220
MD	MONTGOMERY	890024031	890	24031	5352	314	2151	819	17255	694	1708	10891	1	140
DC	DISTRICT OF COLUMBIA	900011001	900	11001	4	0	0	0	46	0	61	46	0	50
VA	ARLINGTON CITY	900051013	900	51013	332	0	0	0	8934	0	85	7187	0	68
VA	FAIRFAX	900051059	900	51059	8453	105	211	839	66285	439	2718	31364	0	847
VA	ALEXANDRIA CITY	900051510	900	51510	194	0	0	0	4532	0	-92	5026	0	25
VA	FAIRFAX CITY	900051600	900	51600	80	0	0	0	2306	0	6	1604	0	0
VA	FALLS CHURCH CITY	900051610	900	51610	25	0	0	0	672	0	3	571	0	0

Table 8. Forecasted 1998 Phase 4.2 Chesapeake Bay Watershed Model Land Use in Acres by County Segment

State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious Urban	Hay	Non-Ag. Herb.	Impervious Urban	Manure Acres	Water
DC	DISTRICT OF COLUMBIA	910011001	910	11001	98	0	0	0	1874	0	56	1395	0	36
MD	CHARLES	910024017	910	24017	37940	840	1901	694	15389	521	2922	5034	0	665
MD	PRINCE GEORGES	910024033	910	24033	31777	3566	590	1810	34187	1078	6088	13960	1	248
MD	CHARLES	920024017	920	24017	123234	6086	13778	5032	27871	3776	22158	7167	2	1551
MD	PRINCE GEORGES	920024033	920	24033	2848	265	44	135	677	80	479	127	0	0
MD	ST MARYS	920024037	920	24037	88811	19579	8624	5770	22350	3964	14687	4822	12	2760
VA	LANCASTER	930051103	930	51103	6559	1657	461	102	842	32	1747	149	0	561
VA	NORTHUMBERLAND	930051133	930	51133	10804	2748	1583	207	518	92	1586	95	0	522
VA	ESSEX	940051057	940	51057	9425	1413	3002	520	66	146	1864	40	0	50
VA	GLOUCESTER	940051073	940	51073	59779	6516	3032	984	5141	448	13073	2324	0	1364
VA	KING AND QUEEN	940051097	940	51097	34557	2116	3781	413	52	157	4624	35	1	24
VA	MATHEWS	940051115	940	51115	30362	3821	1283	1475	2819	892	11332	1078	0	1836
VA	MIDDLESEX	940051119	940	51119	24181	3010	2369	417	656	246	4467	131	0	265
VA	YORK	950051199	950	51199	4896	73	12	63	5779	19	1156	3901	0	554
VA	POQUOSON CITY	950051735	950	51735	3033	0	0	0	1099	0	1152	661	0	395
VA	YORK	955051199	955	51199	1023	10	2	8	1307	3	139	998	0	95
VA	HAMPTON CITY	955051650	955	51650	5149	0	0	0	10663	0	2039	7834	0	596
VA	NEWPORT NEWS CITY	955051700	955	51700	340	0	0	0	2167	0	123	1617	0	66
VA	POQUOSON CITY	955051735	955	51735	2155	0	0	0	617	0	449	403	0	54
VA	NORTHAMPTON	960051131	960	51131	0	0	0	0	2	0	0	8	0	5
VA	CHESAPEAKE CITY	960051550	960	51550	3132	5779	476	396	19334	245	517	13782	2	999
VA	HAMPTON CITY	960051650	960	51650	1	0	0	0	11	0	0	13	0	3
VA	NORFOLK CITY	960051710	960	51710	627	0	0	0	12555	0	415	11909	0	749
VA	PORTSMOUTH CITY	960051740	960	51740	171	0	0	0	4397	0	135	3683	0	141
VA	VIRGINIA BEACH	960051810	960	51810	179	86	15	8	4611	4	6	3670	0	397
VA	NORFOLK CITY	965051710	965	51710	406	0	0	0	4005	0	347	3184	0	538
VA	VIRGINIA BEACH	965051810	965	51810	4225	991	173	90	23500	44	373	16187	0	2223
VA	PRINCE WILLIAM	970051153	970	51153	25257	107	364	543	5600	493	1327	2656	0	239
VA	FAUQUIER	980051061	980	51061	1950	35	38	207	197	77	45	37	0	0
VA	KING GEORGE	980051099	980	51099	51701	3283	2414	2088	7337	1986	2837	1591	0	755
VA	NORTHUMBERLAND	980051133	980	51133	34019	11625	6694	876	2019	388	6812	358	0	1478
VA	PRINCE WILLIAM	980051153	980	51153	7169	21	73	109	792	99	274	325	0	288
VA	RICHMOND	980051159	980	51159	26	62	21	7	31	3	54	5	0	0
VA	STAFFORD	980051179	980	51179	76616	757	999	2629	21342	2787	10948	6311	1	1285
VA	WESTMORELAND	980051193	980	51193	55192	20947	6982	4935	6676	948	7754	1475	1	1835
MD	ST MARYS	990024037	990	24037	6902	1337	589	394	4142	271	942	1499	1	635
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					23289300	2533611	1863072	3026894	2485667	2177544	4116366	1188028	8606	423311

Table 9. Forecasted 2000 Phase 4.2 Chesapeake Bay Watershed Model Land Use in Acres by County Segment

State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious		Non-Ag.		Impervious	Manure Acres	Water
									Urban	Hay	Herb.	Urban			
NY	ALLEGANY	10036003	10	36003	36426	3371	50	2677	2151	2683	4453	1139		10	5
NY	CHEMUNG	10036015	10	36015	101865	14565	776	12496	16386	11026	38676	7846		28	1587
NY	LIVINGSTON	10036051	10	36051	4508	2311	411	516	0	477	1853	0		4	0
NY	ONTARIO	10036069	10	36069	436	104	60	22	0	31	63	0		0	0
NY	SCHUYLER	10036097	10	36097	36231	1985	436	2742	1410	2876	3829	755		7	1976
NY	STEUBEN	10036101	10	36101	480110	63888	579	46807	28264	62802	82055	15829		153	3381
NY	YATES	10036123	10	36123	2988	1087	431	323	47	786	783	10		2	28
PA	BRADFORD	10042015	10	42015	55348	10981	174	9084	2300	15827	15848	1059		54	931
PA	POTTER	10042105	10	42105	18237	3109	65	2374	236	2735	3317	120		7	103
PA	TIOGA	10042117	10	42117	270743	20405	1933	28048	8606	46975	31553	4555		116	3120
NY	BROOME	20036007	20	36007	193066	19264	1993	15645	35404	18923	96341	19206		66	5802
NY	CHEMUNG	20036015	20	36015	22302	2225	119	1909	464	1685	5909	243		4	23
NY	CHENANGO	20036017	20	36017	358644	39520	621	40023	11487	43989	70725	4872		195	3433
NY	CORTLAND	20036023	20	36023	162604	24306	986	18846	7360	17522	45013	2364		104	1608
NY	DELAWARE	20036025	20	36025	115009	7300	73	18605	3351	16746	23237	1832		49	864
NY	HERKIMER	20036043	20	36043	21114	4230	2301	4744	1376	5237	13336	685		27	254
NY	MADISON	20036053	20	36053	126644	17855	1735	11502	2648	17394	25482	568		75	1672
NY	ONEIDA	20036065	20	36065	19114	2189	385	1583	292	2005	4996	151		10	116
NY	ONONDAGA	20036067	20	36067	20980	5602	1353	1140	715	1728	3432	108		12	423
NY	OTSEGO	20036077	20	36077	356213	40936	6084	52712	12447	54038	94880	4997		194	8823
NY	SCHOHARIE	20036095	20	36095	17574	1454	330	1281	176	1961	3250	87		6	125
NY	SCHUYLER	20036097	20	36097	18356	1026	225	1416	404	1486	1991	237		4	360
NY	TIOGA	20036107	20	36107	162106	26966	2554	20184	14356	19928	78426	6131		95	2781
NY	TOMPKINS	20036109	20	36109	45952	5010	479	1686	596	2123	3618	263		10	122
PA	BRADFORD	20042015	20	42015	30621	6192	98	5123	1585	8925	8937	1083		30	618
PA	SUSQUEHANNA	20042115	20	42115	127760	6115	784	10926	4265	12817	23185	2474		44	3150
PA	WAYNE	20042127	20	42127	14581	318	197	1195	58	1601	1895	24		4	338
PA	BRADFORD	30042015	30	42015	224633	35972	571	29759	4241	51848	51631	2361		177	5328
PA	LACKAWANNA	30042069	30	42069	152367	2765	2467	4761	42642	7850	14325	21233		20	3561
PA	LUZERNE	30042079	30	42079	61710	2432	967	691	14195	1384	5105	11161		2	1823
PA	LYCOMING	30042081	30	42081	971	43	4	13	0	24	67	0		0	0
PA	SULLIVAN	30042113	30	42113	13770	380	79	325	129	806	2701	80		3	101
PA	SUSQUEHANNA	30042115	30	42115	183879	16586	2128	29633	3515	34762	64190	1533		120	4517
PA	TIOGA	30042117	30	42117	3206	313	26	425	43	712	484	28		2	0
PA	WAYNE	30042127	30	42127	14789	145	90	545	351	731	834	155		2	373
PA	WYOMING	30042131	30	42131	167358	8975	5571	9171	20248	16175	19232	3862		38	4990
PA	COLUMBIA	40042037	40	42037	149488	40786	22729	7696	9575	14464	48175	4873		73	2304
PA	LUZERNE	40042079	40	42079	256065	19988	7945	5680	28430	11378	41644	18702		20	5737
PA	MONTGOMERY	40042093	40	42093	10288	2811	2879	626	4691	1715	5918	1235		6	546
PA	NORTHUMBERLAND	40042097	40	42097	68862	12777	13349	3598	10677	4802	16143	6305		31	3171
PA	SCHUYLKILL	40042107	40	42107	39016	3976	1647	558	2966	1422	2250	1256		9	237
PA	SULLIVAN	40042113	40	42113	28041	110	23	94	13	234	777	9		1	150
PA	CAMBRIA	50042021	50	42021	137103	10998	5467	4209	6353	9254	8169	3058		16	1962
PA	CENTRE	50042027	50	42027	105455	600	593	444	3737	681	1164	2116		3	570
PA	CLEARFIELD	50042033	50	42033	463458	8830	634	3821	30535	12504	9890	18432		23	3859
PA	INDIANA	50042063	50	42063	28775	1870	1172	1078	2273	1543	2113	1396		5	26
PA	JEFFERSON	50042065	50	42065	17	0	0	0	503	0	0	342		0	0
PA	CAMERON	60042023	60	42023	237469	314	0	271	2009	822	11138	810		0	1682
PA	CENTRE	60042027	60	42027	283198	14431	14276	10690	14943	16398	28236	7309		84	3061
PA	CLEARFIELD	60042033	60	42033	110464	1039	75	450	1840	1471	1163	1112		3	271
PA	CLINTON	60042035	60	42035	483591	6372	10806	7919	9307	8202	37374	5305		51	6239
PA	ELK	60042047	60	42047	156062	2227	52	3680	1826	4438	3708	971		7	587
PA	LYCOMING	60042081	60	42081	390182	22357	2266	6794	7351	12508	35203	4043		45	4633
PA	MCKEAN	60042083	60	42083	15114	64	1	107	35	87	111	20		0	4
PA	POTTER	60042105	60	42105	371197	8271	173	6315	1540	7274	8545	514		20	443
PA	SULLIVAN	60042113	60	42113	2819	65	14	56	7	138	461	4		0	48
PA	TIOGA	60042117	60	42117	236817	9938	820	13508	2674	22622	14926	1579		56	944
PA	BRADFORD	70042015	70	42015	6109	546	9	455	12	787	774	8		0	90
PA	CENTRE	70042027	70	42027	9041	33	33	25	28	38	65	19		0	0
PA	COLUMBIA	70042037	70	42037	4977	2454	1367	463	79	870	2839	41		4	0
PA	LYCOMING	70042081	70	42081	201947	26145	2650	7945	8022	14628	41243	3779		53	3377
PA	MONTGOMERY	70042093	70	42093	13477	7688	7874	1713	854	4691	16790	568		15	259
PA	NORTHUMBERLAND	70042097	70	42097	16830	11097	11594	3125	3778	4171	14035	2115		27	2607
PA	SULLIVAN	70042113	70	42113	191303	3775	791	3229	1808	8013	26779	914		26	1398
PA	UNION	70042119	70	42119	81132	23586	7137	3924	4414	8541	16413	2153		82	434
PA	WYOMING	70042131	70	42131	3129	61	38	62	0	110	128	0		0	11
PA	CENTRE	80042027	80	42027	93515	8680	8587	6430	1137	9863	17186	374		50	205
PA	CUMBERLAND	80042041	80	42041	75945	23543	35496	14666	16954	24536	34960	11355		164	1938
PA	DAUPHIN	80042043	80	42043	135645	12138	12675	4762	10109	9900	28206	6002		45	14074
PA	FRANKLIN	80042055	80	42055	42125	6383	11970	4875	5458	7728	6462	1776		92	138
PA	JUNIATA	80042067	80	42067	9969	2499	1058	1284	63	1624	3286	28		13	4
PA	LEBANON	80042075	80	42075	9594	6	4	2	0	2	4	0		0	0
PA	MIFFLIN	80042087	80	42087	10184	20	10	14	0	17	32	0		0	26
PA	NORTHUMBERLAND	80042097	80	42097	41830	11938	12473	3362	532	4487	15088	235		29	6376
PA	PERRY	80042099	80	42099	150015	12699	17990	10663	3926	20539	24969	1766		92	1708
PA	SCHUYLKILL	80042107	80	42107	67511	12952	5365	1817	9702	4632	7340	5882		28	157
PA	SNYDER	80042109	80	42109	90999	16609	26728	12663	3746	18300	32935	1420		205	1572
PA	UNION	80042119	80	42119	34905	7735	2341	1287	383	2801	5425	53		27	498
PA	BEDFORD	90042009	90	42009	285923	23084	16754	30728	7626	42716	33912	2865		163	2317
PA	BLAIR	90042013	90	42013	3120	1074	1001	663	51	1042	851	12		9	0
PA	CAMBRIA	90042021	90	42021	1	23	11	9	0	19	6	0		0	0
PA	FULTON	90042057	90	42057	18668	1037	203	967	152	1552	236	101		4	0
PA	HUNTINGDON	90042061	90	42061	86705	2828	3198	2849	453	3401	4750	150		20	8506
PA	SOMERSET	90042111	90	42111	15058	343	116	367	214	497	611	121		2	0
PA	BEDFORD	100042009	100	42009	8579	930	675	1238	386	1721	1367	77		7	5

