Appendix A

Use Support Ratings for All Monitored Waterbodies in Yadkin River Headwaters Subbasin

IR Category	Integrated Reporting Categories for individual Assessment Unit/Use Support Category/Parameter Assessments. A single AU can have multiple assessments depending on data available and classified uses.
1	Supporting the assessed use no criteria exceeded (NCE) for a parameter of interest (POI) in a Use Support Category (USC).
1t	Supporting the assessed use no criteria exceeded (NCE) for a parameter of interest (POI) in a Use Support Category and there is an approved TMDL for the POI.
2	Supporting or not Impaired for all monitored uses
3a	Instream/monitoring data are inconclusive (DI)
3c	No Data available for assessment
3t	No Data available for assessment –AU is in a watershed with an approved TMDL
4a	Impaired for the assessed USC/POI; There is a standards violation (SV) and an approved TMDL for the POI.
4b	Impaired for the assessed USC/POI; Other program expected to address POI
4c	Impaired for the assessed USC/POI loss of use (LOU) and POI is a non pollutant
4cr	Impaired for LOU Recreation use and there is no data for TMDL (swimming advisories posted)
4ct	Impaired for the assessed USC/POI and the AU is in a watershed that is part of TMDL study area for the POI.
4s	Impaired Biological integrity with an identified Aquatic Life Standards Violation listed in Category 5
5	Impaired for the assessed USC/POI in need of TMDL for POI
5s	Impaired Biological integrity and stressor study does not indicate aquatic life standard violations.

Assessment Unit Number / Description / Classification	Name / DWQ Subbasin	Miles/Acres	Potential Stressors / Potential Sources	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
12-72-(1)	**Ararat River**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From N.C.-Va. State Line to the mouth of Johnson Creek				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
WS-IV;Tr	03-07-03	2.5 FW Miles								
12-72-(18)	**Ararat River**			Aquatic Life	Impaired	Standard Violation	Turbidity	2006	2004	5
From a point 0.1 mile upstream of Surry County SR 2080 to Yadkin River				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2001		1
WS-IV	03-07-03	2.0 FW Miles		Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
12-72-(4.5)a	**Ararat River**		**Turbidity** Impervious Surface	Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
From Town of Mount Airy proposed water supply intake to Stoney Creek 12-72-12				Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
C	03-07-03	14.2 FW Miles								
12-72-(4.5)b	**Ararat River**		**Habitat Degradation** **Turbidity** Coastal Stormwater Outfalls Impervious Surface	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From Stoney Creek 12-72-12 to a point 0.1 mile upstream of Surry County SR 2080				Aquatic Life	Impaired	Standard Violation	Turbidity	2006	2008	5
C	03-07-03	13.7 FW Miles		Recreation	Not Rated	Potential Standards Violation	Fecal Coliform (recreation)	2006		3a
12-25	**Beaver Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Yadkin River				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2002		1
C;Tr	03-07-01	9.9 FW Miles								
12-48-(0.7)	**Big Bugaboo Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From a point 0.3 mile upstream of Wilkes County SR 1931 to Yadkin River										
WS-IV	03-07-01	5.2 FW Miles								
12-29-1	**Big Warrior Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2002		1
From source to Warrior Creek										
C	03-07-01	6.5 FW Miles								
12-19	**Buffalo Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Yadkin River				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
C;Tr	03-07-01	14.9 FW Miles								

Assessment Unit Number / Description / Classification	Name / DWQ Subbasin	Miles/Acres	Potential Stressors / Potential Sources	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
12-102-13-(2)	**Cedar Creek**		**Habitat Degradation**	Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity FishCom	2004	2008	5
From Davie County SR 1410 to Dutchman Creek			Impoundment							
C	03-07-05	7.0 FW Miles	Industrial Site							
12-62-8	**Christian Creek (North Fork Mitchell River)**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Mitchell River										
B;Tr,ORW	03-07-02	5.5 FW Miles								
12-63-14	**Cody Creek**		**Turbidity**	Aquatic Life	Impaired	Standard Violation	Turbidity	2006	2008	5
From source to Fisher River			Impervious Surface	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
C	03-07-02	7.0 FW Miles		Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
12-41	**Cub Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2001		1
From source to Yadkin River										
C	03-07-01	10.8 FW Miles								
12-77-3	**Danbury Creek**		**Habitat Degradation**	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2001		1
From source to Little Yadkin River			Impervious Surface							
WS-IV	03-07-02	4.3 FW Miles								
12-102-(2)a	**Dutchman Creek**		**Habitat Degradation**	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From Davie County SR 1002 to Elisha Creek			General Agriculture/Pasture	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
C	03-07-05	25.5 FW Miles	Impervious Surface							
12-102-(2)b	**Dutchman Creek**		**Habitat Degradation**	Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
From Elisha Creek to a point 0.9 mile upstream of mouth			General Agriculture/Pasture	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
C	03-07-05	7.5 FW Miles	Impervious Surface	Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
			Natural Conditions							
			Turbidity							
			General Agriculture/Pasture							
			Impervious Surface							
12-24-(1)	**Elk Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Dugger Creek										
B;Tr,ORW	03-07-01	13.5 FW Miles								

Assessment Unit Number / Description / Classification	Name / DWQ Subbasin	Miles/Acres	Potential Stressors / Potential Sources	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
12-24-(10) From Dugger Creek to Yadkin River B;ORW	**Elk Creek** 03-07-01	9.1 FW Miles	**Fecal Coliform Bacteria** General Agriculture/Pasture	Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
				Recreation	Impaired	Standard Violation	Fecal Coliform (recreation)	2006	2004	5
12-54-(0.5) From source to Long Branch WS-II;HQW	**Elkin Creek (River)** 03-07-02	16.3 FW Miles		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
12-54-(4.5) From Elkin Water Supply Intake to Yadkin River C	**Elkin Creek (River)** 03-07-02	1.8 FW Miles	**Habitat Degradation** General Agriculture/Pasture Impervious Surface	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
12-63-5-(3) From dam at Raven Knob Lake to Fisher River WS-II;Tr,HQW	**Endicott Creek (Branch)** 03-07-02	0.5 FW Miles	**Habitat Degradation** General Agriculture/Pasture	Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity Benthos	1991	1998	5
12-72-6 From source to Ararat River C	**Faulkner Creek** 03-07-03	6.1 FW Miles	**Habitat Degradation** Impervious Surface	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
12-35 From source to Yadkin River WS-IV	**Fish Dam Creek (Fishtrap Creek)** 03-07-01	4.2 FW Miles	**Habitat Degradation** General Agriculture/Pasture Impervious Surface	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2002		1
12-63-(7) From Burris Creek to a point 1.0 mile upstream of the Town of Dobson water supply intake WS-II;HQW	**Fisher River** 03-07-02	6.3 FW Miles		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
12-63-(9) From Town of Dobson water supply intake to Yadkin River C	**Fisher River** 03-07-02	21.2 FW Miles	**Turbidity** General Agriculture/Pasture Impervious Surface Land Clearing	Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
				Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
12-72-13 From source to Ararat River C	**Flat Shoal Creek** 03-07-03	8.2 FW Miles	**Habitat Degradation** Impervious Surface Natural Conditions	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1

Assessment Unit Number / Description / Classification	Name / DWQ Subbasin	Miles/Acres	Potential Stressors / Potential Sources	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
12-83-(1.5)	**Forbush Creek**		**Habitat Degradation**	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From a point 0.4 mile upstream of Yadkin County SR 1600 to Yadkin River			General Agriculture/Pasture							
WS-IV	03-07-02	4.9 FW Miles								
12-94-12-6-1	**Frazier Creek (Winston Lake)**			Aquatic Life	Not Rated	Data Inconclusive	Water Quality Standards Aquatic Life	2006		3a
From source to Brushy Fork										
C	03-07-04	4.6 FW Miles								
12-72-14-5a	**Heatherly Creek**			Aquatic Life	Not Rated	Data Inconclusive	Ecological/biological Integrity Benthos	2004		3a
From source to NC 268										
C	03-07-03	2.0 FW Miles								
12-72-14-5b	**Heatherly Creek**			Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity Benthos	1994	1998	5
From NC 268 to Toms Creek										
C	03-07-03	1.4 FW Miles								
12-94-12-2-(0.3)	**Kerners Mill Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2001		1
From source to a point 0.1 mile downstream of I-40										
WS-III	03-07-04	4.6 FW Miles								
12-23	**Kings Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Yadkin River										
C;Tr	03-07-01	8.2 FW Miles		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
12-24-8	**Laurel Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From source to Elk Creek										
C;Tr,ORW	03-07-01	3.4 FW Miles								
12-26-3	**Left Prong Stony Fork**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2002		1
From source to Stony Fork										
C;Tr	03-07-01	7.3 FW Miles								
12-63-13	**Little Beaver Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2001		1
From source to Fisher River										
C	03-07-02	4.4 FW Miles								

Assessment Unit Number / Description / Classification	Name / DWQ Subbasin / Miles/Acres	Potential Stressors / Potential Sources	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
12-63-10-(2)	**Little Fisher River**	**Habitat Degradation** General Agriculture/Pasture	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From Surry County SR 1615 to Fisher River			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
C	03-07-02 8.9 FW Miles								
12-31-1-5	**Little Fork Creek**		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2001		1
From source to North Prong Lewis Fork									
C	03-07-01 4.5 FW Miles								
12-29-2-(2)	**Little Warrior Creek**		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2002		1
From a point 0.3 mile upstream of mouth to Warrior Creek									
WS-IV	03-07-01 0.3 FW Miles								
12-77	**Little Yadkin River**	**Habitat Degradation** Construction Impervious Surface Road Construction	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Yadkin River			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
WS-IV	03-07-02 12.5 FW Miles								
12-83-2-(0.7)	**Logan Creek**	**Habitat Degradation** Stormwater Runoff	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From a point 0.4 mile upstream of mouth of Loney Creek to Forbush Creek									
WS-IV	03-07-02 2.6 FW Miles								
12-42-9	**Long Creek**	**Habitat Degradation** Impervious Surface	Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity Benthos	1990	1998	5
From source to Mulberry Creek									
C	03-07-01 3.1 FW Miles								
12-72-8-(1)	**Lovills Creek (Lovell Creek)**	**Habitat Degradation** Impervious Surface MS4 NPDES	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From N.C.-Va. State Line to a point 0.5 mile upstream of Town of Mount Airy Water Supply Dam									
WS-IV	03-07-03 2.5 FW Miles								
12-72-8-(3)	**Lovills Creek (Lovell Creek)**	**Habitat Degradation** Impervious Surface Stormwater Runoff	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From Town of Mount Airy Water Supply Dam to Ararat River			Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity Benthos	2006	1998	5
C	03-07-03 4.2 FW Miles								
12-40-2	**Middle Fork Reddies River**		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2001		1
From source to Reddies River									
WS-II;Tr,HQW	03-07-01 7.9 FW Miles								

Assessment Unit Number / Description / Classification	Name / DWQ Subbasin	Miles/Acres	Potential Stressors / Potential Sources	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
12-46-2-(6)	**Middle Prong Roaring River**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From Wilkes County SR 1736 to Roaring River										
C	03-07-01	3.1 FW Miles								
12-62-(1)	**Mitchell River**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From source to mouth of Christian Creek (North Fork Mitchell River)										
B;Tr,ORW	03-07-02	8.5 FW Miles								
12-62-(12.5)	**Mitchell River**			Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
From South Fork Mitchell River to Yadkin River				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
C	03-07-02	6.9 FW Miles		Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
12-39	**Moravian Creek (Yellow Jacket Lake)**		**Habitat Degradation** General Agriculture/Pasture	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From source to Yadkin River										
C	03-07-01	11.4 FW Miles								
12-94-(0.5)a	**Muddy Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2004		1
From source to Mill Creek #3				Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity Benthos	2006	2008	5
C	03-07-04	10.3 FW Miles								
12-94-(0.5)b	**Muddy Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
From Mill Creek #3 to SR 2995				Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity Benthos	2006	2004	5
C	03-07-04	15.2 FW Miles		Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
12-94-(0.5)c	**Muddy Creek**		**Fecal Coliform Bacteria**	Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
From SR 2995 to a point 0.8 mile upstream of mouth			**Turbidity** Stormwater Runoff	Recreation	Not Rated	Potential Standards Violation	Fecal Coliform (recreation)	2006		3a
C	03-07-04	4.8 FW Miles								
12-42	**Mulberry Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Yadkin River				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
C	03-07-01	19.7 FW Miles								

Assessment Unit Number / Description / Classification	Name / DWQ Subbasin / Miles/Acres	Potential Stressors / Potential Sources	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
12-31-3-(2)	**Naked Creek**	**Habitat Degradation**	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2002		1
From a point 0.7 mile upstream of mouth to Lewis Fork		General Agriculture/Pasture							
WS-IV	03-07-01 0.9 FW Miles								
12-84-1-(0.5)	**North Deep Creek**	**Turbidity**	Aquatic Life	Impaired	Standard Violation	Turbidity	2006	2008	5
From source to a point 1.0 mile downstream of Yadkin County SR 1515		General Agriculture/Pasture Impervious Surface	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
C	03-07-02 17.3 FW Miles		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
			Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
12-40-4	**North Fork Reddies River**		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Reddies River									
WS-II;Tr,HQW	03-07-01 11.2 FW Miles								
12-31-1-(1)	**North Prong Lewis Fork**		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2002		1
From source to Wilkes County SR 1300									
C;Tr	03-07-01 7.3 FW Miles								
12-31-1-(4)	**North Prong Lewis Fork**		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From Wilkes County SR 1300 to a point 1.0 mile upstream of Purlear Creek			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
C	03-07-01 4.7 FW Miles								
12-31-1-(7.5)	**North Prong Lewis Fork**		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2002		1
From a point 1.0 mile upstream of mouth of Purlear Creek to Lewis Fork									
WS-IV	03-07-01 3.9 FW Miles								
12-31-1-8-(1)	**Purlear Creek**		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2001		1
From source to a point 2.0 mile upstream of mouth									
C	03-07-01 2.9 FW Miles								
12-40-(1)	**Reddies River**		Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
From source to a point 0.4 mile downstream of Hoopers Branch			Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
WS-II;HQW	03-07-01 14.3 FW Miles		Water Supply	Supporting	No Criteria Exceeded	Water Quality Standards Water Supply	2006		1

Assessment Unit Number / Description / Classification	Name / DWQ Subbasin	Miles/Acres	Potential Stressors / Potential Sources	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
12-94-9b	**Reynolds Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From Sequoia WWTP to Muddy Creek										
C	03-07-04	2.9 FW Miles								
12-46	**Roaring River**			Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
From source to Yadkin River				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
B	03-07-01	5.9 FW Miles		Recreation	Impaired	Standard Violation	Fecal Coliform (recreation)	2006	2008	5
12-72-10	**Rutledge Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From source to Ararat River										
C	03-07-03	9.4 FW Miles								
12-94-12-(4)	**Salem Creek (Middle Fork Muddy Creek)**		**Fecal Coliform Bacteria** Failing Septic Systems General Agriculture/Pasture MS4 NPDES WWTP NPDES **Habitat Degradation** Construction Impervious Surface MS4 NPDES **Nutrient Impacts** MS4 NPDES WWTP NPDES **Turbidity**	Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
From Winston-Salem Water Supply Dam (Salem Lake) to Muddy Creek				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2004		1
C	03-07-04	12.0 FW Miles		Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity Benthos	2006	1998	5
				Recreation	Impaired	Standard Violation	Fecal Coliform (recreation)	2006	1998	4a
12-94-12-(1)	**Salem Creek (Middle Fork Muddy Creek, Salem Lake)**		**Nutrient Impacts** Stormwater Runoff	Aquatic Life	Not Rated	Data Inconclusive	Chlorophyll a	2006		3a
From source to Winston-Salem Water Supply Dam (Salem Lake)				Water Supply	Supporting	No Criteria Exceeded	Water Quality Standards Water Supply	2006		1
WS-III;CA	03-07-04	275.3 FW Acres								
12-94-10	**Silas Creek**		**Habitat Degradation** Construction Impervious Surface MS4 NPDES	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Muddy Creek										
C	03-07-04	10.1 FW Miles								

Assessment Unit Number / Description / Classification	Name / DWQ Subbasin / Miles/Acres	Potential Stressors / Potential Sources	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
12-62-15	**Snow Creek**	**Habitat Degradation**	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Mitchell River		General Agriculture/Pasture							
C	03-07-02 9.6 FW Miles		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
12-84-2-(1)	**South Deep Creek**		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to a point 0.6 mile upstream of U.S. Hwy. 601									
WS-III	03-07-02 18.5 FW Miles								
12-84-2-(5.5)	**South Deep Creek**	**Turbidity**	Aquatic Life	Impaired	Standard Violation	Turbidity	2006	2008	5
From a point 0.6 mile upstream of Yadkin County SR 1710 to Deep Creek		General Agriculture/Pasture Impervious Surface	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
WS-IV	03-07-02 2.8 FW Miles		Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
12-62-13	**South Fork Mitchell River**		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Mitchell River									
C	03-07-02 17.7 FW Miles								
12-94-13	**South Fork Muddy Creek**	**Habitat Degradation**	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Muddy Creek		General Agriculture/Pasture Impervious Surface	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
C	03-07-04 14.3 FW Miles								
12-40-3	**South Fork Reddies River**		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2001		1
From source to Reddies River									
WS-II;Tr,HQW	03-07-01 7.5 FW Miles								
12-31-2-(6)	**South Prong Lewis Fork**		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From Wilkes County SR 1155 to a point 1.1 mile upstream of mouth			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2002		1
C	03-07-01 5.8 FW Miles								
12-72-9-(1)	**Stewarts Creek**		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From N.C.-Va. State Line to Surry County SR 1622									
WS-IV;Tr	03-07-03 5.0 FW Miles								
12-72-9-(4)	**Stewarts Creek**	**Habitat Degradation**	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2002		1
From Surry County SR 1622 to a point 0.7 mile downstream of mouth of Pauls Creek		Impoundment							
WS-IV	03-07-03 3.3 FW Miles								

Assessment Unit Number / Description / Classification	Name / DWQ Subbasin	Miles/Acres	Potential Stressors / Potential Sources	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
12-72-9-(8)	**Stewarts Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From Town of Mount Airy water supply intake to Ararat River										
C	03-07-03	6.8 FW Miles								
12-26-(7)	**Stony Fork**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From Wilkes County SR 1168 to Yadkin River				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
C	03-07-01	5.9 FW Miles								
12-104	**Tanyard Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From source to Yadkin River										
WS-IV	03-07-04	1.5 FW Miles								
12-72-14-(4)	**Toms Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From Town of Pilot Mountain water supply intake (Located 0.2 mile upstream of U.S. Hwy. 52) to Ararat River										
C	03-07-03	5.7 FW Miles								
12-37-(2)	**Tucker Hole Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2002		1
From a point 0.5 mile upstream of mouth to Yadkin River										
WS-IV;Tr,CA	03-07-01	0.4 FW Miles								
12-40-6	**Tumbling Shoals Creek**			Aquatic Life	Not Rated	Data Inconclusive	Ecological/biological Integrity Benthos	2004		3a
From source to Reddies River										
WS-II;HQW	03-07-01	4.1 FW Miles								
12-(1)ut21	**UT to Yadkin River**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2005		1
From source to Yadkin River										
	03-07-01	3.0 FW Miles								
12-(1)	**YADKIN RIVER**		**Habitat Degradation** Road Construction	Aquatic Life	Impaired	Standard Violation	Turbidity	2000	2004	5
From source to mouth in W. Kerr Scott Reservoir at Elevation 1030				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
C;Tr	03-07-01	35.0 FW Miles		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
12-(38)	**YADKIN RIVER**			Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
From Moravian Creek to a point 1.0 mile upstream of Roaring River				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
C	03-07-01	11.5 FW Miles		Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1

