SUMMARY OF THE 1994 STATE WATER QUALITY ASSESSMENTS FOR THE POTOMAC RIVER BASIN

H. Carlton Haywood
Ross Mandel

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Acknowledgements

We would like to thank all the people who supplied us with information and technical assistance in the course of this project. Maggie Passmore and Sumner Crosby of the EPA Region III Office in Philadelphia helped to get us started working with the 305(b) data and the GIS representation of it. Mark Weber of MTI at the Chesapeake Bay Program Office provided technical assistance with ARC/INFO. Jack Clifford at EPA Headquarters and Randall Williams of the Research Triangle Institute provided technical assistance with the Waterbody System software. We would especially like to thank John Brakebill, who prepared the USGS ARC/INFO layers that were used in this report, and Lowell Bahner of the EPA's Chesapeake Bay Program Office, who made it possible for us to work with GIS layers in ARC/INFO and ARCVIEW.

All of the 305(b) Report Coordinators in the signatory jurisdictions generously helped us to understand the data for their 1994 State Water Quality Assessments and how the 305(b) assessments were made in their jurisdictions. We would like to thank Mike Arcuri, Sheila Besse, Rod Bodkin, Sherm Garrison, Carrie Gorsuch, Bob Frey, and Michelle Fults. It is worth repeating that they are in no way responsible for the content of this report or any errors in it.

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This series of maps, graphs, and tables presents a summary of the water quality information which the District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia compiled on the Potomac River Basin as part of the Water Quality Assessments that the states are required to submit biennially to the USEPA under Section 305(b) of the Clean Water Act.

State Water Quality Assessments

The Clean Water Act and the EPA regulations derived from it have established a system for evaluating the quality of the nation's waters. Each state is required to set **designated uses** for all the waterbodies in the state. Except in very special circumstances, each waterbody is at a minimum required to be fishable and swimmable, that is, to support aquatic life and to permit contact recreation. States can and should set additional uses for waterbodies if a waterbody currently supports a use or has supported a use in the past before human activity degraded it. Other such uses can include the support of trout or other salmonids, the consumption of fish caught in the waterbody, or the use of the waterbody as a public water supply.

It is important to recognize that each state sets its own uses, subject to EPA review. States also set the **water quality standards** that determine whether a waterbody supports its designated use. A water quality standard consists of a designated use for a waterbody and the water quality **criteria** necessary to support that use. Criteria can be expressed as either numeric criteria, such as constituent concentrations, or "narrative" criteria. For example, to support aquatic life, a state may set a minimum concentration for dissolved oxygen, or a maximum concentration for ionized ammonia. This means that, in the view of that state, fish and other aquatic organisms are endangered if the dissolved oxygen concentration falls below the minimum or the ionized ammonia criteria goes above the maximum. Maximum coliform counts are another example of water quality criteria expressed as constituent concentrations. States usually set maximum coliform counts to determine whether a water body is suitable for swimming or the consumption of shellfish. Narrative criteria are used when it is not possible to set strict numerical criteria. For example, a narrative criterion may state that "surface waters shall be virtually free from floating non-petroleum oils of vegetable or animal origin, as well as petroleum-derived oils."[1] Criteria need not specify only the levels of chemical constituents. Biological criteria are increasingly being used, and these can be either numerical criteria or narrative criteria.

States must also assess their waters to determine whether the waters are supporting their designated uses. **Assessments** can be based on either water quality **monitoring** or **evaluation** by

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[1]This example is taken from the USEPA Water Quality Standards Academy Participant Manual.

state experts. That is, a state can either sample and analyze the water in a waterbody to determine whether it meets the water quality criteria for its designated uses, or it can rely on the expert opinion of officials in local agencies to determine whether a waterbody supports its use. On the basis of these assessments, waterbodies are classified as either **fully supporting** a use, **partially supporting** a use, or **not supporting** a use. They are also judged to be fully, partially, or not supporting their uses overall. The difference between partially supporting a use and not supporting a use can be determined by evaluation and expert opinion. When the assessment is based on monitoring data, waterbodies can be classified on the basis of the percent of samples taken which violate the water quality criteria. For example, the EPA recommends that for dissolved oxygen, pH, and temperature, a waterbody is fully supporting aquatic life if the criteria are violated in less than 10% of the samples, partially supporting if the criteria are violated in 11-25% of the samples, and not supporting if the number of violations are greater than 25% of the samples taken. For toxics, on the other hand, the EPA recommends that a waterbody be classified as fully supporting only if no violations of the criteria occur; otherwise, it does not support its use. The "partially supporting" classification is not applicable in this case. The states have, for the most part, followed EPA guidance in classifying use support on the basis of monitoring data. In the determination of overall use support, the EPA guidance states that a waterbody fully supports its overall use only if it fully supports all the uses assigned to it, and partially supports its overall use if and only if it partially supports some uses and fully supports the rest; otherwise it does not support its overall use. For the most part, the states follow this guidance.

States must not only assess use support, but also determine the **causes** and **sources** of the failure of waterbodies to fully support their uses. In this context, causes are the conditions in the waterbody itself that are responsible for failing to fully support a use. Causes include excess nutrients, low dissolved oxygen, the presence of pathogens, siltation, and habitat alterations. Sources identify what is responsible for these conditions, the agents by which the causes originate. Urban runoff, agriculture, mining, and construction are among the categories of sources of the failure of use support. Both sources and causes can be classified as major, moderate, or minor contributors to the failure of use support, though it appears that the EPA's guidance on the use of these categories is not followed closely by the states.

To facilitate and standardize the Water Quality Assessments mandated under Section 305(b) of the Clean Water Act, the EPA has developed the Waterbody System (WBS) software to maintain water quality records on each waterbody and to automate the production of the tables and summary statistics necessary for the 305(b) reports. WBS also supplies standard list of uses, causes and sources, which the states can modify as they see fit.

The databases each state develops in using WBS can therefore supply information on individual waterbodies. The states, however, are only required to submit state-wide totals for use assessment, sources, and causes for their waters, and there is a great deal of variation in the way states define their waterbodies. Waterbodies can be stretches of rivers and streams, watersheds, or noncontiguous parts of different watersheds, as well as lakes and estuaries. The size of rivers and streams is measured in miles, while the size of estuaries and lakes is measured in square miles.

Fractions of the total size of a waterbody can be reported as fully supporting, partially supporting, or not supporting its uses. The contribution of a cause or source to a failure of use support can also be expressed as a fraction of the total size of a waterbody.

Thus, for example, one could have a twenty-mile river, ten miles of which is not supporting aquatic life, and five miles of which is only partially-supporting aquatic life. Five miles of impairment may be due to nutrients from municipal point sources. The ten miles not supporting aquatic life may be due to nutrients from agricultural runoff. Perhaps fifteen miles only partially support contact recreation, due to pathogens from both municipal point sources and agriculture. Assuming that the same fifteen-mile stretch is affected by both pathogens and nutrients, five miles of the river would fully support its overall use, five miles would partially support its overall use, and ten miles would not support its overall use.

Again, it is important to emphasize that each state sets its own designated uses and water quality standards, subject to EPA guidance and review. A waterbody which crosses state boundaries can have a different designated use in each state. Even if a waterbody has a similar use in each state, the criteria by which each state judges whether the waterbody supports its use may be different. States can therefore differ on whether a waterbody which crosses state lines meets its designated uses, not only because the conditions in the waterbody are different in each state, but either because the uses in each state are different or because the standards for the uses are different.

The Assumptions Behind the Figures and Tables in this Report

The purpose of the figures and tables in this report is to summarize the water quality assessments each of the jurisdictions made of their rivers and streams within the Potomac Basin.

How These Figures Were Produced

The figures and tables in this report use water quality data from the states' 1994 State Water Quality Assessments (305(b) reports). The EPA Region III Office supplied the WBS databases for the District of Columbia, Virginia, and Pennsylvania. The District and Virginia use WBS to produce their 305(b) reports. Pennsylvania uses its own system, but EPA contractors at the Research Triangle Institute were able to adapt the Pennsylvania system to WBS. West Virginia, which uses WBS to produce their reports, directly supplied their databases to ICPRB. Maryland does not use WBS but maintains information on individual waterbodies in a form compatible with WBS. This information was converted to the WBS format by ICPRB. The databases from individual jurisdictions were combined into a single set of dBASE databases for the Potomac River Basin. The data processing necessary to produce the tables and graphics were then carried out in dBASE at ICPRB.

The USGS office at Towson, Maryland, supplied ARC/INFO coverages of the River Reach Files, Version 3, for the Potomac River Basin. USGS also supplied a coverage of the hydrologic unit outlines for the basin and a coverage of state boundaries. A coverage containing hydrologic units sectioned by state was produced from the USGS coverages, using ARC/INFO at the Chesapeake

Bay Program Office. Some minor editing of the other layers were also performed using ARC/INFO to prepare them for use in ARCVIEW. The remainder of the production of the maps in this report was carried out in ARCVIEW at ICPRB.

Scope of Water Quality Information

Water quality information was summarized for rivers and streams only. Lakes, reservoirs, and estuaries are not included in these summaries. In particular, the summary information does not include the estuarine portions of the Potomac or the lower Potomac tributaries, or impoundments on rivers such as the Savage River Reservoir or the Jennings Randolph Reservoir.

Summary by State and Hydrologic Unit

The information was summarized by state and hydrologic unit. The Potomac River basin is divided into eleven hydrologic units. With the exception of the Potomac and the Shenandoah Rivers, individual rivers, streams, and watersheds are contained within a single hydrologic unit. The total miles of rivers and streams within a state's portion of a hydrologic unit was determined by summing the total mileage of waterbodies within that state's portion of the hydrologic unit.

Assessment

The total miles assessed within each state-hydrologic unit includes both the miles monitored and evaluated. The percentage assessed is simply the fraction of the total miles in a state-hydrologic unit assessed.

Use Impairment

The total miles impaired within each unit includes both the mileage partially supporting the overall use and the mileage not supporting the overall use. Pennsylvania uses aquatic life support as a measure of overall use. The same was done for the figures and tables presented here. The percentage of miles impaired in each state-hydrologic unit was measured as a fraction of the total miles within each unit.

Causes and Sources

The summaries of waterbody miles affected by causes and sources include major, moderate, and minor contributions. The percentage of a unit affected by a cause or source is again measured relative to the total miles of rivers and streams in the unit. In three cases the graphics combine more than one WBS cause category: *Siltation/Suspended Solids* includes both siltation and suspended solids, *Pathogens* includes the total miles affected by pathogens or fecal coliforms, and *Toxics and Metals* includes the total miles affected by metals, priority organics, nonpriority organics, chlorine, unionized ammonia, and other organics. In some waterbodies in the Lower Potomac, the North Branch of the Potomac, and the Monocacy hydrologic units (HUC's 02070011, 02070002, and 02070009, respectively), Maryland was uncertain about the extent of contamination from metals or toxics and so assigned a minimal 0.01 miles of use impairment to these waterbodies.

The Limitations of This Report

It must be reiterated that no independent assessment of the states' water quality evaluations has been made. The purpose of these figures is to show where the states themselves have identified water quality problems. For this reason, the degree to which a region has been assessed should be kept in mind when interpreting these figures. The states cannot identify problems in waterbodies they do not assess, although it is not necessarily true that if more unassessed waterbodies were monitored or evaluated, more water quality problems would be discovered.

The EPA, in conjunction with the states in the basin, is currently developing the capacity to represent the evaluation of individual waterbodies in basin-scale graphics. This would eliminate the need to summarize the mileage assessed or mileage impaired over a region. A map could then represent directly which water bodies fully support their designated uses, which are impaired, and which were not assessed. The means to produce this kind of map may become available during the 1996 reporting cycle.

References

United States Environmental Protection Agency. 1993. Guidelines for Preparation of the 1994 State Water Quality Assessments (305(b) Reports). EPA841-B-93-004. Washington, DC: United States Environmental Protection Agency.

United States Environmental Protection Agency. 1993. Water Quality Standards Academy Participant Manual. Washington, DC: United States Environmental Protection Agency.