Table 9. Forecasted 2000 Phase 4.2 Chesapeake Bay Watershed Model Land Use in Acres by County Segment

State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious		Non-Ag.		Impervious		Manure Acres	Water
									Urban	Hay	Herb.	Urban				
PA	BLAIR	100042013	100	42013	223638	18298	17058	11293	18852	17745	15202	8049	156	1026		
PA	CENTRE	100042027	100	42027	33127	2501	2474	1853	163	2842	4940	41	14	11		
PA	FRANKLIN	100042055	100	42055	11267	955	1790	729	80	1156	962	44	14	0		
PA	FULTON	100042057	100	42057	57162	3214	628	2997	843	4808	732	370	12	133		
PA	HUNTINGDON	100042061	100	42061	350150	16522	18686	16647	4137	19868	27884	1748	116	1621		
PA	JUNIATA	100042067	100	42067	140244	22382	9478	11499	1852	14546	29449	662	113	1680		
PA	MIFFLIN	100042087	100	42087	156709	19017	9272	12986	6866	16054	28855	2203	188	2288		
PA	PERRY	100042099	100	42099	69248	5919	8386	4970	693	9574	11655	222	43	618		
PA	SNYDER	100042109	100	42109	5850	262	422	200	16	289	537	3	3	0		
MD	CARROLL	110024013	110	24013	1339	322	660	307	23	280	538	6	1	0		
PA	ADAMS	110042001	110	42001	53251	26641	14715	13059	4155	36982	21411	1837	63	1023		
PA	BERKS	110042011	110	42011	13328	5637	5807	2200	878	4155	5697	457	27	5		
PA	CUMBERLAND	110042041	110	42041	58804	7181	10826	4482	8230	7484	10593	5286	42	309		
PA	DAUPHIN	110042043	110	42043	30349	9808	10242	3854	19037	7999	23512	11688	30	6712		
PA	LANCASTER	110042071	110	42071	8010	9461	1763	2581	2998	2972	2183	1863	62	3726		
PA	LEBANON	110042075	110	42075	43569	37236	20829	11006	13953	12351	20572	7521	246	1027		
PA	SCHUYLKILL	110042107	110	42107	56807	10068	4170	1416	3754	3601	5704	1822	18	164		
PA	YORK	110042133	110	42133	119827	70056	38663	18916	29989	25194	62246	15988	99	4707		
PA	CHESTER	120042029	120	42029	2834	306	601	334	0	440	499	0	2	0		
PA	LANCASTER	120042071	120	42071	29125	33013	6152	9005	4062	10369	7808	2372	218	2787		
PA	YORK	120042133	120	42133	10457	3398	1876	918	129	1222	3126	39	5	78		
MD	CECIL	140024015	140	24015	3501	207	378	190	23	91	418	15	0	1426		
MD	HARFORD	140024025	140	24025	15735	2887	4398	2362	644	1570	5177	216	6	1704		
PA	LANCASTER	140042071	140	42071	13303	15987	2979	4361	582	5021	3823	343	106	6694		
PA	YORK	140042133	140	42133	34550	19430	10723	5246	772	6988	17676	378	27	480		
MD	ALLEGANY	160024001	160	24001	118629	1010	565	8845	15351	7036	9338	7227	7	920		
MD	GARRETT	160024023	160	24023	123846	3867	1019	7226	2564	4510	7377	1626	16	896		
PA	BEDFORD	160042009	160	42009	68517	2521	1830	3356	613	4665	3701	302	18	415		
PA	SOMERSET	160042111	160	42111	62215	2572	867	2753	334	3730	4636	172	13	5		
WV	GRANT	160054023	160	54023	89529	1206	312	35897	3551	6614	14633	2220	13	1371		
WV	HAMPSHIRE	160054027	160	54027	7101	82	33	2301	259	947	939	228	1	30		
WV	MINERAL	160054057	160	54057	155880	2447	1769	27080	5990	12422	1204	3170	13	1107		
WV	PRESTON	160054077	160	54077	685	4	5	54	122	38	37	81	0	0		
WV	TUCKER	160054093	160	54093	479	0	0	20	26	5	9	17	0	0		
VA	HIGHLAND	170051091	170	51091	37047	0	361	15165	308	2499	7760	131	6	0		
WV	GRANT	170054023	170	54023	85573	1284	333	38202	2833	7039	15499	1428	14	487		
WV	HAMPSHIRE	170054027	170	54027	83900	542	219	15112	1846	6221	6210	1050	7	1755		
WV	HARDY	170054031	170	54031	104913	2907	842	37399	2015	8207	9064	1168	31	142		
WV	PENDLETON	170054071	170	54071	304742	3470	955	93742	3406	15691	22066	1676	49	568		
MD	ALLEGANY	175024001	175	24001	87930	624	349	5465	598	4347	5764	379	4	1040		
MD	WASHINGTON	175024043	175	24043	22724	459	1071	751	769	453	786	307	4	557		
PA	BEDFORD	175042009	175	42009	84002	3103	2252	4130	0	5742	4557	0	22	0		
PA	FULTON	175042057	175	42057	12470	865	169	806	23	1293	197	15	3	0		
WV	HAMPSHIRE	175054027	175	54027	205357	1406	569	39222	2706	16145	16145	1422	18	1458		
WV	HARDY	175054031	175	54031	148966	2362	684	30384	1676	6668	7321	753	25	144		
WV	MORGAN	175054065	175	54065	55065	361	194	1435	2298	1222	4216	1106	1	1019		
MD	FREDERICK	180024021	180	24021	34339	10046	12517	9495	2818	9522	9641	1645	51	1133		
MD	WASHINGTON	180024043	180	24043	45240	9634	22479	15782	9840	9505	16233	6508	74	1453		
PA	ADAMS	180042001	180	42001	4543	41	23	20	14	57	33	10	0	32		
PA	FRANKLIN	180042055	180	42055	22614	5781	10840	4425	4311	6999	5919	2476	73	12		
VA	LOUDOUN	180051107	180	51107	32733	2546	3920	21810	1162	12197	6179	297	1	146		
WV	JEFFERSON	180054037	180	54037	6370	816	6208	5001	1247	3546	6084	347	7	113		
VA	AUGUSTA	190051015	190	51015	198677	6216	22496	130302	27359	45978	18732	7702	92	472		
VA	PAGE	190051139	190	51139	108527	3059	5214	30925	15439	16831	10957	2569	34	1720		
VA	ROCKINGHAM	190051165	190	51165	155539	16260	9764	55230	24122	27753	11574	6509	163	1845		
VA	WARREN	190051187	190	51187	33513	299	434	7015	3510	3102	4448	531	0	708		
VA	HARRISONBURG CITY	190051660	190	51660	705	0	0	0	3438	0	2737	2689	0	5		
VA	STAUNTON CITY	190051790	190	51790	1627	0	0	0	4609	0	4536	1900	0	4		
VA	WAYNESBORO CITY	190051820	190	51820	1111	0	0	0	3397	0	2487	2004	0	18		
VA	CLARKE	200051043	200	51043	34780	5357	3604	23288	1269	14950	6495	567	7	926		
VA	FREDERICK	200051069	200	51069	38850	1628	1138	11349	1358	8163	14788	655	2	173		
VA	PAGE	200051139	200	51139	6009	1	1	9	0	5	3	0	0	0		
VA	ROCKINGHAM	200051165	200	51165	132181	12290	7381	41747	11425	20977	8787	3340	123	229		
VA	SHENANDOAH	200051171	200	51171	177791	13174	6184	56356	20564	25407	21643	5231	40	2144		
VA	WARREN	200051187	200	51187	34723	680	989	15960	12215	7057	9529	2824	1	1061		
VA	HARRISONBURG CITY	200051660	200	51660	34	0	0	0	717	0	405	555	0	0		
WV	HARDY	200054031	200	54031	7408	84	24	1080	29	237	260	19	0	0		
WV	JEFFERSON	200054037	200	54037	18730	1337	10177	8198	6360	5813	9359	1524	11	1383		
MD	CARROLL	210024013	210	24013	32276	14317	29292	13618	3418	12419	23903	1687	48	190		
MD	FREDERICK	210024021	210	24021	115977	31657	39443	29921	19905	30005	29496	11254	162	1602		
MD	MONTGOMERY	210024031	210	24031	9741	472										