Assessment Unit Number / Description / Classification	Name / DWQ Subbasin / Miles/Acres	Potential Stressors / Potential Sources	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
12-(47.5)	**YADKIN RIVER**		Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
From a point 0.2 mile upstream of Big Bugaboo Creek to a point 0.9 mile upstream of mouth of Elkin Creek (River)			Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
WS-IV	03-07-01 9.7 FW Miles		Water Supply	Supporting	No Criteria Exceeded	Water Quality Standards Water Supply	2006		1
12-(53)	**YADKIN RIVER**	**Habitat Degradation**	Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
From a point 0.3 mile upstream of the mouth to Elkin Creek (River) to a point 0.3 mile upstream of Ararat River		Impervious Surface	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
C	03-07-02 24.7 FW Miles		Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
12-(80.7)	**YADKIN RIVER**	**Turbidity**	Aquatic Life	Impaired	Standard Violation	Turbidity	2006	2004	5
From a point 0.3 mile upstream of Bashavia Creek to mouth of Hauser Cr.		Stormwater Runoff	Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
WS-IV	03-07-02 9.4 FW Miles		Water Supply	Supporting	No Criteria Exceeded	Water Quality Standards Water Supply	2006		1
12-(86.7)	**YADKIN RIVER**	**Turbidity**	Aquatic Life	Impaired	Standard Violation	Turbidity	2006	2008	5
From Davie County water supply intake to a point 0.5 mile upstream of Carters Creek		Stormwater Runoff	Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
WS-IV	03-07-02 10.0 FW Miles		Water Supply	Supporting	No Criteria Exceeded	Water Quality Standards Water Supply	2006		1
12-(97.5)	**YADKIN RIVER**	**Turbidity**	Aquatic Life	Impaired	Standard Violation	Turbidity	2006	2008	5
From a point 0.5 mile upstream of U.S. Hwy. 64 to a point 0.3 mile downstream of U.S. Hwy. 64 (Davidson County water supply intake)		Stormwater Runoff	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
WS-IV;CA	03-07-04 0.5 FW Miles		Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
			Water Supply	Supporting	No Criteria Exceeded	Water Quality Standards Water Supply	2006		1
12-(27.5)	**YADKIN RIVER (W. Kerr Scott Reservoir below Elevation 1030)**	**Chlorophyll a**	Aquatic Life	Not Rated	Data Inconclusive	High Water Temperature	2006		3a
From a point 3.2 mile downstream of Stony Fork to W. Kerr Scott Dam		General Agriculture/Pasture General Agriculture/Pasture WWTP NPDES	Aquatic Life	Not Rated	Data Inconclusive	Chlorophyll a	2006		3a
WS-IV,B;Tr	03-07-01 882.1 FW Acres								

Appendix B

Ambient Monitoring Stations

Summary Sheets

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: YADKIN RIV AT US 421 BUS AT N WILKESBORO
Station #: Q0450000 **Hydrologic Unit Code:** 3040101
Latitude: 36.16597 **Longitude:** -81.13447 **Stream class:** C
Agency: NCAMBNT **NC stream index:** 12-(38)

Time period: 03/08/2005 to 12/05/2006

	# result	# ND	Results not meeting EL: EL	#	%	%Conf	Percentiles: Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	39	0	<4	0	0		5.6	7.6	7.8	9.5	11.8	12.3	13.3
	39	0	<5	0	0		5.6	7.6	7.8	9.5	11.8	12.3	13.3
pH (SU)	39	0	<6	0	0		6.9	7	7.1	7.2	7.4	7.7	8.1
	39	0	>9	0	0		6.9	7	7.1	7.2	7.4	7.7	8.1
Spec. conductance (umhos/cm at 25°C)	39	0	N/A				36	42	47	52	59	62	68
Water Temperature (°C)	38	0	>29	0	0		5.6	8.2	11.7	16.2	22.5	25.2	27.1
Other													
TSS (mg/L)	36	1	N/A				3	4.5	5.8	11	16.2	48.7	326
Turbidity (NTU)	39	0	>50	2	5.1		2.9	3.2	4.5	7.8	16	26	220
Nutrients (mg/L)													
NH3 as N	33	9	N/A				0.02	0.02	0.02	0.04	0.06	0.11	0.13
NO2 + NO3 as N	33	0	N/A				0.23	0.34	0.4	0.46	0.62	0.77	0.85
TKN as N	33	9	N/A				0.2	0.2	0.2	0.29	0.36	0.5	0.99
Total Phosphorus	33	0	N/A				0.06	0.06	0.08	0.11	0.16	0.22	0.68

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
20	71	1	5	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: YADKIN RIV AT US 421 BUS AT N WILKESBORO
Station #: Q0450000 **Hydrologic Unit Code:** 3040101
Latitude: 36.16597 **Longitude:** -81.13447 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-(38)

Time period: 01/13/2002 to 12/10/2006

	#	#		Results not meeting EL			Percentiles						
	result	ND	EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	85	0	<4	0	0		5.4	6	6.4	7.6	9.1	10.4	12.4
	85	0	<5	0	0		5.4	6	6.4	7.6	9.1	10.4	12.4
pH (SU)	85	0	<6	0	0		6.3	6.9	7	7.2	7.4	8	8.1
	85	0	>9	0	0		6.3	6.9	7	7.2	7.4	8	8.1
Spec. conductance (umhos/cm at 25°C)	84	18	N/A				50	50	50	57	68	84	149
Water Temperature (°C)	85	0	>29	0	0		3.3	6	11.4	18.6	21.8	23.5	25.8
Other													
TSS (mg/L)	28	0	N/A				1.1	1.8	2.7	5	13.8	36.9	99
Turbidity (NTU)	60	0	>50	2	3.3		1.9	2.8	3.8	6	11	23.7	110
Nutrients (mg/L)													
NH3 as N	42	5	N/A				0.01	0.01	0.02	0.04	0.07	0.19	0.61
NO2 + NO3 as N	42	0	N/A				0.21	0.26	0.33	0.42	0.48	0.57	0.78
TKN as N	42	20	N/A				0.1	0.13	0.2	0.2	0.31	0.45	0.92
Total Phosphorus	42	0	N/A				0.03	0.04	0.05	0.07	0.09	0.16	0.18
Metals (ug/L)													
Aluminum, total (Al)	29	1	N/A				50	111	173	280	687	972	8188
Arsenic, total (As)	29	29	>10	0	0		5	5	5	5	5	5	5
Cadmium, total (Cd)	29	29	>2	0	0		1	1	1	1	1	1	1
Chromium, total (Cr)	29	29	>50	0	0		5	5	5	5	5	5	5
Copper, total (Cu)	29	19	>7	4	13.8	84.2	2	2	2	2	3	10	13
Iron, total (Fe)	29	0	>1000	6	20.7	97.8	108	232	334	510	986	1485	2563
Lead, total (Pb)	29	28	>25	0	0		5	5	5	5	5	5	6
Mercury, total (Hg)	29	29	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	29	28	>88	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	29	19	>50	0	0		10	10	10	10	14	19	48

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	69	3	5	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: ROARING RIV AT SR 1990 NR ROARING RIVER
Station #: Q0660000 **Hydrologic Unit Code:** 3040101
Latitude: 36.24802 **Longitude:** -81.04303 **Stream class:** B
Agency: NCAMBNT **NC stream index:** 12-46

Time period: 01/10/2002 to 12/05/2006

	# result	# ND	Results not meeting EL: EL	#	%	%Conf	Percentiles: Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	76	0	<4	0	0		6.8	7.9	8.8	10.3	11.9	13.3	13.8
	76	0	<5	0	0		6.8	7.9	8.8	10.3	11.9	13.3	13.8
pH (SU)	76	0	<6	0	0		6	6.5	7	7.3	7.5	7.7	8.3
	76	0	>9	0	0		6	6.5	7	7.3	7.5	7.7	8.3
Spec. conductance (umhos/cm at 25°C)	77	0	N/A				29	33	35	38	40	43	109
Water Temperature (°C)	77	0	>29	0	0		2.4	6	9.4	14.9	21.7	24.1	27
Other													
TSS (mg/L)	48	10	N/A				2.5	2.5	3	6	16.2	62.8	269
Turbidity (NTU)	77	2	>50	5	6.5		1	1.5	2	4.7	10	34	190
Nutrients (mg/L)													
NH3 as N	34	21	N/A				0.02	0.02	0.02	0.02	0.02	0.05	0.1
NO2 + NO3 as N	34	0	N/A				0.32	0.35	0.42	0.48	0.55	0.6	0.7
TKN as N	34	14	N/A				0.2	0.2	0.2	0.22	0.35	0.62	4
Total Phosphorus	34	0	N/A				0.02	0.02	0.03	0.05	0.08	0.15	1
Metals (ug/L)													
Aluminum, total (Al)	20	0	N/A				70	77	102	235	335	959	4500
Arsenic, total (As)	20	20	>10	0	0		5	5	5	10	10	10	10
Cadmium, total (Cd)	20	20	>2	0	0		2	2	2	2	2	2	2
Chromium, total (Cr)	20	20	>50	0	0		25	25	25	25	25	25	25
Copper, total (Cu)	20	17	>7	0	0		2	2	2	2	2	4	5
Iron, total (Fe)	20	0	>1000	1	5		150	180	215	330	512	964	3700
Lead, total (Pb)	20	19	>25	0	0		10	10	10	10	10	10	16
Mercury, total (Hg)	20	20	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	20	20	>88	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	20	16	>50	0	0		10	10	10	10	10	13	15

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
53	94	7	13	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: YADKIN RIV AT SR 2303 AT RONDA
Station #: Q0720000 **Hydrologic Unit Code:** 3040101
Latitude: 36.21548 **Longitude:** -80.93678 **Stream class:** WS-IV
Agency: NCAMBNT **NC stream index:** 12-(47.5)

Time period: 01/10/2002 to 12/05/2006

	# result	# ND	Results not meeting EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	59	0	<4	0	0		5.1	6.9	7.8	9.5	11.3	12.2	13.2
	59	0	<5	0	0		5.1	6.9	7.8	9.5	11.3	12.2	13.2
pH (SU)	60	0	<6	0	0		6.1	6.4	6.7	7	7.3	7.5	7.9
	60	0	>9	0	0		6.1	6.4	6.7	7	7.3	7.5	7.9
Spec. conductance (umhos/cm at 25°C)	60	0	N/A				34	46	51	58	64	76	169
Water Temperature (°C)	60	0	>29	0	0		3.9	6.1	9.5	16	21.9	24	26.5
Other													
TSS (mg/L)	20	1	N/A				2.5	6	8	12	23.5	77.7	94
Turbidity (NTU)	59	0	>50	1	1.7		2.7	4.2	5.7	9	15	32	70
Metals (ug/L)													
Aluminum, total (Al)	20	0	N/A				140	162	220	295	945	1860	2400
Arsenic, total (As)	20	20	>10	0	0		5	5	5	8	10	10	10
Cadmium, total (Cd)	20	20	>2	0	0		2	2	2	2	2	2	2
Chromium, total (Cr)	20	20	>50	0	0		25	25	25	25	25	25	25
Copper, total (Cu)	20	12	>7	0	0		2	2	2	2	3	3	4
Iron, total (Fe)	20	0	>1000	5	25	98.9	260	282	328	505	1170	1860	2900
Lead, total (Pb)	20	20	>25	0	0		10	10	10	10	10	10	10
Manganese, total (Mn)	10	0	>200	0	0		21	21	26	44	58	85	87
Mercury, total (Hg)	20	20	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	20	20	>25	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	20	16	>50	1	5		10	10	10	10	10	13	83

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
56	154	10	18	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: YADKIN RIV AT SR 2303 AT RONDA
Station #: Q0720000 **Hydrologic Unit Code:** 3040101
Latitude: 36.21548 **Longitude:** -80.93678 **Stream class:** WS-IV
Agency: YPDRBA **NC stream index:** 12-(47.5)

Time period: 01/13/2002 to 12/10/2006

	# result	# ND	Results not meeting EL EL	#	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	85	0	<4	0	0		5.6	6.2	6.5	7.6	9.4	10.5	13.1
	85	0	<5	0	0		5.6	6.2	6.5	7.6	9.4	10.5	13.1
pH (SU)	85	0	<6	0	0		6.7	6.9	7.1	7.2	7.4	8.1	8.4
	85	0	>9	0	0		6.7	6.9	7.1	7.2	7.4	8.1	8.4
Spec. conductance (umhos/cm at 25°C)	84	23	N/A				50	50	50	58	69	89	165
Water Temperature (°C)	85	0	>29	0	0		3.6	6.5	11.6	19.2	22.1	23.9	26.4
Other													
TSS (mg/L)	7	0	N/A				2.7	2.7	5.3	7.4	19	44	44
Turbidity (NTU)	60	0	>50	2	3.3		3.2	4.1	5.5	8.8	16.8	29.9	200
Nutrients (mg/L)													
NH3 as N	42	7	N/A				0.01	0.01	0.03	0.06	0.1	0.17	0.44
NO2 + NO3 as N	42	0	>10	0	0		0.36	0.47	0.53	0.57	0.67	0.73	0.87
TKN as N	42	5	N/A				0.13	0.2	0.21	0.28	0.42	0.48	0.56
Total Phosphorus	42	0	N/A				0.05	0.06	0.08	0.11	0.13	0.15	0.18
Metals (ug/L)													
Aluminum, total (Al)	29	0	N/A				133	170	320	640	986	1673	2737
Arsenic, total (As)	29	29	>10	0	0		5	5	5	5	5	5	5
Cadmium, total (Cd)	29	29	>2	0	0		1	1	1	1	1	1	1
Chromium, total (Cr)	29	29	>50	0	0		5	5	5	5	5	5	5
Copper, total (Cu)	29	16	>7	3	10.3	67.1	2	2	2	2	4	8	25
Iron, total (Fe)	29	0	>1000	13	44.8	100	317	447	593	901	1404	1658	2516
Lead, total (Pb)	29	28	>25	0	0		5	5	5	5	5	5	10
Manganese, total (Mn)	29	0	>200	0	0		17	28	36	48	62	72	75
Mercury, total (Hg)	29	29	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	29	27	>25	0	0		10	10	10	10	10	10	12
Zinc, total (Zn)	29	18	>50	0	0		10	10	10	10	13	18	22

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
45	52	0	0	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: YADKIN RIV AT US 21 BUS AT ELKIN
Station #: Q0810000 **Hydrologic Unit Code:** 3040101
Latitude: 36.24176 **Longitude:** -80.84734 **Stream class:** C
Agency: NCAMBNT **NC stream index:** 12-(53)

Time period: 01/14/2002 to 12/05/2006

	#	#		Results not meeting EL			Percentiles						
	result	ND	EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	76	0	<4	0	0		6.6	7.2	7.8	9.4	11.4	12.5	13
	76	0	<5	0	0		6.6	7.2	7.8	9.4	11.4	12.5	13
pH (SU)	75	0	<6	0	0		6.3	6.6	6.9	7.2	7.5	7.6	8.2
	75	0	>9	0	0		6.3	6.6	6.9	7.2	7.5	7.6	8.2
Spec. conductance (umhos/cm at 25°C)	77	0	N/A				32	46	52	57	62	70	94
Water Temperature (°C)	77	0	>29	0	0		4	7.1	10	15.9	22.6	25.2	27.8
Other													
TSS (mg/L)	48	0	N/A				4	6.3	8	12.5	27.5	43.1	530
Turbidity (NTU)	76	0	>50	4	5.3		2.4	4.9	7	10	21.5	41.5	110
Nutrients (mg/L)													
NH3 as N	34	18	N/A				0.02	0.02	0.02	0.02	0.03	0.07	0.14
NO2 + NO3 as N	34	0	N/A				0.37	0.48	0.54	0.61	0.68	0.72	0.88
TKN as N	34	1	N/A				0.2	0.22	0.26	0.32	0.44	0.55	0.63
Total Phosphorus	34	0	N/A				0.08	0.08	0.1	0.14	0.17	0.2	0.22
Metals (ug/L)													
Aluminum, total (Al)	20	0	N/A				200	213	278	405	612	906	2400
Arsenic, total (As)	20	20	>10	0	0		5	5	5	10	10	10	10
Cadmium, total (Cd)	20	20	>2	0	0		2	2	2	2	2	2	2
Chromium, total (Cr)	20	20	>50	0	0		25	25	25	25	25	25	25
Copper, total (Cu)	20	12	>7	0	0		2	2	2	2	2	3	4
Iron, total (Fe)	20	0	>1000	3	15	86.7	380	413	485	645	880	1100	2500
Lead, total (Pb)	20	20	>25	0	0		10	10	10	10	10	10	10
Mercury, total (Hg)	20	20	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	20	20	>88	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	20	15	>50	0	0		10	10	10	10	10	16	26

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
56	123	7	12	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: MITCHELL RIV AT SR 1001 NR NORTH ELKIN
Station #: Q1065000 **Hydrologic Unit Code:** 3040101
Latitude: 36.31137 **Longitude:** -80.80656 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-62-(12.5)

Time period: 01/14/2002 to 12/11/2006

	# result	# ND	Results not meeting EL	#	%	%Conf	Percentiles Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	85	0	<4	0	0		5.6	6.3	6.8	8.6	10.6	11.5	14.2
	85	0	<5	0	0		5.6	6.3	6.8	8.6	10.6	11.5	14.2
pH (SU)	85	0	<6	0	0		6.7	6.8	7	7.1	7.4	8.8	9.5
	85	0	>9	4	4.7		6.7	6.8	7	7.1	7.4	8.8	9.5
Spec. conductance (umhos/cm at 25°C)	84	32	N/A				50	50	50	52	72	93	109
Water Temperature (°C)	85	0	>29	0	0		1.5	3.8	9.3	17.2	20.2	22.7	24.3
Other													
TSS (mg/L)	60	5	N/A				1	1.1	1.8	4.5	9	22.4	161
Turbidity (NTU)	60	0	>50	2	3.3		1	1.9	3.1	5.9	11	21.9	110
Nutrients (mg/L)													
NH3 as N	60	17	N/A				0.01	0.01	0.01	0.03	0.07	0.09	0.27
NO2 + NO3 as N	60	0	N/A				0.13	0.2	0.25	0.29	0.34	0.39	0.48
TKN as N	60	24	N/A				0.1	0.1	0.2	0.2	0.29	0.43	2.23
Total Phosphorus	60	2	N/A				0.01	0.03	0.04	0.05	0.08	0.15	0.5
Metals (ug/L)													
Aluminum, total (Al)	18	2	N/A				50	72	128	296	560	785	1676
Arsenic, total (As)	18	17	>10	0	0		5	5	5	5	5	5	5
Cadmium, total (Cd)	18	17	>2	0	0		1	1	1	1	1	1	1
Chromium, total (Cr)	18	16	>50	0	0		5	5	5	5	5	5	7
Copper, total (Cu)	18	16	>7	0	0		2	2	2	2	2	2	2
Iron, total (Fe)	18	0	>1000	4	22.2	97.2	265	304	363	588	936	2201	7260
Lead, total (Pb)	18	16	>25	0	0		5	5	5	5	5	5	7
Mercury, total (Hg)	18	18	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	18	16	>88	0	0		5	10	10	10	10	10	13
Zinc, total (Zn)	18	16	>50	0	0		10	10	10	10	10	11	16

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	66	5	8	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: FISHER RIV AT NC 268 NR FAIRVIEW
Station #: Q1215000 **Hydrologic Unit Code:** 3040101
Latitude: 36.33953 **Longitude:** -80.68520 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-63-(9)