FIGURE 1

POTOMAC RIVER BASIN

Hydrologic Units

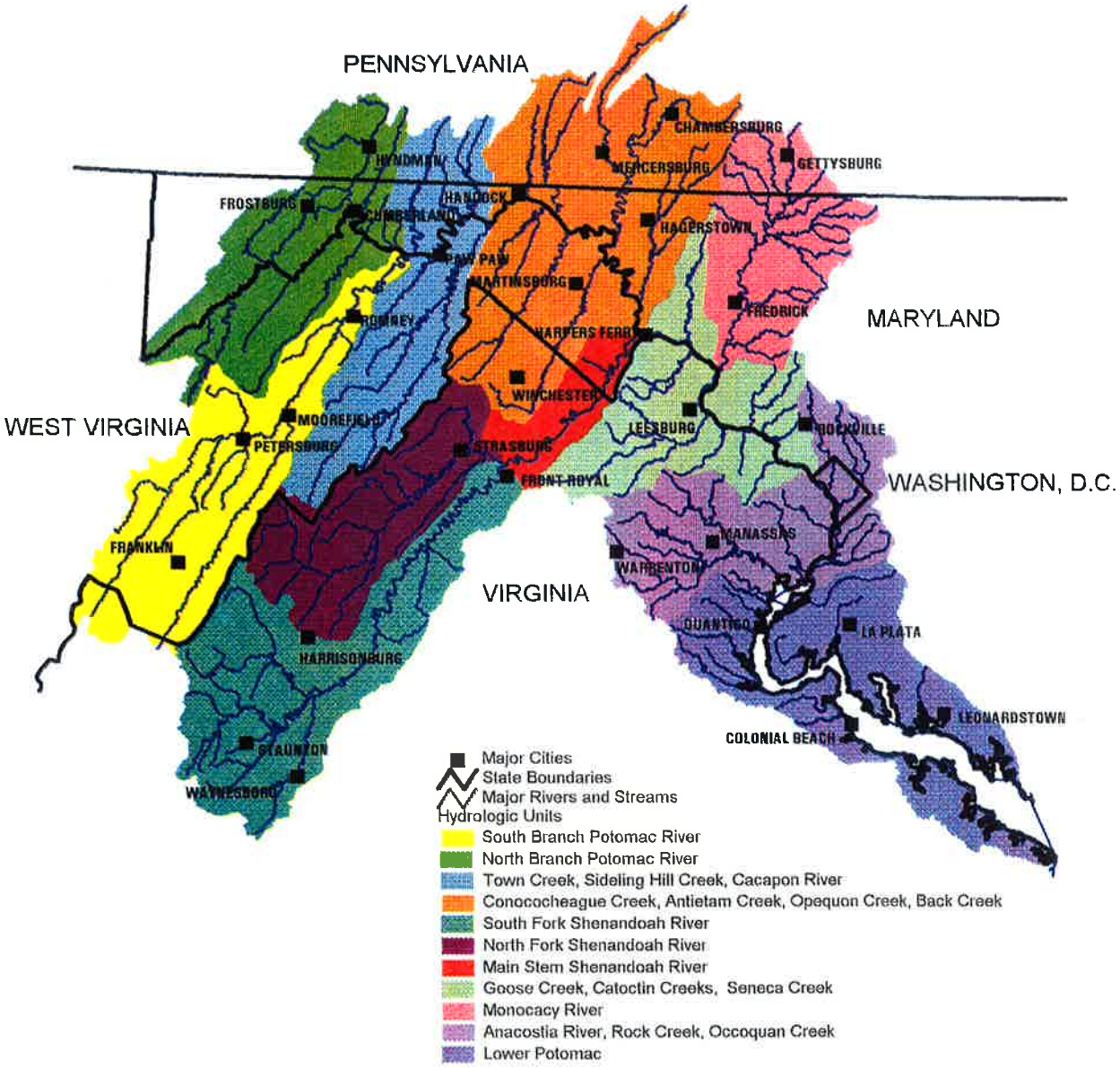

FIGURE 2

Assessment

In Percent Stream Miles

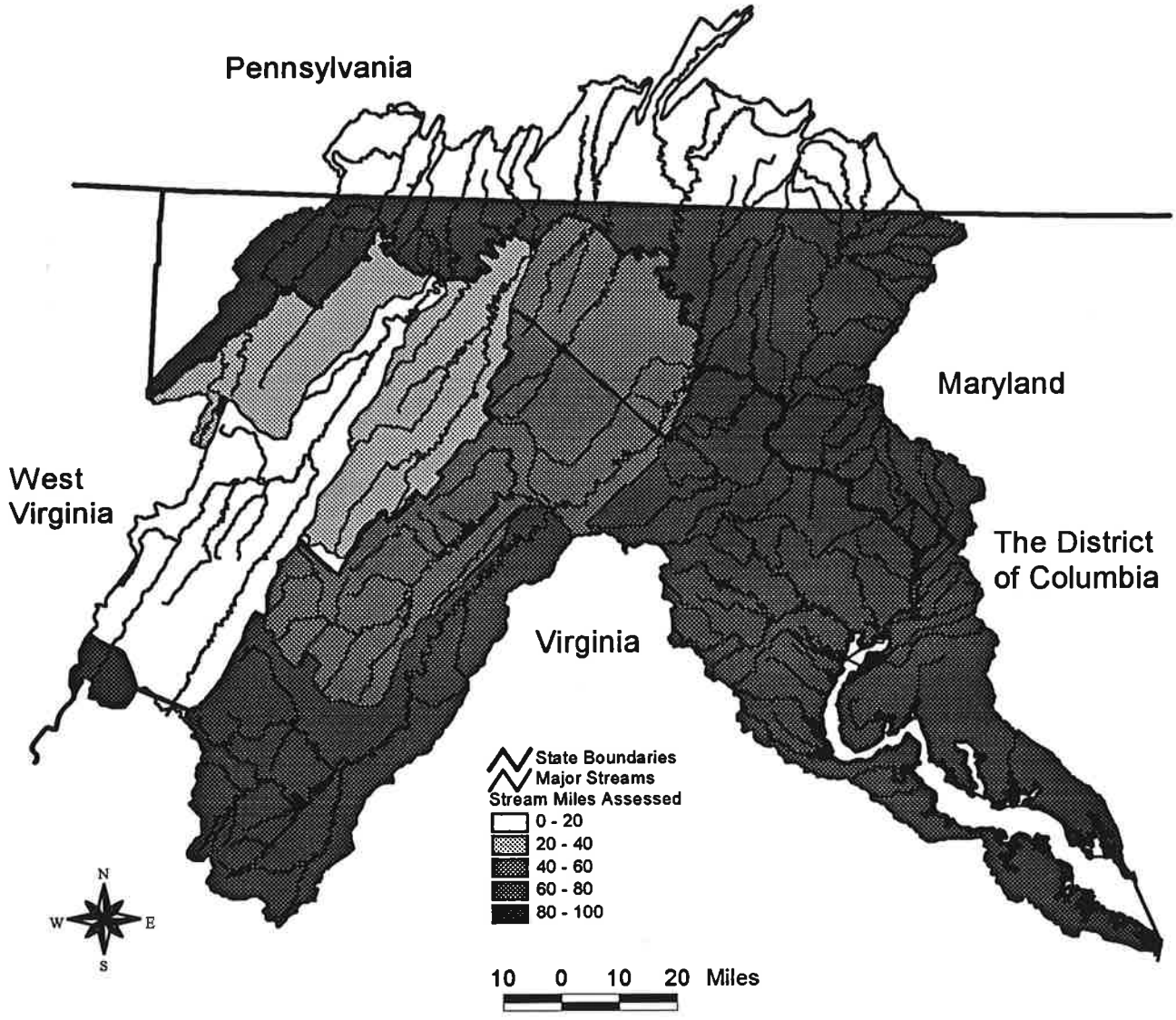

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FIGURE 3

Use Impairment

In Percent Stream Miles

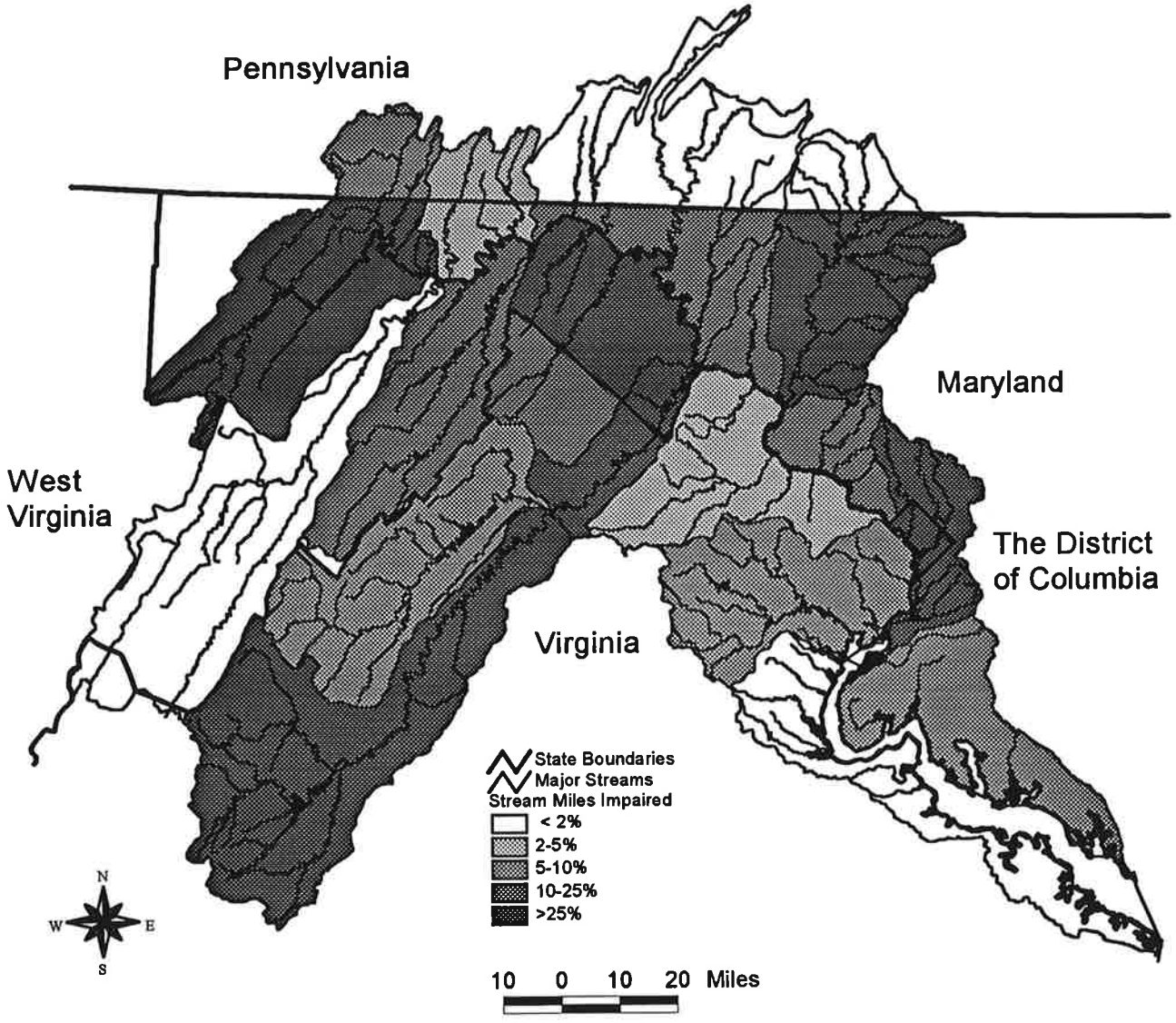

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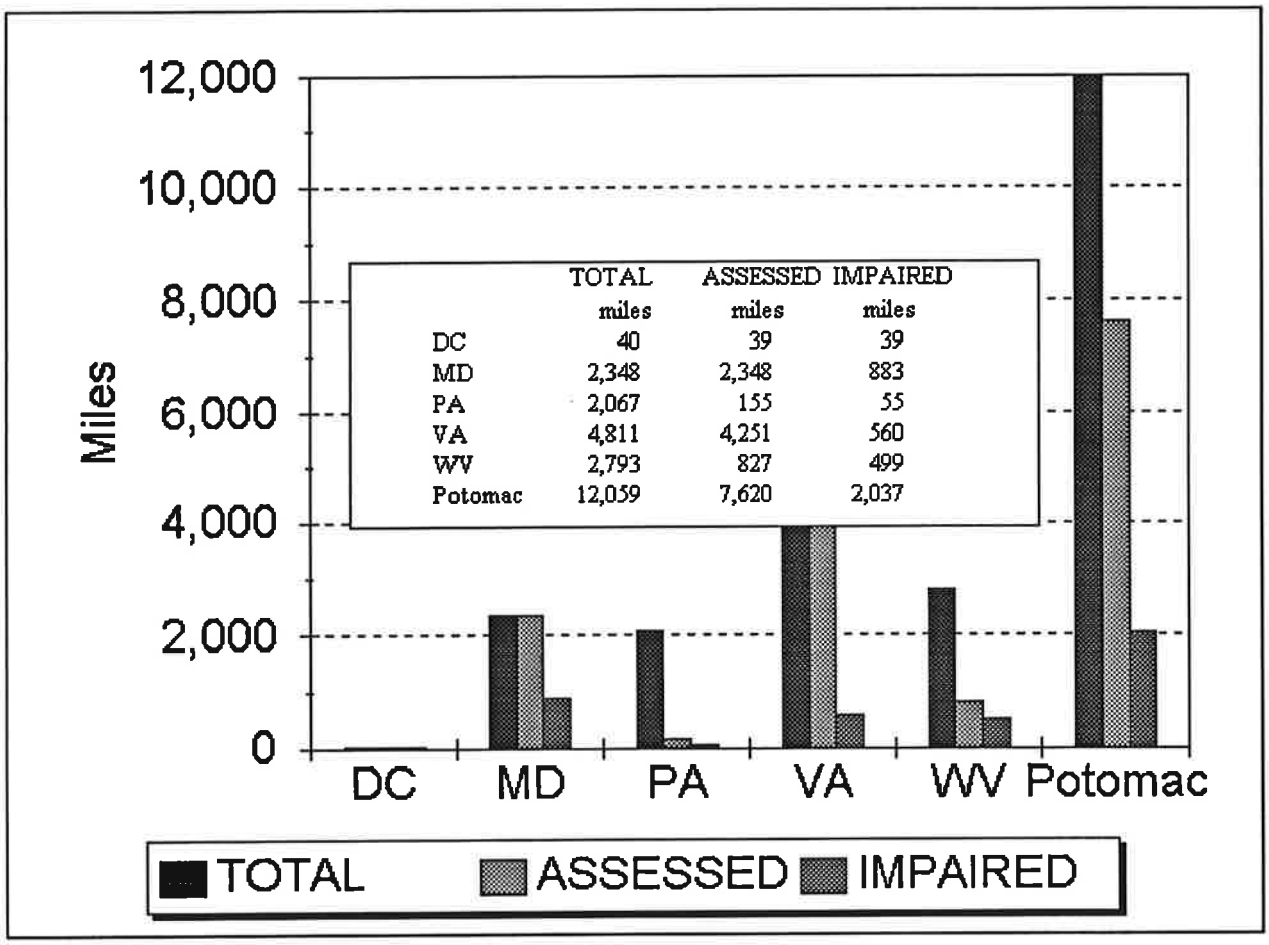
FIGURE 4
STREAM MILES ASSESSED AND IMPAIRED
POTOMAC RIVER BASIN
by State



	TOTAL miles	ASSESSED miles	IMPAIRED miles
DC	40	39	39
MD	2,348	2,348	883
PA	2,067	155	55
VA	4,811	4,251	560
WV	2,793	827	499
Potomac	12,059	7,620	2,037