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State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious		Non-Ag.		Impervious	Manure Acres	Water
									Urban	Hay	Herb.	Urban			
VA	RAPPAHANNOCK	230051157	230	51157	99214	1581	1203	30283	5682	16936	15059	895	0	122	
VA	SPOTSYLVANIA	230051177	230	51177	19382	281	447	898	1040	748	3449	388	1	364	
VA	STAFFORD	230051179	230	51179	17829	190	252	635	1299	840	3262	283	0	410	
VA	FREDERICKSBURG CITY	230051630	230	51630	216	0	0	0	2	0	156	2	0	21	
VA	CAROLINE	235051033	235	51033	24403	2432	1094	735	1002	331	5527	241	0	94	
VA	ORANGE	235051137	235	51137	1670	50	76	421	1	192	296	1	0	0	
VA	SPOTSYLVANIA	235051177	235	51177	90426	1424	2260	4541	3919	3783	17603	1030	3	882	
VA	CAROLINE	240051033	240	51033	122645	14391	6472	4350	5486	1958	32596	1697	1	987	
VA	KING AND QUEEN	240051097	240	51097	9875	787	1407	127	115	51	1799	14	0	13	
VA	KING WILLIAM	240051101	240	51101	3142	164	562	35	6	21	280	4	0	21	
VA	SPOTSYLVANIA	240051177	240	51177	4920	92	146	293	167	244	1146	22	0	12	
VA	LOUISA	250051109	250	51109	54924	335	2167	6061	3357	4285	14257	1054	2	8481	
VA	ORANGE	250051137	250	51137	36973	1871	2854	15833	2656	7231	11079	400	4	373	
VA	SPOTSYLVANIA	250051177	250	51177	20797	603	957	1922	524	1601	7659	325	1	5291	
VA	ALBEMARLE	260051003	260	51003	2199	35	66	1246	23	772	953	16	0	10	
VA	CAROLINE	260051033	260	51033	22534	2129	957	644	974	290	4838	331	0	151	
VA	GOOCHLAND	260051075	260	51075	3211	62	49	233	274	162	646	181	0	7	
VA	HANOVER	260051085	260	51085	96404	19991	4088	12916	8004	7568	20811	1781	4	728	
VA	LOUISA	260051109	260	51109	133219	971	6279	17559	6896	12415	41496	1847	6	945	
VA	ORANGE	260051137	260	51137	798	112	170	946	576	432	626	136	0	18	
VA	SPOTSYLVANIA	260051177	260	51177	21298	337	535	1076	410	896	4216	70	1	7	
VA	ALLEGHANY	265051005	265	51005	7140	0	0	2	0	0	1	0	0	502	
VA	BATH	265051017	265	51017	111108	199	228	9343	1151	3177	5095	586	0	2114	
VA	HIGHLAND	265051091	265	51091	57071	0	505	21232	695	3498	10837	245	1	0	
VA	ALLEGHANY	270051005	270	51005	229118	549	434	19649	6613	5699	13650	2495	0	1136	
VA	AMHERST	270051009	270	51009	75066	110	84	8450	632	2526	2275	388	0	826	
VA	AUGUSTA	270051015	270	51015	131285	849	3074	17808	2799	6284	2451	1095	13	63	
VA	BATH	270051017	270	51017	163522	462	531	21737	3474	7392	11576	906	0	506	
VA	BEDFORD	270051019	270	51019	30852	130	44	2608	1166	1063	1845	507	1	448	
VA	BOTETOURT	270051023	270	51023	214436	886	2459	32460	13665	13473	22222	4823	11	1927	
VA	CRAIG	270051045	270	51045	156887	393	378	13590	794	3982	7066	277	1	19	
VA	GILES	270051071	270	51071	7519	0	0	10	0	3	7	0	0	0	
VA	HIGHLAND	270051091	270	51091	78038	0	436	18349	393	3023	9289	153	1	0	
VA	MONTGOMERY	270051121	270	51121	13915	3	18	218	9	78	156	6	0	0	
VA	ROANOKE	270051161	270	51161	11114	87	149	2346	135	1163	1709	35	1	0	
VA	ROCKBRIDGE	270051163	270	51163	238735	410	4189	82136	17226	27315	6664	7054	13	2042	
VA	BUENA VISTA CITY	270051530	270	51530	1808	0	0	0	1026	0	661	790	0	102	
VA	CLIFTON FORGE CITY	270051560	270	51560	687	0	0	0	693	0	24	537	0	48	
VA	COVINGTON CITY	270051580	270	51580	618	0	0	0	1048	0	265	747	0	170	
VA	LEXINGTON CITY	270051678	270	51678	75	0	0	0	890	0	72	553	0	8	
WV	MONROE	270054063	270	54063	42603	122	106	3266	94	852	2618	25	1	0	
WV	PENDLETON	270054071	270	54071	977	19	5	511	0	85	122	0	0	0	
VA	ALBEMARLE	280051003	280	51003	283572	1583	3000	56584	28690	35045	38586	7613	5	2660	
VA	AMHERST	280051009	280	51009	135222	505	387	38685	13455	11563	10463	4722	1	1874	
VA	APPOMATTOX	280051011	280	51011	55196	1014	1023	13361	2539	5388	10453	793	2	590	
VA	BEDFORD	280051019	280	51019	14630	106	36	2129	6407	868	1332	3951	1	352	
VA	BUCKINGHAM	280051029	280	51029	227131	816	3470	28747	6925	17910	62888	1897	23	2690	
VA	CAMPBELL	280051031	280	51031	26237	935	237	3351	6241	1373	2549	3273	1	318	
VA	CUMBERLAND	280051049	280	51049	58656	771	1420	8817	1749	4697	16830	501	4	469	
VA	FLUVANNA	280051065	280	51065	101121	598	1538	22060	11828	13327	29618	3162	0	2717	
VA	GOOCHLAND	280051075	280	51075	22088	860	681	3234	775	2250	9281	250	1	689	
VA	GREENE	280051079	280	51079	32693	319	580	9812	5291	3975	7373	759	3	168	
VA	LOUISA	280051109	280	51109	6427	39	253	709	862	501	1645	169	0	39	
VA	NELSON	280051125	280	51125	215976	1519	2663	34641	8373	13329	24500	1625	1	1565	
VA	ORANGE	280051137	280	51137	3127	112	172	952	557	435	650	64	0	3	
VA	CHARLOTTESVILLE CITY	280051540	280	51540	151	0	0	0	3921	0	282	2213	0	11	
VA	LYNCHBURG CITY	280051680	280	51680	12992	0	0	0	10096	0	1782	6800	0	224	
VA	CHESTERFIELD	290051041	290	51041	5267	173	7	167	2073	94	1060	846	0	64	
VA	CUMBERLAND	290051049	290	51049	18988	310	571	3544	532	1888	6786	186	2	65	
VA	GOOCHLAND	290051075	290	51075	75469	2818	2231	10599	6681	7372	29983	2140	4	3526	
VA	HENRICO	290051087	290	51087	3858	813	274	288	9077	284	1439	5176	0	630	
VA	POWHATAN	290051145	290	51145	74972	1557	2921	9234	5090	4703	21016	1714	8	1200	
VA	RICHMOND CITY	290051760	290	51760	680	0	0	0	856	0	123	284	0	60	
VA	AMELIA	300051007	300	51007	119530	6802	8982	18035	2911	9817	47924	1163	19	950	
VA	APPOMATTOX	300051011	300	51011	42187	521	526	6870	2157	2771	5316	716	1	118	
VA	BUCKINGHAM	300051029	300	51029	14519	50	211	1747	115	1089	3838	55	1	82	
VA	CHESTERFIELD	300051041	300	51041	25493	676	29	654	284	367	4455	181	0	298	
VA	CUMBERLAND	300051049	300	51049	33941	691	1274	7907	1317	4212	15192	331	4	419	
VA	NOTTOWAY	300051135	300	51135	52295	2646	1604	18551	2664	9366	10928	1111	10	466	
VA	POWHATAN	300051145	300	51145	24414	596	1118	3535	530	1801	8227	176	3	244	
VA	PRINCE EDWARD	300051147	300	51147	118756	4369	3560	30597	7879	14829	32337	2782	25	1688	
VA	AMELIA	310051007	310	51007	9454	261	345	693	21	377	1849	14	1	540	
VA	CHESTERFIELD	310051041	310	51041	23285	552	24	534	722	300	3628	268	0	1611	
VA	DINWIDDIE	310051053	310	51053	28402	3941	1886	2860	412	943	3468	233	2	1344	
VA	NOTTOWAY	310051135	310	51135	4110	173	105	1213	27	612	721	18	1	27	
MD	HOWARD	330024027	330	24027	21189	666	6010	2987	1808	2008	8898	592	5	820	
MD	MONTGOMERY	330024031	330	24031	17838	860	5891	2036	2793	1802	6345	1063	3	634	
MD	ANNE ARUNDEL	340024003	340	24003	18409	976	522	432	10010	309	1977	5536	0	26	
MD	HOWARD	340024027	340	24027	20714	757	6832	3395	21957	2283	7869	12733	5	188	
MD	PRINCE GEORGES	340024033	340	24033	8843	506	84	289	9382	186	940	5428	0	90	
DE	NEW CASTLE	370010003	370	10003	1106	2176	1362	213	40	240	1855	15	1	16	
MD	CECIL	370024015	370	24015	10536	4280	7823	3921	754	1883	8280	262	9	596	
DE	KENT	380010001	380	10001	8439	3944	3396	335	420	347	2361	54	3	0	
DE	NEW CASTLE	380010003	380	10003	4772	1092	683	107	0	121	733	0	0	0	
MD	CAROLINE	380024011	380	24011	7	6	4	0	0	0	3	0	0	0	