Time period: 09/20/2004 to 12/11/2006

	# result	# ND	Results not meeting EL EL	#	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	39	0	<4	0	0		6.4	6.5	7.1	8.6	10.6	11.6	12.1
	39	0	<5	0	0		6.4	6.5	7.1	8.6	10.6	11.6	12.1
pH (SU)	39	0	<6	0	0		6.6	6.7	6.8	7	7.1	7.3	7.4
	39	0	>9	0	0		6.6	6.7	6.8	7	7.1	7.3	7.4
Spec. conductance (umhos/cm at 25°C)	39	1	N/A				50	53	62	68	84	95	128
Water Temperature (°C)	39	0	>29	0	0		2.9	4.7	9.6	14.6	20	22.1	23.3
Other													
TSS (mg/L)	28	0	N/A				1.3	2.2	3.9	5.8	11	32.2	191
Turbidity (NTU)	28	0	>50	2	7.1		2.4	3.3	6.4	11.5	22.8	53.5	290
Nutrients (mg/L)													
NH3 as N	28	3	N/A				0.01	0.01	0.02	0.04	0.06	0.08	0.18
NO2 + NO3 as N	28	0	N/A				0.41	0.6	0.7	0.86	0.98	1.07	1.36
TKN as N	28	10	N/A				0.2	0.2	0.2	0.26	0.43	0.69	1.17
Total Phosphorus	28	0	N/A				0.06	0.08	0.1	0.12	0.16	0.24	0.52

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
28	41	0	0	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: CODY CRK AT NC 268 NR FAIRVIEW
Station #: Q1270000 **Hydrologic Unit Code:** 3040101
Latitude: 36.33803 **Longitude:** -80.69287 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-63-14

Time period: 01/14/2002 to 08/26/2004

	# result	# ND	EL	Results not meeting EL #	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	46	0	<4	0	0		5.2	5.9	6.9	8.9	10.5	11.8	14.6
	46	0	<5	0	0		5.2	5.9	6.9	8.9	10.5	11.8	14.6
pH (SU)	46	0	<6	0	0		6.9	7	7.1	7.3	8.1	8.3	8.5
	46	0	>9	0	0		6.9	7	7.1	7.3	8.1	8.3	8.5
Spec. conductance (umhos/cm at 25°C)	45	2	N/A				50	50	54	64	72	83	89
Water Temperature (°C)	46	0	>29	0	0		1.3	3.1	8.5	17.3	20.5	22.3	23.3
Other													
TSS (mg/L)	32	0	N/A				1.3	1.8	2.9	8.8	17.8	34	69
Turbidity (NTU)	32	0	>50	4	12.5	78.9	3.9	5.8	9.5	16	33.5	58.5	80
Nutrients (mg/L)													
NH3 as N	32	7	N/A				0.01	0.01	0.03	0.08	0.13	0.19	0.41
NO2 + NO3 as N	32	0	N/A				0.45	0.6	0.65	0.75	0.86	1	1.12
TKN as N	32	4	N/A				0.1	0.11	0.2	0.3	0.47	0.7	1.52
Total Phosphorus	32	1	N/A				0.01	0.05	0.07	0.1	0.17	0.42	0.97

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
32	148	5	16	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: YADKIN RIV AT SR 1003 NR SILOAM
Station #: Q1350000 **Hydrologic Unit Code:** 3040101
Latitude: 36.28238 **Longitude:** -80.56223 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-(53)

Time period: 01/14/2002 to 12/11/2006

	# result	# ND	Results not meeting EL: EL	#	%	%Conf	Percentiles: Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	85	0	<4	0	0		5.3	6.1	6.7	8.5	9.8	11.3	12.5
	85	0	<5	0	0		5.3	6.1	6.7	8.5	9.8	11.3	12.5
pH (SU)	85	0	<6	0	0		6.7	6.9	7	7.1	7.3	8	8.2
	85	0	>9	0	0		6.7	6.9	7	7.1	7.3	8	8.2
Spec. conductance (umhos/cm at 25°C)	84	3	N/A				50	60	73	90	105	121	151
Water Temperature (°C)	85	0	>29	0	0		2.5	4.6	10.3	17.9	21.8	23.4	26.8
Other													
TSS (mg/L)	60	1	N/A				1	2.9	8.9	14.5	29.8	61	680
Turbidity (NTU)	60	0	>50	4	6.7		2.2	4.3	8.5	14	27.5	49.5	360
Nutrients (mg/L)													
NH3 as N	60	15	N/A				0.01	0.01	0.01	0.04	0.08	0.13	0.23
NO2 + NO3 as N	60	0	N/A				0.34	0.45	0.51	0.57	0.67	0.79	0.98
TKN as N	60	10	N/A				0.1	0.18	0.2	0.31	0.47	0.99	2.52
Total Phosphorus	60	1	N/A				0.01	0.07	0.08	0.11	0.15	0.21	1.69
Metals (ug/L)													
Aluminum, total (Al)	47	0	N/A				94	186	289	650	1221	1890	2610
Arsenic, total (As)	47	46	>10	0	0		5	5	5	5	5	5	5
Cadmium, total (Cd)	47	45	>2	0	0		1	1	1	1	1	1	1
Chromium, total (Cr)	47	43	>50	0	0		5	5	5	5	5	5	20
Copper, total (Cu)	47	21	>7	3	6.4		2	2	2	2	3	6	13
Iron, total (Fe)	47	0	>1000	23	48.9	100	289	390	644	995	1617	2578	21490
Lead, total (Pb)	47	43	>25	0	0		5	5	5	5	5	5	15
Mercury, total (Hg)	47	47	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	47	45	>88	0	0		5	10	10	10	10	10	32
Zinc, total (Zn)	47	34	>50	1	2.1		10	10	10	10	10	23	206

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	52	3	5	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: ARARAT RIV AT US 52 NR MT AIRY
Station #: Q1500000 **Hydrologic Unit Code:** 3040101
Latitude: 36.47995 **Longitude:** -80.60035 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-72-(4.5)

Time period: 01/14/2002 to 12/11/2006

	# result	# ND	Results not meeting EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	99	0	<4	0	0		5.4	6	6.8	8.4	9.7	10.9	13.5
	99	0	<5	0	0		5.4	6	6.8	8.4	9.7	10.9	13.5
pH (SU)	85	0	<6	0	0		6.8	6.9	7	7.1	7.3	8	8.3
	85	0	>9	0	0		6.8	6.9	7	7.1	7.3	8	8.3
Spec. conductance (umhos/cm at 25°C)	84	3	N/A				50	64	82	96	108	128	319
Water Temperature (°C)	99	0	>29	0	0		1.5	4	10.7	17.9	21.4	23.5	25.6
Other													
Turbidity (NTU)	60	0	>50	4	6.7		2.2	3.4	7.3	12	19.8	38.5	170

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	67	4	7	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: ARARAT RIV AT WWTP RD AT MT AIRY WWTP
Station #: Q1550000 **Hydrologic Unit Code:** 3040101
Latitude: 36.47703 **Longitude:** -80.60452 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-72-(4.5)

Time period: 01/14/2002 to 12/11/2006

	# result	# ND	Results not meeting EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	99	0	<4	0	0		5.2	5.8	6.6	8.2	9.4	10.2	13.1
	99	0	<5	0	0		5.2	5.8	6.6	8.2	9.4	10.2	13.1
pH (SU)	85	0	<6	0	0		6.8	6.9	7	7.2	7.4	8	8.3
	85	0	>9	0	0		6.8	6.9	7	7.2	7.4	8	8.3
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				94	120	130	170	197	251	377
Water Temperature (°C)	99	0	>29	0	0		1.9	4.6	10.8	17.9	21.4	23.8	26
Other													
Turbidity (NTU)	60	0	>50	5	8.3		1.8	3.3	6.1	10.1	16	40	190

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	89	5	8	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: ARARAT RIV AT SR 2119 NR MT AIRY
Station #: Q1725000 **Hydrologic Unit Code:** 3040101
Latitude: 36.45172 **Longitude:** -80.60915 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-72-(4.5)

Time period: 01/14/2002 to 12/11/2006

	# result	# ND	Results not meeting EL EL	#	%	%Conf	Percentiles Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	99	0	<4	0	0		5.5	6	6.7	8.2	9.7	10.7	13.2
	99	0	<5	0	0		5.5	6	6.7	8.2	9.7	10.7	13.2
pH (SU)	85	0	<6	0	0		6.8	6.9	7	7.2	7.5	8	9
	85	0	>9	0	0		6.8	6.9	7	7.2	7.5	8	9
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				54	74	98	121	154	186	378
Water Temperature (°C)	99	0	>29	0	0		1.8	4.4	10.5	17.7	21.8	23.8	26.2
Other													
Turbidity (NTU)	60	0	>50	4	6.7		1.8	2.9	5.5	8.6	19.8	36	92

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	82	5	8	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: ARARAT RIV AT SR 2019 AT ARARAT
Station #: Q1780000 **Hydrologic Unit Code:** 3040101
Latitude: 36.40361 **Longitude:** -80.56113 **Stream class:** C
Agency: NCAMBNT **NC stream index:** 12-72-(4.5)

Time period: 01/14/2002 to 12/05/2006

	# result	# ND	Results not meeting EL				Percentiles						
			EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	70	0	<4	0	0		7.2	8	8.5	9.8	11.6	13	14.2
	70	0	<5	0	0		7.2	8	8.5	9.8	11.6	13	14.2
pH (SU)	71	0	<6	0	0		6.3	6.9	7.2	7.5	7.8	8.2	8.8
	71	0	>9	0	0		6.3	6.9	7.2	7.5	7.8	8.2	8.8
Spec. conductance (umhos/cm at 25°C)	71	0	N/A				11	69	92	113	142	187	595
Water Temperature (°C)	71	0	>29	0	0		3	4.7	10.2	16.1	22.6	25.4	28.7
Other													
TSS (mg/L)	39	6	N/A				2.5	2.5	3	7.2	41	106	810
Turbidity (NTU)	70	0	>50	11	15.7	95.6	1.5	3	4.4	8.1	28.5	74.6	550
Nutrients (mg/L)													
NH3 as N	22	11	N/A				0.02	0.02	0.02	0.02	0.04	0.06	0.1
NO2 + NO3 as N	22	0	N/A				0.28	0.32	0.44	0.55	0.61	0.72	0.85
TKN as N	22	1	N/A				0.2	0.22	0.24	0.3	0.59	0.87	1
Total Phosphorus	22	0	N/A				0.04	0.04	0.06	0.1	0.16	0.3	0.38
Metals (ug/L)													
Aluminum, total (Al)	20	0	N/A				84	102	142	220	1650	6520	48000
Arsenic, total (As)	20	20	>10	0	0		5	5	5	8	10	10	10
Cadmium, total (Cd)	20	20	>2	0	0		2	2	2	2	2	2	2
Chromium, total (Cr)	20	19	>50	0	0		25	25	25	25	25	25	29
Copper, total (Cu)	20	8	>7	4	20	95.7	2	2	2	3	5	13	18
Iron, total (Fe)	20	0	>1000	8	40	100	290	313	355	545	2050	6500	34000
Lead, total (Pb)	20	19	>25	0	0		10	10	10	10	10	10	20
Mercury, total (Hg)	20	20	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	20	19	>88	0	0		10	10	10	10	10	10	12
Zinc, total (Zn)	20	12	>50	1	5		10	10	10	10	15	27	65

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
55	99	12	22	70.2

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: ARARAT RIV AT SR 2044 NR PILOT MOUNTAIN
Station #: Q1935000 **Hydrologic Unit Code:** 3040101
Latitude: 36.36262 **Longitude:** -80.53938 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-72-(4.5)

Time period: 01/14/2002 to 12/11/2006

	# result	# ND	Results not meeting EL EL	#	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	85	0	<4	0	0		5.7	6.1	7	8.7	10.2	11.2	13.3
	85	0	<5	0	0		5.7	6.1	7	8.7	10.2	11.2	13.3
pH (SU)	85	0	<6	0	0		6.7	6.8	7	7.2	7.5	8.1	8.4
	85	0	>9	0	0		6.7	6.8	7	7.2	7.5	8.1	8.4
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				64	83	95	112	133	150	174
Water Temperature (°C)	85	0	>29	0	0		2.1	4	9.8	17.6	21.6	23.4	26.3
Other													
Turbidity (NTU)	60	0	>50	3	5		2.2	3.3	5.9	11	17	39.6	550

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	61	6	10	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: ARARAT RIV AT SR 2080 NR SILOAM
Station #: Q1950000 **Hydrologic Unit Code:** 3040101
Latitude: 36.30235 **Longitude:** -80.53159 **Stream class:** WS-IV
Agency: NCAMBNT **NC stream index:** 12-72-(18)

Time period: 01/14/2002 to 12/05/2006

	# result	# ND	Results not meeting EL	#	%	%Conf	Percentiles Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	59	0	<4	0	0		6.9	7.8	8.4	9.6	11.6	13.1	14.2
	59	0	<5	0	0		6.9	7.8	8.4	9.6	11.6	13.1	14.2
pH (SU)	60	0	<6	0	0		6.5	6.8	7.2	7.5	7.7	8.2	8.8
	60	0	>9	0	0		6.5	6.8	7.2	7.5	7.7	8.2	8.8
Spec. conductance (umhos/cm at 25°C)	60	0	N/A				53	67	93	105	122	162	420
Water Temperature (°C)	60	0	>29	1	1.7		2	4.1	9.5	17.6	22.5	24.8	29.1
Other													
TSS (mg/L)	20	2	N/A				2.5	2.5	3	6.5	31.8	369.6	460
Turbidity (NTU)	60	0	>50	7	11.7	75.2	2.6	3.7	5.1	8.4	28.8	59.5	850
Metals (ug/L)													
Aluminum, total (Al)	20	0	N/A				120	140	152	415	1800	16690	25000
Arsenic, total (As)	20	20	>10	0	0		5	5	5	8	10	10	10
Cadmium, total (Cd)	20	20	>2	0	0		2	2	2	2	2	2	2
Chromium, total (Cr)	20	20	>50	0	0		25	25	25	25	25	25	25
Copper, total (Cu)	20	7	>7	2	10	67.7	2	2	2	3	4	9	16
Iron, total (Fe)	20	0	>1000	9	45	100	290	322	418	740	2175	12290	17000
Lead, total (Pb)	20	19	>25	0	0		10	10	10	10	10	10	12
Manganese, total (Mn)	20	0	>200	1	5		21	22	26	35	69	194	210
Mercury, total (Hg)	20	20	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	20	20	>25	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	20	11	>50	0	0		10	10	10	10	15	28	43

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
57	99	11	19	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: YADKIN RIV AT SR 1605 AT ENON
Station #: Q2040000 **Hydrologic Unit Code:** 3040101
Latitude: 36.13279 **Longitude:** -80.44539 **Stream class:** WS-IV
Agency: NCAMBNT **NC stream index:** 12-(80.7)

Time period: 01/28/2002 to 12/20/2006

	# result	# ND	Results not meeting EL	#	%	%Conf	Percentiles Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	74	0	<4	0	0		5.7	7	7.8	9.6	11.9	13	15.5
	74	0	<5	0	0		5.7	7	7.8	9.6	11.9	13	15.5
pH (SU)	75	0	<6	0	0		6.2	6.6	7	7.3	7.6	7.9	9.2
	75	0	>9	1	1.3		6.2	6.6	7	7.3	7.6	7.9	9.2
Spec. conductance (umhos/cm at 25°C)	75	0	N/A				40	54	61	70	75	87	138
Water Temperature (°C)	75	0	>29	2	2.7		1.1	6.7	9.4	15.6	23.2	26.3	29.2
Other													
TSS (mg/L)	45	0	N/A				4	5.5	8.8	22	33.5	96.6	600
Turbidity (NTU)	75	0	>50	11	14.7	93.1	2.3	3.4	6.5	13	26	97	450
Nutrients (mg/L)													
NH3 as N	34	23	N/A				0.02	0.02	0.02	0.02	0.02	0.06	0.13
NO2 + NO3 as N	34	0	>10	0	0		0.25	0.34	0.44	0.54	0.61	0.65	0.72
TKN as N	34	5	N/A				0.2	0.2	0.22	0.31	0.42	0.76	1.4
Total Phosphorus	34	0	N/A				0.04	0.06	0.06	0.11	0.14	0.3	0.47
Metals (ug/L)													
Aluminum, total (Al)	19	0	N/A				110	160	300	1100	2500	4800	39000
Arsenic, total (As)	19	19	>10	0	0		5	5	5	10	10	10	10
Cadmium, total (Cd)	19	19	>2	0	0		2	2	2	2	2	2	2
Chromium, total (Cr)	19	18	>50	0	0		25	25	25	25	25	25	29
Copper, total (Cu)	19	9	>7	1	5.3		2	2	2	2	4	6	17
Iron, total (Fe)	19	0	>1000	11	57.9	100	330	330	570	1400	2500	5900	30000
Lead, total (Pb)	19	18	>25	0	0		10	10	10	10	10	10	20
Manganese, total (Mn)	19	0	>200	1	5.3		17	17	23	46	85	160	440
Mercury, total (Hg)	19	19	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	19	18	>25	0	0		10	10	10	10	10	10	13
Zinc, total (Zn)	19	10	>50	1	5.3		10	10	10	10	17	26	69

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
54	62	8	15	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: N DEEP CRK AT SR 1605 NR YADKINVILLE
Station #: Q2090000 **Hydrologic Unit Code:** 3040101
Latitude: 36.13618 **Longitude:** -80.63003 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-84-1-(0.5)

Time period: 01/14/2002 to 12/11/2006

	# result	# ND	Results not meeting EL EL	#	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	85	0	<4	0	0		5.1	5.8	6.6	8.2	9.8	10.9	13
	85	0	<5	0	0		5.1	5.8	6.6	8.2	9.8	10.9	13
pH (SU)	85	0	<6	0	0		6.7	6.7	6.9	7	7.3	8.2	8.5
	85	0	>9	0	0		6.7	6.7	6.9	7	7.3	8.2	8.5
Spec. conductance (umhos/cm at 25°C)	84	3	N/A				50	62	77	92	115	142	246
Water Temperature (°C)	85	0	>29	0	0		1.4	4.7	10.1	17.9	21.5	22.3	24.5
Other													
Turbidity (NTU)	60	0	>50	7	11.7	75.2	4.8	9	11.2	17	27	129	190

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	135	9	15	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: N DEEP CRK AT SR 1510 NR YADKINVILLE
Station #: Q2120000 **Hydrologic Unit Code:** 3040101
Latitude: 36.12590 **Longitude:** -80.59183 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-84-1-(0.5)

Time period: 01/14/2002 to 12/11/2006

	# result	# ND	Results not meeting EL EL	#	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	85	0	<4	0	0		5.4	6.2	6.7	8.2	9.8	10.9	12.8
	85	0	<5	0	0		5.4	6.2	6.7	8.2	9.8	10.9	12.8
pH (SU)	85	0	<6	0	0		6.6	6.8	6.9	7.1	7.4	8	8.2
	85	0	>9	0	0		6.6	6.8	6.9	7.1	7.4	8	8.2
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				68	86	96	111	124	150	210
Water Temperature (°C)	85	0	>29	0	0		1.3	4.9	10.4	18.2	21.4	22.6	24.8
Other													
Turbidity (NTU)	60	0	>50	7	11.7	75.2	4.2	8.9	11.2	17	30	90.1	290

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	111	6	10	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: S DEEP CRK AT SR 1733 NR SHACKTOWN
Station #: Q2135000 **Hydrologic Unit Code:** 3040101
Latitude: 36.10648 **Longitude:** -80.58765 **Stream class:** WS-IV
Agency: YPDRBA **NC stream index:** 12-84-2-(5.5)