FIGURE 5
MAJOR CAUSES OF USE IMPAIRMENT
POTOMAC RIVER BASIN

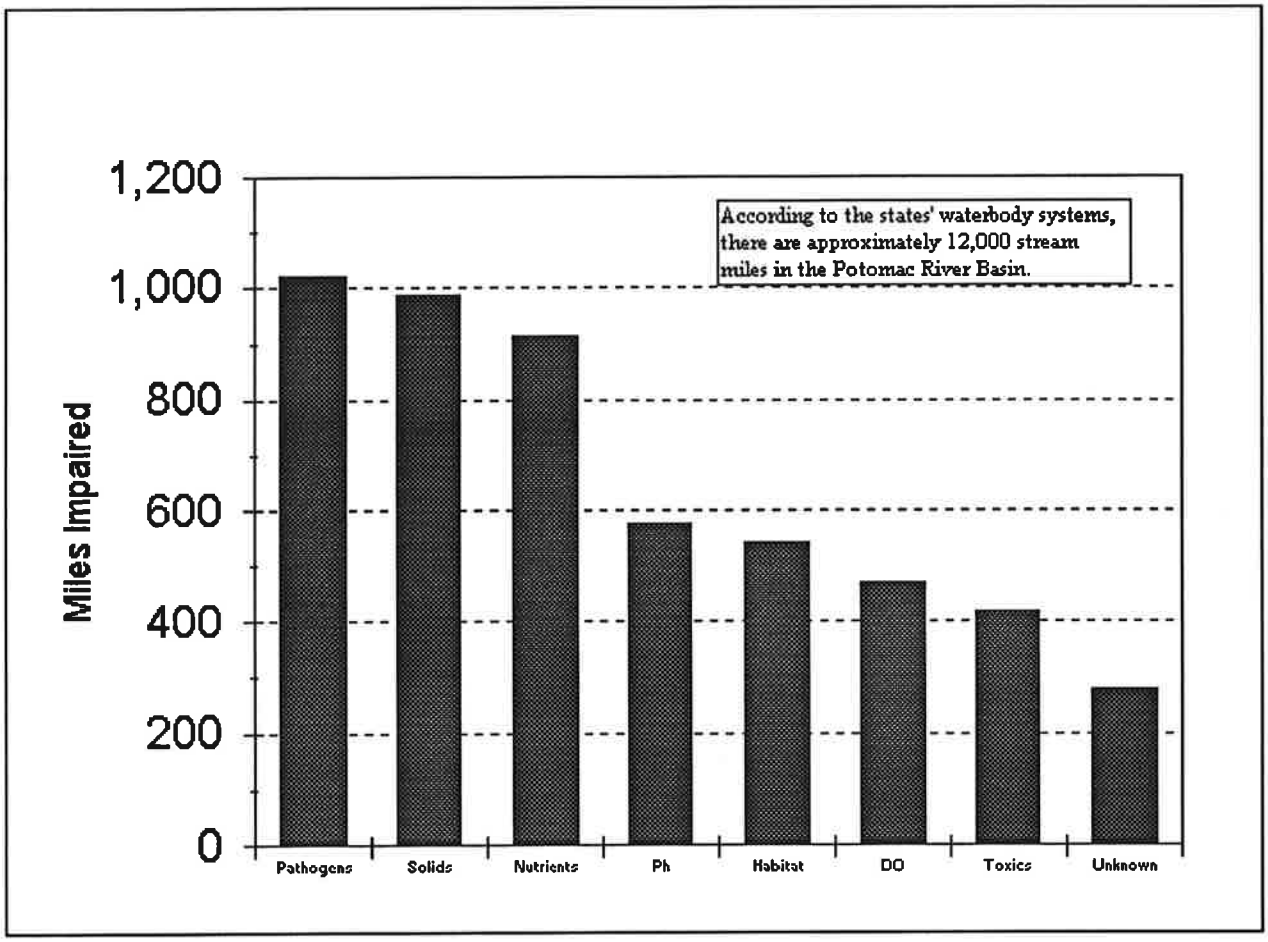


FIGURE 6

Percent Stream Miles Impaired By
Pathogens

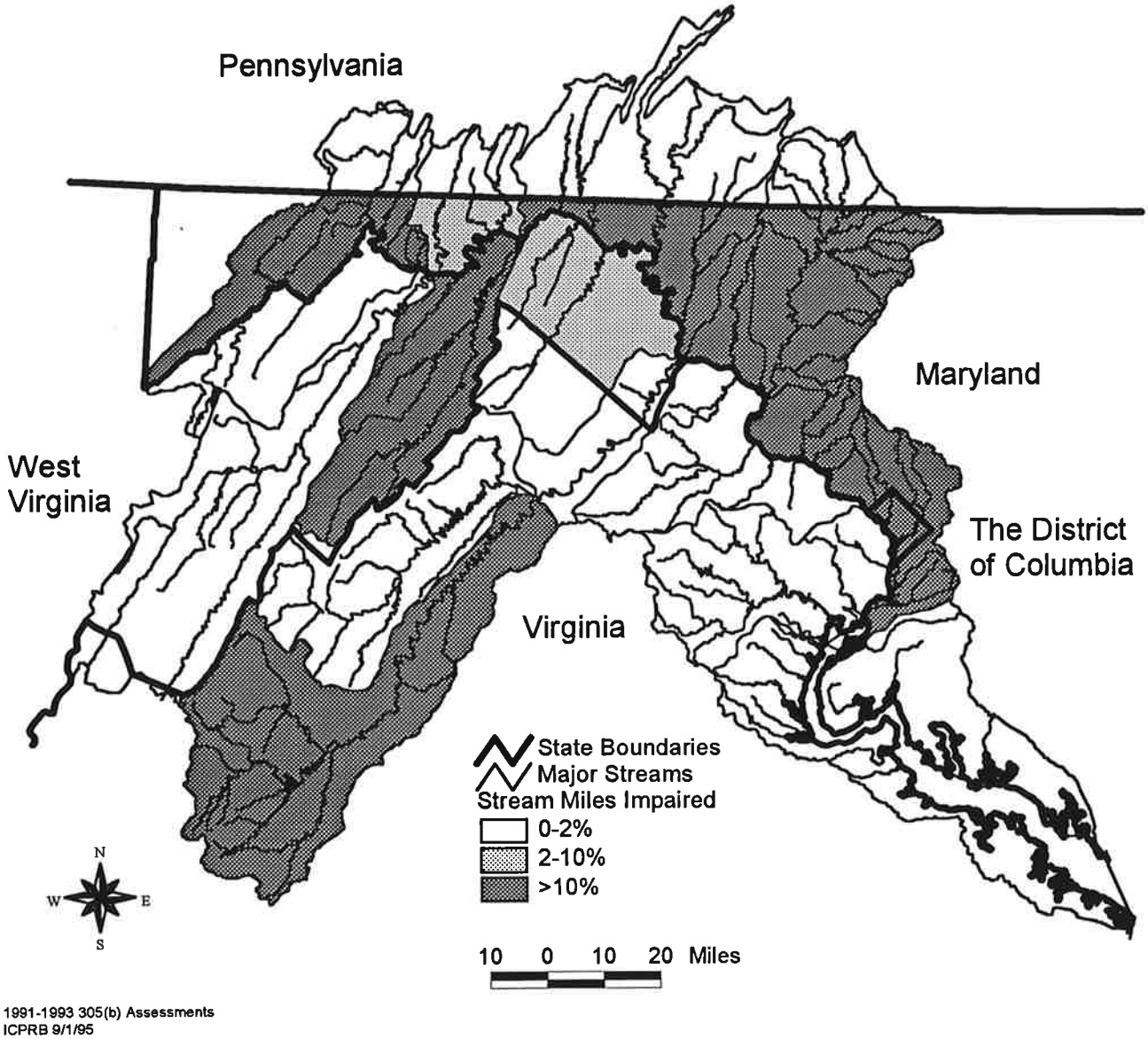


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FIGURE 7

Percent Stream Miles Impaired By
Siltation/Suspended Solids

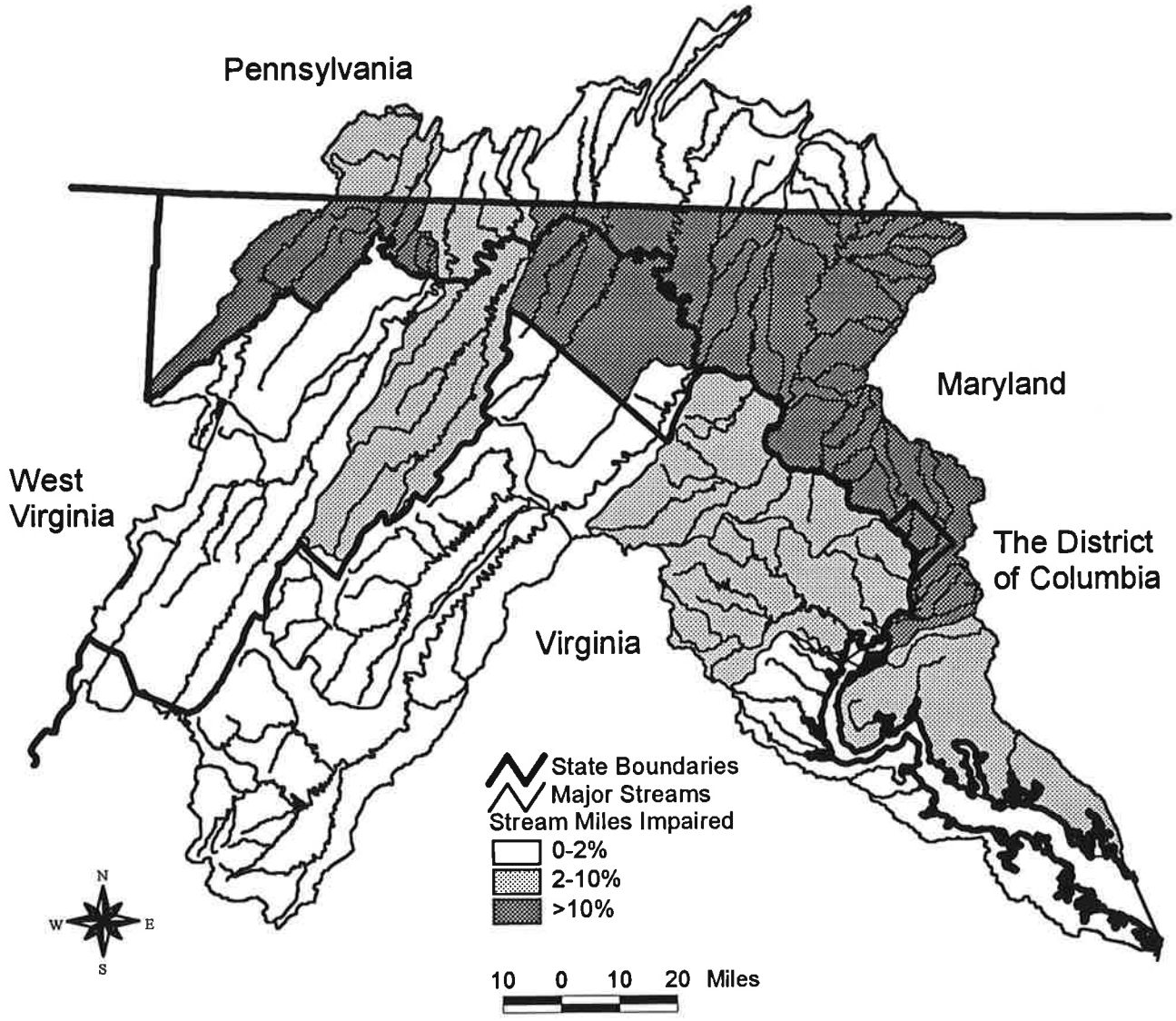

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FIGURE 8

Percent Stream Miles Impaired By
Nutrients

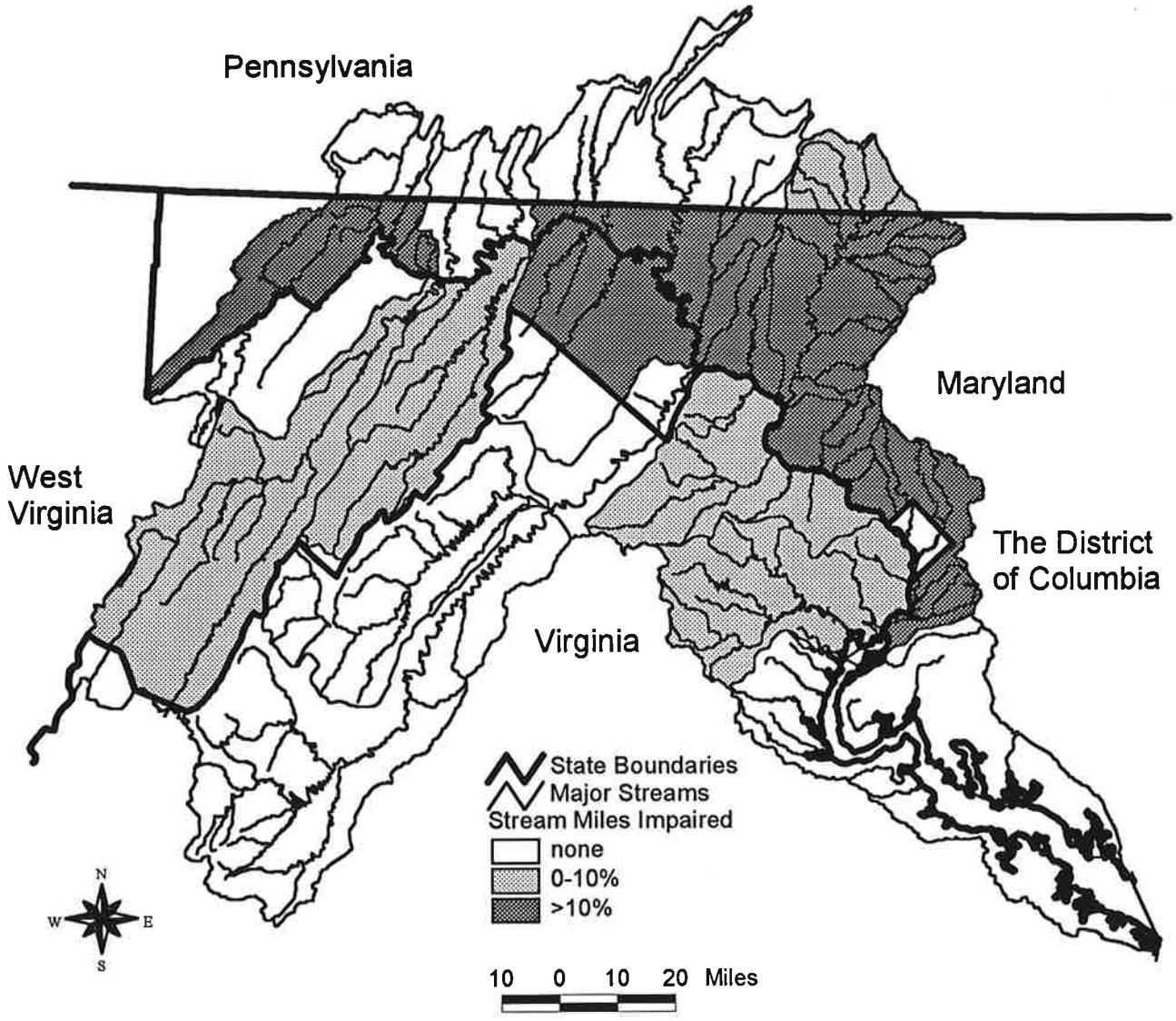

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FIGURE 9

Percent Stream Miles Impaired By

pH

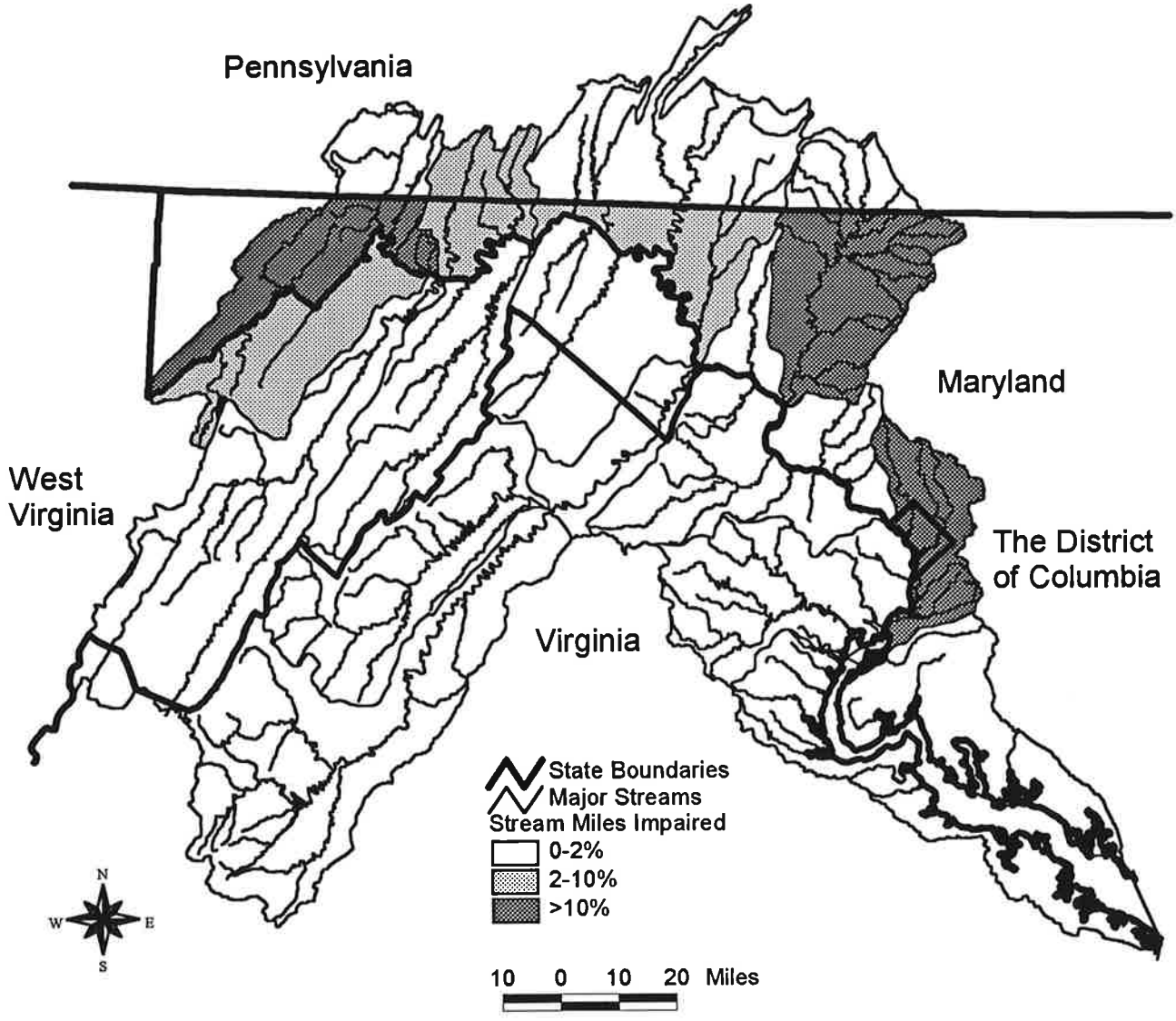

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FIGURE 10

Percent Stream Miles Impaired By
Habitat Alterations

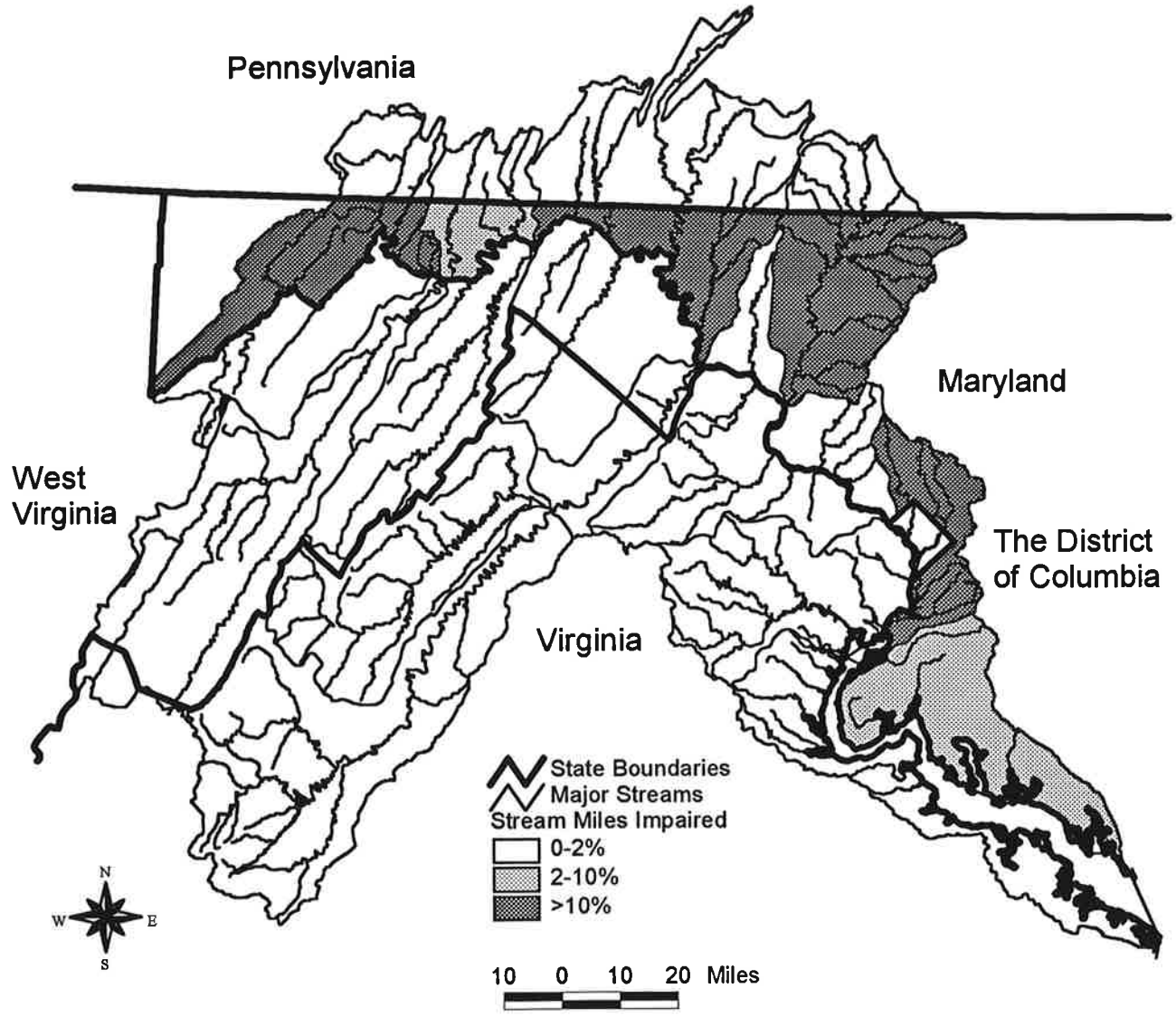

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FIGURE 11

Percent Stream Miles Impaired By
Low Dissolved Oxygen

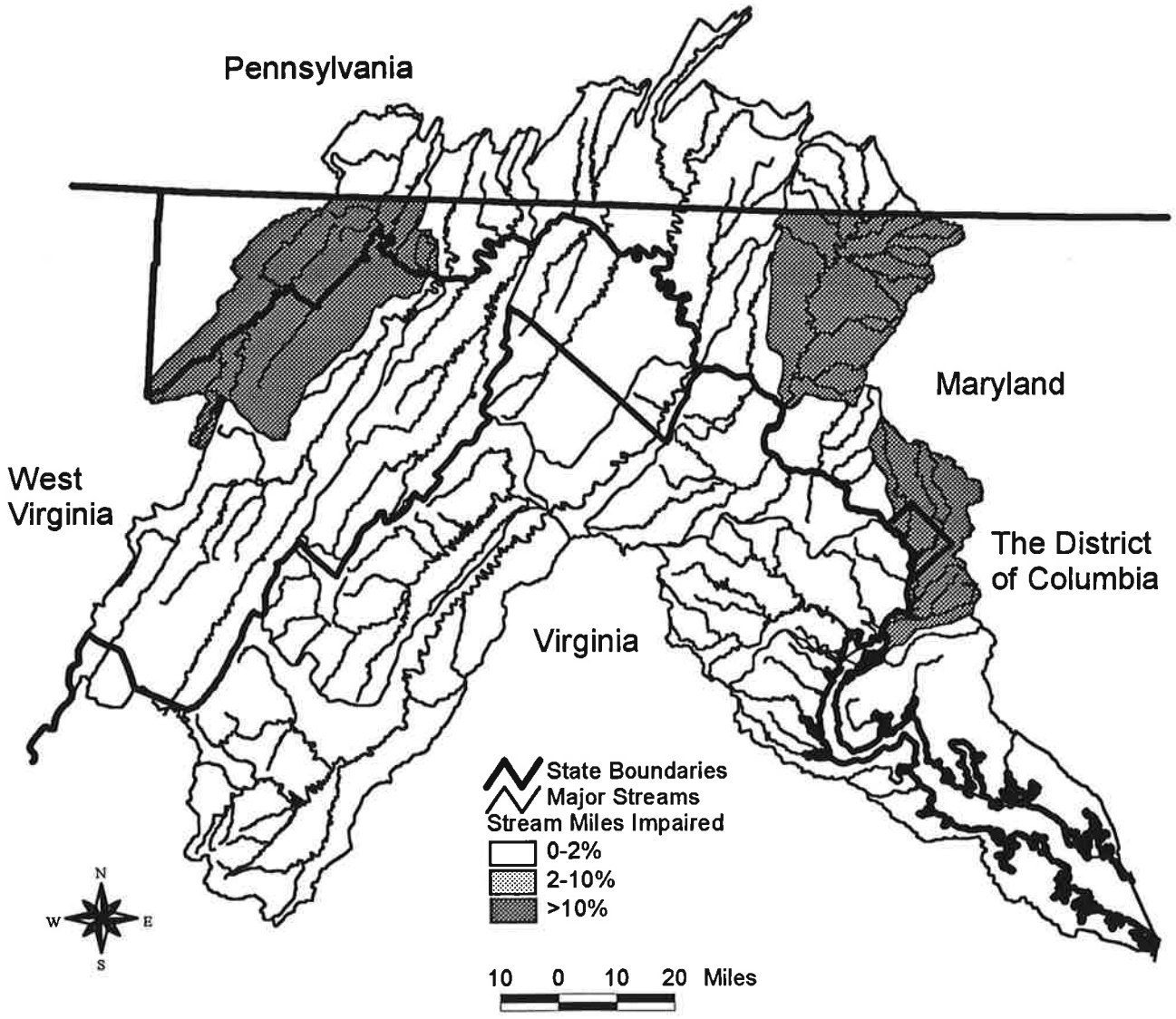

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FIGURE 12

Percent Stream Miles Impaired By
Toxics and Metals

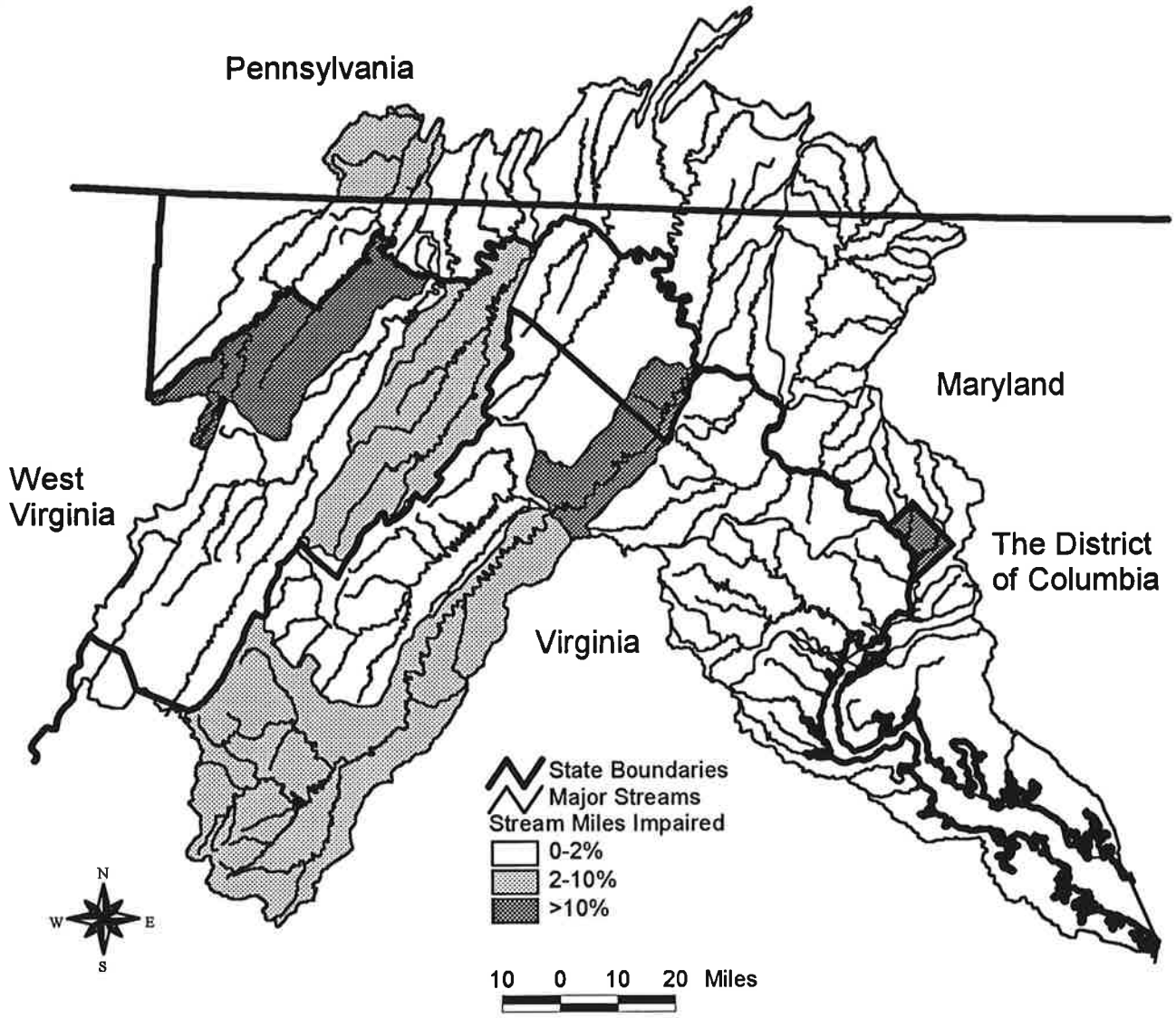

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FIGURE 13
MAJOR SOURCES OF USE IMPAIRMENT
POTOMAC RIVER BASIN

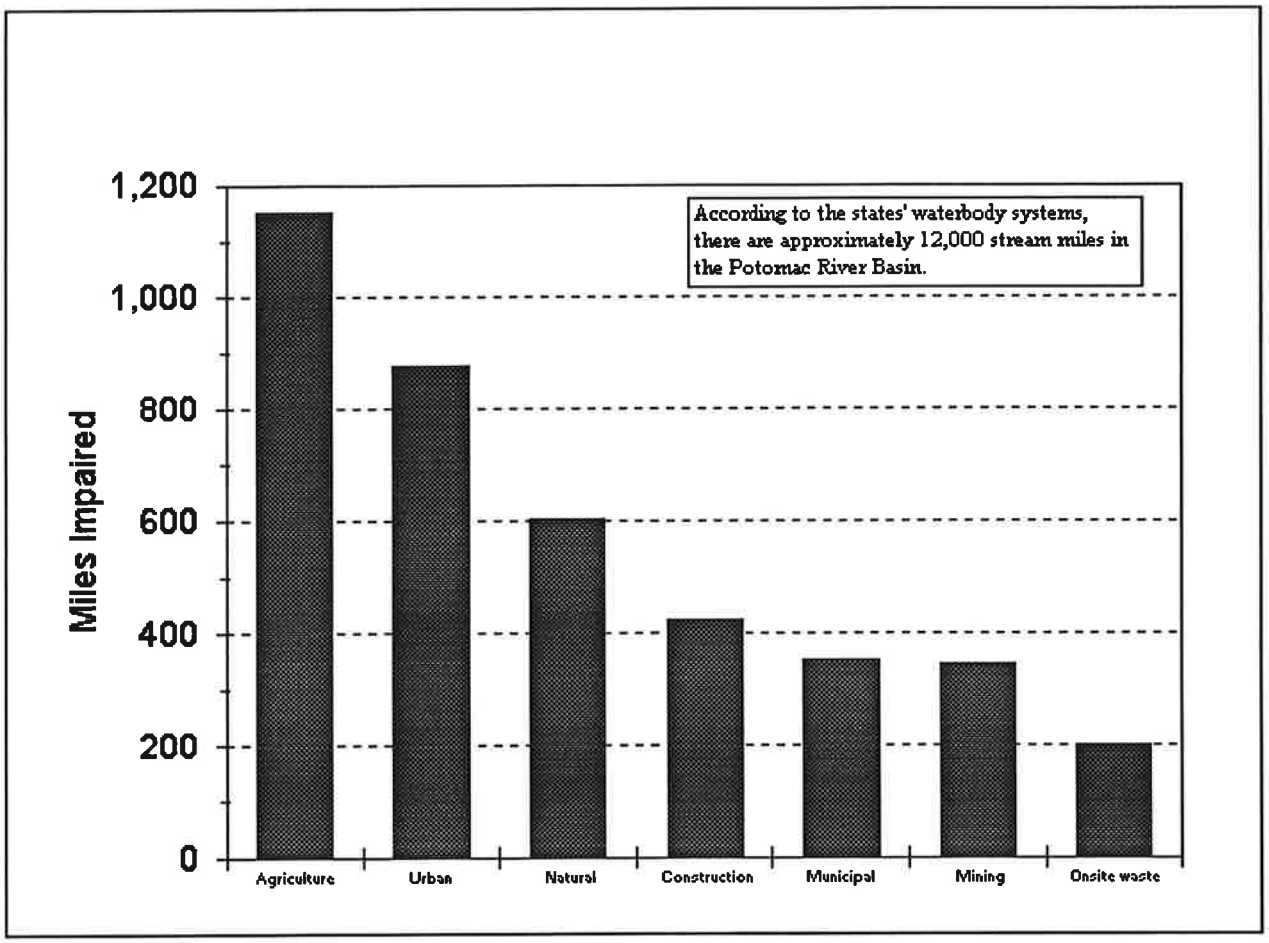

FIGURE 14

Percent Stream Miles Impaired By
Agriculture

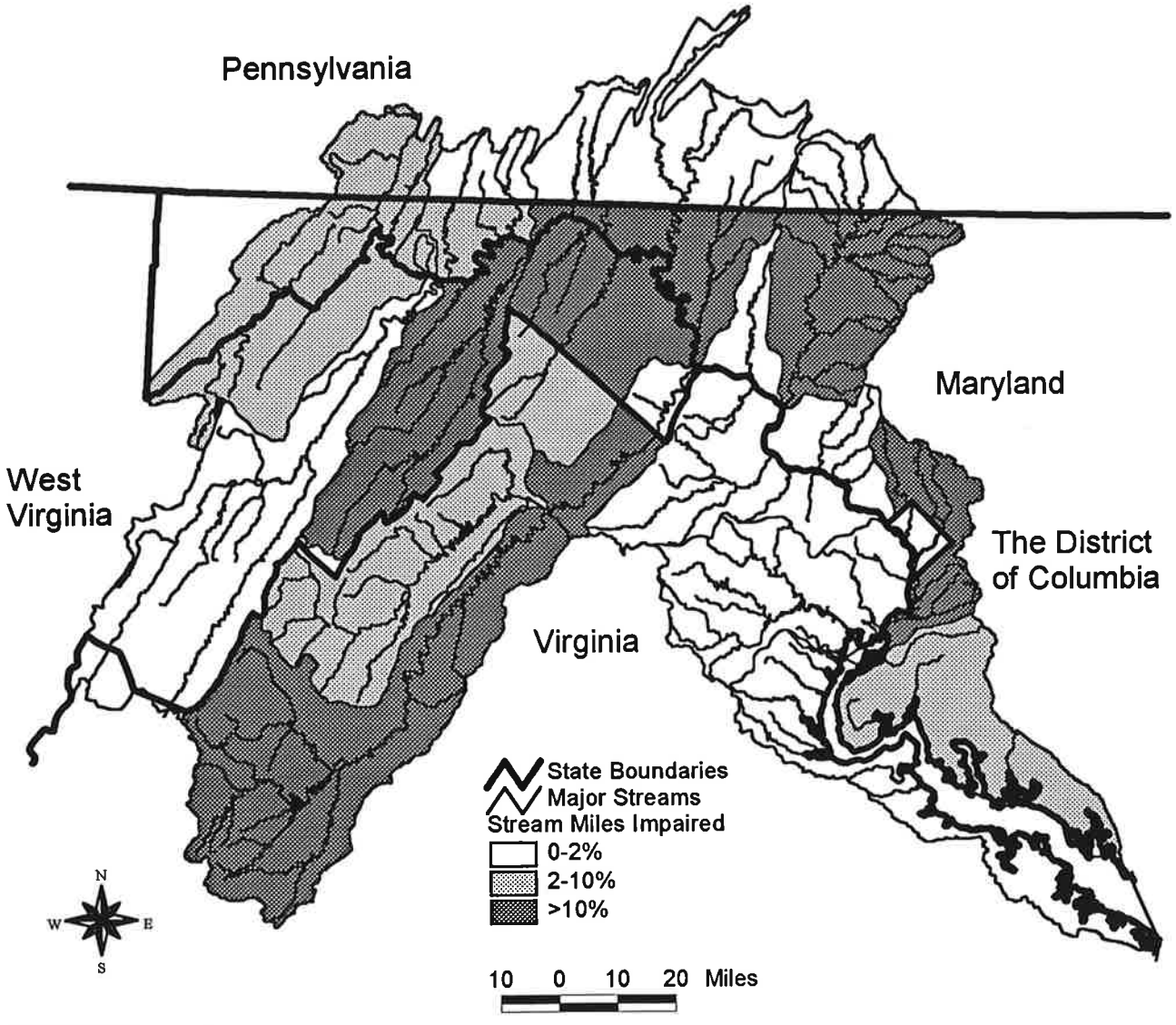

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FIGURE 15

Percent Stream Miles Impaired By
Urban Runoff

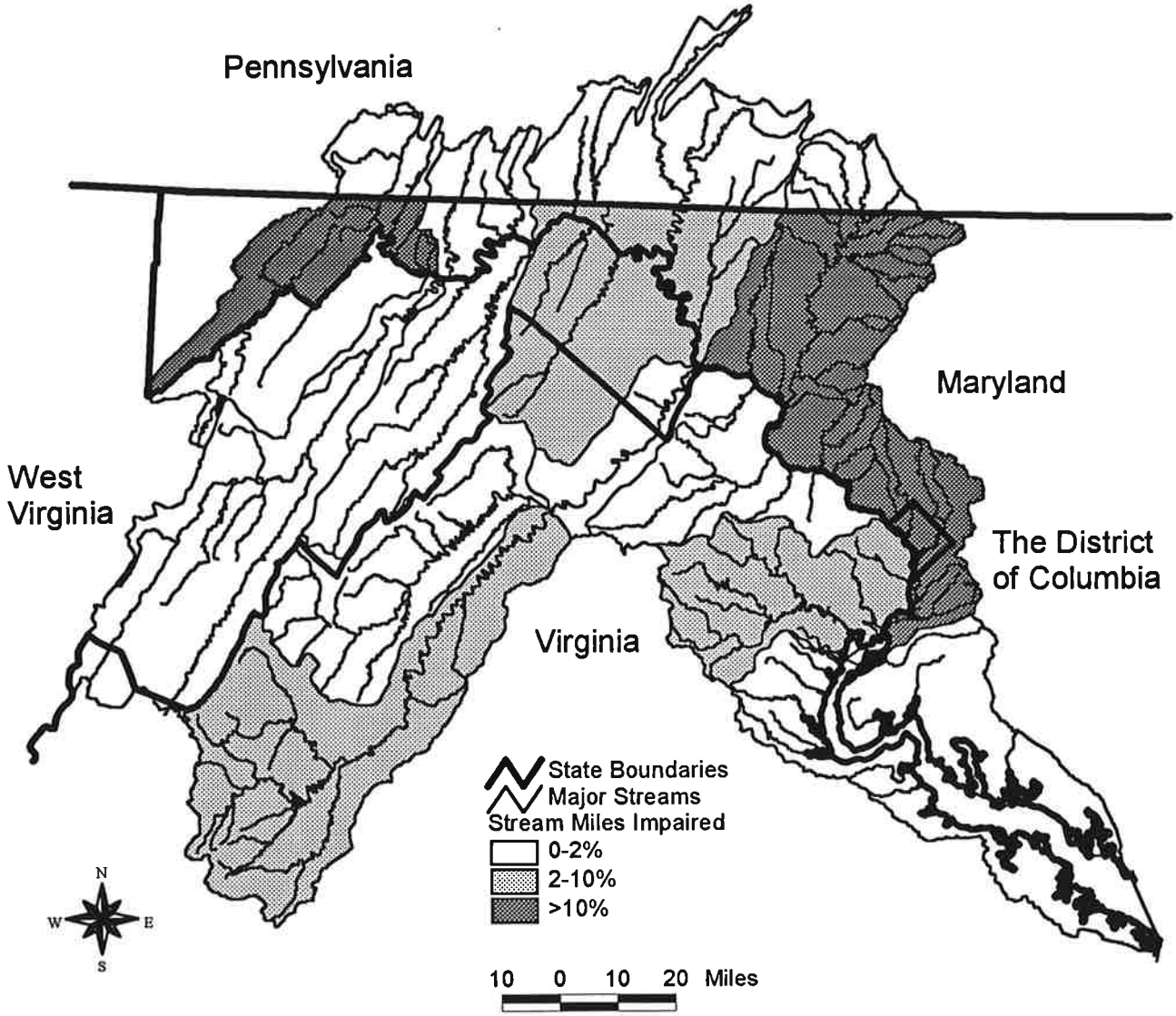

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FIGURE 16

Percent Stream Miles Impaired By
Construction

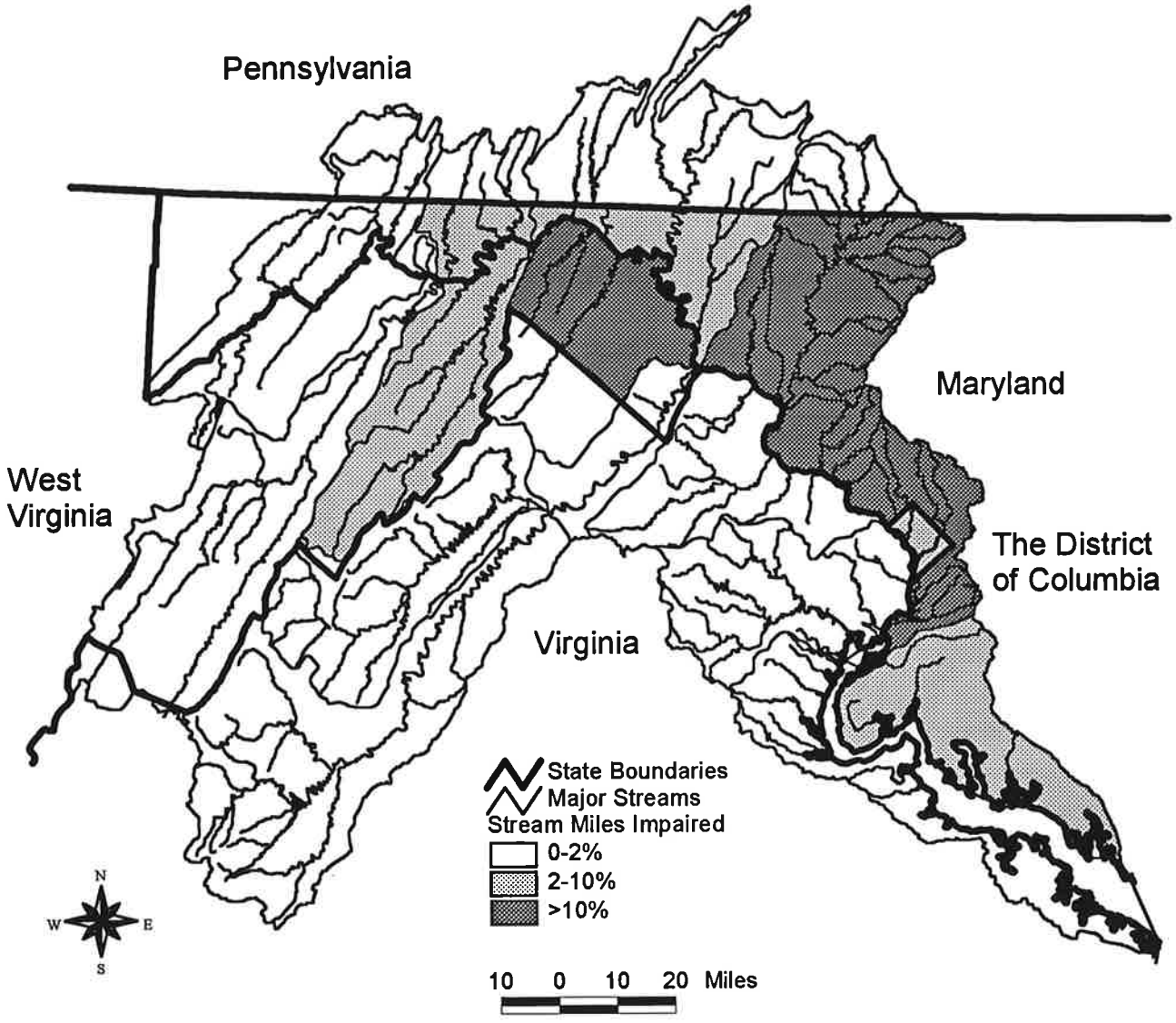

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FIGURE 17

Percent Stream Miles Impaired By
Municipal Point Sources

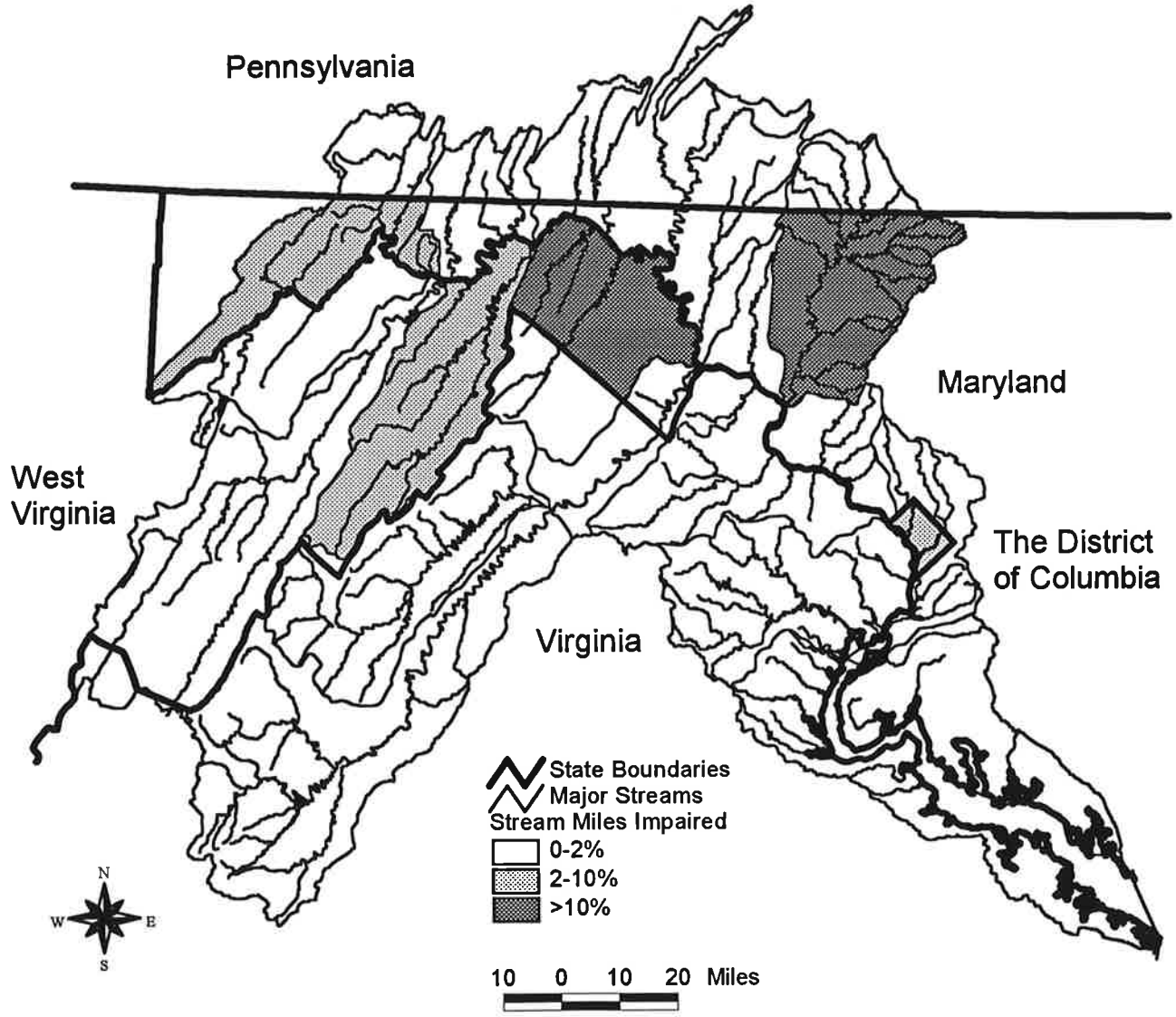

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FIGURE 18

Percent Stream Miles Impaired By
Resource Extraction

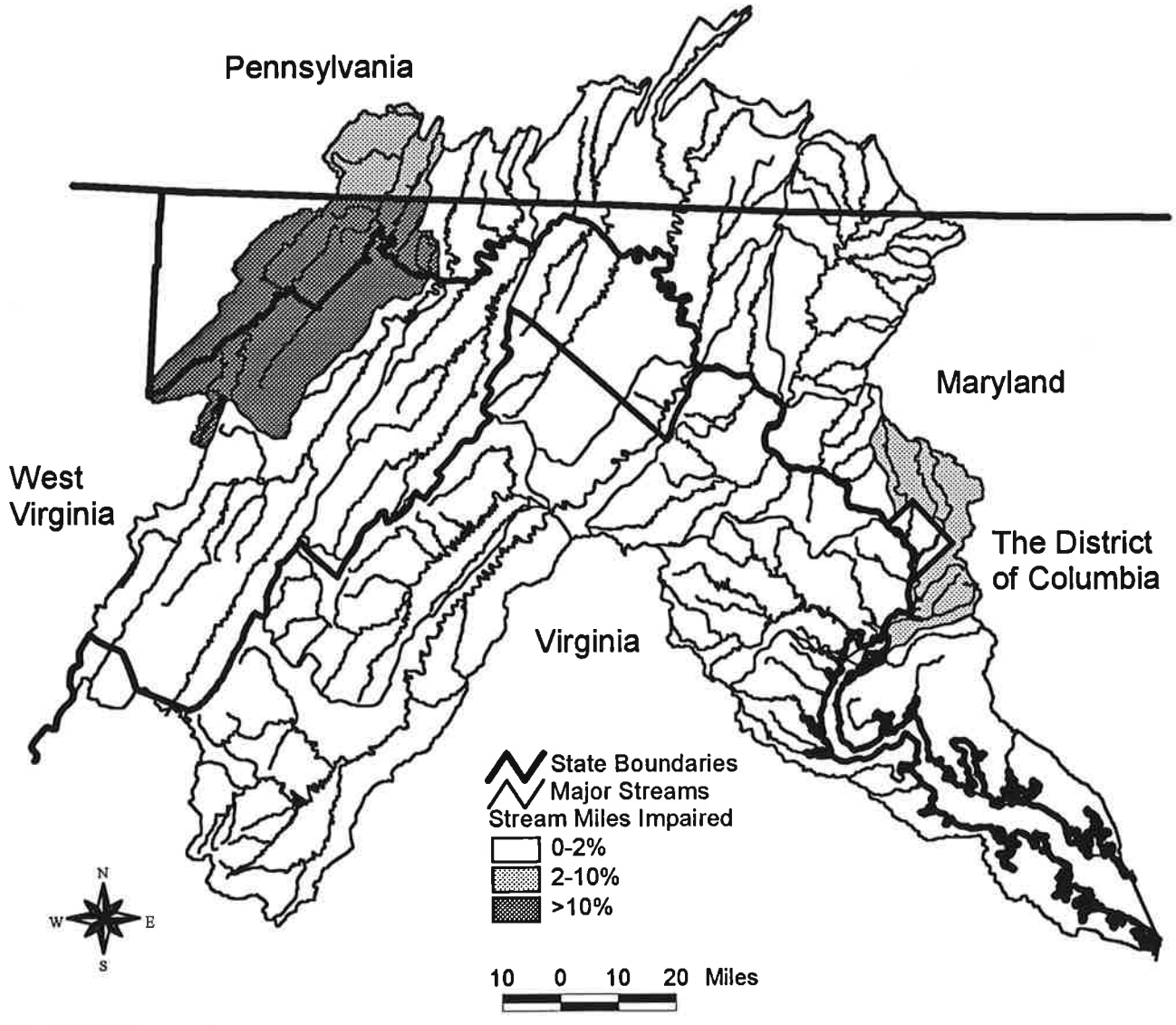

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FIGURE 19

Percent Stream Miles Impaired By
Onsite Waste Disposal

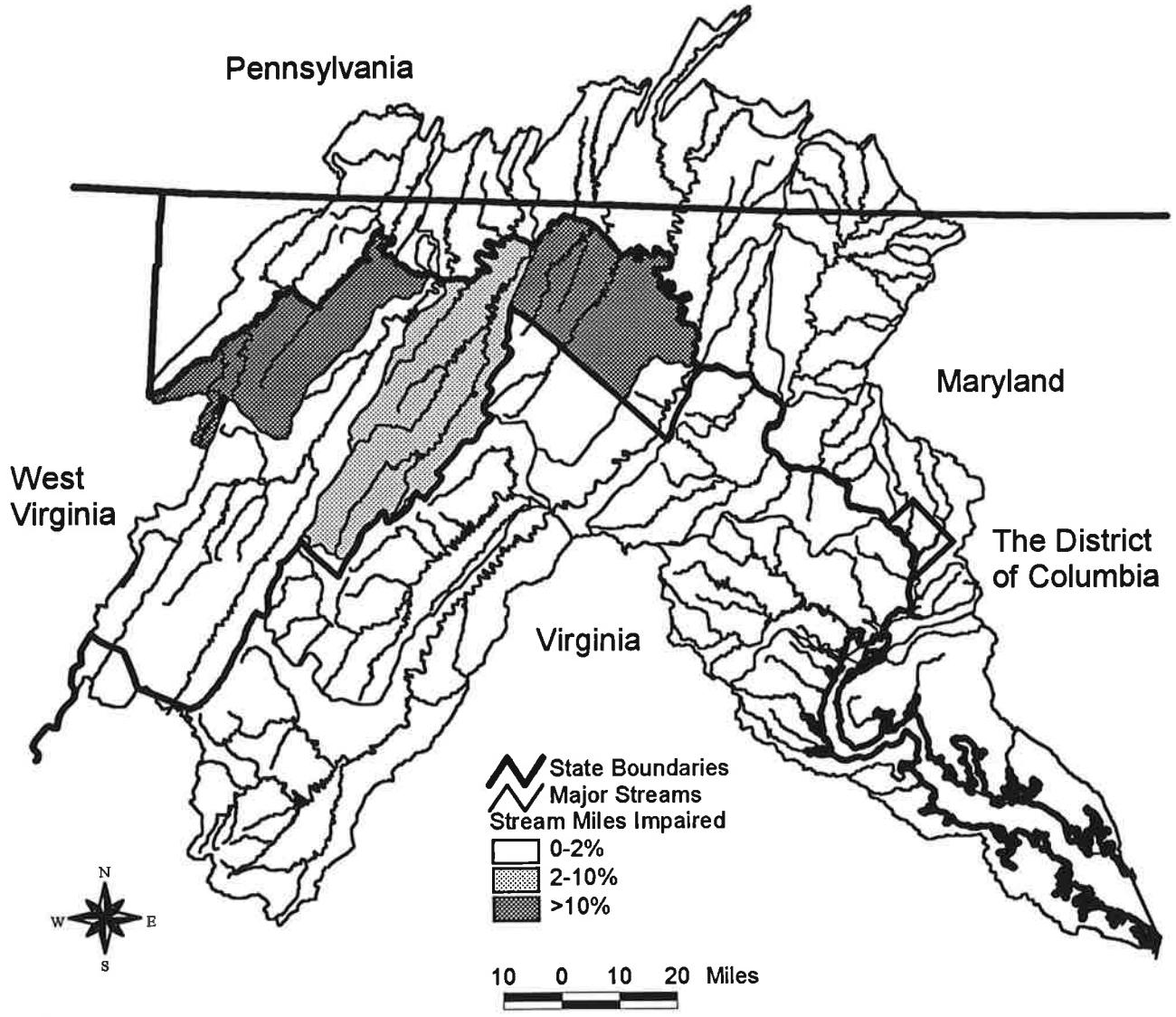

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TABLE 1-A: CAUSES OF USE IMPAIRMENT IN THE POTOMAC RIVER BASIN
(in percent of total mileage in state-hydrologic unit)

STATE	HUC	ASSESSED	IMPAIRED	PATHOGENS	SOLIDS	NUTRIENTS	PH	HABITAT	DO	TOXICS
DC	2070010	100.0	100.0	59.1	35.0	0.0	15.3	0.0	64.5	91.7
MD	2070002	100.0	46.7	13.4	19.3	11.9	39.5	32.3	33.5	0.1
MD	2070003	100.0	4.4	4.4	4.4	0.0	4.4	4.4	0.0	0.0
MD	2070004	100.0	12.3	12.3	12.3	12.3	3.5	12.3	0.0	0.0
MD	2070008	100.0	13.1	12.3	12.3	13.1	0.0	0.0	0.0	0.0