Table 9. Forecasted 2000 Phase 4.2 Chesapeake Bay Watershed Model Land Use in Acres by County Segment

State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious		Non-Ag.		Impervious	Manure Acres	Water
									Urban	Hay	Herb.	Urban			
MD	KENT	380024029	380	24029	32708	26842	23115	4136	2144	1962	10912	684		30	1317
MD	QUEEN ANNES	380024035	380	24035	31756	20063	57839	962	3195	1339	7641	950		11	724
MD	QUEEN ANNES	390024035	390	24035	6278	4749	13690	228	1731	317	1749	428		3	475
MD	TALBOT	390024041	390	24041	4768	3659	8988	551	603	106	1774	94		2	410
DE	KENT	400010001	400	10001	5108	3490	3006	297	131	307	2103	15		3	0
MD	CAROLINE	400024011	400	24011	53172	37466	25098	1476	5343	1317	19764	1271		25	563
MD	DORCHESTER	400024019	400	24019	6177	4863	8746	265	2597	33	6775	1132		2	474
MD	QUEEN ANNES	400024035	400	24035	10941	7921	22835	380	377	529	3042	70		4	9
MD	TALBOT	400024041	400	24041	20447	12649	31072	1906	2452	365	6137	527		6	724
DE	KENT	410010001	410	10001	13945	8919	7680	758	242	785	5374	46		7	0
DE	SUSSEX	410010005	410	10005	89995	35645	57638	3276	11250	1486	27777	3913		51	1146
MD	CAROLINE	410024011	410	24011	17287	9278	6215	365	1545	326	4667	623		6	48
MD	DORCHESTER	410024019	410	24019	26534	8699	15644	474	1050	59	12009	370		3	748
MD	WICOMICO	410024045	410	24045	38916	15338	4501	1064	2560	930	11171	694		11	601
DE	SUSSEX	420010005	420	10005	202	246	397	23	322	10	152	199		0	0
MD	SOMERSET	420024039	420	24039	22399	4392	2439	386	1732	211	4700	258		3	666
MD	WICOMICO	420024045	420	24045	39513	20110	5901	1395	11493	1219	14418	5648		14	641
MD	WORCESTER	420024047	420	24047	24	18	14	2	0	1	11	0		0	0
DE	SUSSEX	430010005	430	10005	11156	3148	5090	289	116	131	2507	13		5	0
MD	SOMERSET	430024039	430	24039	106788	19616	10896	1723	5926	943	20990	1353		15	3015
MD	WICOMICO	430024045	430	24045	28814	15709	4610	1090	1932	953	11453	374		11	17
MD	WORCESTER	430024047	430	24047	109035	27441	22223	2439	3616	828	16370	1209		19	507
VA	ACCOMACK	430051001	430	51001	10500	5437	677	192	552	39	1671	83		1	38
VA	ACCOMACK	440051001	440	51001	67313	34009	4233	1199	5022	244	10454	955		6	2205
VA	NORTHAMPTON	440051131	440	51131	12374	36445	877	1124	3356	61	6601	1335		0	1792
MD	BALTIMORE	450024005	450	24005	3074	312	1040	553	51	309	1846	16		1	0
MD	CECIL	450024015	450	24015	14243	2570	4697	2354	2906	1131	4929	1384		6	1134
MD	HARFORD	450024025	450	24025	42682	8292	12631	6783	2622	4510	14828	1084		18	892
PA	CHESTER	450042029	450	42029	19418	3218	6328	3512	1203	4630	5220	581		19	331
PA	LANCASTER	450042071	450	42071	15257	25977	4841	7086	1092	8159	6229	484		172	437
PA	YORK	450042133	450	42133	3758	4145	2287	1119	878	1491	3658	427		6	20
MD	BALTIMORE	470024005	470	24005	118556	6286	20986	11156	24045	6241	35293	13774		20	4468
MD	CARROLL	470024013	470	24013	6827	2091	4278	1989	791	1814	3446	291		7	0
MD	HARFORD	470024025	470	24025	10196	1850	2818	1513	5839	1006	3007	2425		4	359
PA	YORK	470042133	470	42133	1075	1495	825	404	138	537	1324	49		2	0
MD	BALTIMORE	480024005	480	24005	12737	575	1921	1021	22039	571	2934	11588		2	69
MD	BALTIMORE CITY	480024510	480	24510	1429	0	0	0	13922	0	310	20259		0	217
MD	ANNE ARUNDEL	490024003	490	24003	10667	852	456	377	20947	270	1387	15510		0	827
MD	BALTIMORE	490024005	490	24005	3810	49	164	87	7959	49	230	5064		0	172
MD	HOWARD	490024027	490	24027	7227	96	867	431	5885	290	952	3334		1	27
MD	BALTIMORE CITY	490024510	490	24510	53	0	0	0	765	0	95	1655		0	60
MD	ANNE ARUNDEL	500024003	500	24003	17530	3581	1914	1586	6199	1132	8347	1357		1	660
MD	CALVERT	500024009	500	24009	44912	7803	2911	4007	28099	1409	5315	4806		0	1569
MD	CHARLES	500024017	500	24017	10962	412	933	311	3072	277	1491	601		0	36
MD	PRINCE GEORGES	500024033	500	24033	57579	8892	1472	5072	27958	3270	18624	10196		2	583
MD	ST MARYS	500024037	500	24037	22562	2826	1245	749	10152	614	2030	2435		2	482
MD	ANNE ARUNDEL	510024003	510	24003	14391	861	460	381	15810	272	1609	8631		0	953
DC	DISTRICT OF COLUMBIA	540011001	540	11001	364	0	0	0	7748	0	434	9376		0	299
MD	MONTGOMERY	540024031	540	24031	5231	206	1411	488	19485	432	942	10152		1	5
MD	PRINCE GEORGES	540024033	540	24033	6246	700	116	399	26948	257	1026	18582		0	63
VA	FAIRFAX	550051059	550	51059	26294	216	432	1311	21162	841	8791	8884		0	734
VA	FAUQUIER	550051061	550	51061	47509	5721	6229	31883	19538	11890	6977	4875		14	580
VA	LOUDOUN	550051107	550	51107	4898	363	559	3112	3382	1740	607	1512		0	16
VA	PRINCE WILLIAM	550051153	550	51153	57104	2291	7797	10292	44412	10599	22656	16332		8	1765
VA	MANASSAS CITY	550051683	550	51683	128	0	0	0	3521	0	327	2443		0	0
VA	MANASSAS PARK CITY	550051685	550	51685	256	0	0	0	437	0	211	268		0	0
VA	CAROLINE	560051033	560	51033	54967	4019	1807	1215	3129	547	9143	855		0	398
VA	ESSEX	560051057	560	51057	87045	11719	24894	5267	2143	1510	14844	682		0	967
VA	KING GEORGE	560051099	560	51099	24216	3572	2626	2229	1248	2633	3842	387		0	302
VA	LANCASTER	560051103	560	51103	48208	8481	2360	392	2685	200	8931	445		0	1414
VA	MIDDLESEX	560051119	560	51119	26538	5287	4162	681	2543	307	7262	404		0	988
VA	NORTHUMBERLAND	560051133	560	51133	709	385	222	19	69	16	246	20		0	0
VA	RICHMOND	560051159	560	51159	77573	16601	5568	2203	4234	708	13834	707		1	992
VA	SPOTSYLVANIA	560051177	560	51177	14708	479	760	1526	7562	1271	4989	3946		1	254
VA	STAFFORD	560051179	560	51179	7905	301	398	1005	7055	1329	4307	2902		0	207
VA	WESTMORELAND	560051193	560	51193	20850	9172	3057	2410	1510	375	3184	197		0	234
VA	FREDERICKSBURG CITY	560051630	560	51630	1628	0	0	0	2384	0	901	1366		0	83
VA	LANCASTER	580051103	580	51103	234	127	35	6	25	3	137	3		0	0
VA	NORTHUMBERLAND	580051133	580	51133	27686	3883	2236	190	2185	160	2262	297		0	734
VA	RICHMOND	580051159	580	51159	82	32	11	4	0	1	27	0		0	0
VA	CAROLINE	590051033	590	51033	5027	519	234	157	397	71	1174	57		0	0
VA	GLOUCESTER	590051073	590	51073	26033	4245	1975	608	3183	273	8561	2105		0	807
VA	HANOVER	590051085	590	51085	42893	8527	1744	5510	12126	3228	8391	3294		2	1044
VA	JAMES CITY	590051095	590	51095	14141	699	421	383	1357	296	3161	938		0	81
VA	KING AND QUEEN	590051097	590	51097	96399	8195	14644	1323	1413	534	18762	380		4	1045
VA	KING WILLIAM	590051101	590	51101	119559	7332	25166	1553	1977	948	12670	653		7	2426
VA	NEW KENT	590051127	590	51127	47723	2839	2221	649	719	280	7378	347		0	1242
VA	YORK	590051199	590	51199	20307	133	22	138	10378	44	3715	5216		0	1124
VA	WILLIAMSBURG CITY	590051830	590	51830	379	0	0	0	680	0	42	401		0	1
VA	CHARLES CITY	600051036	600	51036	76362	6902	5684	876	1036	319	12566	390		7	1800
VA	CHESTERFIELD	600051041	600	51041	101944	3904	168	3778	41655	2121	23797	22216		1	4278
VA	DENWIDDE	600051053	600	51053	688	595	285	432	2401	142	261	2201		0	86
VA	HENRICO	600051087	600	51087	19665	4805	1617	1701	11905	1679	9738	5175		1	1364
VA	ISLE OF WIGHT	600051093	600	51093	27921	16730	3136	1298	7617	368	6125	3451		31	956
VA	JAMES CITY	600051095	600	51095	40006	1938	1167	1061	10075	821	8346	5964		0	2397