Time period: 01/14/2002 to 12/11/2006

	# result	# ND	Results not meeting EL EL	#	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	85	0	<4	0	0		5.2	6	6.6	7.9	9.4	10.4	12.5
	85	0	<5	0	0		5.2	6	6.6	7.9	9.4	10.4	12.5
pH (SU)	85	0	<6	0	0		6.7	6.8	6.9	7	7.4	8	8.2
	85	0	>9	0	0		6.7	6.8	6.9	7	7.4	8	8.2
Spec. conductance (umhos/cm at 25°C)	84	3	N/A				50	60	72	96	129	168	212
Water Temperature (°C)	85	0	>29	0	0		1.3	5	10.6	18.1	21.7	22.9	25.1
Other													
Turbidity (NTU)	60	0	>50	8	13.3	85.8	4.3	7.7	10.2	16	27.8	90	302

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	134	6	10	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: YADKIN RIV AT US 158 AT CLEMMONS
Station #: Q2180000 **Hydrologic Unit Code:** 3040101
Latitude: 36.01437 **Longitude:** -80.41637 **Stream class:** WS-IV
Agency: YPDRBA **NC stream index:** 12-(86.7)

Time period: 01/14/2002 to 12/11/2006

	# result	# ND	Results not meeting EL EL	#	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	85	0	<4	0	0		5.2	5.9	6.6	8.1	9.6	10.8	12.6
	85	0	<5	0	0		5.2	5.9	6.6	8.1	9.6	10.8	12.6
pH (SU)	85	0	<6	0	0		6.7	7	7.1	7.2	7.4	8.1	8.3
	85	0	>9	0	0		6.7	7	7.1	7.2	7.4	8.1	8.3
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				51	70	92	102	116	127	209
Water Temperature (°C)	85	0	>32	0	0		3.1	5.7	11.1	18.5	22.2	23.4	26.4
Other													
TSS (mg/L)	60	0	N/A				1.2	4	7	14	29.8	76.6	457
Turbidity (NTU)	60	0	>50	8	13.3	85.8	2.7	4.3	8.2	16.5	29.8	64.7	200
Nutrients (mg/L)													
NH3 as N	60	14	N/A				0.01	0.01	0.01	0.04	0.08	0.13	0.77
NO2 + NO3 as N	60	0	>10	0	0		0.25	0.4	0.49	0.57	0.65	0.76	1
TKN as N	60	9	N/A				0.1	0.2	0.2	0.3	0.46	0.65	1.78
Total Phosphorus	60	2	N/A				0.01	0.05	0.07	0.09	0.14	0.21	0.43
Metals (ug/L)													
Aluminum, total (Al)	47	0	N/A				119	187	288	662	1619	2987	14796
Arsenic, total (As)	47	46	>10	0	0		5	5	5	5	5	5	5
Cadmium, total (Cd)	47	46	>2	0	0		1	1	1	1	1	1	1
Chromium, total (Cr)	47	41	>50	0	0		5	5	5	5	5	5	19
Copper, total (Cu)	47	15	>7	4	8.5		2	2	2	2	4	7	15
Iron, total (Fe)	47	0	>1000	29	61.7	100	413	531	743	1317	1929	3616	14530
Lead, total (Pb)	47	44	>25	0	0		5	5	5	5	5	5	8
Manganese, total (Mn)	29	0	>200	0	0		20	25	28	39	64	86	106
Mercury, total (Hg)	47	47	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	47	46	>25	0	0		5	10	10	10	10	10	10
Zinc, total (Zn)	47	29	>50	1	2.1		10	10	10	10	13	24	68

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	56	4	7	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: MUDDY CRK AT I 40 NR CLEMMONS
Station #: Q2291000 **Hydrologic Unit Code:** 3040101
Latitude: 36.04700 **Longitude:** -80.36623 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-94-(0.5)

Time period: 01/15/2002 to 12/12/2006

	# result	# ND	Results not meeting EL	#	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	85	0	<4	0	0		5.5	6.4	7	7.8	10	10.9	13.8
	85	0	<5	0	0		5.5	6.4	7	7.8	10	10.9	13.8
pH (SU)	85	0	<6	0	0		6.6	6.8	6.9	7.1	7.4	8.2	8.9
	85	0	>9	0	0		6.6	6.8	6.9	7.1	7.4	8.2	8.9
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				51	82	103	120	138	169	221
Water Temperature (°C)	85	0	>32	0	0		2	3.9	10.7	18.1	21.2	23.4	26
Other													
Turbidity (NTU)	60	0	>50	4	6.7		3.6	5.1	7.2	12	21.5	39.9	260
Metals (ug/L)													
Aluminum, total (Al)	47	0	N/A				92	120	192	371	817	1387	2416
Arsenic, total (As)	47	46	>10	0	0		5	5	5	5	5	5	5
Cadmium, total (Cd)	47	46	>2	0	0		1	1	1	1	1	1	1
Chromium, total (Cr)	47	41	>50	0	0		5	5	5	5	5	5	44
Copper, total (Cu)	47	25	>7	2	4.3		2	2	2	2	3	4	27
Iron, total (Fe)	47	0	>1000	28	59.6	100	10	793	905	1132	1879	2859	18600
Lead, total (Pb)	47	45	>25	0	0		5	5	5	5	5	5	21
Mercury, total (Hg)	47	46	>0.012	1	2.1		0.2	0.2	0.2	0.2	0.2	0.2	0.3
Nickel, total (Ni)	47	43	>88	0	0		10	10	10	10	10	10	20
Zinc, total (Zn)	47	38	>50	0	0		10	10	10	10	10	15	43

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	70	2	3	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: SALEM CRK AT SR 2740 REYNOLDS PARK RD NR WINSTON SALEM
Station #: Q2479455 **Hydrologic Unit Code:** 3040101
Latitude: 36.08843 **Longitude:** -80.21208 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-94-12-(4)

Time period: 01/15/2002 to 12/12/2006

	# result	# ND	Results not meeting EL	#	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	85	0	<4	0	0		5.4	6.1	7	7.9	10.2	10.8	13.4
	85	0	<5	0	0		5.4	6.1	7	7.9	10.2	10.8	13.4
pH (SU)	85	0	<6	0	0		6.5	6.8	7	7.1	7.3	8.1	8.6
	85	0	>9	0	0		6.5	6.8	7	7.1	7.3	8.1	8.6
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				55	78	95	116	140	188	319
Water Temperature (°C)	85	0	>32	0	0		2.3	4.1	11	18.3	21.3	23.4	26.4
Other													
Turbidity (NTU)	60	0	>50	1	1.7		3.3	5.5	8.2	12	18.8	25.9	100
Metals (ug/L)													
Aluminum, total (Al)	47	2	N/A				50	70	148	311	609	1149	6230
Arsenic, total (As)	47	46	>10	0	0		5	5	5	5	5	5	5
Cadmium, total (Cd)	47	46	>2	0	0		1	1	1	1	1	1	1
Chromium, total (Cr)	47	44	>50	0	0		5	5	5	5	5	5	11
Copper, total (Cu)	47	26	>7	0	0		2	2	2	2	2	4	7
Iron, total (Fe)	47	0	>1000	29	61.7	100	350	589	804	1318	2273	3731	28130
Lead, total (Pb)	47	46	>25	0	0		5	5	5	5	5	5	5
Mercury, total (Hg)	47	47	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	47	45	>88	0	0		10	10	10	10	10	10	11
Zinc, total (Zn)	47	40	>50	0	0		10	10	10	10	10	12	34

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	69	3	5	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: SALEM CRK AT ELLEDGE WTP AT WINSTON SALEM
Station #: Q2510000 **Hydrologic Unit Code:** 3040101
Latitude: 36.03878 **Longitude:** -80.30416 **Stream class:** C
Agency: NCAMBNT **NC stream index:** 12-94-12-(4)

Time period: 01/07/2002 to 12/19/2006

	#	#		Results not meeting EL			Percentiles						
	result	ND	EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	56	0	<4	0	0		6.1	7	8	9.2	11	12	14.2
	56	0	<5	0	0		6.1	7	8	9.2	11	12	14.2
pH (SU)	57	0	<6	0	0		6.2	6.6	7	7.2	7.4	7.7	8.3
	57	0	>9	0	0		6.2	6.6	7	7.2	7.4	7.7	8.3
Spec. conductance (umhos/cm at 25°C)	57	0	N/A				67	123	140	163	190	208	367
Water Temperature (°C)	57	0	>32	0	0		2	7.8	10.6	16	23.5	26.5	30.7
Other													
TSS (mg/L)	18	2	N/A				2.5	2.5	3	5.5	20	89.4	174
Turbidity (NTU)	57	0	>50	4	7		1.5	2.6	3.4	5.8	13.8	36.2	150
Nutrients (mg/L)													
NH3 as N	57	1	N/A				0.02	0.09	0.12	0.17	0.31	0.53	0.84
NO2 + NO3 as N	57	0	N/A				0.12	0.6	0.94	1.1	1.3	1.6	1.8
TKN as N	57	0	N/A				0.25	0.34	0.41	0.49	0.68	1	1.2
Total Phosphorus	57	2	N/A				0.02	0.03	0.03	0.04	0.05	0.13	0.28
Metals (ug/L)													
Aluminum, total (Al)	19	0	N/A				66	80	130	180	1500	3000	7800
Arsenic, total (As)	18	18	>10	0	0		5	5	5	10	10	10	10
Cadmium, total (Cd)	19	19	>2	0	0		2	2	2	2	2	2	2
Chromium, total (Cr)	19	19	>50	0	0		25	25	25	25	25	25	25
Copper, total (Cu)	19	3	>7	4	21.1	96.5	2	2	2	3	7	15	15
Iron, total (Fe)	19	0	>1000	5	26.3	99.1	420	440	490	610	2400	4800	8000
Lead, total (Pb)	19	16	>25	0	0		10	10	10	10	10	21	22
Mercury, total (Hg)	19	19	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	19	19	>88	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	19	2	>50	3	15.8	88.5	10	10	17	30	41	73	73

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
52	475	26	50	100

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: SALEM CRK AT SR 1120 CLEMMONSVILLE RD AT WINSTON SALEM
Station #: Q2540000 **Hydrologic Unit Code:** 3040101
Latitude: 36.03115 **Longitude:** -80.31372 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-94-12-(4)

Time period: 01/15/2002 to 12/12/2006

	# result	# ND	EL	Results not meeting EL #	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	99	0	<4	0	0		5.4	5.7	6.5	7.3	9.3	10.4	13.2
	99	0	<5	0	0		5.4	5.7	6.5	7.3	9.3	10.4	13.2
pH (SU)	85	0	<6	0	0		6.6	6.9	6.9	7.1	7.4	8.1	8.5
	85	0	>9	0	0		6.6	6.9	6.9	7.1	7.4	8.1	8.5
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				62	121	150	180	225	278	387
Water Temperature (°C)	99	0	>32	0	0		3	5.3	12.7	18.9	22.4	24.5	28.2
Other													
Turbidity (NTU)	60	0	>50	2	3.3		2	3.8	4.5	8.8	17.5	30.6	310
Nutrients (mg/L)													
NH3 as N	60	2	N/A				0.01	0.05	0.09	0.14	0.21	0.36	0.43
NO2 + NO3 as N	60	0	N/A				0.16	0.61	0.86	1.05	1.3	1.54	1.86
TKN as N	60	3	N/A				0.1	0.2	0.31	0.49	0.68	0.93	1.67
Total Phosphorus	60	5	N/A				0.01	0.02	0.04	0.06	0.1	0.16	0.62

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	99	5	8	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: SALEM CRK AT SR 2991 FRATERNITY CHURCH RD NR WINSTON SALEM
Station #: Q2570000 **Hydrologic Unit Code:** 3040101
Latitude: 36.00855 **Longitude:** -80.33528 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-94-12-(4)

Time period: 01/15/2002 to 12/12/2006

	#	#		Results not meeting EL			Percentiles						
	result	ND	EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	98	0	<4	0	0		5.1	5.4	6.1	7	9.1	10.1	12.7
	98	0	<5	0	0		5.1	5.4	6.1	7	9.1	10.1	12.7
pH (SU)	84	0	<6	0	0		6.7	6.8	6.9	7	7.4	8.1	8.4
	84	0	>9	0	0		6.7	6.8	6.9	7	7.4	8.1	8.4
Spec. conductance (umhos/cm at 25°C)	83	0	N/A				93	178	223	302	389	597	749
Water Temperature (°C)	98	0	>32	0	0		4	5.8	13.5	20.1	23.1	24.9	28.8
Other													
Turbidity (NTU)	59	0	>50	2	3.4		2.2	3.4	4.8	8.6	20	31	360
Nutrients (mg/L)													
NH3 as N	59	4	N/A				0.01	0.05	0.1	0.13	0.2	0.34	0.93
NO2 + NO3 as N	59	0	N/A				1	2.46	3.5	4.76	5.69	6.94	9.01
TKN as N	59	0	N/A				0.19	0.68	0.92	1.12	1.38	1.62	2.02
Total Phosphorus	59	0	N/A				0.53	0.71	1.21	1.81	2.46	3.39	4.45
Metals (ug/L)													
Aluminum, total (Al)	28	0	N/A				92	121	162	281	522	1304	16156
Arsenic, total (As)	28	28	>10	0	0		5	5	5	5	5	5	5
Cadmium, total (Cd)	28	28	>2	0	0		1	1	1	1	1	1	1
Chromium, total (Cr)	28	25	>50	0	0		5	5	5	5	5	6	31
Copper, total (Cu)	28	0	>7	6	21.4	98.2	2	3	4	5	7	10	32
Iron, total (Fe)	28	0	>1000	8	28.6	99.9	441	463	559	770	1204	1828	18300
Lead, total (Pb)	28	25	>25	1	3.6		5	5	5	5	5	5	56
Mercury, total (Hg)	28	28	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	28	23	>88	0	0		10	10	10	10	10	11	12
Zinc, total (Zn)	28	0	>50	7	25	99.5	15	24	34	40	52	59	102

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
59	117	5	8	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: MUDDY CRK AT SR 2995 NR MUDDY CREEK
Station #: Q2600000 **Hydrologic Unit Code:** 3040101
Latitude: 36.00001 **Longitude:** -80.34000 **Stream class:** C
Agency: NCAMBNT **NC stream index:** 12-94-(0.5)

Time period: 01/07/2002 to 12/19/2006

	#	#		Results not meeting EL			Percentiles						
	result	ND	EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	55	0	<4	0	0		5.5	6.5	6.8	8.5	10.7	11.9	13.9
	55	0	<5	0	0		5.5	6.5	6.8	8.5	10.7	11.9	13.9
pH (SU)	57	0	<6	0	0		6	6.6	7	7.3	7.4	7.4	7.6
	57	0	>9	0	0		6	6.6	7	7.3	7.4	7.4	7.6
Spec. conductance (umhos/cm at 25°C)	57	0	N/A				51	190	250	321	432	488	728
Water Temperature (°C)	57	0	>32	0	0		2	8	11.1	16.8	23.8	26.9	29.7
Other													
TSS (mg/L)	18	1	N/A				5	5	6.8	11.5	40.5	279.8	728
Turbidity (NTU)	57	0	>50	3	5.3		2.8	4.1	6.5	9.1	19.5	38.4	500
Nutrients (mg/L)													
NH3 as N	41	1	N/A				0.02	0.03	0.04	0.06	0.12	0.24	1.1
NO2 + NO3 as N	41	0	N/A				0.38	1.52	1.9	2.4	2.9	3.28	3.9
TKN as N	41	0	N/A				0.49	0.56	0.65	0.73	0.87	1.08	1.8
Total Phosphorus	41	0	N/A				0.16	0.25	0.47	0.68	1.15	1.48	2.6
Metals (ug/L)													
Aluminum, total (Al)	19	0	N/A				130	190	290	400	1800	20000	34000
Arsenic, total (As)	19	19	>10	0	0		5	5	5	10	10	10	10
Cadmium, total (Cd)	19	19	>2	0	0		2	2	2	2	2	2	2
Chromium, total (Cr)	19	18	>50	0	0		25	25	25	25	25	25	42
Copper, total (Cu)	19	0	>7	4	21.1	96.5	2	2	3	4	6	14	30
Iron, total (Fe)	19	0	>1000	7	36.8	100	530	540	760	980	2700	15000	34000
Lead, total (Pb)	19	16	>25	1	5.3		10	10	10	10	10	14	28
Mercury, total (Hg)	19	19	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	19	18	>88	0	0		10	10	10	10	10	10	22
Zinc, total (Zn)	19	0	>50	9	47.4	100	27	33	41	48	63	83	120

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
52	376	22	42	100

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: MUDDY CRK AT SR 1485 NR WINSTON SALEM
Station #: Q2720000 **Hydrologic Unit Code:** 3040101
Latitude: 35.94020 **Longitude:** -80.35800 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-94-(0.5)

Time period: 01/15/2002 to 12/12/2006

	# result	# ND	Results not meeting EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	99	0	<4	0	0		5.2	5.5	6.3	7.2	9.3	10.3	13
	99	0	<5	0	0		5.2	5.5	6.3	7.2	9.3	10.3	13
pH (SU)	85	0	<6	0	0		6.6	6.7	6.9	7	7.6	8	8.4
	85	0	>9	0	0		6.6	6.7	6.9	7	7.6	8	8.4
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				59	158	191	263	349	504	716
Water Temperature (°C)	99	0	>32	0	0		3.8	5.8	12.8	19.7	22.9	24.8	28.5
Other													
Turbidity (NTU)	60	0	>50	5	8.3		3.5	5.2	8.5	15.5	28.8	44.5	450
Nutrients (mg/L)													
NH3 as N	60	5	N/A				0.01	0.01	0.06	0.08	0.15	0.27	0.38
NO2 + NO3 as N	60	0	N/A				0.59	1.39	1.89	2.49	3.02	3.57	4.71
TKN as N	60	0	N/A				0.26	0.37	0.57	0.68	0.88	1.03	1.68
Total Phosphorus	60	0	N/A				0.17	0.39	0.52	0.8	1.01	1.62	2.22

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	127	2	3	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: YADKIN RIV AT US 64 AT YADKIN COLLEGE
Station #: Q2810000 **Hydrologic Unit Code:** 3040101
Latitude: 35.85700 **Longitude:** -80.38628 **Stream class:** WS-IV CA
Agency: NCAMBNT **NC stream index:** 12-(97.5)

Time period: 01/07/2002 to 12/19/2006

	#	#		Results not meeting EL			Percentiles						
	result	ND	EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	76	0	<4	0	0		5.2	6.8	7.2	8.9	11	12.3	15.6
	76	0	<5	0	0		5.2	6.8	7.2	8.9	11	12.3	15.6
pH (SU)	77	0	<6	0	0		6.4	6.8	6.9	7.3	7.5	7.8	8
	77	0	>9	0	0		6.4	6.8	6.9	7.3	7.5	7.8	8
Spec. conductance (umhos/cm at 25°C)	77	0	N/A				60	70	82	95	114	149	267
Water Temperature (°C)	77	0	>32	0	0		2	7.6	11	17.1	24.8	26.8	29.9
Other													
TSS (mg/L)	46	1	N/A				4.2	5	8	14	28.2	58.6	430
Turbidity (NTU)	77	0	>50	12	15.6	95.9	3.4	4.4	8.2	17	31.5	76	250
Nutrients (mg/L)													
NH3 as N	35	13	N/A				0.02	0.02	0.02	0.02	0.06	0.18	0.23
NO2 + NO3 as N	35	0	>10	0	0		0.5	0.69	0.77	0.87	1	1.2	1.2
TKN as N	35	0	N/A				0.23	0.27	0.37	0.41	0.5	0.64	0.9
Total Phosphorus	35	0	N/A				0.13	0.15	0.17	0.19	0.23	0.28	0.3
Metals (ug/L)													
Aluminum, total (Al)	20	0	N/A				130	233	370	680	940	1550	6600
Arsenic, total (As)	20	20	>10	0	0		5	5	5	10	10	10	10
Cadmium, total (Cd)	20	20	>2	0	0		2	2	2	2	2	2	2
Chromium, total (Cr)	20	20	>50	0	0		25	25	25	25	25	25	25
Copper, total (Cu)	20	10	>7	1	5		2	2	2	2	3	5	12
Iron, total (Fe)	20	0	>1000	10	50	100	520	531	658	975	1350	1960	7400
Lead, total (Pb)	20	20	>25	0	0		10	10	10	10	10	10	10
Manganese, total (Mn)	20	0	>200	0	0		37	39	41	52	67	86	180
Mercury, total (Hg)	20	20	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	20	20	>25	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	20	6	>50	2	10	67.7	10	10	10	12	16	57	93