MD	2070009	100.0	74.9	74.9	74.9	74.9	53.6	53.6	27.6	0.1
MD	2070010	100.0	67.1	67.1	55.3	58.0	20.3	32.8	20.3	0.0
MD	2070011	100.0	5.8	0.0	5.8	0.0	0.0	5.8	0.0	0.1
PA	2070002	17.4	7.8	0.9	2.8	0.0	0.0	0.0	0.0	3.7
PA	2070003	2.8	2.8	0.0	0.0	0.0	2.8	0.0	0.0	0.0
PA	2070004	5.5	1.6	0.0	1.5	0.0	0.0	0.0	0.0	0.1
PA	2070009	9.0	1.4	0.3	0.3	0.7	0.0	0.0	0.0	0.0
VA	2070001	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VA	2070004	73.7	13.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VA	2070005	82.5	28.5	14.1	0.0	0.0	0.5	0.0	0.0	9.2
VA	2070006	76.1	7.5	0.0	0.0	0.0	1.1	0.0	0.0	0.9
VA	2070007	65.8	34.2	0.0	0.0	0.0	0.0	0.0	0.0	34.2
VA	2070008	93.7	3.5	0.2	2.4	3.9	0.0	0.0	0.0	0.9
VA	2070010	97.2	6.6	0.0	6.5	6.2	0.0	0.0	0.1	0.1
VA	2070011	95.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
WV	2070001	19.9	1.3	0.0	1.3	1.3	0.0	0.0	0.0	0.1
WV	2070002	37.9	35.1	0.0	0.0	0.0	9.2	0.0	15.8	26.1
WV	2070003	27.3	22.0	0.0	5.8	5.8	0.0	0.0	0.0	5.0
WV	2070004	42.8	28.2	0.0	26.7	26.3	0.0	0.0	0.0	0.4
WV	2070007	54.0	27.0	0.0	0.0	0.0	0.0	0.0	0.0	27.0

02070001 South Branch Potomac River
02070002 North Branch Potomac River
02070003 Town Creek, Sideling Hill Creek, Cacapon River
02070004 Conococheague Creek, Antietam Creek, Opequon Creek, Back Creek
02070005 South Fork Shenandoah River
02070006 North Fork Shenandoah River
02070007 Main Stem Shenandoah River
02070008 Goose Creek, Catoctin Creeks, Seneca Creek
02070009 Monocacy River
02070010 Anancostia River, Rock Creek, Occoquon Creek
02070011 Lower Potomac

TABLE 1-B: SOURCES OF USE IMPAIRMENT IN THE POTOMAC RIVER BASIN
(in percent of total mileage in state-hydrologic unit)

STATE	HUC	ASSESSED	IMPAIRED	AGRICULTURE	URBAN	CONSTRUCTION	MUNICIPAL	MINING	ONSITE
DC	02070010	100.0	100.0	0.0	100.0	3.4	2.3	0.0	0.0
MD	02070002	100.0	46.7	9.4	19.9	0.0	2.9	37.8	0.0
MD	02070003	100.0	4.4	4.4	0.0	4.4	0.0	0.0	0.0
MD	02070004	100.0	12.3	12.3	7.0	8.8	0.0	0.0	0.0
MD	02070008	100.0	13.1	0.8	12.3	12.3	0.8	0.0	0.0
MD	02070009	100.0	74.9	74.9	74.9	26.0	47.3	0.0	0.0
MD	02070010	100.0	67.1	16.9	67.1	32.8	0.0	5.7	0.0
MD	02070011	100.0	5.8	5.8	0.0	5.8	0.0	0.0	0.0
PA	02070002	17.4	7.8	2.5	0.0	0.0	0.6	3.7	0.9
PA	02070003	2.8	2.8	0.0	0.0	0.0	0.0	0.0	0.0
PA	02070004	5.5	1.6	1.6	0.0	0.0	0.0	0.0	0.0
PA	02070009	9.0	1.4	0.4	0.0	0.0	0.3	0.0	0.7
VA	02070001	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VA	02070004	73.7	13.9	5.2	8.7	0.0	0.0	0.0	0.0
VA	02070005	82.5	28.5	21.1	2.1	0.0	0.0	0.0	0.0
VA	02070006	76.1	7.5	5.4	0.0	0.0	0.0	0.0	0.0
VA	02070007	65.8	34.2	21.8	0.0	0.0	0.0	0.0	0.0
VA	02070008	93.7	3.5	1.9	0.5	0.0	0.2	0.0	0.0
VA	02070010	97.2	6.6	0.4	6.1	0.0	0.1	0.0	0.0
VA	02070011	95.8	0.1	0.0	0.0	0.0	0.1	0.0	0.0
WV	02070001	19.9	1.3	1.3	0.0	0.0	0.0	0.0	0.0