Table 9. Forecasted 2000 Phase 4.2 Chesapeake Bay Watershed Model Land Use in Acres by County Segment

State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious		Non-Ag.		Urban	Manure Acres	Water
									Urban	Hay	Herb.	Urban			
VA	NEW KENT	600051127	600	51127	36975	1649	1290	377	1608	162	4211	945	0	1827	
VA	POWHATAN	600051145	600	51145	3064	60	113	358	354	182	801	76	0	9	
VA	PRINCE GEORGE	600051149	600	51149	44520	11643	2229	1590	3581	1187	9674	2086	2	1267	
VA	SURRY	600051181	600	51181	41728	10423	5642	645	3396	627	6116	737	40	1026	
VA	YORK	600051199	600	51199	4447	16	3	17	1842	5	455	814	0	22	
VA	COLONIAL HEIGHTS CITY	600051570	600	51570	904	0	0	0	1868	0	633	1291	0	201	
VA	HAMPTON CITY	600051650	600	51650	138	0	0	0	3838	0	66	2711	0	162	
VA	HOPEWELL CITY	600051670	600	51670	1059	0	0	0	2968	0	375	2145	0	90	
VA	NEWPORT NEWS CITY	600051700	600	51700	11430	0	0	0	13760	0	2456	11031	0	1270	
VA	PETERSBURG CITY	600051730	600	51730	2063	0	0	0	3763	0	1202	2542	0	152	
VA	RICHMOND CITY	600051760	600	51760	2076	0	0	0	19626	0	1221	13312	0	1169	
VA	SUFFOLK	600051800	600	51800	2540	1598	340	219	2114	9	708	766	0	362	
VA	WILLIAMSBURG CITY	600051830	600	51830	2157	0	0	0	1094	0	156	591	0	57	
VA	CHARLES CITY	610051036	610	51036	8475	783	644	99	101	36	1425	85	1	57	
VA	HANOVER	610051085	610	51085	16608	3750	767	2423	11811	1420	3279	3915	1	238	
VA	HENRICO	610051087	610	51087	21034	2903	977	1029	27016	1015	5518	14302	0	389	
VA	NEW KENT	610051127	610	51127	16053	963	754	220	1664	95	2429	836	0	364	
VA	ISLE OF WIGHT	620051093	620	51093	13433	10865	2037	843	1630	239	4090	578	20	824	
VA	PORTSMOUTH CITY	620051740	620	51740	684	0	0	0	2702	0	658	1874	0	664	
VA	SUFFOLK	620051800	620	51800	36391	16540	3515	2264	16440	94	7639	8067	4	4717	
VA	CHESAPEAKE CITY	630051550	630	51550	1275	1191	98	98	5645	59	125	3260	0	169	
VA	PORTSMOUTH CITY	630051740	630	51740	276	0	0	0	3404	0	171	2305	0	314	
MD	BALTIMORE	650024005	650	24005	9991	411	1373	730	913	408	2293	395	1	1144	
MD	CARROLL	650024013	650	24013	30748	7217	14765	6864	5570	6260	11604	2635	24	1441	
PA	BRADFORD	700042015	700	42015	86632	12486	198	10330	3158	17998	17862	1888	61	1815	
PA	TIOGA	700042117	700	42117	1309	199	16	271	33	453	315	22	1	35	
PA	LANCASTER	710042071	710	42071	12062	32273	6014	8803	5360	10136	7552	3344	213	7924	
PA	LEBANON	710042075	710	42075	5038	189	106	56	122	63	111	65	1	0	
PA	YORK	710042133	710	42133	18486	10107	5578	2729	3902	3635	9026	1984	14	139	
PA	BERKS	720042011	720	42011	12155	1256	1294	490	699	926	1217	528	6	61	
PA	CHESTER	720042029	720	42029	948	36	70	39	58	51	57	56	0	0	
PA	LANCASTER	720042071	720	42071	47376	83135	15492	22677	32933	26111	18742	21383	549	1822	
PA	LEBANON	720042075	720	42075	6813	2452	1372	725	273	813	1406	116	16	25	
MD	WASHINGTON	730024043	730	24043	270	202	472	331	12	199	342	8	2	103	
PA	ADAMS	730042001	730	42001	14145	121	67	59	135	168	98	91	0	251	
PA	FRANKLIN	730042055	730	42055	119789	27754	52044	21245	13270	33600	28492	7061	350	757	
MD	WASHINGTON	740024043	740	24043	50132	8714	20332	14275	7289	8597	14754	4611	67	4055	
PA	FRANKLIN	740042055	740	42055	18512	752	1409	575	17	910	751	12	9	0	
PA	FULTON	740042057	740	42057	127372	10797	2111	10077	1200	16152	2471	513	31	214	
VA	CLARKE	740051043	740	51043	3552	1917	1290	8335	90	5351	2292	48	3	19	
VA	FREDERICK	740051069	740	51069	83151	4054	2833	28269	8569	20334	36370	4110	5	521	
VA	WINCHESTER CITY	740051840	740	51840	291	0	0	0	2877	0	1278	1532	0	0	
WV	BERKELEY	740054003	740	54003	92546	3964	7339	23171	10755	24618	38168	4792	18	625	
WV	JEFFERSON	740054037	740	54037	10387	1163	8848	7127	1348	5054	8656	258	10	58	
WV	MORGAN	740054065	740	54065	52103	1310	705	5213	879	4437	15072	427	0	87	
MD	CARROLL	750024013	750	24013	1397	811	1659	771	55	703	1383	15	3	178	
MD	FREDERICK	750024021	750	24021	2081	954	1189	902	32	905	960	16	5	69	
PA	ADAMS	750042001	750	42001	33496	13785	7614	6757	4596	19136	10972	2752	33	476	
MD	BALTIMORE	760024005	760	24005	9038	383	1280	681	1966	381	2126	963	1	34	
MD	CARROLL	760024013	760	24013	13836	3209	6565	3052	3072	2783	5120	1284	11	299	
MD	HOWARD	760024027	760	24027	11012	277	2495	1240	1332	833	3573	620	2	49	
DE	KENT	770010001	770	10001	22122	10206	8789	867	1243	898	6107	140	8	42	
MD	CAROLINE	770024011	770	24011	8593	4426	2965	174	658	156	2219	75	3	14	
MD	QUEEN ANNES	770024035	770	24035	795	251	722	12	43	17	98	5	0	0	
DE	KENT	780010001	780	10001	3210	1658	1428	141	236	146	991	39	1	0	
DE	SUSSEX	780010005	780	10005	13049	6389	10331	587	1780	266	4995	434	9	0	
DE	NEW CASTLE	800010003	800	10003	3530	2178	1362	213	422	241	1587	92	1	107	
MD	CECIL	800024015	800	24015	55264	7949	14529	7282	13674	3497	15214	4936	17	861	
PA	CHESTER	800042029	800	42029	12763	3520	6922	3841	1622	5064	5705	633	21	406	
DE	NEW CASTLE	810010003	810	10003	1534	1211	758	118	41	134	919	12	0	0	
MD	CECIL	810024015	810	24015	4437	1998	3652	1830	250	879	3862	105	4	257	
MD	KENT	810024029	810	24029	27997	20204	13148	2761	1489	1310	6850	547	20	1522	
MD	QUEEN ANNES	820024035	820	24035	7479	4200	12107	201	6142	280	1399	2426	2	1865	
MD	TALBOT	830024041	830	24041	19468	9737	23918	1467	9639	281	4548	3233	5	3009	
MD	DORCHESTER	840024019	840	24019	159326	21357	38409	1164	5116	145	29290	1364	8	12650	
MD	SOMERSET	840024039	840	24039	3	3	2	0	1	0	3	0	0	12	
MD	HARFORD	850024025	850	24025	51513	6946	10581	5682	23936	3777	11343	11073	15	772	
MD	BALTIMORE	860024005	860	24005	2660	159	531	282	14800	158	631	14528	1	743	
MD	BALTIMORE CITY	860024510	860	24510	265	0	0	0	6590	0	120	6218	0	67	
MD	ANNE ARUNDEL	870024003	870	24003	4999	381	203	169	10245	120	633	5373	0	587	
MD	ANNE ARUNDEL	880024003	880	24003	31643	2956	1580	1309	15226	935	6272	7140	1	1292	
MD	CALVERT	880024009	880	24009	22043	1298	484	666	9170	234	877	2148	0	163	
DC	DISTRICT OF COLUMBIA	890011001	890	11001	2033	0	0	0	6852	0	87	7158	0	220	
MD	MONTGOMERY	890024031	890	24031	4757	320	2192	757	17759	670	1518	11210	1	140	
DC	DISTRICT OF COLUMBIA	900011001	900	11001	4	0	0	0	46	0	61	46	0	50	
VA	ARLINGTON CITY	900051013	900	51013	332	0	0	0	8941	0	-2	7266	0	68	
VA	FAIRFAX	900051059	900	51059	6279	121	243	737	68250	473	2019	32293	0	847	
VA	ALEXANDRIA CITY	900051510	900	51510	194	0	0	0	4528	0	-119	5056	0	25	
VA	FAIRFAX CITY	900051600	900	51600	80	0	0	0	2318	0	16	1582	0	0	
VA	FALLS CHURCH CITY	900051610	900	51610	25	0	0	0	672	0	3	571	0	0	
DC	DISTRICT OF COLUMBIA	910011001	910	11001	98	0	0	0	1874	0	56	1395	0	36	
MD	CHARLES	910024017	910	24017	37264	830	1878	627	15986	558	2869	5229	0	665	
MD	PRINCE GEORGES	910024033	910	24033	31896	3162	524	1804	34364	1163	6111	14032	1	248	
MD	CHARLES	920024017	920	24017	122476	6011	13607	4543	28952	4046	22022	7445	2	1551	
MD	PRINCE GEORGES	920024033	920	24033	2870	235	39	134	680	87	483	128	0	0	