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
58	144	15	26	89.7

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: YADKIN RIV AT US 64 AT YADKIN COLLEGE
Station #: Q2810000 **Hydrologic Unit Code:** 3040101
Latitude: 35.85700 **Longitude:** -80.38628 **Stream class:** WS-IV CA
Agency: YPDRBA **NC stream index:** 12-(97.5)

Time period: 01/15/2002 to 12/12/2006

	# result	# ND	Results not meeting EL	#	%	%Conf	Percentiles Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	83	0	<4	0	0		5.1	5.7	6.8	7.8	10	11.2	13.2
	83	0	<5	0	0		5.1	5.7	6.8	7.8	10	11.2	13.2
pH (SU)	83	0	<6	0	0		6.7	6.8	6.9	7.1	7.5	8.1	8.5
	83	0	>9	0	0		6.7	6.8	6.9	7.1	7.5	8.1	8.5
Spec. conductance (umhos/cm at 25°C)	82	0	N/A				61	81	96	110	133	159	231
Water Temperature (°C)	83	0	>32	0	0		3.5	5.4	11.6	18.8	22.6	24.5	28.8
Other													
TSS (mg/L)	58	0	N/A				2.1	5.1	9.4	15.5	40.2	111.2	757
Turbidity (NTU)	58	0	>50	5	8.6		4.2	6.3	12	16	27.2	44	160
Nutrients (mg/L)													
NH3 as N	58	6	N/A				0.01	0.01	0.04	0.08	0.16	0.27	0.44
NO2 + NO3 as N	58	0	>10	0	0		0.27	0.61	0.76	1.09	1.47	1.84	2.23
TKN as N	58	4	N/A				0.1	0.23	0.35	0.48	0.77	1.07	3.57
Total Phosphorus	58	0	N/A				0.06	0.09	0.14	0.31	0.48	0.73	8.28
Metals (ug/L)													
Aluminum, total (Al)	45	0	N/A				92	197	322	672	1219	3770	9546
Arsenic, total (As)	45	44	>10	0	0		5	5	5	5	5	5	5
Cadmium, total (Cd)	45	44	>2	0	0		1	1	1	1	1	1	1
Chromium, total (Cr)	45	33	>50	0	0		5	5	5	5	6	9	17
Copper, total (Cu)	45	13	>7	4	8.9		2	2	2	3	4	8	14
Iron, total (Fe)	45	0	>1000	34	75.6	100	654	713	992	1197	1746	9253	21480
Lead, total (Pb)	45	38	>25	0	0		5	5	5	5	5	7	12
Manganese, total (Mn)	45	1	>200	7	15.6	92.4	10	46	66	109	162	304	514
Mercury, total (Hg)	45	45	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	45	41	>25	0	0		10	10	10	10	10	10	16
Zinc, total (Zn)	45	18	>50	1	2.2		10	10	10	12	18	28	58

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
58	63	4	7	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: DUTCHMAN CRK AT US 64 NR MOCKSVILLE
Station #: Q3105000 **Hydrologic Unit Code:** 3040101
Latitude: 35.88107 **Longitude:** -80.50118 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-102-(2)

Time period: 01/15/2002 to 12/12/2006

	# result	# ND	Results not meeting EL EL	#	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	85	0	<4	0	0		5.1	5.9	6.8	7.5	9.7	10.8	12.9
	85	0	<5	0	0		5.1	5.9	6.8	7.5	9.7	10.8	12.9
pH (SU)	85	0	<6	0	0		6.7	6.9	6.9	7.1	7.4	8	8.2
	85	0	>9	0	0		6.7	6.9	6.9	7.1	7.4	8	8.2
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				73	110	119	138	166	188	290
Water Temperature (°C)	85	0	>32	0	0		3.2	4.9	12	18.6	22.1	23.9	25.3
Other													
Turbidity (NTU)	60	0	>50	5	8.3		3	5.6	8.7	11	23.8	39.9	330

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	79	7	12	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Appendix C

Biological Data Sample Sites

Summary

YADKIN RIVER HUC 03040101 – YADKIN RIVER HEADWATERS

Description

The Yadkin River Headwaters 8 digit HUC 03040101 contains the Yadkin River subbasins 1, 2, 3, 4 (in part), and 5 (Figure 2). Streams and rivers on the western boundary of the HUC drain the high elevation areas of the Blue Ridge Mountains. Watersheds to the east of the Blue Ridge are primarily located within the Piedmont ecoregions. Streams of the Northern Inner Piedmont generally have rocky substrates, while Southern Outer Piedmont watersheds in the southeast portion of the HUC (around Winston-Salem) have sandier substrates. W. Kerr Scott Reservoir is the first of the Yadkin River chain of lakes, and is the only major impoundment located in this HUC.

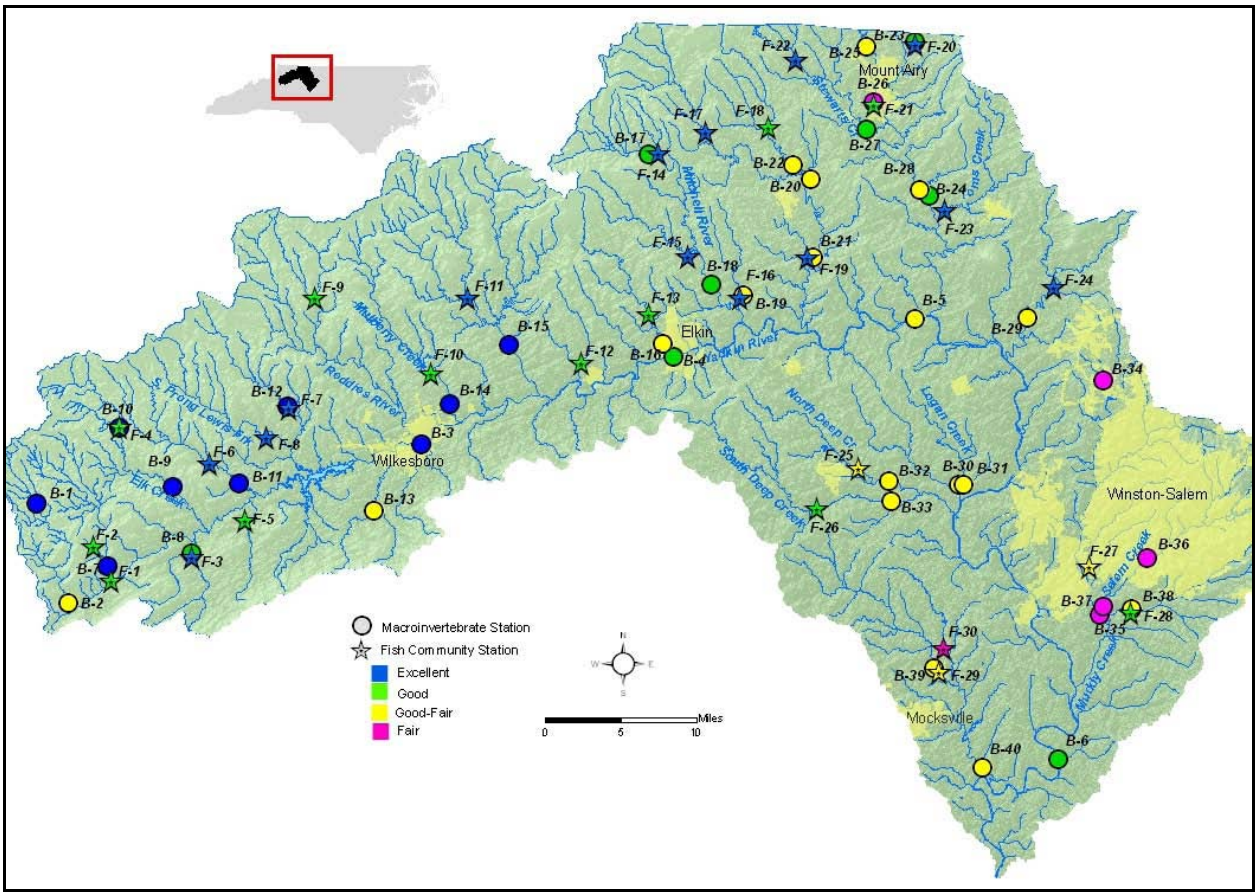


Figure 2. Sampling sites in HUC 03040101 in the Yadkin River Basin. Monitoring sites are listed in Table 1.

Subbasin 01 includes the mountainous headwater reaches of the Yadkin River basin in Watauga, Caldwell and Wilkes Counties. Streams occurring along the northern edge of this subbasin are primarily located within the Southern Crystalline Ridges and Mountain ecoregion where elevations are generally 1200-4500 feet (Griffith *et al*. 2002), stream gradients are high, and landuse is predominantly forest. The major mountain tributaries include Buffalo, Elk, and Stony Creeks, North and South Prong Lewis Forks, Reddies River, Mulberry Creek, and Roaring River, most of which flow south into the Northern Inner Piedmont ecoregion before reaching the Yadkin river. Many of the mountain streams are classified as trout streams, and in terms of their fish communities, are considered mountain cold water, and foothills cool water systems. The Eastern Blue Ridge Foothills ecoregion also occurs along the southern edge of subbasin 01 and includes the Kings and Beaver Creek watersheds. W. Kerr Scott Reservoir is located in this subbasin.

The cities of Wilkesboro and North Wilkesboro are located in subbasin 01, both of which have wastewater treatment plants that discharge to the Yadkin River (4.9 MGD and 2.0 MGD, respectively). The other major discharger is the Louisiana Pacific Corporation ABTCO plant that discharges 1.0 MGD to the Yadkin River, approximately eight river-miles downstream of North Wilkesboro.

Flowing out of its mountainous escarpment in a northeast direction, the Yadkin River then flows through the town of Elkin into subbasin 02 along the Surry and Yadkin County line, before changing direction to the south at the intersection of Surry, Stokes, Forsyth, and Yadkin Counties. The river continues south through this subbasin until just below I-40 in Davie County. Subbasin 02 is located primarily within the Northern Inner Piedmont where elevations and gradients are generally higher and more mountain-like than in other Piedmont ecoregions. The smaller, southern part of the subbasin is located within the Southern Inner Piedmont ecoregion, where streams are characterized by slower flows and sandy substrates. The major tributaries to the Yadkin River in this part of the HUC include the Mitchell, Fisher and Little Yadkin Rivers, Forbush Creek, and Deep Creek. The mountainous section of the Mitchell River watershed above its confluence with the South Fork Mitchell River in western Surry County is classified as ORW.

Landuse in this subbasin is largely forest or used for pasture. The largest residential community in this subbasin is Elkin; others smaller communities include Yadkinville, Dobson, Lewisville, and Clemmons. The three largest NPDES facilities in this subbasin are Chatham Manufacturing Incorporated, which discharges 4.0 MGD into the Yadkin River at Elkin, the Elkin WWTP, which discharges 1.8 MGD into the Yadkin River, and Yadkinville WWTP, which discharges 1.0 MGD into North Deep Creek.

Subbasin 03 lies within the Northern Inner Piedmont ecoregion and originates in the mountains of Virginia. Flowing south, the Ararat River watershed and all of its tributaries drain this entire subbasin before emptying into the Yadkin River to the east of Elkin. The Ararat's main tributaries include Stewarts, Lovills and Flat Shoals Creeks. This watershed is known to have moderate to swift flows throughout the year, with turbidity problems following rainfall events. Outside of the cities of Mt Airy and Pilot Mountain, landuse in this subbasin is mostly forest and pasture. The Mt Airy and Pilot Mountain wastewater treatment plants discharge 7MGD and 1.5 MGD of effluent to the Ararat River, respectively.

The upper portion of Yadkin subbasin 04, approximately bisected north to south by NC 150, includes most of the city of Winston-Salem, one of the largest urban areas in North Carolina. The Muddy Creek watershed is the largest Yadkin River tributary in this subbasin, and receives runoff from almost the entire Winston-Salem vicinity. The major tributaries to Muddy Creek in Winston-Salem include Salem, and South Fork Muddy Creeks. Salem Creek drains a heavily urbanized portion of Winston-Salem. South of Winston-Salem, land use in this lowest part of the HUC is still primarily forest and pasture.

Many streams in Winston-Salem are affected by urban runoff and/or by the city's numerous permitted dischargers, many of which are small residential (i.e. package) plants. Large dischargers in the Muddy Creek drainage include the Winston-Salem Archie Elledge WWTP (Salem Creek, 30 MGD), and Winston-Salem Muddy Creek WWTP (Yadkin River, 21 MGD).

Dutchmans Creek and all of its tributaries, including Cedar Creek (subbasin 05) lies mainly within the Southern Outer Piedmont ecoregion in Davie County. The headwater reaches of Dutchmans Creek originate in small sections of the Northern Inner Piedmont and Triassic Basins ecoregions, along the borders of Yadkin and Iredell Counties. Outside of the town of Mocksville, this area is rural, with the predominant land use in forest and pasture. The Mocksville Town WWTP is the largest permitted NPDES facility in this area, and discharges 0.68 MGD to Dutchmans Creek.

Overview of Water Quality

Overall, there were 40 benthic macroinvertebrate sites sampled in the Yadkin River Headwater HUC (Table 1). Seven of the 36 benthic macroinvertebrate sites previously sampled in the last basinwide cycle had an improvement in bioclassification. The Yadkin River at NC18/268 was the only benthic site that improved by two bioclassifications. Seven of the 36 benthic basinwide sites also declined by one bioclassification.

Table 1. Waterbodies monitored in HUC 03040101 in the Yadkin River basin for basinwide assessment, 2001 and 2006.

Map #[1]	Waterbody	County	Location	2001	2006
B-1	Yadkin R	Caldwell	NC 268, Patterson	Good-Fair	Good-Fair
B-2	Yadkin R	Caldwell	SR 1372	Good	Excellent
B-3	Yadkin R	Wilkes	NC 18/268	Good-Fair	Excellent
B-4	Yadkin R	Yadkin	US 21	Good	Good
B-5	Yadkin R	Surry	SR 1003	Good	Good-Fair
B-6	Yadkin R	Davidson	SR 1447	Good	Good
B-7	Buffalo Cr	Caldwell	SR 1505	Excellent	Excellent
B-8	Kings Cr	Caldwell	SR 1552	---	Good
B-9	Elk Cr	Wilkes	SR 1175	Good	Excellent
B-10	Laurel Cr	Watauga	SR 1508	---	Excellent
B-11	Stony Fk	Wilkes	SR 1135	Excellent (2002)	Excellent
B-12	N Pr Lewis Fk	Wilkes	Near SR 1300	Excellent (2002)	Excellent
B-13	Moravian Cr	Wilkes	NC 18	Good-Fair	Good-Fair
B-14	Mulberry Cr	Wilkes	NC 268	Excellent	Excellent
B-15	Roaring R	Wilkes	SR 1990	Good	Excellent
B-16	Elkin Cr	Surry	NC 268	Good-Fair	Good-Fair
B-17	Mitchell R	Surry	SR 1330	Good	Good
B-18	Mitchell R	Surry	SR 1001	Excellent	Good
B-19	Snow Cr	Surry	SR 1121	Good-Fair	Good-Fair
B-20	Fisher R	Surry	US 601	Good	Good-Fair
B-21	Fisher R	Surry	NC 268	Good	Good-Fair
B-22	L Fisher R	Surry	SR 1480	Good-Fair	Good-Fair
B-23	Ararat R	Surry	NC 104	Good-Fair	Good
B-24	Ararat R	Surry	SR 2019	Good-Fair	Good
B-25	Lovills Cr	Surry	SR 1700	Good-Fair	Good-Fair
B-26	Lovills Cr	Surry	SR 1371	Fair	Fair
B-27	Stewarts Cr	Surry	SR 2258	Good	Good
B-28	Flat Shoal Cr	Surry	SR 2017	---	Good-Fair
B-29	L Yadkin R	Stokes	SR 1102	---	Good-Fair
B-30	Forbush Cr	Yadkin	SR 1570	Good-Fair	Good-Fair
B-31	Logan Cr	Yadkin	SR 1571	Good	Good-Fair
B-32	N Deep	Yadkin	SR 1510	Good-Fair	Good-Fair
B-33	S Deep Cr	Yadkin	SR 1710	Good-Fair	Good-Fair
B-34	Muddy Cr	Forsyth	SR 1898	Good-Fair	Fair
B-35	Muddy Cr	Forsyth	SR 2995	Good-Fair	Fair
B-36	Salem Cr	Forsyth	SR 2902	Fair	Fair
B-37	Salem Cr	Forsyth	SR 2991	Fair	Fair
B-38	S Fk Muddy Cr	Forsyth	SR 2902	Good-Fair	Good-Fair
B-39	Dutchmans Cr	Davie	US 158	Good-Fair	Good-Fair
B-40	Dutchmans Cr	Davie	NC 801	Fair	Good-Fair

Table 1 (continued).

Map #[1]	Waterbody	County	Location	2001	2006
F-1	Yadkin R	Caldwell	NC 268	Good	Good
F-2	Buffalo Cr	Caldwell	SR 1594	Excellent (1999)	Good
F-3	Kings Cr	Caldwell	SR 1552	---	Excellent
F-4	Laurel Cr	Watauga	SR 1508	Good (1999)	Good
F-5	Beaver Cr	Wilkes	SR 1131	Good	Good
F-6	Stony Fk	Wilkes	SR 1170	---	Excellent
F-7	N Prong Lewis Fk	Wilkes	SR 1304	Excellent	Excellent
F-8	S Prong Lewis Fk	Wilkes	SR 1154	Good	Excellent
F-9	N Fk Reddies R	Wilkes	SR 1567	Excellent	Good
F-10	Mulberry Cr	Wilkes	SR 1002	---	Good
F-11	M Prong Roaring R	Wilkes	SR 1002	Excellent	Excellent
F-12	Big Bugaboo Cr	Wilkes	SR 1924	---	Good
F-13	Elkin Cr	Wilkes	SR 2044	---	Good
F-14	Mitchell R	Surry	SR 1330	Good (1999)	Excellent
F-15	S Fk Mitchell R	Surry	SR 1301	---	Excellent
F-16	Snow Cr	Surry	SR 1121	---	Excellent
F-17	Fisher R	Surry	SR 1331	Excellent	Excellent
F-18	Little Fisher R	Surry	SR 1480	Good	Good
F-19	Cody Cr	Surry	US 268	Good (1996)	Excellent
F-20	Ararat R	Surry	NC 104	---	Excellent
F-21	Lovills Cr	Surry	SR 1371	---	Good
F-22	Stewarts Cr	Surry	SR 1622	Excellent	Excellent
F-23	Toms Cr	Surry	SR 2024	Excellent	Excellent
F-24	Little Yadkin R	Stokes	SR 1236	Excellent	Excellent
F-25	N Deep Cr	Yadkin	SR 1605	Good-Fair	Good-Fair
F-26	S Deep Cr	Yadkin	SR 1152	Good	Good
F-27	Silas Cr	Forsyth	SR 1137	Good-Fair (2002)[2]	Good-Fair
F-28	S Fk Muddy Cr	Forsyth	SR 2902	Good-Fair	Good
F-29	Dutchmans Cr	Davie	US 158	Good-Fair	Good-Fair
F-30	Cedar Cr	Davie	off SR 1410	---	Fair (2004)

[1]B = benthic macroinvertebrate monitoring sites; F = fish community monitoring sites.
[2]Basinwide site that was resampled as a special study.