WV	02070002	37.9	35.1	8.5	0.0	0.0	0.0	18.6	15.8
WV	02070003	27.3	22.0	22.0	0.0	5.0	5.0	0.0	5.0
WV	02070004	42.8	28.2	27.8	7.2	18.1	27.1	0.0	18.1
WV	02070007	54.0	27.0	0.0	0.0	0.0	0.0	0.0	0.0

02070001 South Branch Potomac River
02070002 North Branch Potomac River
02070003 Town Creek, Sideling Hill Creek, Cacapon River
02070004 Conococheague Creek, Antietam Creek, Opequon Creek, Back Creek
02070005 South Fork Shenandoah River
02070006 North Fork Shenandoah River
02070007 Main Stem Shenandoah River
02070008 Goose Creek, Catoctin Creeks, Seneca Creek
02070009 Monocacy River
02070010 Anancostia River, Rock Creek, Occoquon Creek
02070011 Lower Potomac

TABLE 2-A: CAUSES OF USE IMPAIRMENT IN THE POTOMAC RIVER BASIN
(in miles)

STATE	HUC	SIZE	ASSESSED	IMPAIRED	PATHOGENS	SOLIDS	NUTRIENTS	PH	HABITAT	DO	TOXICS
DC	02070010	38.60	38.60	38.60	22.80	13.50	0.00	5.90	0.00	24.90	35.40
MD	02070002	580.20	580.20	270.95	78.00	112.00	69.30	229.40	187.50	194.10	0.03
MD	02070003	112.54	112.54	4.95	5.00	5.00	0.00	5.00	5.00	0.00	0.00
MD	02070004	284.06	284.06	34.94	35.00	35.00	35.00	10.00	35.00	0.00	0.00
MD	02070008	494.30	494.30	64.75	61.00	61.00	65.00	0.00	0.00	0.00	0.00
MD	02070009	362.10	362.10	271.21	271.10	271.10	271.10	194.00	194.00	100.00	0.01
MD	02070010	337.30	337.33	226.33	226.20	186.60	195.70	68.40	110.60	68.40	0.00
MD	02070011	177.70	177.70	10.31	0.00	10.30	0.00	0.00	10.30	0.00	0.01
PA	02070002	319.70	55.50	24.94	3.00	9.00	0.00	0.00	0.00	0.00	11.80
PA	02070003	245.10	6.80	6.86	0.00	0.00	0.00	6.80	0.00	0.00	0.00
PA	02070004	1197.60	65.60	19.16	0.00	18.00	0.00	0.00	0.00	0.00	1.10
PA	02070009	304.50	27.40	4.26	1.00	1.00	2.00	0.00	0.00	0.00	0.00
VA	02070001	62.50	62.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VA	02070004	167.83	123.73	23.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VA	02070005	1164.66	960.65	331.93	164.10	0.00	0.00	5.60	0.00	0.00	107.06
VA	02070006	579.80	441.40	43.49	0.00	0.00	0.00	6.10	0.00	0.00	5.33
VA	02070007	161.90	106.50	55.37	0.00	0.00	0.00	0.00	0.00	0.00	55.40
VA	02070008	987.49	925.77	34.56	1.60	24.00	39.00	0.00	0.00	0.00	8.86
VA	02070010	1071.83	1041.62	70.74	0.00	69.67	66.54	0.00	0.00	0.87	0.50
VA	02070011	614.81	588.70	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.50
WV	02070001	1023.77	203.75	13.31	0.00	13.04	13.04	0.00	0.00	0.00	0.33
WV	02070002	507.97	192.63	178.30	0.00	0.00	0.00	46.67	0.00	80.06	132.34
WV	02070003	761.50	207.95	167.53	123.70	44.19	44.19	0.00	0.00	0.00	37.73
WV	02070004	427.90	183.32	120.67	30.72	114.28	112.72	0.00	0.00	0.00	1.50
WV	02070007	72.08	38.93	19.46	0.00	0.00	0.00	0.00	0.00	0.00	19.45

02070001 South Branch Potomac River
02070002 North Branch Potomac River