Table 9. Forecasted 2000 Phase 4.2 Chesapeake Bay Watershed Model Land Use in Acres by County Segment

State	County	COSEG	SEG	FIPS	Forest	Hi Till	Lo Till	Pasture	Pervious		Non-Ag.		Urban	Manure Acres	Water
									Urban	Hay	Herb.	Impervious			
MD	ST MARYS	920024037	920	24037	88335	19160	8439	5079	23706	4165	14608	5115		12	2760
VA	LANCASTER	930051103	930	51103	6574	1659	462	77	839	39	1751	148		0	561
VA	NORTHUMBERLAND	930051133	930	51133	10942	2675	1540	131	531	110	1607	97		0	522
VA	ESSEX	940051057	940	51057	9201	1445	3071	650	64	186	1820	39		0	50
VA	GLOUCESTER	940051073	940	51073	59684	6445	2999	923	5359	414	13052	2422		0	1364
VA	KING AND QUEEN	940051097	940	51097	34798	2055	3672	332	53	134	4657	36		1	24
VA	MATHEWS	940051115	940	51115	29620	4097	1376	1827	2852	1145	11055	1090		0	1836
VA	MIDDLESEX	940051119	940	51119	23985	3168	2494	408	673	184	4431	134		0	265
VA	YORK	950051199	950	51199	4393	49	8	51	6176	16	1037	4169		0	554
VA	POQUOSON CITY	950051735	950	51735	3033	0	0	0	1099	0	1152	661		0	395
VA	YORK	955051199	955	51199	888	6	1	7	1397	2	121	1066		0	95
VA	HAMPTON CITY	955051650	955	51650	5319	0	0	0	10526	0	2106	7732		0	596
VA	NEWPORT NEWS CITY	955051700	955	51700	340	0	0	0	2167	0	123	1617		0	66
VA	POQUOSON CITY	955051735	955	51735	2155	0	0	0	617	0	449	403		0	54
VA	NORTHAMPTON	960051131	960	51131	0	0	0	0	2	0	0	8		0	5
VA	CHESAPEAKE CITY	960051550	960	51550	1885	5854	482	479	20060	291	311	14299		2	999
VA	HAMPTON CITY	960051650	960	51650	1	0	0	0	11	0	0	13		0	3
VA	NORFOLK CITY	960051710	960	51710	627	0	0	0	12555	0	415	11909		0	749
VA	PORTSMOUTH CITY	960051740	960	51740	171	0	0	0	4397	0	135	3683		0	141
VA	VIRGINIA BEACH	960051810	960	51810	179	68	12	8	4616	4	4	3687		0	397
VA	NORFOLK CITY	965051710	965	51710	406	0	0	0	4005	0	347	3184		0	538
VA	VIRGINIA BEACH	965051810	965	51810	4279	782	136	89	23609	47	378	16262		0	2223
VA	PRINCE WILLIAM	970051153	970	51153	24844	118	401	529	5837	545	1306	2768		0	239
VA	FAUQUIER	980051061	980	51061	1943	36	39	202	206	75	45	39		0	0
VA	KING GEORGE	980051099	980	51099	51851	1384	3742	1843	7720	2177	2845	1674		0	755
VA	NORTHUMBERLAND	980051133	980	51133	34581	5348	12480	553	2071	467	6924	367		0	1478
VA	PRINCE WILLIAM	980051153	980	51153	7107	24	81	106	825	110	272	339		0	288
VA	RICHMOND	980051159	980	51159	28	60	20	8	31	3	56	5		0	0
VA	STAFFORD	980051179	980	51179	75496	687	908	2294	22524	3033	10788	6661		1	1285
VA	WESTMORELAND	980051193	980	51193	53838	8672	20234	5695	6568	887	7563	1452		1	1835
MD	ST MARYS	990024037	990	24037	6666	1309	576	347	4393	284	910	1590			635
					=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
					23228978	2506888	1881166	2967963	2543203	2215041	4125530	1211706		8613	423311

Section 5. Airshed, Watershed, and Estuarine Model Linkages

Regional Acid Deposition Model

A link between the Regional Acid Deposition Model (RADM) and the Phase 4.2 Watershed Model is forged to incorporate RADM output data into Watershed Model input decks for running scenarios. The RADM model is usually based on an 80x80-km grid. For purposes of simulating atmospheric deposition loads to the Chesapeake Bay Watershed Model, a refined 20x20-km grid is used (Figure 11). Using GIS, the Phase 4.2 Watershed Model segments are overlain with the refined 20x20-km grid to determine the percentage of each RADM grid cell falling within each Watershed Model segment (Figure 12).

Chesapeake Bay Water Quality Model

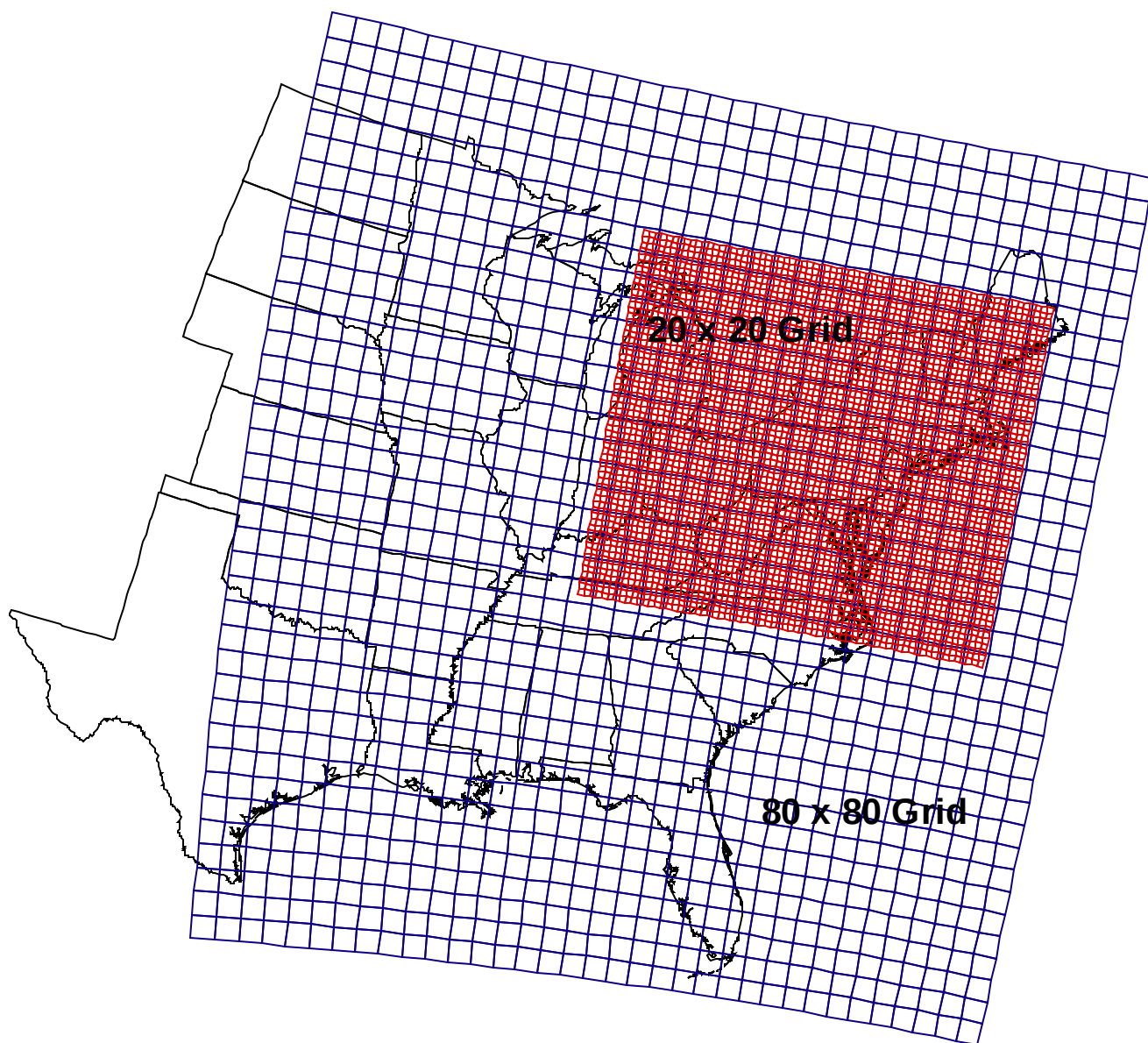
The Phase 4.2 Watershed Model results provide input information for the Bay water quality model, the Chesapeake Bay Estuary Model Package (CBEMP). In order to refine the linkage between the two models, a new and more extensive segmentation of the below fall line watershed model segments is developed. Using GIS, below fall line sub-segments are created based on 11-Digit HUICS and the relative position of adjoining water quality model grid cells. Sub-segments are wholly contained within the larger watershed model segments. The final cover contains 259 sub-segments. Each sub-segment is assigned a five-digit identification number. The first three digits are the segment in which the sub-segment falls. The last two are sequential, from the smallest to the largest sub-segment in each segment.

