

Acknowledgements

Fairfax County is extremely grateful to the many individuals and groups who continue to support and dedicated their time and knowledge in assisting the Department of Public Works and Environmental Services with the 2006 Annual Report on Fairfax County's Streams.

Thank you, to the following individuals for providing data for this report:

Joanna Cornell

*Northern Virginia Soil and Water
Conservation District*

Cliff Fairweather

Audubon Naturalist Society

Thank you, to the following who rendered special assistance:

Prince William Forest Park

*Allowing us to continue to sample the
reference sites*

Volunteer Stream Monitors

Supplemental data

Fairfax County Health Department

*Processing of bacteria, nitrate, and
phosphate samples*

Fairfax County Department of Public Works and Environmental Services (DPWES)
Staff:

Jimmie Jenkins

Director, DPWES

Randy Bartlett

Director, Stormwater Management

Steve Aitcheson

Director, Stormwater Planning Division

Fred Rose

*Chief, Watershed Planning and
Assessment Branch*

Technical team: Tanya Amrhein, Kate Bennett, Shannon Curtis, Gayle England, Laura Grape, Chad Grupe, Dipmani Kumar, Matthew Meyers and Danielle Wynne

Reviewers: Dean Blackwell, Krystal Kearns

For information about this report and to request reasonable ADA accommodations or alternative format of materials, call Fairfax County Stormwater Management, 703-324-5500, TTY 711; 12000 Government Center Parkway, Fairfax, Virginia 22035; www.fairfaxcounty.gov/dpes

This page intentionally left blank.

TABLE OF CONTENTS

Acknowledgements	i
Table of Contents	iii
List of Figures.....	iv
List of Tables.....	v
Executive Summary	ES-1
1 Introduction.....	1
1.1 Report and Program Goals	1
1.2 Study Area Overview	2
2 Monitoring and Sampling Methods	6
2.1 Site Selection	6
2.2 Bacteria and Water Chemistry	9
2.3 Benthic Macroinvertebrates	9
2.4 Fish Community	10
2.5 Volunteer Monitoring.....	11
2.6 Project Specific Monitoring.....	11
3 Results: 2005 Monitoring Data	14
3.1 Bacteria Monitoring Data	14
3.2 Benthic Macroinvertebrate Data.....	17
3.3 Fish Sampling Data.....	19
3.4 Stream Quality Index	20
3.5 2005 Monitoring Station Data.....	21
4 Watershed Conditions: 1999 - 2005	25
5 Virginia Department of Environmental Quality 2006 Draft Impaired Waters Listings for Fairfax County	41
6 Bibliography.....	50
7 Glossary	51

LIST OF FIGURES

Figure 1: Location of Fairfax County in the State of Virginia.	2
Figure 2: The 30 watersheds and two physiographic provinces in Fairfax County, Virginia.	3
Figure 3: Locations of randomly-selected monitoring sites (biological and bacteriological) for 2005 sample year.	8
Figure 4: <i>E. coli</i> concentrations plotted against water temperature.	15
Figure 5: Geometric mean of <i>E. coli</i> concentrations versus 5-day antecedent rainfall.	16
Figure 6: Percentage of sites that exceeded state water quality standard (235 cfu per 100mL) for <i>E. coli</i>	16
Figure 7: Ratings of 2005 biomonitoring sites based on the Benthic Index of Biotic Integrity.	17
Figure 8: 2005 Site ratings from NVSWCD and ANS volunteer monitors.	18
Figure 9: Ratings of 2005 biomonitoring sites based on the Fish Index of Biotic Integrity.	19
Figure 10: The 30 watersheds in Fairfax County.	26
Figure 11: County and volunteer stream monitoring sites countywide.	27
Figure 12: County and volunteer stream monitoring sites: Nichol Run and Pond Branch Watersheds.	28
Figure 13: County and volunteer stream monitoring sites: Difficult Run Watershed.	29
Figure 14: County and volunteer stream monitoring sites: Bull Neck, Scotts, Dead, Turkey and Pimmit Run Watersheds.	30
Figure 15: County and volunteer stream monitoring sites: Cameron and Four Mile Run Watersheds.	31
Figure 16: County and volunteer stream monitoring sites: Dogue, Little Hunting Creek and Belle Haven Watersheds.	32
Figure 17: County and volunteer stream monitoring sites: Accotink Creek Watershed.	33
Figure 18: County and volunteer stream monitoring sites: Pohick Creek Watershed.	34
Figure 19: County and volunteer stream monitoring sites: Mill Branch, Kane Creek and High Point Watersheds.	35
Figure 20: County and volunteer stream monitoring sites: Old Mill, Wolf Run, Ryan’s Dam, Sandy Run and Occoquan Watersheds.	36
Figure 21: County and volunteer stream monitoring sites: Popes Head Creek Watershed.	37
Figure 22: County and volunteer stream monitoring sites: Little Rocky Run and Johnny Moore Watersheds.	38
Figure 23: County and volunteer stream monitoring sites: Bull Run and Cub Run Watersheds.	39
Figure 24: All Impaired waters within Fairfax County as listed on the State of Virginia’s 2006 draft 303(d) report to US EPA - per the Clean Water Act mandate(s).	46

Figure 25: Waters designated as impaired for aquatic life uses within Fairfax County (as listed on the State of Virginia’s 2006 draft 303(d) report to US EPA).....	47
Figure 26: Fairfax County waters designated as impaired for fish consumption use (as listed on the State of Virginia’s 2006 draft 303(d) report to US EPA)	48
Figure 27: Fairfax County waters designated as impaired for recreational contact use (as listed on the State of Virginia’s 2006 draft 303(d) report to US EPA)	49

LIST OF TABLES

Table 1: Distribution of 40 sample sites across 5 strata.	7
Table 2: Statistics for county Benthic IBI scores from 2005 sampling and score ranges for rating categories.	18
Table 3: Stream quality index values for sampling completed in 1999, 2004 and 2005.....	21
Table 4: Site data and monitoring results for 2005 sample year sites	23
Table 5: Summary of Impaired Waters in Fairfax County for 2004 and 2006.....	44
Table 6: Summary of 2006 VDEQ list of impaired waters in Fairfax County	45

This Report, prior Annual Reports, the Standard Operating Procedures Manual, Data Appendix and additional information are available online at:

<http://www.fairfaxcounty.gov/dpwes/stormwater/streams/assessment.htm>

<http://www.fairfaxcounty.gov/dpwes/stormwater/resources.htm>

This page intentionally left blank.