02070003 Town Creek, Sideling Hill Creek, Cacapon River
02070004 Conococheague Creek, Antietam Creek, Opequon Creek, Back Creek
02070005 South Fork Shenandoah River
02070006 North Fork Shenandoah River
02070007 Main Stem Shenandoah River
02070008 Goose Creek, Catoctin Creeks, Seneca Creek
02070009 Monocacy River
02070010 Anancostia River, Rock Creek, Occoquon Creek
02070011 Lower Potomac

TABLE 2-B: SOURCES OF USE IMPAIRMENT IN THE POTOMAC RIVER BASIN
(in miles)

STATE	HUC	SIZE	ASSESSED	IMPAIRED	AGRICULTURE	URBAN	CONSTRUCTION	MUNICIPAL	MINING	ONSITE
DC	02070010	38.60	38.60	38.60	0.00	38.60	1.30	0.90	0.00	0.00
MD	02070002	580.20	580.20	270.95	54.50	115.70	0.00	16.80	219.60	0.00
MD	02070003	112.54	112.54	4.95	5.00	0.00	5.00	0.00	0.00	0.00
MD	02070004	284.06	284.06	34.94	35.00	20.00	25.00	0.00	0.00	0.00
MD	02070008	494.30	494.30	64.75	4.00	61.00	61.00	4.00	0.00	0.00
MD	02070009	362.10	362.10	271.21	271.10	271.10	94.00	171.10	0.00	0.00
MD	02070010	337.30	337.33	226.33	57.10	226.20	110.60	0.00	19.30	0.00
MD	02070011	177.70	177.70	10.31	10.30	0.00	10.30	0.00	0.00	0.00
PA	02070002	319.70	55.50	24.94	8.00	0.00	0.00	2.00	11.80	3.00
PA	02070003	245.10	6.80	6.86	0.00	0.00	0.00	0.00	0.00	0.00
PA	02070004	1197.60	65.60	19.16	19.10	0.00	0.00	0.00	0.00	0.00
PA	02070009	304.50	27.40	4.26	1.30	0.00	0.00	1.00	0.00	2.00
VA	02070001	62.50	62.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VA	02070004	167.83	123.73	23.33	8.73	14.55	0.00	0.00	0.00	0.00
VA	02070005	1164.66	960.65	331.93	245.20	24.30	0.00	0.00	0.00	0.00
VA	02070006	579.80	441.40	43.49	31.52	0.00	0.00	0.00	0.00	0.00
VA	02070007	161.90	106.50	55.37	35.30	0.00	0.00	0.00	0.00	0.00
VA	02070008	987.49	925.77	34.56	19.00	5.00	0.00	1.60	0.00	0.00
VA	02070010	1071.83	1041.62	70.74	4.00	65.67	0.00	0.87	0.00	0.00
VA	02070011	614.81	588.70	0.61	0.00	0.00	0.00	0.50	0.00	0.00
WV	02070001	1023.77	203.75	13.31	13.04	0.00	0.00	0.00	0.00	0.00
WV	02070002	507.97	192.63	178.30	43.06	0.00	0.00	0.00	94.47	80.06
WV	02070003	761.50	207.95	167.53	167.89	0.00	37.73	37.73	0.00	37.73
WV	02070004	427.90	183.32	120.67	119.01	30.72	77.27	115.78	0.00	77.27
WV	02070007	72.08	38.93	19.46	0.00	0.00	0.00	0.00	0.00	0.00

02070001 South Branch Potomac River
02070002 North Branch Potomac River
02070003 Town Creek, Sideling Hill Creek, Cacapon River
02070004 Conococheague Creek, Antietam Creek, Opequon Creek, Back Creek
02070005 South Fork Shenandoah River
02070006 North Fork Shenandoah River
02070007 Main Stem Shenandoah River
02070008 Goose Creek, Catoctin Creeks, Seneca Creek
02070009 Monocacy River
02070010 Anancostia River, Rock Creek, Occoquon Creek
02070011 Lower Potomac

TABLE 3-A: CAUSES OF USE IMPAIRMENT IN DISTRICT OF COLUMBIA WATERBODIES
(in miles)