In addition, there were 30 fish community sites sampled in the Yadkin River Headwater 8-digit HUC. Four of the 20 fish community sites previously sampled in the last basinwide cycle improved by one bioclassification and two declined by one bioclassification (Table 1).

The Yadkin River basin was experiencing moderate to severe drought conditions in 2001, which had the potential to reduce the impacts from nonpoint sources and magnify the impacts from point source discharges. This below average flow regime in the basin should be considered when looking at changes in the 2006 monitoring cycle.

The upper part of the Yadkin River Headwaters HUC generally has Good or Excellent water quality, as indicated by the basinwide sites (benthic and fish) sampled west of Elkin (Figure 2). Two of the benthic sites in the uppermost part of the HUC (Yadkin River at SR 1372, and Elk Creek at SR 1175) have been showing trends of stable or improving water quality since the 1980's, and had ratings of Good in 2001 that increased to Excellent in 2006. A new benthic site in the upper Elk Creek watershed (Laurel Creek at SR 1508, an established fish community site) was also rated Excellent for its benthic community and Good for fish community. The Yadkin River at NC 268 in Patterson is an exception in this part of the watershed, receiving two consecutive Good-Fair benthic ratings, which may be attributed to runoff from road projects along NC 321. Buffalo Creek received its third Excellent rating for benthic macroinvertebrates at SR 1505, but slipped from its previous fish community rating of Excellent to Good at SR 1594 (further upstream).

The Kings Creek watershed was sampled for the first time in 2006 at SR 1552 for both benthic macroinvertebrates and fish, and received ratings of Good and Excellent, respectively. The Stony Fork and North Prong Lewis Fork tributaries continue to be rated Excellent for both their benthic and fish

communities, and have shown very few discernable water quality stressors. The South Prong Lewis Fork fish community site at SR 1154 also improved in rating from Good to Excellent.

A few miles southwest of Wilkesboro, the benthic site at NC 18 on Moravian Creek has produced three consecutive Good-Fair ratings, and may be showing subtle signs of declining water quality in that agricultural watershed. The benthic site in Wilkesboro (Yadkin River at NC 18/268) has fluctuated between Good-Fair and Good since 1984, and is the only biological monitoring station in the Yadkin River Headwater HUC that improved two whole ratings in 2006; rising to Excellent.

The biological assessments of the Mulberry Creek watershed indicate good water quality. The creek was sampled for the first time for fish in 2006 at SR 1002 and received a rating of Good. Further downstream at NC 268, the stream has been rated Excellent for its benthic community on three occasions, and shows no signs of water quality stressors. The Roaring River at SR 1990 moved from Good to Excellent, and has been showing trends of stable or improving water quality since first sampled in 1983. The Middle Prong Roaring River fish community site rated Excellent for the second time in a row, after an initial 1996 rating of Good in this rural mountain watershed. The fish community of Big Bugaboo Creek just outside of Rhonda at SR 1924 was sampled for the first time in 2006, and earned a rating of Good.

Bound by Elkin and Jonesville, the Yadkin River at US 21 has been sampled for benthic macroinvertebrates on three occasions since 1996. This urban river site has maintained a rating of Good since the 2001 assessment, and has shown slight improvement over a ten-year period. The Elkin Creek tributary just upstream of this site has been sampled for its benthic community at NC 268 and further upstream for fish at SR 2044. The lower site has maintained a Good-Fair rating over three basinwide cycles and continues to show its urban influences. The new fish community site located about three miles upstream at SR 2044 is classified as WS-II; HQW, and was rated Good in 2006.
Streams in the northernmost areas of the Yadkin River Headwater HUC and especially the northwest corner of Surry County are typified by rural montane characteristics, and in general, exhibit good water quality. The upper Mitchell River watershed in western Surry County, much of which is classified as ORW (above the South Fork Mitchell confluence), has benefited from extensive restoration and conservation efforts. There are four biological monitoring stations located throughout the Mitchell River watershed.

The upper Mitchell River site at SR 1330 retained its third consecutive Good rating for benthos in 2006, and improved to a rating of Excellent based on the fish community. In fact, water quality (as indicated by the fish community) has shown a steady improvement over three assessments, from Good-Fair in 1996 to Excellent in 2006, and can be attributed to the ongoing conservation and habitat restoration efforts. Further downstream at the SR 1003 crossing, the 2006 benthic assessment of the Mitchell River indicated a return to a previous rating of Good (1987 and 1996) after one Excellent rating in 2001 based on low flows and the lack of nonpoint pollution inputs. The fish community of South Fork Mitchell River was sampled for the first time in 2006 at SR 1301, and was rated Excellent.

Snow Creek is a tributary to the lower Mitchell River that was rated Good-Fair for benthos at SR 1121 in 2001 and 2006 (a decline from a Good rating in 1996). This site however, which drains a primarily forested and agricultural watershed, was rated Excellent for fish in 2006.

The upper Fisher River watershed drains the rural extreme northwest corner of Surry County. The 2006 fish community site located at SR 1331 retained its water quality rating of Excellent, and is showing no discernable signs of stressors. However, the water quality ratings at two benthos sites further downstream (US 601 and NC 268) declined from Good in 2001 to Good-Fair in 2006 based on low flow and sedimentation (upstream residential construction), respectively. Originating in Virginia, the Little Fisher River retained its water quality ratings of Good (as indicated by the fish community) and Good-Fair (as indicated by benthic macroinvertebrates), but was noted as having an increased amount of interstitial sediment than in 2001. Although not sampled since the 1996 basinwide cycle, the fish community of Cody Creek (a tributary to the Little Fisher River) showed a slight water quality improvement, with an increase in rating from Good to Excellent.

The Yadkin River at SR 1003 (just before its turn to the south) has been sampled for benthic macroinvertebrates on three occasions, fluctuating between ratings of Good-Fair and Good since 1996. In 2006 the rating returned to Good-Fair, as the benthic community at this 1,228 square mile site is showing trends towards increasingly tolerant organisms.

Originating in the mountains of Virginia, the Ararat River watershed located in the northeast corner of the Yadkin River Headwaters HUC, comprises the entire Yadkin River subbasin 03, and is almost completely contained within Surry County. At the uppermost monitoring site on the Ararat River (NC 104), nearly the entire drainage flows from Virginia. In 2006, this site was rated Good based on the benthic community (an improvement from the two previous Good-Fair ratings) and Excellent based on the first fish community assessment. Further downstream at SR 2019, the benthic community has shown consistent improvements in water quality since the 1996 assessment (rated Fair). Since then, the site has earned a Good-Fair rating in 2001, then improved to a rating of Good for benthos in 2006, which was likely due to the loss of the textile industry in Mt Airy. All biological monitoring efforts indicate that water quality is improving in this watershed.

Stewarts Creek is a main tributary that drains the western side of the watershed. The fish community site in the upper part of this catchment (SR 1622) was rated Excellent for the third time in 2006, and the benthos site draining western Mt Airy (located just above the Ararat River confluence at SR 2258) earned a second rating of Good. The aquatic biotas at these sites are very stable and there appears to be no discernable water quality stressors in this watershed. There are three monitoring sites on Lovills Creek, which runs through the center of Mt Airy. The benthos site just below the Virginia line (SR 1700) has been rated Good-Fair on three occasions and continues to indicate no specific stressors in that upper part of the catchment. The Lovills Creek site at SR 1371 in southwest Mt Airy has been rated Fair in three consecutive benthos assessments, yet the first fish community sample in 2006 indicated Good water quality, mostly as a result of the extreme number of fish that were collected. In fact, the abundance of aquatic vegetation at this site (due to an open canopy and non-point nutrients) may be enhancing the fish community.

Flat Shoal Creek was sampled for the first time for benthos at SR 2017 in 2006, and earned a rating of Good-Fair. However, the influence of the Ararat River (site 250 feet above the Ararat River confluence) during high flow events may cause this site to be somewhat unrepresentative of the watershed as a whole. The fish community of Toms Creek, the next major downstream tributary to the Ararat River draining Pilot Mountain, was sampled at SR 2024 in 2001 and 2006 and has received its second consecutive rating of Excellent, with no apparent water quality issues.

In general, the areas that lie to the east and southeast of the town of Elkin in the Yadkin River Headwater HUC are dominated by Piedmont topographies. The Little Yadkin River watershed drains the southwest corner of Stokes County and maintained its third Excellent rating (as indicated by the fish community) at SR 1236. Further southwest at the SR 1102 crossing, the Little Yadkin River was rated Good-Fair following its first benthic macroinvertebrate assessment. This rating is reflective of the various land uses in the watershed including agriculture, commercial and residential. Situated between Winston-Salem and Yadkinville, the largely agricultural watershed of Forbush Creek has maintained its water quality rating of Good-Fair at SR 1570 since 1996, and is supporting a stable benthic community that may be showing a slight trend towards more tolerant species. Logan Creek is a tributary to Forbush Creek that has fluctuated between ratings of Good-Fair (1996 and 2006) and Good (2001). The drop in the 2006 rating may not be related to a decline in water quality in this agricultural watershed, but rather may reflect recent high flows that scoured the benthic population. The North Deep Creek watershed has maintained its water quality rating of Good-Fair for both benthos and fish community monitoring sites since it was first sampled in 1993. Water quality in the South Deep Creek watershed (drains the south side of Yadkinville) has also remained stable since 1996, with three ratings of Good (as indicated by the fish community at SR 1152), and three ratings of Good-Fair further downstream (as indicated by benthos at SR 1710).

In general, water quality in and around the Winston-Salem metropolitan area appears to be unchanged since the last basinwide assessment. The benthic site in the upper Muddy Creek watershed (at SR 1898) dropped by one bioclassification to Fair, likely because of a decline in habitat quality (erosion and

sedimentation). Although the monitoring site located further downstream on Muddy Creek at SR 2995 (below its confluence with Salem Creek) also declined by one rating to Fair, the benthic community at this location appears to indicate fairly stable stream conditions. Water Quality in Silas Creek also appears to be unchanged since the last monitoring cycle. This urban site was rated Good-Fair for the second time since 2002, based on its fish community. Both of the benthic sites in the heavily urbanized watershed of Salem Creek also retained their ratings of Fair and indicate stable water quality conditions. As indicated by the increase in the fish community rating at the SR 2902 crossing from Good-Fair to Good, water quality in the South Fork Muddy Creek watershed seems to be improving slightly. Possible reasons include the loss of industrial dischargers, as well as sewer collection system upgrades in Kernersville. However, the benthic macroinvertebrates sampled at this same location indicated no changes in water quality. Despite its location below the Muddy and Salem Creek catchments (about 10 miles downstream from the Muddy Creek confluence), the Yadkin River site at SR 1447 (this crossing is listed as SR 1147 in the 2001 Basinwide Assessment Report) maintained its fifth rating of Good for benthos since 1985. In part, good habitat qualities have been attributed to the stable benthic community at this location.

The US 158 monitoring site in the upper Dutchmans Creek watershed earned its second Good-Fair rating for both benthic macroinvertebrates and the fish community in 2006. As in 2001, low flows at this sandy low gradient site exposed some functional instream habitats (i.e. root mats), which may be affecting these ratings. Further downstream below Mocksville at the NC 810 crossing, the benthic rating for Cedar Creek improved slightly from Fair to Good-Fair because of slight improvements in habitat quality. However, both of these monitoring sites continue to suffer from the same habitat issues including sedimentation from easily eroded banks and instream habitat exposures that occur during periods of drought. The fish community of Cedar Creek (a tributary to Dutchmans Creek) has been sampled on three occasions since 1996, with the most recent sample resulting in a decline in rating from Good in 2001 to Fair in 2006. This stream is also a low flow affected stream that suffers from poor instream habitats during periods of drought.

River and Stream Assessment

Specific site summaries of the 40 benthic macroinvertebrate and 30 fish community samples may be found at this link: **03040101**.

SPECIAL STUDIES

Benthic Macroinvertebrate Monitoring of Stewarts Creek, Surry County

Stewarts Creek at NC 89 was re-sampled in order to determine if it should be placed on the 303d list, as an earlier 2001 sample resulted in a Fair bioclassification (BAU Memorandum B-021001). The 2002 resample produced a Good-Fair rating. A temporary cofferdam upstream of the sampling location during the 2001 sample restricted flow to the riffle area, and thereby lowered EPT richness and the bioclassification. The dam was removed after the 2001 sample, thereby restoring the riffle and the stream's bioclassification.

Benthic Macroinvertebrate Monitoring of Heatherly Creek, Surry County

Two sites on Heatherly Creek (at NC 268 and US 52) were sampled as part of an upstream/downstream study on the effects of the 1996 removal of the Pilot Mountain WWTP discharge on Heatherly Creek (BAU Memorandum B-040823). This facility used to discharge upstream of the US 52 location. The 2004 samples declined from the 2001 samples. The 2001 samples were collected during drought conditions, and were therefore receiving less polluted runoff from the upstream Town of Mt. Airy. In 2004, normal flows returned and the increased pollutant inputs lowered the bioclassifications from 2001 levels.

Benthic Macroinvertebrate Monitoring of Faulkner Creek, Surry County

Faulkner Creek was sampled at three locations (SR 1742, SR 1756, SR 1827) in order to determine if the stream should remain on the 303d list (BAU Memorandum B-020719). It was determined that the section of Faulkner Creek below SR 1742 should remain listed on the 303d list, as it received a Not Rated bioclassification.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
YADKIN R	SR 1372	06/05/06	Excellent

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
CALDWELL	1	03040101	12-(1)	360514	813556

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Crystalline Ridges and Mountains	C; Tr	9.2	3	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	0	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none		

Water Quality Parameters

Temperature (°C)	17.1
Dissolved Oxygen (mg/L)	9.2
Specific Conductance (µS/cm)	44
pH (s.u.)	6.7
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	13
Pool Variety (10)	9
Riffle Habitat (16)	16
Left Bank Stability (7)	3
Right Bank Stability (7)	7
Light Penetration (10)	3
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	84

Site Photograph

Substrate mostly cobble, boulder, gravel; some bedrock, sand

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
06/05/06	9939	-	43	-	2.67	Excellent
07/27/01	8525	-	33	-	3.50	Good

Taxonomic Analysis

The number of Trichoptera taxa doubled, from six in 2001 to 12 in 2006; four taxa not present in 2001 were common or abundant in 2006: *Lepidostoma* , *Dolophilodes* , *Polycentropus* , and *Rhyacophila fuscula* . The mayfly community differed somewhat between the two sampling events, and had a net addition of two taxa in 2006. The stonefly community was very similar in 2001 and 2006; the most notable addition was *Isoperla holochlora* , which was absent in 2001 and abundant in 2006.

Data Analysis

The site is 5.5 miles SE of Blowing Rock NC; the drainage area includes the watersheds of Ooten, Bailey Camp and Dennis Creeks. It was suggested in the prior BAU report that water quality in the catchment has been improving since 1988 when sampling occurred near the mouth of Dennis Creek and about 1 mile downstream of the present site on Yadkin River; both sites received ratings of Good-Fair in that year. The Excellent classification in 2006 provides support for the trend towards better water quality in the upper Yadkin River watershed.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
YADKIN R	NC 268, Patterson	06/06/06	Good-Fair

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
CALDWELL	1	03040101	12-(1)	355930	813329

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Eastern Blue Ridge Foothills	C; Tr	28.6	10	0.5

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	20	50	30	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
Omni Supply	NC0006254	0.45
Caldwell County Schools	NC0041181	0.008

Water Quality Parameters

Temperature (°C)	16.1
Dissolved Oxygen (mg/L)	8.6
Specific Conductance (µS/cm)	51
pH (s.u.)	6.5
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	15
Bottom Substrate (15)	10
Pool Variety (10)	9
Riffle Habitat (16)	7
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	10
Left Riparian Score (5)	3
Right Riparian Score (5)	2
Total Habitat Score (100)	73

Site Photograph

Substrate mostly bedrock, boulder, sand; some cobble, gravel, silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
06/06/06	9940	112	33	5.32	4.22	Good-Fair
08/30/01	8619	69	24	5.53	4.69	Good-Fair
07/22/96	7107	102	41	4.55	3.75	Good
07/10/90	5373	87	38	4.89	3.92	Good
08/04/87	4181	87	37	5.24	4.39	Good
08/06/85	3544	76	24	6.03	4.27	Good-Fair

Taxonomic Analysis

EPT richness was much lower in 2001 than 1996, but increased in 2006. Trichoptera richness took a particularly hard hit between 1996 and 2001, from 16 taxa down to seven; in 2006 the number was still low with eight caddisfly taxa collected. Between 1987 and 1996 there were six or seven hydropsychid taxa present at each sampling event; in two were present in 2001 and three in 2006. *Polycentropus* were either common or abundant prior to 2001, but rare in both 2001 and 2006.

Data Analysis

The site is located next to a USGS gauging station on Yadkin River near Patterson. Good-Fair ratings at the site in both 2001 and 2006 may be the result of road projects on NC 321; better erosion control in 2006 may be resulting in better values over 2001 for EPT richness and NCBI.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Yadkin R	**NC 268 (Legerwood)**	**08/02/06**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Caldwell	1	03040101	360048	813030	12-(1)	Eastern Blue Ridge Foothills

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C,Tr	85.2	1150	11	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	35	---	65	---

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
Patterson School (100% domestic, 1 mile above site)	NC0043125	0.025

Water Quality Parameters

Temperature (°C)	24.5
Dissolved Oxygen (mg/L)	7.8
Specific Conductance (µS/cm)	60
pH (s.u.)	5.9

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	14
Bottom Substrate (15)	11
Pool Variety (10)	6
Riffle Habitat (16)	7
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	8
Left Riparian Score (5)	3
Right Riparian Score (5)	3
Total Habitat Score (100)	**67**

Site Photograph

Substrate gravel, cobble, sand, bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
08/02/06	2006-106	22	48	Good
06/18/01	2001-60	20	48	Good
05/23/96	96-61	22	48	Good

Most Abundant Species Bluehead Chub

Exotic Species Central Stoneroller, Warpaint Shiner

Species Change Since Last Cycle **Gains** -- Gizzard Shad, Rosyside Dace, Whitefin Shiner. **Losses** -- Striped Jumprock

Data Analysis

Watershed -- drains the extreme western headwater portion of the Yadkin River in northeast Caldwell County, including the municipalities of Patterson and Legerwood. **Habitats** -- runs, riffles, car snags (old bank stabilization), woody snags, no true pools; narrow riparian zones; low flow. **2006** -- moderate abundances, but good diversity of fish community; total of 24 species collected with Smallmouth Bass and Flat Bullhead counted (young-of-year representation only). **1996-2006** -- 26 species have been collected from this site; stable darter populations with same three species; Redbreast Sunfish is the one consistent sunfish present; declining number of sucker species in three assessments (5,4,3, respectively); same four intolerant species collected; no trout collected in 1996, 2001, or 2006: identical NCIBI scores and ratings over a ten year period.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
YADKIN R	**NC 18/268**	**06/08/06**	**Excellent**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
WILKES	1	03040101	12-(38)	360909	810845

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	500	30	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	10	80	10	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none		

Water Quality Parameters

Temperature (°C)	18.9
Dissolved Oxygen (mg/L)	9.1
Specific Conductance (µS/cm)	41
pH (s.u.)	6.6
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	6
Pool Variety (10)	0
Riffle Habitat (16)	12
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	2
Left Riparian Score (5)	3
Right Riparian Score (5)	3
Total Habitat Score (100)	59

Site Photograph

Substrate mostly cobble with some gravel and sand

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
06/08/06	9950	114	46	4.61	3.69	Excellent
07/25/01	8516	94	32	5.31	4.41	Good-Fair
07/24/96	7116	72	39	5.03	4.01	Good
06/07/93	6181	73	34	5.50	4.47	Good-Fair
08/10/89	5047	75	35	4.76	4.22	Good

Taxonomic Analysis

In 2006 the site had the highest number of EPT taxa than for any prior sampling event, with the next greatest number of 39 EPT taxa occurring in 1996. In fact, each of the three orders were higher in 2006 than for any previous year; seasonality does not account for the high numbers of those taxa seen. Four taxa were either common or abundant in 2006 and unrecorded for previous years: *Agnetina* , *Ceraclea ancylus* , *Neophylax fuscus* , and *Neophylax oligius* . The decrease in NCBI and EPT BI between 2001 and 2006 is due in large part to several taxa intolerant to the presence of stressors that were either common or abundant in 2006 and absent in 2001: *Drunella tubercalata* , *Serratella deficiens* , *Serratella molita* , *Agnetina* , *Pteronarcys* , *Ceraclea ancylus* , *Neophylax fuscus* , and *Neophylax oligius* .