An overlay of the Phase 4.2 Watershed Model sub-segment's coverage and the water quality model grid cell's coverage displays the location of sub-segments relative to grid cells. The Chesapeake Bay Program modeling team assigned each sub-segment to a cell or set of cells for the purpose of loading watershed model output to the water quality model. In cases where a sub-segment delivers output to more than one cell, the load is divided equally among the number of cells associated with that sub-segment. If a cell straddles two sub-segments, a portion of load from each sub-segment is applied. Figure 13 shows the Chesapeake Bay Watershed Model sub-segments and the water quality model grid of the Chesapeake Bay Estuary Model Package.

In order to load the water quality model more accurately, sub-segment land use is developed. The Chesapeake Bay Program Land Use (CBPLU) cover is overlain with the sub-segment cover to obtain CBPLU land use by sub-segment. These data were used to proportion out the Phase 4.2 Watershed Model land use by the spatial distribution of land cover in the CBPLU. In other words, assume model segment X has two sub-segments, sub-segment 1X and sub-segment 2X. If 75% of the CBPLU woody and wetlands in Segment X are found in sub-segment 1X, then 75% of the Phase 4.2 Forest found in segment X are assigned to sub-segment 1X, and the remaining 25% is assigned to sub-

segment 2X. Similarly, if 60% of the CBPLU Herbaceous in Segment X is found in sub-segment 2X, then 60% of each agricultural Phase 4.2 land use will be assigned to sub-segment 2X and 40% to sub-segment 1X. After partitioning Phase 4.2 land use to each sub-segment, simulated total flow, nutrient, and sediment loading are delivered to the adjacent water quality model cells.

Regional Acid Deposition Model (RADM) Refined Grid (20 x 20 km) Domain



400 0 400 800 Miles



Regional Acid Deposition Model Grid, Chesapeake Bay Watershed Model Segments, and Chesapeake Bay Water Quality Model Cells

Chesapeake Bay Watershed
in the
Mid-Atlantic States

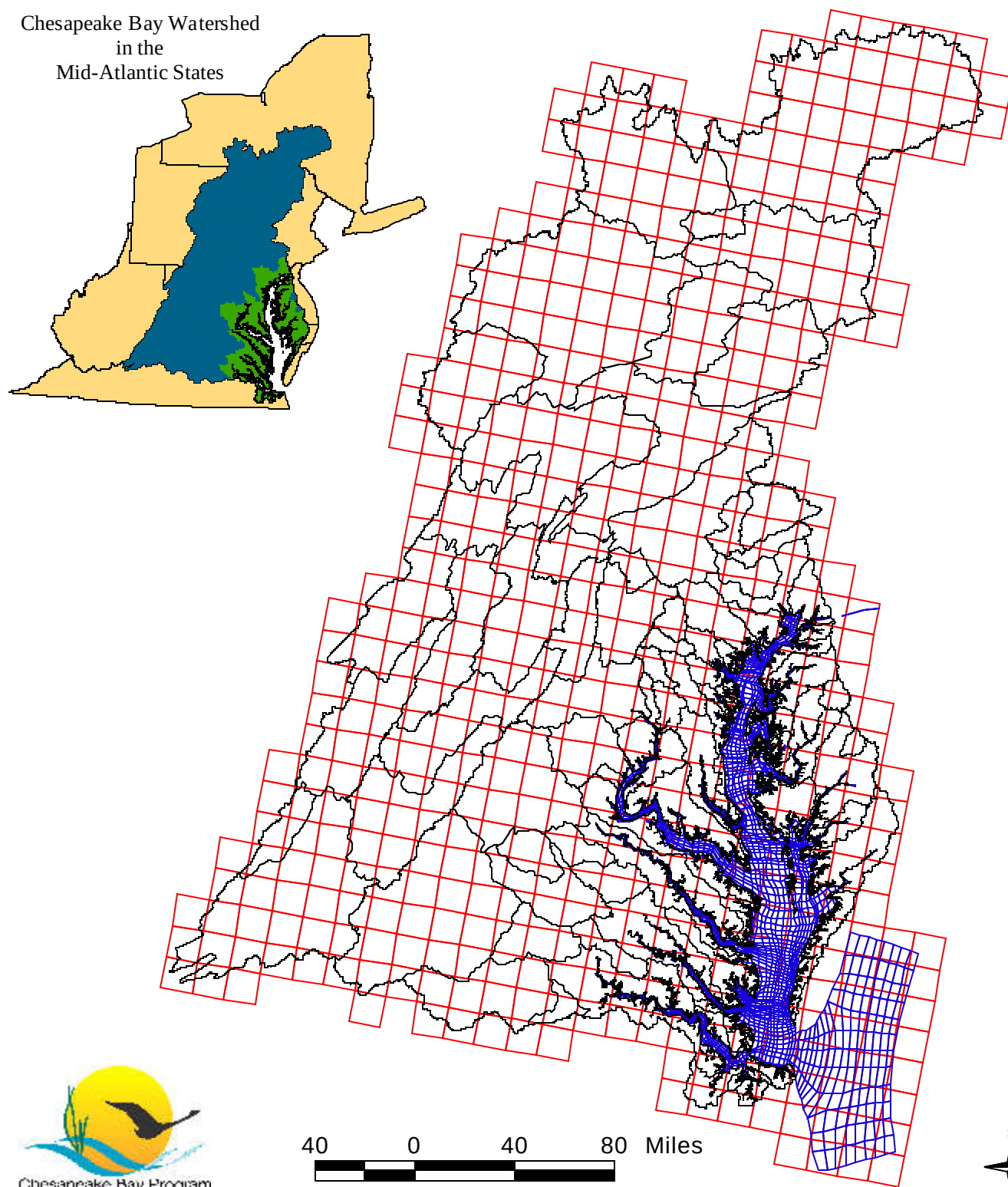
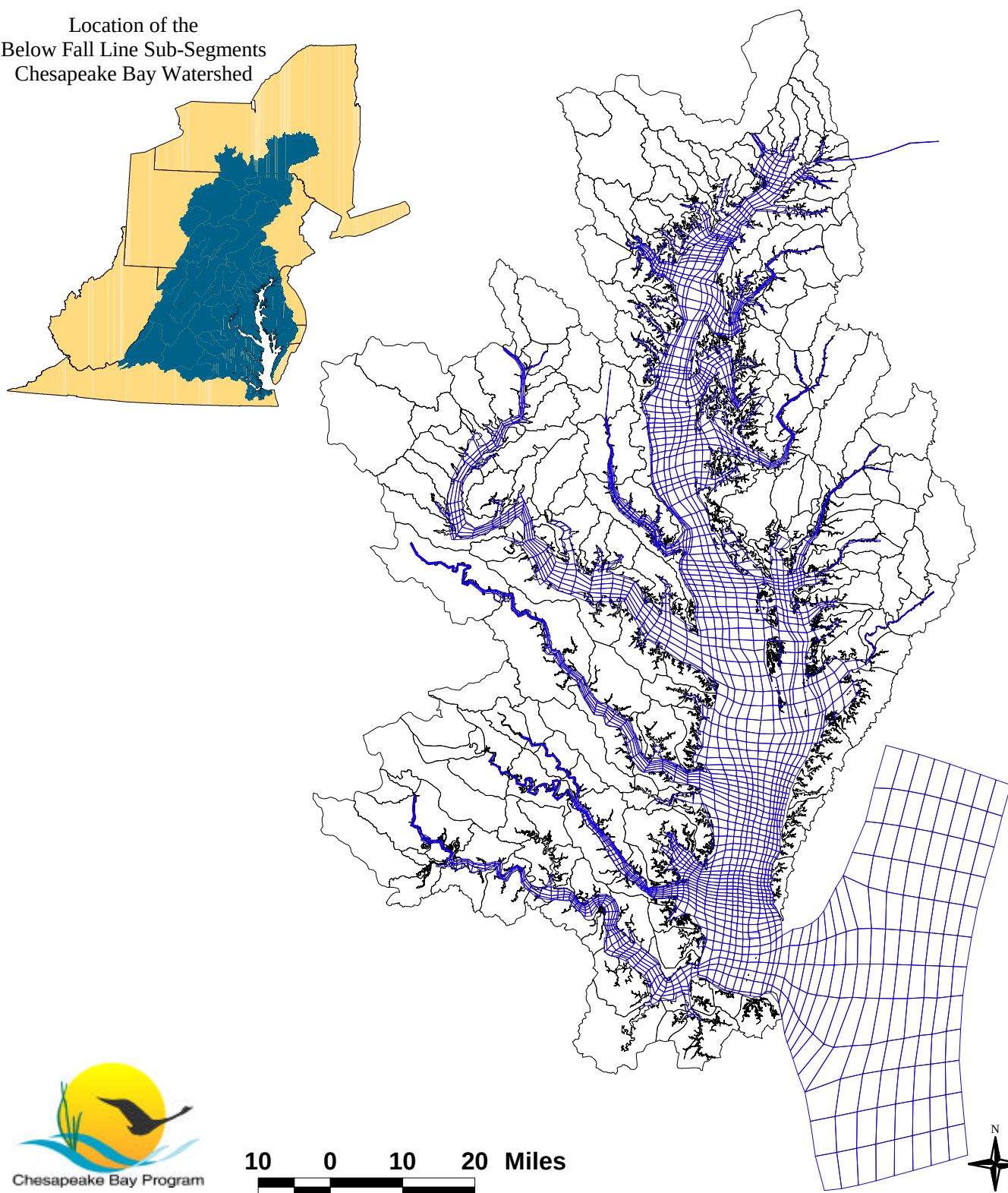


Figure 13

Phase IV Chesapeake Bay Watershed Model Below Fall Line Model Sub-Segments and Chesapeake Bay Water Quality Model Cells

Location of the
Below Fall Line Sub-Segments
Chesapeake Bay Watershed



Section 6. Chesapeake Bay Estuary Model Cells Identified as Potential SAV Habitat

In order to fully a littoral zone submerged aquatic vegetation (SAV) sub-model into the Chesapeake Bay Estuary Model Package (CBEMP), it was necessary to define those shallow water littoral zone model cells are capable of supporting SAV growth. These grow cells were then further subdivided into three categories of model cells to reflect the three representative Bay SAV species for which the Bay water quality model littoral zone SAV sub-model would be parameterized.