NAME	SIZE	PATHOGENS	SOLIDS	NUTRIENTS	PH	HABITAT	DO	TOXICS
DC--02070010 Anancostia River, Rock Creek								
ROCK CREEK DC	3.60	3.60	3.60	0.00	3.60	0.00	3.60	3.60
ROCK CREEK DC	5.90	5.90	5.90	0.00	0.00	0.00	5.90	5.90
BATTERY KEMBLE CREEK	1.20	0.00	0.00	0.00	0.00	0.00	0.00	1.20
BROAD BRANCH	1.70	0.00	0.00	0.00	0.00	0.00	1.70	1.70
DALECARLIA TRIBUTARY	1.70	1.70	0.00	0.00	0.00	0.00	0.00	0.00
DUMBARTON OAKS	0.60	0.00	0.00	0.00	0.00	0.00	0.60	0.60
FORT DUPONT CREEK	1.70	1.70	0.00	0.00	0.00	0.00	0.00	1.70
FOUNDRY BRANCH	0.80	0.80	0.00	0.00	0.00	0.00	0.80	0.80
FORT CHAPLIN	0.60	0.60	0.00	0.00	0.00	0.00	0.00	0.60
FORT DAVIS TRIBUTARY	1.40	1.40	0.00	0.00	1.40	0.00	0.00	1.40
FENWICK BRANCH	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
FLETCHER'S RUN	0.20	0.00	0.00	0.00	0.00	0.00	0.20	0.00
FORT STANTON TRIBUTARY	1.30	1.30	0.00	0.00	0.00	0.00	0.00	1.30
HICKEY RUN	0.90	0.90	0.00	0.00	0.90	0.00	0.00	0.90
KLINGLE VALLEY	0.80	0.00	0.00	0.00	0.00	0.00	0.80	0.80
LUZON BRANCH	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00
MELVIN HAZEN VALLEY BRANCH	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00
NASH RUN	0.10	0.10	0.00	0.00	0.00	0.00	0.00	0.10
NORMANSTONE CREEK	0.80	0.00	0.00	0.00	0.00	0.00	0.80	0.80
OXON RUN	3.20	3.20	0.00	0.00	0.00	0.00	0.00	3.20
POPES BRANCH (HAWES RUN)	1.10	1.10	0.00	0.00	0.00	0.00	0.00	1.10
PINEHURST BRANCH	1.50	0.00	0.00	0.00	0.00	0.00	1.50	1.50
PORTAL BRANCH	0.50	0.00	0.00	0.00	0.00	0.00	0.50	0.50
PINEY BRANCH	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00

TABLE 3-A: CAUSES OF USE IMPAIRMENT IN DISTRICT OF COLUMBIA WATERBODIES, CON'T.
(in miles)

NAME	SIZE	PATHOGENS	SOLIDS	NUTRIENTS	PH	HABITAT	DO	TOXICS
SOAPSTONE CREEK	0.80	0.00	0.00	0.00	0.00	0.00	0.80	0.80
TEXAS AVENUE TRIBUTARY	0.20	0.20	0.00	0.00	0.00	0.00	0.00	0.20
WATTS BRANCH DC	0.30	0.30	0.30	0.00	0.00	0.00	0.00	0.00
WATTS BRANCH DC	3.70	0.00	3.70	0.00	0.00	0.00	3.70	3.70

TABLE 3-B: SOURCES OF USE IMPAIRMENT IN DISTRICT OF COLUMBIA WATERBODIES
(in miles)

NAME	SIZE	AGRICULTURE	URBAN	CONSTRUCTION	MUNICIPAL	MINING	ONSITE
DC--02070010 Anancostia River, Rock Creek							
ROCK CREEK DC	3.60	0.00	3.60	0.00	0.00	0.00	0.00
ROCK CREEK DC	5.90	0.00	5.90	0.00	0.00	0.00	0.00
BATTERY KEMBLE CREEK	1.20	0.00	0.00	0.00	0.00	0.00	0.00
BROAD BRANCH	1.70	0.00	1.70	0.00	0.00	0.00	0.00
DALECARLIA TRIBUTARY	1.70	0.00	1.70	0.00	0.00	0.00	0.00
DUMBARTON OAKS	0.60	0.00	0.60	0.00	0.00	0.00	0.00
FORT DUPONT CREEK	1.70	0.00	1.70	0.00	0.00	0.00	0.00
FOUNDRY BRANCH	0.80	0.00	0.80	0.00	0.00	0.00	0.00
FORT CHAPLIN	0.60	0.00	0.60	0.00	0.00	0.00	0.00
FORT DAVIS TRIBUTARY	1.40	0.00	1.40	0.00	0.00	0.00	0.00
FENWICK BRANCH	1.00	0.00	1.00	0.00	0.00	0.00	0.00
FLETCHER'S RUN	0.20	0.00	0.20	0.00	0.00	0.00	0.00
FORT STANTON TRIBUTARY	1.30	0.00	1.30	1.30	0.00	0.00	0.00
HICKEY RUN	0.90	0.00	0.90	0.00	0.90	0.00	0.00
KLINGLE VALLEY	0.80	0.00	0.80	0.00	0.00	0.00	0.00
LUZON BRANCH	1.00	0.00	1.00	0.00	0.00	0.00	0.00
MELVIN HAZEN VALLEY BRANCH	1.00	0.00	1.00	0.00	0.00	0.00	0.00
NASH RUN	0.10	0.00	0.10	0.00	0.00	0.00	0.00
NORMANSTONE CREEK	0.80	0.00	0.80	0.00	0.00	0.00	0.00
OXON RUN	3.20	0.00	3.20	0.00	0.00	0.00	0.00
POPES BRANCH (HAWES RUN)	1.10	0.00	1.10	0.00	0.00	0.00	0.00
PINEHURST BRANCH	1.50	0.00	1.50	0.00	0.00	0.00	0.00
PORTAL BRANCH	0.50	0.00	0.50	0.00	0.00	0.00	0.00
PINEY BRANCH	1.00	0.00	1.00	0.00	0.00	0.00	0.00

TABLE 3-B: SOURCES OF USE IMPAIRMENT IN DISTRICT OF COLUMBIA WATERBODIES, CON'T.
(in miles)

NAME	SIZE	AGRICULTURE	URBAN	CONSTRUCTION	MUNICIPAL	MINING	ONSITE
SOAPSTONE CREEK	0.80	0.00	0.80	0.00	0.00	0.00	0.00
TEXAS AVENUE TRIBUTARY	0.20	0.00	0.20	0.00	0.00	0.00	0.00
WATTS BRANCH DC	0.30	0.00	0.30	0.00	0.00	0.00	0.00
WATTS BRANCH DC	3.70	0.00	3.70	0.00	0.00	0.00	0.00

TABLE 4-A: CAUSES OF USE IMPAIRMENT IN MARYLAND WATERBODIES
(in miles)

NAME	SIZE	PATHOGENS	SOLIDS	NUTRIENTS	PH	HABITAT	DO	TOXICS
MD--02070002 North Branch Potomac River								
LOWER NORTH BRANCH POTOMAC RIVER	108.90	16.80	16.80	16.80	16.80	16.80	16.80	0.01
EVITTS CREEK	37.70	0.00	37.70	0.00	0.00	37.70	0.00	0.00
WILLS CREEK	66.90	61.20	0.00	0.00	61.20	0.00	61.20	0.01
GEORGES CREEK	79.20	0.00	52.50	52.50	52.50	30.20	52.50	0.01
UPPER NORTH BRANCH POTOMAC RIVER (ABOVE DAM)	121.60	0.00	0.00	0.00	84.10	84.10	48.80	0.00
UPPER NORTH BRANCH POTOMAC RIVER (BELOW DAM)	19.90	0.00	0.00	0.00	9.80	9.80	9.80	0.00
SAVAGE RIVER (BELOW SAVAGE RIVER RESERVOIR)	11.80	0.00	5.00	0.00	5.00	8.90	5.00	0.00
MD--02070003 Town Creek, Sideling Hill Creek, Cacapon River								
TOWN CREEK	37.10	5.00	5.00	0.00	5.00	5.00	0.00	0.00
MD--02070004 Conococheague Creek, Antietam Creek, Opequon Creek, Back Creek								
ANTIETAM CREEK	93.70	25.00	25.00	25.00	0.00	25.00	0.00	0.00
CONOCOCHEAGUE CREEK	40.10	10.00	10.00	10.00	10.00	10.00	0.00	0.00
MD--02070008 Goose Creek, Catoctin Creeks, Seneca Creek								
POTOMAC - MONACACY RIVER TO CHAIN BRIDGE	183.30	28.90	28.90	28.90	0.00	0.00	0.00	0.00
CABIN JOHN CREEK	26.40	26.40	26.40	26.40	0.00	0.00	0.00	0.00
SENECA CREEK	196.00	5.70	5.70	5.70	0.00	0.00	0.00	0.00
CATOCTIN CREEK	54.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00
MD-02070009 Monocacy River								
LOWER MONOCACY RIVER	139.00	94.00	94.00	94.00	94.00	94.00	0.00	0.01
UPPER MONOCACY RIVER	146.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00
DOUBLE PIPE CREEK	77.10	77.10	77.10	77.10	0.00	0.00	0.00	0.00
MD--02070010 Anancostia River, Rock Creek, Occoquon Creek								
POTOMAC - MARSHALL HALL TO CHAIN BRIDGE	39.60	30.50	30.50	0.00	0.00	30.50	0.00	0.00

TABLE 4-A: CAUSES OF USE IMPAIRMENT IN MARYLAND WATERBODIES, CON'T.
(in miles)

NAME	SIZE	PATHOGENS	SOLIDS	NUTRIENTS	PH	HABITAT	DO	TOXICS
PISCATAWAY CREEK	73.60	57.10	57.10	57.10	57.10	57.10	57.10	0.00
OXON RUN	11.30	11.30	11.30	11.30	11.30	11.30	11.30	0.00
ANACOSTIA RIVER	157.20	115.60	76.00	115.60	0.00	0.00	0.00	0.00
ROCK CREEK	55.60	11.70	11.70	11.70	0.00	11.70	0.00	0.00
MD--02070011 Lower Potomac								
ZEKIAH SWAMP	34.90	0.00	0.00	0.00	0.00	0.00	0.00	0.01
PORT TOBACCO RIVER	10.30	0.00	10.30	0.00	0.00	10.30	0.00	0.00

TABLE 4-B: SOURCES OF USE IMPAIRMENT IN MARYLAND WATERBODIES
(in miles)

NAME	SIZE	AGRICULTURE	URBAN	CONSTRUCTION	MUNICIPAL	MINING	ONSITE
MD--02070002 North Branch Potomac River							
LOWER NORTH BRANCH POTOMAC RIVER	108.90	16.80	16.80	0.00	16.80	16.80	0.00
EVITTS CREEK	37.70	37.70	37.70	0.00	0.00	0.00	0.00
WILLS CREEK	66.90	0.00	61.20	0.00	0.00	61.20	0.00
GEORGES CREEK	79.20	0.00	0.00	0.00	0.00	52.50	0.00
UPPER NORTH BRANCH POTOMAC RIVER (ABOVE DAM)	121.60	0.00	0.00	0.00	0.00	84.10	0.00
UPPER NORTH BRANCH POTOMAC RIVER (BELOW DAM)	19.90	0.00	0.00	0.00	0.00	0.00	0.00
SAVAGE RIVER (BELOW SAVAGE RIVER RESERVOIR)	11.80	0.00	0.00	0.00	0.00	5.00	0.00
MD--02070003 Town Creek, Sideling Hill Creek, Cacapon River							
TOWN CREEK	37.10	5.00	0.00	5.00	0.00	0.00	0.00
MD--02070004 Conococheague Creek, Antietam Creek, Opequon Creek, Back Creek							
ANTIETAM CREEK	93.70	25.00	20.00	25.00	0.00	0.00	0.00
CONOCOCHEAGUE CREEK	40.10	10.00	0.00	0.00	0.00	0.00	0.00
MD--02070008 Goose Creek, Catoctin Creeks, Seneca Creek							
POTOMAC - MONACACY RIVER TO CHAIN BRIDGE	183.30	0.00	28.90	28.90	0.00	0.00	0.00
CABIN JOHN CREEK	26.40	0.00	26.40	26.40	0.00	0.00	0.00
SENECA CREEK	196.00	0.00	5.70	5.70	0.00	0.00	0.00
CATOCTIN CREEK	54.00	4.00	0.00	0.00	4.00	0.00	0.00
MD--02070009 Monocacy River							
LOWER MONOCACY RIVER	139.00	94.00	94.00	94.00	94.00	0.00	0.00
UPPER MONOCACY RIVER	146.00	100.00	100.00	0.00	0.00	0.00	0.00
DOUBLE PIPE CREEK	77.10	77.10	77.10	0.00	77.10	0.00	0.00
MD--02070010 Anancostia River, Rock Creek, Occoquon Creek							
POTOMAC - MARSHALL HALL TO CHAIN BRIDGE	39.60	0.00	30.50	30.50	0.00	0.00	0.00

SOURCES OF USE IMPAIRMENT IN MARYLAND WATERBODIES, CON'T.
(in miles)

NAME	SIZE	AGRICULTURE	URBAN	CONSTRUCTION	MUNICIPAL	MINING	ONSITE
PISCATAWAY CREEK	73.60	57.10	57.10	57.10	0.00	0.00	0.00
OXON RUN	11.30	0.00	11.30	11.30	0.00	0.00	0.00
ANACOSTIA RIVER	157.20	0.00	115.60	0.00	0.00	5.70	0.00
ROCK CREEK	55.60	0.00	11.70	11.70	0.00	0.00	0.00
MD–02070011 Lower Potomac							
ZEKIAH SWAMP	34.90	0.00	0.00	0.00	0.00	0.00	0.00
PORT TOBACCO RIVER	10.30	10.30	0.00	10.30	0.00	0.00	0.00

TABLE 5-A: CAUSES OF USE IMPAIRMENT IN PENNSYLVANIA WATERBODIES
(in miles)

NAME	SIZE	PATHOGENS	SOLIDS	NUTRIENTS	PH	HABITAT	DO	METALS
PA-02070002 North Branch Potomac River								
EVITTS CREEK	11.00	3.00	8.00	0.00	0.00	0.00	0.00	0.00
EVITTS CREEK	2.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
GLADDENS RUN	11.80	0.00	0.00	0.00	0.00	0.00	0.00	11.80
PA-02070003 Town Creek, Sideling Hill Creek, Cacapon River								
FLINTSTONE CREEK	6.80	0.00	0.00	0.00	6.80	0.00	0.00	0.00
PA-02070004 Conococheague Creek, Antietam Creek, Opequon Creek, Back Creek								
RED RUN	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BIG COVE CREEK	18.00	0.00	18.00	0.00	0.00	0.00	0.00	0.00
PA-02070009 Monocacy River								
ALLOWAY CREEK (UNT)	8.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ROCK CREEK	6.50	1.00	1.00	2.00	0.00	0.00	0.00	0.00

TABLE 5-B: SOURCES OF USE IMPAIRMENT IN PENNSYLVANIA WATERBODIES
(in miles)

NAME	SIZE	AGRICULTURE	URBAN	CONSTRUCTION	MUNICIPAL	MINING	ONSITE
PA-02070002 North Branch Potomac River							
EVITTS CREEK	11.00	8.00	0.00	0.00	0.00	0.00	3.00
EVITTS CREEK	2.00	0.00	0.00	0.00	2.00	0.00	0.00
GLADDENS RUN	11.80	0.00	0.00	0.00	0.00	11.80	0.00
PA-02070003 Town Creek, Sideling Hill Creek, Cacapon River							
FLINTSTONE CREEK	6.80	0.00	0.00	0.00	0.00	0.00	0.00
PA-02070004 Conococheague Creek, Antietam Creek, Opequon Creek, Back Creek							
RED RUN	1.20	1.10	0.00	0.00	0.00	0.00	0.00
BIG COVE CREEK	18.00	18.00	0.00	0.00	0.00	0.00	0.00
PA-02070009 Monocacy River							
ALLOWAY CREEK (UNT)	8.20	0.30	0.00	0.00	0.00	0.00	0.00
ROCK CREEK	6.50	1.00	0.00	0.00	1.00	0.00	2.00

TABLE 6-A: CAUSES OF USE IMPAIRMENT IN VIRGINIA WATERBODIES
(in miles)