Data Analysis

The site was sampled about 300 feet downstream of the NC 18/268 bridge at Wilksboro NC. The site has been sampled ten times since 1984. On seven of those occasions the site received a rating of Good-Fair, and at three other times a rating of Good. Only after the most recent sampling event in 2006 has the site received a classification of Excellent. In addition to having the highest number of EPT taxa in 2006, the site in 2006 also had the lowest NCBI and EPT BI values. The sedimentation and large amounts of filamentous algae noted in 2001 were not seen in 2006 and are likely significant for the results from the benthic data seen in 2006.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
YADKIN R	**US 21**	**08/07/06**	**Good**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
YADKIN	2	03040101	12-(53)	361427	805057

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	828.2	50	1

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	10	70	20	

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
Louisiana Pacific Corp - ABTCO (approcimately 15.5 miles upstream)	NC0005266	1
North Wilkesboro WWTP (approximately 22.5 miles upstream)	NC0020761	2
Wilkesboro WWTP (approximately 23.6 miles upstream)	NC0021717	4.9

Water Quality Parameters

Temperature (°C)	26
Dissolved Oxygen (mg/L)	6.9
Specific Conductance (µS/cm)	57
pH (s.u.)	6.2
Water Clarity	turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	14
Bottom Substrate (15)	8
Pool Variety (10)	0
Riffle Habitat (16)	7
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	2
Left Riparian Score (5)	3
Right Riparian Score (5)	4
Total Habitat Score (100)	52

Site Photograph

Substrate Gravel, rubble, sand

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/07/06	10006	82	35	4.9	3.9	Good
08/06/01	8562	65	30	4.7	3.8	Good
07/23/96	7094	56	23	5.4	4.4	Good-Fair

Taxonomic Analysis

Total taxa collected in 2006 increased relative to 2001, mostly due to more midge species, though the sensitivity of the overall community decreased slightly. Trichopteran taxa collected in 2006 including *Brachycentrus, Ceraclea,* and *Micrasema* indicate that species absent in 2001 may have been the result of droughts and decreased habitat available that year. Amphipod and isopod species collected in 2006 may support the assumption that additional organic leaf litter along the edges of the river provided better habitat during this period.

Data Analysis

This relatively urban site, bounded by the towns of Elkin ad Jonesville has had biological results that suggest relatively stable water quality conditions and even improvement on a ten-year scale. At the head of subbasin 2, the drainage immediately upstream of this wide site is predominately rural once it passes Wilkesboro 22 miles upstream. The site offers fairly homogenous gravel/sand habitat with little riparian canopy and few pools.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
YADKIN R	SR 1003	08/09/06	Good-Fair

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
SURRY	2	03040101	12-(53)	361655	803351

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	1227.8	70	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	60	10	30	

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None		

Water Quality Parameters

Temperature (°C)	26.3
Dissolved Oxygen (mg/L)	7.2
Specific Conductance (µS/cm)	60
pH (s.u.)	6.9
Water Clarity	turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	12
Bottom Substrate (15)	8
Pool Variety (10)	0
Riffle Habitat (16)	7
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	2
Left Riparian Score (5)	3
Right Riparian Score (5)	3
Total Habitat Score (100)	53

Site Photograph

Substrate Gravel, boulder, sand, bedrock

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/09/06	10013	78	29	5.3	4.2	Good-Fair
08/07/01	8569	65	30	4.5	3.8	Good
07/27/96	7078	62	30	5.4	4.6	Good-Fair

Taxonomic Analysis

Total taxa at this site increased relative to the previous (2001) sampling event, mostly by a large increase in chironomid taxa. At the same time, the biotic index of the site increased from 4.54 to 5.25, helping to reduce the site's bioclassification from Good in 2001 to the current Good-Fair rating. The relative abundance of tolerant organisms like *Larsia, Argia, Plauditus dubius* and the absence/paucity of sensitive taxa previously present like *Protoptila* and *Promoresia elegans* helped foment this change.

Data Analysis

This site is located between the confluences of the Fisher and Ararat rivers and receives 1228 square miles of drainage at this point. The River is wide and flowing over a short, exposed area of riffle/bedrock. Though benthos results seem relatively stable over time, hovering in the Good to Good-Fair range, the current rating shows a trend toward a more tolerant community of organisms.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
YADKIN R	SR 1447	08/09/06	Good

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
DAVIDSON	4	03040101	12-(97.5)	355140	802315

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Outer Piedmont	WS-IV	2160.6	50	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	50	10	40	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
Winston-Salem Muddy Creek WWTP	NC0050342	21.0

Water Quality Parameters

Temperature (°C)	28.2
Dissolved Oxygen (mg/L)	6.5
Specific Conductance (µS/cm)	118
pH (s.u.)	6.5
Water Clarity	turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	11
Pool Variety (10)	5
Riffle Habitat (16)	9
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	2
Left Riparian Score (5)	5
Right Riparian Score (5)	3
Total Habitat Score (100)	70

Site Photograph

Substrate cobble, gravel and sand

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/09/06	10045	85	33	5.4	4.3	Good
09/12/01	8631	67	29	5.5	4.6	Good
07/09/90	5368	64	27	5.5	4.6	Good
08/05/86	3898	67	26	5.8	4.8	Good
09/09/85	3670	60	23	5.7	4.5	Good

Taxonomic Analysis

The number of EPT species collected has risen slightly every collection year since 1985 to the current number of 33 taxa. Additionally, the BI has decreased slightly over the same period. This site on the Yadkin River was not sampled in 1996 due to high flows. Three intolerant species were abundant in 2006, a mayfly (*Heptagenia*) and two caddisflies (*Brachycentrus numerosu*s and *Protoptila*). Of note is the fact that more relatively intolerant taxa were abundant than tolerent taxa. As in 2001, three stonefly species were present though were rare.

Data Analysis

This site is approximately 10 miles downstream from the confluence with Muddy Creek and the outfall to the Muddy Creek WWTP. The large urban area of Winston-Salem drains into the Yadkin via Muddy Creek and therefore has the potential to affect water quality, particularly during low flows. Water quality, however, has remained good since 1985 indicating substantial dilution effect of water received from upstream of Muddy Creek. Another contributing factor to the high EPT count is the high amount of favorable habitat available for colonization.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Buffalo Cr	**SR 1594**	**08/03/06**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Caldwell	1	03040101	360246	813149	12-19	Southern Crystalline Ridges and Mountains

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C,Tr	29.8	1230	13	0.3	Yes

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	95	---	---	5 (camp lawns)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	22.6
Dissolved Oxygen (mg/L)	7.4
Specific Conductance (µS/cm)	35
pH (s.u.)	7.0

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	15
Pool Variety (10)	9
Riffle Habitat (16)	14
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	4
Total Habitat Score (100)	**91**

Site Photograph

Substrate cobble, boulder, bedrock shelves

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
08/03/06	2006-108	13	52	Good
06/08/99	99-42	15	56	Excellent

Most Abundant Species Bluehead Chub

Exotic Species Striped Jumprock, Smallmouth Bass, Central Stoneroller, Warpaint Shiner, Brown Trout

Species Change Since Last Cycle **Losses** -- White Sucker, Sandbar Shiner, Piedmont Darter **Gains** -- Brown Trout

Data Analysis

Watershed -- drains the extreme northeast corner of Caldwell County, and the extreme southeast corner of Watauga County; site location is at Camp Carolwood. **Habitats** -- high quality; runs, riffles, plunge pools; good riparian; low flow. **2006** -- 16 species collected including three that were only represented by young-of-year fish (White Sucker, Piedmont Darter, and Creek Chub); 77% of species with multiple age groups. **1999-2006** -- total of 17 species collected from this site; slight drop in NCIBI score and rating from 1999 special study.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
BUFFALO CR	**SR 1505**	**06/06/06**	**Excellent**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
CALDWELL	1	03040101	12-19	360143	813045

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Crystalline Ridges and Mountains	C; Tr	32.2	12	0.5

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	0	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none		

Water Quality Parameters

Temperature (°C)	17.8
Dissolved Oxygen (mg/L)	9.6
Specific Conductance (µS/cm)	29
pH (s.u.)	6.6
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	15
Bottom Substrate (15)	13
Pool Variety (10)	6
Riffle Habitat (16)	14
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	7
Left Riparian Score (5)	4
Right Riparian Score (5)	5
Total Habitat Score (100)	82

Site Photograph

Substrate bedrock and a mix of boulder, cobble, sand and silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
06/06/06	9942	-	48	-	3.36	Excellent
08/30/01	8620	-	43	-	3.88	Excellent
07/22/96	7108	-	40	-	3.65	Excellent

Taxonomic Analysis

EPT richness increased in both 2001 and 2006. In 2006 the increase occurred in spite of the fewest number of recorded caddisfly taxa for the site; both mayfly and stonefly richness were higher in 2006 than for the two prior sampling events. Seasonality is playing a role in increased mayfly and stonefly richness; five taxa identified by the BAU as winter seasonal (*Dannella simplex* , *Drunella walkeri* , *Eurylophella verisimilis* , *Haploperla brevis* , and *Isoperla transmarina*) were present in the June sample in 2006 and absent in later season samples in 1996 and 2001. Three taxa were abundant in 2006 though unrecorded in prior samples: *Drunella cornutella* , *Maccaffertium ithaca* , and *Dolophilodes* . Though either common or abundant in 1996 and 2001, no *Micrasema* were identified from the site in 2006.

Data Analysis

The site is eight miles north of Lenoir NC, one mile south of the summit of Winding Stairs Mountain, about one mile above the confluence of Buffalo Creek and Yadkin River, and about 450 feet below a small impoundment. The highest EPT richness and the lowest EPT BI were recorded for the site in 2006. No water quality problems are indicated by the benthic community.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
KINGS CR	SR 1552	06/07/06	Good

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
CALDWELL	1	03040101	12-23	360234	812453

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C; Tr	25.8	12	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	20	0	80	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none		

Water Quality Parameters

Temperature (°C)	15.5
Dissolved Oxygen (mg/L)	9.8
Specific Conductance (µS/cm)	51
pH (s.u.)	6.7
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	11
Bottom Substrate (15)	3
Pool Variety (10)	9
Riffle Habitat (16)	7
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	7
Left Riparian Score (5)	2
Right Riparian Score (5)	4
Total Habitat Score (100)	57

Site Photograph

Substrate mostly sand and silt with a small amount of gravel

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
06/07/06	9946	-	28	-	4.19	Good

Taxonomic Analysis

The presence of *Brachycercus* spp. and *Caenis* spp. (both common) is a benthic reflection of the silt and sand substrate. A species of *Pteronarcys* was abundant suggesting stability of water quality and habitat at the site. Other abundant taxa were: *Baetis intercalaris*, *Plauditus dubius* group, *Serratella deficiens*, *Serratella serrata*, *Maccaffertium modestum*, *Isonychia*, *Perlesta*, *Ceratopsyche bronta*, *Ceratopsyche sparna*, *Cheumatopsyche*, and *Neophylax oligius*.

Data Analysis

The site is about 11 miles NE of Lenoir NC and one stream mile above the confluence with Yadkin River. The drainage area captures much of the region between Brushy Mountains and Yadkin River in Caldwell County. This is the first year for a benthic collection on the stream. Though the site classified as Good, one taxon fewer would have resulted in a classification of Good-Fair. Habitat homogeneity resulting from a dominance of silt and sand as the bottom substrate is very likely depressing richness at the site. The EPT BI was relatively high; of the ten EPT samples collected in Yadkin River subbasin 01 in 2006, only the basinwide site at Moravian Creek was higher.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Kings Cr	**SR 1552**	**06/23/06**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Caldwell	1	03040101	360235	812453	12-23	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C,Tr	27.6	1075	8	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	50	---	50	---

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	19.4
Dissolved Oxygen (mg/L)	7.7
Specific Conductance (µS/cm)	58
pH (s.u.)	6.0

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	3
Pool Variety (10)	4
Riffle Habitat (16)	14
Left Bank Stability (7)	4
Right Bank Stability (7)	4
Light Penetration (10)	7
Left Riparian Score (5)	2
Right Riparian Score (5)	5
Total Habitat Score (100)	**65**

Site Photograph

Substrate gravel, sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/23/06	2006-95	21	54	Excellent

Most Abundant Species Bluehead Chub

Exotic Species Striped Jumprock, Central Stoneroller, Warpaint Shiner, Brown Trout

Species Change Since Last Cycle N/A, new site in 2006

Data Analysis

Watershed -- drains the northeast corner of Caldwell County. **Habitats** -- borderline between Piedmont and Mountains (Eastern Blue Ridge Foothills); snags, gravel riffles, undercuts, few side snag pools; riprap on left to stabilize banks leading to corn fields; tires in stream throughout sample reach, trash dump at upper end. **2006** -- first fish community sample at this location; good abundance (n=599) and diversity with three darter species, two sunfish, one bass, and one trout species, three sucker species, and two intolerant species; slightly skewed trophic structure towards Omnivores+Herbivores (Bluehead Chub = 41% of sample); large suckers collected with high biomass.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
ELK CR	**SR 1175**	**06/07/06**	**Excellent**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
WILKES	1	03040101	12-24-(10)	360623	812617

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Crystalline Ridges and Mountains	B; ORW	43.2	18	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	0	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none		

Water Quality Parameters

Temperature (°C)	21
Dissolved Oxygen (mg/L)	8.8
Specific Conductance (µS/cm)	36
pH (s.u.)	6.9
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	11
Bottom Substrate (15)	13
Pool Variety (10)	5
Riffle Habitat (16)	12
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	79

Site Photograph

Substrate mix of boulder, cobble, gravel, sand, and silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
06/07/06	9948	135	62	4.26	3.53	Excellent
08/29/01	8618	100	43	4.64	3.68	Good
07/22/96	7109	85	42	4.68	3.90	Good
07/29/88	4643	96	47	4.52	3.52	Excellent
08/06/85	3545	107	44	4.73	3.73	Good

Taxonomic Analysis

The highest number of EPT taxa in Yadkin River basin in 2006 were collected at the site, far exceeding the next highest number of 53 EPT taxa collected at three other sites. Seasonality is playing only a small role in the high number of EPT taxa collected in 2006; three taxa identified as winter seasonal (*Eurylophella aestiva* , *Isoperla transmarina* , and *Apatania*) were collected in the early June sample in 2006 and not collected previously in later season samples. Several EPT taxa were identified from the site for the first time in 2006 and were either common or abundant: *Heterocloeon curiosum* , *Plauditus dubius* group, *Procloeon* , *Drunella tuberculata* , *Eurylophella aestiva* , *Serratella serrata, Apatania* , and *Paranyctiophylax nephophilus* .

Data Analysis

The site is 14.5 miles NNE of Lenoir NC, about 4.5 stream miles above the confluence with Yadkin River, and between Elk and County Line Ridges. High numbers of EPT taxa and specimens collected places the site into the Excellent category for 2006; the NCBI is somewhat high for the category, indicating a relatively tolerant community considering the Excellent classification. However, the highest number of EPT taxa and the lowest NCBI value were recorded for the site in 2006, possibly indicating an improvement in water quality.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
LAUREL CR	**SR 1508**	**06/07/06**	**Excellent**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
WATAUGA	1	03040101	12-24-8	360941	813013

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Crystalline Ridges and Mountains	C; Tr, ORW	8.3	7	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	0	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none		

Water Quality Parameters

Temperature (°C)	16.9
Dissolved Oxygen (mg/L)	9.5
Specific Conductance (µS/cm)	26
pH (s.u.)	6.9
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	19
Bottom Substrate (15)	14
Pool Variety (10)	9
Riffle Habitat (16)	16
Left Bank Stability (7)	7
Right Bank Stability (7)	6
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	96

Site Photograph

Substrate relatively even mix of boulder, cobble, gravel, sand

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
06/07/06	9947	-	47	-	2.82	Excellent

Taxonomic Analysis

Several taxa uncommonly collected in North Carolina were present at the site: *Habrophlebia vibrans*, *Rhithrogena exilis*, *R. uhari*, *Acroneuria carolinensis*, and *Apatania*. In addition, one stonefly rarely collected in the state was present: *Acroneuria evoluta*. Abundant taxa were: *Baetis flavistriga*, *Baetis intercalaris*, *Drunella cornutella*, *Epeorus rubidus*, *Leucrocuta*, *Maccaffertium ithaca*, *Paraleptophlebia*, *Leuctra*, *Tallaperla*, *Acroneuria abnormis*, *Perlesta*, *Isoperla holochlora*, and *Neophylax oligius*.

Data Analysis

The site is about 10 miles ESE of Boone NC and about 450 feet above the confluence with Elk Creek. A portion of the drainage area coincides with a portion of the proposed 6000-acre Laurelmor Resort. Laurel Creek and all of its tributaries are classified as Outstanding Resource Waters. Good habitat diversity was reflected by the high number of EPT taxa collected. The site had been sampled once before, in December 1987, at which time it received a classification of Excellent. EPT richness was slightly higher in summer 2006 than winter 1987 (47 versus 45), contrary to the expectations of higher diversity in winter. In neither year did the benthic macroinvertebrate community show indications of impact at the site. The site supports a diverse and pollution-intolerant assemblage of macroinvertebrate species.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Laurel Cr	**SR 1508**	**08/03/06**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Watauga	1	03040101	360942	813012	12-24-8	Southern Crystalline Ridges and Mountains

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C,Tr,ORW	7.8	1430	10	0.3	Yes

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	85	---	---	15 (rural residential)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	22.3
Dissolved Oxygen (mg/L)	7.1
Specific Conductance (µS/cm)	30
pH (s.u.)	5.8

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	13
Pool Variety (10)	9
Riffle Habitat (16)	14
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	4
Total Habitat Score (100)	**92**

Site Photograph

Substrate cobble, boulder, gravel, sand, silt, bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
08/03/06	2006-109	13	48	Good
05/05/99	99-31	13	52	Good
10/01/98	98-80	14	54	Excellent
05/23/96	96-62	14	54	Excellent

Most Abundant Species Central Stoneroller

Exotic Species Rock Bass, Smallmouth Bass, Central Stoneroller, Warpaint Shiner, Brown Trout

Species Change Since Last Cycle **Gains** -- Notchlip Redhorse, Warpaint Shiner **Losses** -- White Sucker, Striped Jumprock

Data Analysis

Watershed -- drains the rural area of eastern-central Watauga County; watershed is part of the Powderhorn Development; three small impoundments in the upstream watershed. **Habitats --** runs, riffles, pools; *Rhododendron* and Hemlock-lined; water was clear, but became very silty during sampling. **2006** -- fewer fish than all previous samples (n=128 vs. 494 in 1999, 737 in 1998, and 280 in 1996); Redlip Shiner numbers very low (n=5 vs. 88 in 1999, 259 in 1998, and 125 in 1996); much higher percentage of piscivores collected (~15%) including large specimens of Smallmouth Bass, Rock Bass, and Brown Trout; fewer Stonerollers than in 1999; Warpaint Shiner is new. **1996-2006** -- consistently high habitat scores; fluctuation of trophic structure over ten year period; steady drop in NCIBI score since the 1998 assessment; stream appears to be siltier than in past assessments; the three upstream impoundments have no minimum flow requirements which may reduce flow in this watershed during periods of drought.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Beaver Cr	**SR 1131**	**06/22/06**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Wilkes	1	03040101	360428	812110	12-25	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C,Tr	17.4	---	9	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	30	---	60	10 (rural residential)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	23.0
Dissolved Oxygen (mg/L)	7.3
Specific Conductance (µS/cm)	57
pH (s.u.)	5.8

Water Clarity	Slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	11
Bottom Substrate (15)	3
Pool Variety (10)	8
Riffle Habitat (16)	3
Left Bank Stability (7)	2
Right Bank Stability (7)	5
Light Penetration (10)	7
Left Riparian Score (5)	1
Right Riparian Score (5)	5
Total Habitat Score (100)	**50**

Site Photograph

Substrate sand, bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/22/06	2006-94	18	52	Good
06/18/01	2001-61	19	50	Good
05/21/96	96-56	14	50	Good

Most Abundant Species Bluehead Chub

Exotic Species Striped Jumprock, Central Stoneroller

Species Change Since Last Cycle **Losses** -- Brown Trout, **Gains** -- none.