Identification of SAV Grow Cells

In 1992, the Chesapeake Bay Program developed a series of tiered SAV distribution restoration target maps as part of the SAV Technical Synthesis¹ based on both present and historical SAV distribution patterns and understanding of the physical habitat conditions limiting potential SAV distribution. The Tier I target, adopted by the Chesapeake Executive Council as a formal Bay Program goal in 1993, delineated restoration of SAV to areas currently or previously inhabited by SAV as mapped through regional and Bay wide aerial surveys from 1971 through 1990. The Tier II target delineated restoration of SAV to all shallow water areas delineated as existing or potential SAV habitat down to the one meter depth contour. The Tier III target delineated restoration of SAV to all shallow water areas delineated as existing or potential SAV habitat down to the two meter depth contour.

The GIS coverage of the Chesapeake Bay Water Quality Model segmentation was overlaid onto the Tier III Chesapeake Bay SAV Distribution Restoration Target map. Through visual inspection of the map overlay, the individual CBEMP cells which overlaid onto part of, or were in close proximity to, the Tier III target coverage were identified as SAV grow cells as described below. As the CBEMP segmentation and the Bay shoreline GIS shoreline coverage did not exactly correspond (and in some case diverged from each other), the following series of decision rules were developed.

In cases where there was clearly no potential SAV habitat along the Bay shoreline, the adjacent outer model cell depicting that shoreline and adjoining littoral zone habitat was designated a SAV no-grow cell and not considered further. The littoral region of Calvert Cliffs provide an example where elevation and relatively high energy beaches preclude the growth of SAV.

In cases where there was clearly potential SAV habitat along the shoreline, adjacent outer model cells that depict the shoreline and adjoining littoral zone habitat are designated a SAV grow cells, such as the Patuxent River shoreline.

In shallow water regions where potential SAV habitat extends out away from the shoreline into

¹ Batiuk et al. 1992. *Chesapeake Bay Submerged Aquatic Vegetation Habitat Requirements and Restoration Goals: A Technical Synthesis*. CBP/TRS 83/92. Chesapeake Bay Program, Annapolis, Maryland.

shallow water areas, associated model cells were designated SAV grow cells. For example, the shallow water areas of Tangier Sound and just north of South Marsh Island are designated SAV grow zones.

The compiled listing of SAV grow cells were entered into a spreadsheet and quality assured through a visual cross check and comparison of each spreadsheet listed grow cell with the original GIS Tier III/Model Segmentation overlay maps on which the SAV grow cells were identified.

Partitioning the SAV Grow Cells by the Three Modeled Species

The Chesapeake Bay Program Living Resources SAV Workgroup decided to select *Vallisneria americana*, *Potamogeton pectinatus*, and *Zostera marina* as the three species for which the Bay water quality model littoral zone SAV sub-model would be parameterized. These three species were considered the most representative species for the modeling objective as: 1) all three species are native to Chesapeake Bay; 2) their combined existing and potential habitat distribution covered the full range of Bay salinity, and 3) their minimum light requirements were generally the most conservative for their habitat range.

The Chesapeake Bay Program developed a series of distribution restoration target maps as part of the production of the 1992 SAV Technical Synthesis based on both existing and historical SAV distribution patterns. The information on actual past and present species distribution derived from aerial and ground surveys of present SAV distribution, survey from past pollen and seed records, and the published literature. Potential distribution was based on the above information and the individual species distribution limits as defined by their upper and lower salinity tolerances.

The Chesapeake Bay Program Office staff overlaid the Chesapeake Bay Distribution Restoration Target maps for *Vallisneria americana*, *Potamogeton pectinatus*, and *Zostera marina* from the SAV Technical Synthesis to produce a single map outlining the actual/potential distribution of these three species. This integrated map of the three species distribution was further refined through an analysis of distribution of 1985-1995 monthly mean salinity data from all the Chesapeake Bay Water Quality Monitoring Program stations. The integrated species distribution map was further refined to ensure that all areas of the Bay where the mean salinity was generally (between the 25th and 75th percentile) below 5 part per thousand (ppt) were delineated as *Vallisneria* habitat, areas with a mean salinity between 5 and 18 ppt were delineated as *Potamogeton* habitat, and areas with a mean salinity above 18 ppt were delineated as *Zostera* habitat. This analysis involving monthly mean salinity data resulted in relatively minor refinements to the integrated species distribution map developed originally based on the SAV Technical Synthesis species restoration target maps.

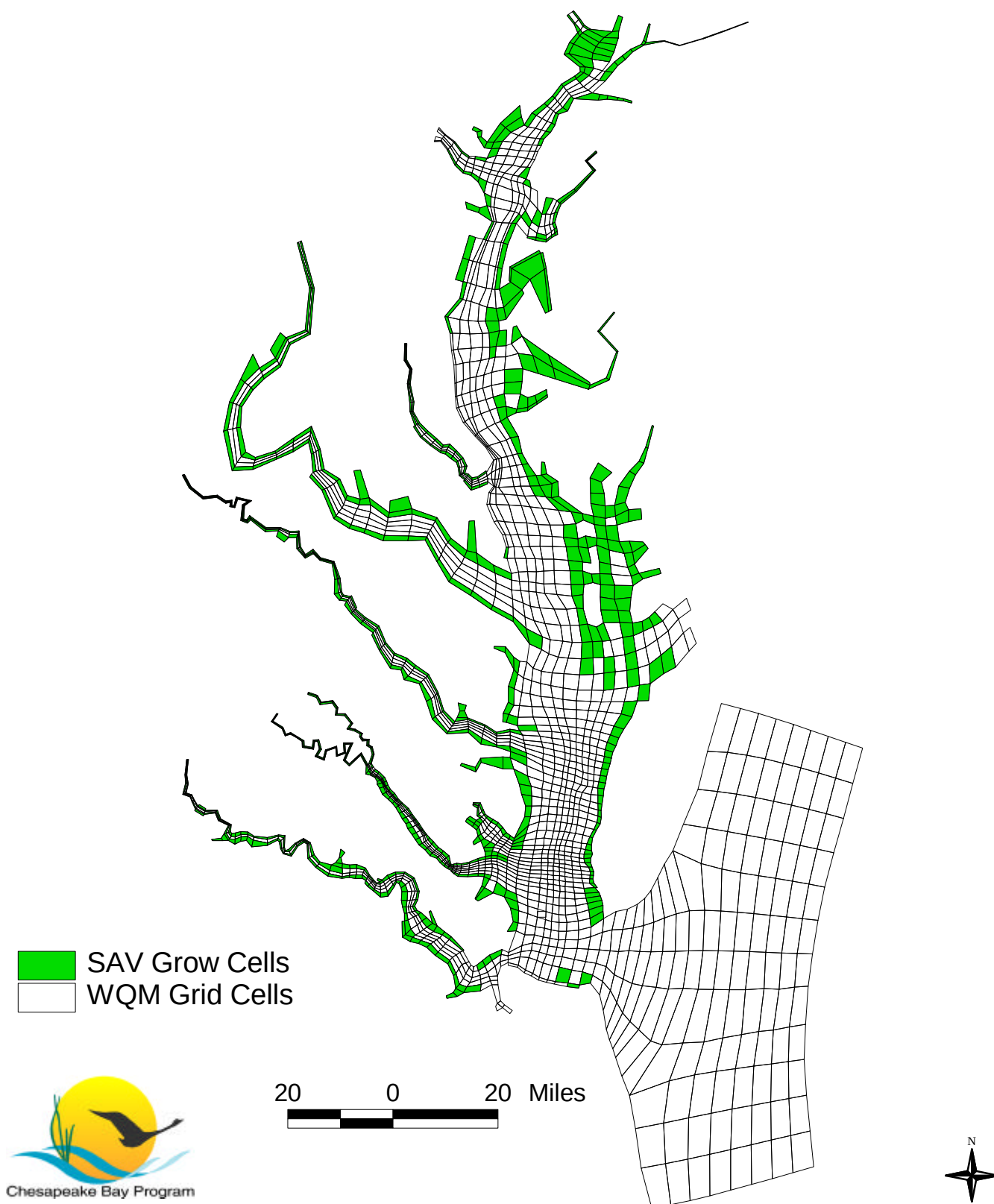
The Chesapeake Bay Program Living Resources Subcommittee's SAV Workgroup reviewed and approved the final integrated species distribution map. The integrated species distribution map was then overlaid on top of CBEMP segmentation map on which the SAV grow model cells had been delineated (Figure 14). Based on visual and then GIS analysis of the overlay, each

delineated SAV grow cell was categorized and labeled as either a *Vallisneria*, *Potamogeton*, or *Zostera* SAV grow cell.

Figure 14

Chesapeake Bay Estuary Model Package

SAV Grow Cells



This report is cited in the following way:
Hopkins, K., B. Brown, L.C. Linker, R.L. Mader, Jr.. 2000.
Chesapeake Bay Watershed Model Land Use and Model Linkages to
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Subcommittee. January, 2000. Chesapeake Bay Program Office,
Annapolis, MD. <http://www.chesapeakebay.net/modsc.htm> -
Publications Tab. Date Retrieved: *retrieval date*