NAME	SIZE	PATHOGENS	SOLIDS	NUTRIENTS	PH	HABITAT	DO	TOXICS
VA-2070004 Conococheague Creek, Antietam Creek, Opequon Creek, Back Creek								
LOWER OPEQUON CREEK/ABRAMS CREEK	41.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VA-2070005 South Fork Shenandoah River								
LOWER SOUTH FORK SHENANDOAH RIVER/HAPPY CREEK	10.20	0.00	0.00	0.00	0.00	0.00	0.00	3.50
SOUTH FORK SHENANDOAH RIVER/GOONEY RUN/JEREMYS RUN	70.48	0.00	0.00	0.00	0.00	0.00	0.00	19.18
SOUTH FORK SHENANDOAH RIVER/BIG RUN	26.82	0.00	0.00	0.00	0.00	0.00	0.00	13.42
MILL CREEK	8.20	8.20	0.00	0.00	0.00	0.00	0.00	0.00
SOUTH FORK SHENANDOAH RIVER/CUB RUN/STONY RUN/NAKED CREEK	192.00	0.00	0.00	0.00	0.00	0.00	0.00	30.80
SOUTH FORK SHENANDOAH RIVER/MADISON RUN/BIG RUN/STONY RUN	45.86	0.00	0.00	0.00	5.60	0.00	0.00	14.86
LOWER SOUTH RIVER	52.20	3.90	0.00	0.00	0.00	0.00	0.00	25.30
MIDDLE SOUTH RIVER/BACK CREEK	62.91	9.31	0.00	0.00	0.00	0.00	0.00	0.00
LOWER NORTH RIVER	19.36	4.35	0.00	0.00	0.00	0.00	0.00	0.00
NAKED CREEK	21.01	6.40	0.00	0.00	0.00	0.00	0.00	0.00
PLEASANT RUN	6.60	6.60	0.00	0.00	0.00	0.00	0.00	0.00
COOKS CREEK	14.20	14.20	0.00	0.00	0.00	0.00	0.00	0.00
BLACKS RUN	11.40	11.40	0.00	0.00	0.00	0.00	0.00	0.00
MIDDLE NORTH RIVER	18.75	5.76	0.00	0.00	0.00	0.00	0.00	0.00
MOSSY CREEK	10.20	10.20	0.00	0.00	0.00	0.00	0.00	0.00
LOWER DRY RIVER	7.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MUDDY CREEK	23.50	12.80	0.00	0.00	0.00	0.00	0.00	0.00
LOWER MIDDLE RIVER	24.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CHRISTIANS CREEK	77.30	31.90	0.00	0.00	0.00	0.00	0.00	0.00
MIDDLE RIVER/LEWIS CREEK	45.38	21.68	0.00	0.00	0.00	0.00	0.00	0.00

TABLE 6-A: CAUSES OF USE IMPAIRMENT IN VIRGINIA WATERBODIES, CON'T.
(in miles)

NAME	SIZE	PATHOGENS	SOLIDS	NUTRIENTS	PH	HABITAT	DO	TOXICS
MOFFETT CREEK	17.50	12.60	0.00	0.00	0.00	0.00	0.00	0.00
UPPER MIDDLE RIVER/EDISON CREEK	64.10	4.80	0.00	0.00	0.00	0.00	0.00	0.00
VA-2070006 North Fork Shenandoah River								
LOWER NORTH FORK SHENANDOAH RIVER/TUMBLING RUN	29.70	0.00	0.00	0.00	0.00	0.00	0.00	5.33
STONY CREEK	78.20	0.00	0.00	0.00	6.10	0.00	0.00	0.00
SMITH CREEK	56.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LINVILLE CREEK	19.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VA-2070007 Main Stem Shenandoah River								
SHENANDOAH RIVER/SPOUT RUN	96.00	0.00	0.00	0.00	0.00	0.00	0.00	27.90
UPPER SHENANDOAH RIVER/MANASSAS RUN	35.40	0.00	0.00	0.00	0.00	0.00	0.00	27.50
VA-2070008 Goose Creek, Catoctin Creeks, Seneca Creek								
POTOMAC RIVER/DIFFICULT RUN	92.27	0.00	1.00	1.00	0.00	0.00	0.00	0.00
POTOMAC RIVER/SUGARLAND RUN	54.03	0.00	0.00	0.00	0.00	0.00	0.00	8.86
POTOMAC RIVER/BROAD RUN/HORSEPEN RUN	124.37	0.00	4.00	0.00	0.00	0.00	0.00	0.00
CATOCTIN CREEK	130.55	1.60	19.00	19.00	0.00	0.00	0.00	0.00
VA-2070010 Anancostia River, Rock Creek, Occoquon Creek								
BULL RUN/LITTLE BULL RUN	109.59	0.00	4.00	0.00	0.00	0.00	0.00	0.00
BROAD RUN/KETTLE RUN	170.61	0.00	0.00	0.87	0.00	0.00	0.87	0.00
ACCOTINK CREEK	65.17	0.00	65.17	65.17	0.00	0.00	0.00	0.00
POTOMAC RIVER/FOURMILE RUN	20.21	0.00	0.50	0.50	0.00	0.00	0.00	0.50
VA-2070011 Lower Potomac								
POTOMAC RIVER/QUANTICO CREEK/CHOPAWAMSIC CREEK/POWELLS CREEK	92.40	0.00	0.00	0.00	0.00	0.00	0.00	0.50

TABLE 6-B: SOURCES OF USE IMPAIRMENT IN VIRGINIA WATERBODIES
(in miles)

NAME	SIZE	AGRICULTURE	URBAN	CONSTRUCTION	MUNICIPAL	MINING	ONSITE
VA-2070004 Conococheague Creek, Antietam Creek, Opequon Creek, Back Creek							
LOWER OPEQUON CREEK/ABRAMS CREEK	41.28	8.73	14.55	0.00	0.00	0.00	0.00
VA-2070005 South Fork Shenandoah River							
LOWER SOUTH FORK SHENANDOAH RIVER/HAPPY CREEK	10.20	0.00	0.00	0.00	0.00	0.00	0.00
SOUTH FORK SHENANDOAH RIVER/GOONEY RUN/JEREMYS RUN	70.48	0.00	0.00	0.00	0.00	0.00	0.00
SOUTH FORK SHENANDOAH RIVER/BIG RUN	26.82	0.00	0.00	0.00	0.00	0.00	0.00
MILL CREEK	8.20	8.20	0.00	0.00	0.00	0.00	0.00
SOUTH FORK SHENANDOAH RIVER/CUB RUN/STONY RUN/NAKED CREEK	192.00	30.80	0.00	0.00	0.00	0.00	0.00
SOUTH FORK SHENANDOAH RIVER/MADISON RUN/BIG RUN/STONY RUN	45.86	14.86	0.00	0.00	0.00	0.00	0.00
LOWER SOUTH RIVER	52.20	3.90	0.00	0.00	0.00	0.00	0.00
MIDDLE SOUTH RIVER/BACK CREEK	62.91	9.31	0.00	0.00	0.00	0.00	0.00
LOWER NORTH RIVER	19.36	4.35	0.00	0.00	0.00	0.00	0.00
NAKED CREEK	21.01	6.40	0.00	0.00	0.00	0.00	0.00
PLEASANT RUN	6.60	6.60	0.00	0.00	0.00	0.00	0.00
COOKS CREEK	14.20	14.20	0.00	0.00	0.00	0.00	0.00
BLACKS RUN	11.40	0.00	11.40	0.00	0.00	0.00	0.00
MIDDLE NORTH RIVER	18.75	5.76	0.00	0.00	0.00	0.00	0.00
MOSSY CREEK	10.20	10.20	0.00	0.00	0.00	0.00	0.00
LOWER DRY RIVER	7.80	7.80	0.00	0.00	0.00	0.00	0.00
MUDDY CREEK	23.50	12.80	0.00	0.00	0.00	0.00	0.00
LOWER MIDDLE RIVER	24.42	18.12	0.00	0.00	0.00	0.00	0.00
CHRISTIANS CREEK	77.30	31.90	0.00	0.00	0.00	0.00	0.00
MIDDLE RIVER/LEWIS CREEK	45.38	8.78	12.90	0.00	0.00	0.00	0.00

TABLE 6-B: SOURCES OF USE IMPAIRMENT IN VIRGINIA WATERBODIES, CON'T.
(in miles)

NAME	SIZE	AGRICULTURE	URBAN	CONSTRUCTION	MUNICIPAL	MINING	ONSITE
MOFFETT CREEK	17.50	12.60	0.00	0.00	0.00	0.00	0.00
UPPER MIDDLE RIVER/EDISON CREEK	64.10	4.80	0.00	0.00	0.00	0.00	0.00
VA-2070006 North Fork Shenandoah River							
LOWER NORTH FORK SHENANDOAH RIVER/TUMBLING RUN	29.70	5.33	0.00	0.00	0.00	0.00	0.00
STONY CREEK	78.20	0.00	0.00	0.00	0.00	0.00	0.00
SMITH CREEK	56.40	12.39	0.00	0.00	0.00	0.00	0.00
LINVILLE CREEK	19.40	13.80	0.00	0.00	0.00	0.00	0.00
VA-2070007 Main Stem Shenandoah River							
SHENANDOAH RIVER/SPOUT RUN	96.00	7.80	0.00	0.00	0.00	0.00	0.00
UPPER SHENANDOAH RIVER/MANASSAS RUN	35.40	27.50	0.00	0.00	0.00	0.00	0.00
VA-2070008 Goose Creek, Catoctin Creeks, Seneca Creek							
POTOMAC RIVER/DIFFICULT RUN	92.27	0.00	1.00	0.00	0.00	0.00	0.00
POTOMAC RIVER/SUGARLAND RUN	54.03	0.00	0.00	0.00	0.00	0.00	0.00
POTOMAC RIVER/BROAD RUN/HORSEPEN RUN	124.37	0.00	4.00	0.00	0.00	0.00	0.00
CATOCTIN CREEK	130.55	19.00	0.00	0.00	1.60	0.00	0.00
VA-2070010 Anancostia River, Rock Creek, Occoquon Creek							
BULL RUN/LITTLE BULL RUN	109.59	4.00	0.00	0.00	0.00	0.00	0.00
BROAD RUN/KETTLE RUN	170.61	0.00	0.00	0.00	0.87	0.00	0.00
ACCOTINK CREEK	65.17	0.00	65.17	0.00	0.00	0.00	0.00
POTOMAC RIVER/FOURMILE RUN	20.21	0.00	0.50	0.00	0.00	0.00	0.00
VA-2070011 Lower Potomac							
POTOMAC RIVER/QUANTICO CREEK/CHOPAWAMSIC CREEK/POWELLS CREEK	92.40	0.00	0.00	0.00	0.50	0.00	0.00

TABLE 7-A: CAUSES OF USE IMPAIRMENT IN WEST VIRGINIA WATERBODIES
(in miles)

NAME	SIZE	PATHOGENS	SOLIDS	NUTRIENTS	PH	HABITAT	DO	TOXICS
WV-02070001 South Branch Potomac River								
SOUTH MILL CK	13.04	0.00	13.04	13.04	0.00	0.00	0.00	0.00
REEDS CK	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.33
WV-02070002 North Branch Potomac River								
NORTH BR/POTOMAC RV	75.75	0.00	0.00	0.00	0.00	0.00	37.00	50.50
PINEY SWAMP RN	5.51	0.00	0.00	0.00	0.00	0.00	0.00	5.51
ABRAM CK	18.50	0.00	0.00	0.00	18.50	0.00	0.00	18.50
EMORY RN	2.25	0.00	0.00	0.00	0.00	0.00	0.00	2.25
GLADE RN	3.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LITTLE CK	0.68	0.00	0.00	0.00	0.68	0.00	0.00	0.68
STONY RV	24.50	0.00	0.00	0.00	22.50	0.00	0.00	8.00
FOUR MILE RN	1.52	0.00	0.00	0.00	1.52	0.00	0.00	1.52
LAUREL RN/STONY RV (MT STORM LK)	1.37	0.00	0.00	0.00	1.37	0.00	0.00	1.37
HELMICK RN	0.95	0.00	0.00	0.00	0.95	0.00	0.00	0.95
DEAKIN RN	1.15	0.00	0.00	0.00	1.15	0.00	0.00	0.00
PATTERSON CK	57.41	0.00	0.00	0.00	0.00	0.00	43.06	43.06
WV-02070003 Town Creek, Sideling Hill Creek, Cacapon River								
CACAPON RV	110.00	46.20	70.80	0.00	0.00	0.00	0.00	0.00
POTOMAC RV-UPSTREAM OF CACAPON	37.73	0.00	37.73	37.73	0.00	0.00	0.00	37.73
EDWARDS RN	6.46	0.00	6.46	6.46	0.00	0.00	0.00	0.00
LOST RV	26.03	26.03	26.03	0.00	0.00	0.00	0.00	0.00
NORTH RV/CACAPON RV	51.47	51.47	51.47	0.00	0.00	0.00	0.00	0.00
WV-02070004 Conococheague Creek, Antietam Creek, Opequon Creek, Back Creek								
ELKS RN	6.29	0.00	6.29	0.00	0.00	0.00	0.00	0.00

TABLE 7-A: CAUSES OF USE IMPAIRMENT IN WEST VIRGINIA WATERBODIES, CON'T.
(in miles)

NAME	SIZE	PATHOGENS	SOLIDS	NUTRIENTS	PH	HABITAT	DO	TOXICS
ROCKY MARSH RN	4.73	0.00	0.00	4.73	0.00	0.00	0.00	0.00
OPEQUON CK	30.72	30.72	30.72	30.72	0.00	0.00	0.00	0.00
TUSCARORA CK	9.17	0.00	0.00	0.00	0.00	0.00	0.00	1.50
BACK CK	31.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00
POTOMAC RV-DOWNSTREAM OF CACAPON	77.27	0.00	77.27	77.27	0.00	0.00	0.00	0.00
WV-02070007 Main Stem Shenandoah River								
SHENANDOAH RV	19.45	0.00	0.00	0.00	0.00	0.00	0.00	19.45
BULLSKIN RN	8.47	0.00	0.00	8.47	0.00	0.00	0.00	0.00
LONG MARSH RN	8.79	0.00	0.00	8.79	0.00	0.00	0.00	0.00

TABLE 7-B: SOURCES OF USE IMPAIRMENT IN WEST VIRGINIA WATERBODIES
(in miles)

NAME	SIZE	AGRICULTURE	URBAN	CONSTRUCTION	MUNICIPAL	MINING	ONSITE
WV-02070001 South Branch Potomac River							
SOUTH MILL CK	13.04	13.04	0.00	0.00	0.00	0.00	0.00
REEDS CK	2.60	0.00	0.00	0.00	0.00	0.00	0.00
WV-02070002 North Branch Potomac River							
NORTH BR/POTOMAC RV	75.75	0.00	0.00	0.00	0.00	37.00	37.00
PINEY SWAMP RN	5.51	0.00	0.00	0.00	0.00	5.51	0.00
ABRAM CK	18.50	0.00	0.00	0.00	0.00	18.50	0.00
EMORY RN	2.25	0.00	0.00	0.00	0.00	2.25	0.00
GLADE RN	3.04	0.00	0.00	0.00	0.00	3.04	0.00
LITTLE CK	0.68	0.00	0.00	0.00	0.00	0.68	0.00
STONY RV	24.50	0.00	0.00	0.00	0.00	22.50	0.00
FOUR MILE RN	1.52	0.00	0.00	0.00	0.00	1.52	0.00
LAUREL RN/STONY RV (MT STORM LK)	1.37	0.00	0.00	0.00	0.00	1.37	0.00
HELMICK RN	0.95	0.00	0.00	0.00	0.00	0.95	0.00
DEAKIN RN	1.15	0.00	0.00	0.00	0.00	1.15	0.00
PATTERSON CK	57.41	43.06	0.00	0.00	0.00	0.00	43.06
WV-02070003 Town Creek, Sideling Hill Creek, Cacapon River							
CACAPON RV	110.00	24.60	0.00	0.00	0.00	0.00	0.00
POTOMAC RV-UPSTREAM OF CACAPON	37.73	37.73	0.00	37.73	37.73	0.00	37.73
EDWARDS RN	6.46	6.46	0.00	0.00	0.00	0.00	0.00
LOST RV	26.03	26.03	0.00	0.00	0.00	0.00	0.00
NORTH RV/CACAPON RV	51.47	51.47	0.00	0.00	0.00	0.00	0.00
WV-02070004 Conococheague Creek, Antietam Creek, Opequon Creek, Back Creek							
ELKS RN	6.29	6.29	0.00	0.00	6.29	0.00	0.00

TABLE 7-B: SOURCES OF USE IMPAIRMENT IN WEST VIRGINIA WATERBODIES, CON'T.
(in miles)

ROCKY MARSH RN	4.73	4.73	0.00	0.00	0.00	0.00	0.00
OPEQUON CK	30.72	30.72	30.72	0.00	30.72	0.00	0.00
TUSCARORA CK	9.17	0.00	0.00	0.00	1.50	0.00	0.00
BACK CK	31.96	31.96	0.00	31.96	0.00	0.00	0.00
POTOMAC RV-DOWNSTREAM OF CACAPON	77.27	77.27	0.00	77.27	77.27	0.00	77.27
WV-02070007 Main Stem Shenandoah River							
SHENANDOAH RV	19.45	0.00	0.00	0.00	0.00	0.00	0.00
BULLSKIN RN	8.47	8.47	0.00	0.00	0.00	0.00	0.00
LONG MARSH RN	8.79	8.79	0.00	0.00	0.00	0.00	0.00