Data Analysis

Watershed -- drains the southernmost tip of Wilkes County and a small section of northeast Caldwell County; a tributary to W. Scott Kerr Reservoir. **Habitats** -- lots of deadfalls, sandy shallow runs; severe erosion along left bank, corn field above left bank. **2006** -- good diversity with two darter species, four sunfish and one bass species, three sucker species, and one intolerant species; the trophic structure was slightly skewed towards Omnivores+Herbivores (Bluehead Chub = 33% of sample). **1996-2006** -- there are 20 species known from this site; excluding the one Brown Trout collected in 2001 and the one Common Carp collected in 1996, the list of collected species has not changed; consistently low habitat scores (49-50 total score), but stable NCIBI metrics and the same water quality rating over a ten year period.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Stony Fk	**SR 1170**	**06/23/06**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Wilkes	1	03040101	360741	812343	12-26-(7)	Southern Crystalline Ridges and Mountains

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	25.8	1150	11	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	45	---	50	5 (rural residential)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	21.5
Dissolved Oxygen (mg/L)	8.1
Specific Conductance (µS/cm)	37
pH (s.u.)	6.1

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	12
Pool Variety (10)	4
Riffle Habitat (16)	16
Left Bank Stability (7)	4
Right Bank Stability (7)	1
Light Penetration (10)	5
Left Riparian Score (5)	3
Right Riparian Score (5)	0
Total Habitat Score (100)	**66**

Site Photograph

Substrate	cobble, boulder

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/23/06	2006-96	18	54	Excellent

Most Abundant Species	Bluehead Chub	**Exotic Species**	Striped Jumprock, Rock Bass, Smallmouth Bass, Central Stoneroller, Brown Trout

Species Change Since Last Cycle	N/A, new site in 2006

Data Analysis

Watershed -- drains a portion of the western tip of Wilkes County and the extreme eastern corner of Watauga County; a tributary to W. Kerr Scott Reservoir. **Habitats** -- fast runs, good gradient riffles; severe bank erosion from cattle, especially on the right bank; 50-75 animals were in the stream (see picture) and the adjacent woods prior to sampling; specific conductance was not elevated due to wastes in and near the stream, perhaps because of good flow; the extremely rocky substrates and gradient may be offsetting the affects of instream erosion from cattle. **2006** -- first fish community sample at this site; good numbers (n = 484) and diversity of fish with two darter species, four sunfish, bass and trout species, three sucker species, and four intolerant species; White Sucker only represented by young-of-year.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
STONY FK	**SR 1135**	**06/06/06**	**Excellent**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
WILKES	1	03040101	12-26-(7)	360638	812136

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	33.8	15	0.5

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	79	0	30	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none		

Water Quality Parameters

Temperature (°C)	20.2
Dissolved Oxygen (mg/L)	8.3
Specific Conductance (µS/cm)	32
pH (s.u.)	6.5
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	11
Bottom Substrate (15)	3
Pool Variety (10)	10
Riffle Habitat (16)	6
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	6
Left Riparian Score (5)	5
Right Riparian Score (5)	3
Total Habitat Score (100)	62

Site Photograph

Substrate mostly bedrock, sand, boulder; some cobble, silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
06/06/06	9944	-	42	-	3.74	Excellent
06/11/02	8776	-	41	-	3.38	Excellent
07/26/01	8523	-	44	-	3.66	Excellent
07/22/96	7110	-	37	-	3.62	Excellent

Taxonomic Analysis

Three taxa were collected for the first time in 2006 and were either common or abundant in the sample: *Plauditus cestus* , *Ephemerella catawba* , and *Isoperla holochlora* . Otherwise the EPT community has been quite stable over the most recent three sampling events. Other abundant taxa in 2006 were: *Baetis intercalaris* , *Baetis pluto* , *Heterocloeon curiosum* , *Plauditus dubius* group, *Caenis* , *Serratella deficiens* , *Serratella molita* , *Stenacron pallidum* , *Isonychia* , *Ephoron leukon* , *Acroneuria abnormis* , *Perlesta* , *Ceratopsyche sparna* , *Cheumatopsyche* , and *Psychomyia nomada* .

Data Analysis

The site is 7.7 miles WSW of Kerr Scott Dam and 1.6 miles from the confluence with Yadkin River. The site supports a diverse and intolerant benthic community. The biological data do not indicate the presence of stressors, and water quality appears to be stable.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
N PRONG LEWIS FORK	NR SR 1300	06/06/06	Excellent

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
WILKES	1	03040101	12-31-1-(4)	361110	811818

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	23.8	18	0.5

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	40	30	30	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none		

Water Quality Parameters

Temperature (°C)	18.8
Dissolved Oxygen (mg/L)	8.8
Specific Conductance (µS/cm)	25
pH (s.u.)	6.5
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	11
Bottom Substrate (15)	3
Pool Variety (10)	10
Riffle Habitat (16)	12
Left Bank Stability (7)	6
Right Bank Stability (7)	7
Light Penetration (10)	7
Left Riparian Score (5)	3
Right Riparian Score (5)	5
Total Habitat Score (100)	69

Site Photograph

Substrate 1/3 sand, 1/3 bedrock, even distribution among other classes

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
06/06/06	9943	-	38	-	3.32	Excellent
06/10/02	8772	-	42	-	3.45	Excellent
07/25/01	8518	-	35	-	3.58	Good
07/23/96	7114	-	33	-	3.25	Good

Taxonomic Analysis

Greater mayfly diversity, and to a lesser extent greater stonefly diversity, has resulted in high EPT richness in 2001 and 2006. Three mayfly species were common in 2006 though unreported from earlier collections: *Drunella cornutella*, *Ephemerella dorothea*, and *Eurylophella aestiva*. Seasonality is a factor for higher EPT richness values in 2002 and especially in 2006 (samples were collected in the first half of June in both years) than in 1996 and 2001 (collected in the last half of July). Seven of the taxa recorded at the site are identified as winter seasonal by the BAU (*Dannella simplex*, *Drunella walkeri, Ephemerella catawba, E. dorothea, Eurylophella aestiva, Eu. verisimilis, Epeorus dispar*); six of those taxa were only collected in the June samples (and four of those were only collected in 2006). There are also seven summer seasonal taxa recorded for the site (*Baetis flavistriga*, *Baetis intercalaris*, *Heterocloeon curiosum*, *Serratella deficiens*, *Ephoron leukon*, *Oecetis*, *Triaenodes ignitus*); overall those summer taxa do not show any relationship between June and July sampling events at the site.

Data Analysis

The site is about 9 miles W of North Wilksboro NC and about 5.5 miles NW of Kerr Scott dam. The benthic community at the site appears to be stable, with most differences between sampling events due to seasonality. No stressors are indicated by the benthic data.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
N Prong Lewis Fk	**SR 1304**	**08/03/06**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Wilkes	1	03040101	361100	811812	12-31-1-(4)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	23.7	1190	9	0.4	Yes

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	60	---	15	25 (rural residential)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	24.0
Dissolved Oxygen (mg/L)	7.5
Specific Conductance (µS/cm)	30
pH (s.u.)	5.6

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	15
Bottom Substrate (15)	7
Pool Variety (10)	6
Riffle Habitat (16)	10
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	8
Left Riparian Score (5)	3
Right Riparian Score (5)	5
Total Habitat Score (100)	**71**

Site Photograph

Substrate cobble, boulder, bedrock, sand, silt

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
08/03/06	2006-110	15	56	Excellent
06/19/01	2001-64	17	56	Excellent
05/21/96	96-55	15	48	Good

Most Abundant Species Redlip Shiner

Exotic Species Striped Jumprock, Smallmouth Bass, Central Stoneroller, Brown Trout

Species Change Since Last Cycle **Losses** -- Brassy Jumprock, Redbreast Sunfish, Bluegill. **Gains** -- Brown Trout

Data Analysis

Watershed -- drains part of the northwest region of Wilkes County; a tributary to W. Kerr Scott Reservoir. **Habitats** -- pools, riffles, lower half of reach is sandy. **2006** -- diverse assemblage of fish including three darter species, one bass and one trout species, three sucker species, and three intolerant species; stream continues to have very low percentage of tolerant fish (3%). **1996-2006** -- 19 species have been collected from this site; this stream continues to support a well balanced community of fish with the same NCIBI score and Excellent rating since 2001.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
S Prong Lewis Fk	**SR 1154**	**08/04/06**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Wilkes	1	03040101	360918	811948	12-31-2-(7)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-IV	32.3	1150	11	0.4	Yes

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	98	---	---	2 (Kudzu slope)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	22.3
Dissolved Oxygen (mg/L)	7.6
Specific Conductance (µS/cm)	35
pH (s.u.)	6.4

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	8
Pool Variety (10)	6
Riffle Habitat (16)	15
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	8
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**80**

Site Photograph

Substrate cobble, boulder, bedrock, sand, silt

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
08/04/06	2006-111	22	54	Excellent
06/19/01	2001-63	17	48	Good
05/21/96	96-54	16	50	Good

Most Abundant Species Redlip Shiner

Exotic Species Striped Jumprock, Smallmouth Bass, Central Stoneroller

Species Change Since Last Cycle **Gains** -- Brassy Jumprock, Smallmouth Bass, Spottail Shiner, Snail Bullhead, Flat Bullhead. **Losses** -- none.

Data Analysis

Watershed -- drains a portion of rural northwest Wilkes County; a tributary to W. Scott Kerr Reservoir. **Habitats** -- riffles, runs, chutes, sand in channel in mid reach; not as silty compared to 2001 sample when US 421 was being widened. **2006** -- low flow; fewer fish than 2001 (734 vs 1009), but a gain of five species (plus all previously collected species); a balanced and diverse community including three darter species, one sunfish and one bass species, four sucker species, and five intolerant species; Brown Trout represented by young-of-year only. **1996-2006** -- stream has always had a very low percentage of piscivores (<1%); the trophic structure has shifted to a more balanced community of fish since 2001 (Insectivores and Omnivores+Herbivores both equaled ~50% in 2001; in 2006, Insectivores = 70% and Omnivores+Herbivores = 30%). This trophic shift is the main reason for a higher NCIBI score and rating in 2006.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
MORAVIAN CR	**NC 18**	**06/05/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
WILKES	1	03040101	12-39	360517	811201

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	18.3	5	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	20	0	80	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none		

Water Quality Parameters

Temperature (°C)	16.6
Dissolved Oxygen (mg/L)	9.8
Specific Conductance (µS/cm)	48
pH (s.u.)	6.7
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	14
Bottom Substrate (15)	7
Pool Variety (10)	0
Riffle Habitat (16)	12
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	7
Left Riparian Score (5)	4
Right Riparian Score (5)	3
Total Habitat Score (100)	63

Site Photograph

Substrate mostly sand, some gravel, small amount of silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
06/05/06	9937	-	24	-	4.69	Good-Fair
07/26/01	8522	-	25	-	4.97	Good-Fair
07/23/96	7115	-	27	-	4.26	Good-Fair

Taxonomic Analysis

The decline in the number of EPT taxa at the site over the three sampling events is driven by the loss of Plecoptera, which is generally the most sensitive group of the three to the presence of environmental stressors; stoneflies have decreased from five taxa in 1996, to two in 2001, and to one in 2006. The remaining stonefly in 2006, *Perlesta* , is the most tolerant of those taxa found in prior sampling events. Such characteristics of the benthic fauna at the site would suport an argument for a trend towards declining water quality. However, the most tolerant taxon recorded from the site, *Hydropsyche betteni* , was abundant in 1996, common in 2001, and not collected in 2006. Secondly, an intolerant caddisfly, *Neophylax oligius* , has been identified in increasing numbers from no record in 1996, common in 2001, and abundant in 2006. Lastly, an intolerant mayfly, *Serratella serrata,* was abundant in 2006 yet uncollected in either of the two prior sampling events.

Data Analysis

The site is about 4.5 miles SSW of Wilkesboro NC and 3.5 miles SSE of Kerr Scott Dam. The site had the highest EPT BI value for the ten sites collected in Yadkin River subbasin 01 in 2006 using EPT methods. The paucity of large rocky substrate for macroinvertebrate colonization is likely limiting the benthic community. Declining EPT and especially Plecoptera richness over the three sampling events may be reflecting declining water quality at the site, though EPT BI values and characteristics of the mayfly and caddisfly communities do not provide evidence for such a trend.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
N Fk Reddies R	**SR 1567**	**08/04/06**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Wilkes	1	03040101	361723	811631	12-40-4	Southern Crystalline Ridges and Mountains

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-II,Tr, HQW	12.7	1293	7	0.4	Yes

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	85	---	10	5 (rural residential)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	21.5
Dissolved Oxygen (mg/L)	8.4
Specific Conductance (µS/cm)	33
pH (s.u.)	6.2

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	10
Pool Variety (10)	6
Riffle Habitat (16)	16
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	9
Left Riparian Score (5)	3
Right Riparian Score (5)	5
Total Habitat Score (100)	**84**

Site Photograph

Substrate cobble, boulder, bedrock, gravel, sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
08/04/06	2006-112	11	50	Good
06/19/01	2001-65	17	56	Excellent
05/05/99	99-33	14	58	Excellent

Most Abundant Species Bluehead Chub

Exotic Species Rock Bass, Smallmouth Bass, Central Stoneroller

Species Change Since Last Cycle

Losses -- Northern Hogsucker, Highback Chub, Western Blacknose Dace, Rainbow Trout, Brown Trout, Brook Trout. **Gains** -- none.

Data Analysis

Watershed -- drains part of northwest-central Wilkes County. **Habitats** -- runs, riffles, chutes, good side roots; low flow, but evidence of previous high water. **2006** -- fewer fish collected than in 2001 (426 vs. 718, respectively) including six less species; good trophic structure; lower NCIBI score and loss of one bioclassification. **1999-2006** -- 18 species have been collected from this site; consistently high quality habitat scores and stable trophic structure in all monitoring cycles; lower abundances in 2006 may be flow related.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Mulberry Cr	**SR 1002**	**06/23/06**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Wilkes	1	03040101	361309	810810	12-42	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	39	---	12	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	50	---	50	---

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	24.2
Dissolved Oxygen (mg/L)	8.3
Specific Conductance (µS/cm)	44
pH (s.u.)	6.0

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	10
Pool Variety (10)	8
Riffle Habitat (16)	8
Left Bank Stability (7)	3
Right Bank Stability (7)	3
Light Penetration (10)	7
Left Riparian Score (5)	2
Right Riparian Score (5)	2
Total Habitat Score (100)	**66**

Site Photograph

Substrate cobble, bedrock, some gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/23/06	2006-97	22	52	Good

Most Abundant Species Bluehead Chub

Exotic Species Striped Jumprock, Rock Bass, Smallmouth Bass

Species Change Since Last Cycle N/A, new site in 2006

Data Analysis

Watershed -- drains rural north-central Wilkes County, above North Wilkesboro. **Habitats** -- snag pools, bedrock shelves and riffles; fairly open canopy due to width of stream; cattle with access to upper part of sample reach; barbed wire across stream. **2006** -- first fish community sample at this location; lots of fish (n=713); very diverse community with three darter species, one sunfish and two bass species, four sucker species, and six intolerant species (including three cyprinids - Thicklip Chub, Fieryblack Shiner, and Highback Chub); slightly skewed trophic structure towards Omniviores+Herbivores (Bluehead Chub = 48% of sample); large specimens and biomass of all sucker species, and Smallmouth Bass.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
MULBERRY CR	**NC 268**	**06/09/06**	**Excellent**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
WILKES	1	03040101	12-42	361128	810649

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	45.7	20	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	10	50	40	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none		

Water Quality Parameters

Temperature (°C)	17.5
Dissolved Oxygen (mg/L)	8.9
Specific Conductance (µS/cm)	50
pH (s.u.)	6.6
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	10
Bottom Substrate (15)	7
Pool Variety (10)	8
Riffle Habitat (16)	8
Left Bank Stability (7)	5
Right Bank Stability (7)	6
Light Penetration (10)	2
Left Riparian Score (5)	2
Right Riparian Score (5)	5
Total Habitat Score (100)	57

Site Photograph

Substrate mostly sand/silt; cobble riffle; some bedrock, trace boulder

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
06/09/06	9953	-	47	-	3.37	Excellent
07/25/01	8515	-	41	-	4.12	Excellent
07/24/96	7117	-	37	-	3.07	Excellent

Taxonomic Analysis

The increase in EPT richness in 2006 is driven by a large increase in the number of mayfly taxa collected; 17 and 18 Ephemeroptera taxa were collected in 1996 and 2001, while the number collected in 2006 jumped to 26. Seasonality is playing a small role in the increase in mayfly taxa in 2006; three species are identified as winter seasonal by the BAU (*Ephemerella catawba* , *Eurylophella aestiva* , and *Eu. minimella*) and were only collected in the June sample in 2006 (the other two collections were made in late July). Several taxa collected for the first time at the site in 2006 were either common (*Plauditus dubius* group, *Eurylophella aestiva* , *Serratella serrata* , *Hydropsyche scalaris*) or abundant (*Ephoron leukon* , *Apatania*). The absence of wetted root mats in 2006 explains the absence of *Oecetis persimilis* and *Triaenodes ignitus* , both of which were seen in the prior two collections.

Data Analysis

The site is 2.5 miles NE of downtown North Wilksboro NC and 1.9 stream miles above the confluence with Yadkin River. Macroinvertebrate habitat at the site was mostly restricted to a single riffle that was quite productive in terms of taxa richness. The highest number of EPT taxa for the three sampling events at the site occurred in 2006 despite active bridge construction above the site. No water quality problems are indicated by the benthic community.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
ROARING R	**SR 1990**	**06/08/06**	**Excellent**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
WILKES	1	03040101	12-46	361459	810239

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	B	128.3	25	0.5

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	90	0	10	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none		

Water Quality Parameters

Temperature (°C)	21.5
Dissolved Oxygen (mg/L)	9
Specific Conductance (µS/cm)	36
pH (s.u.)	6.9
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	16
Bottom Substrate (15)	10
Pool Variety (10)	10
Riffle Habitat (16)	10
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	5
Left Riparian Score (5)	5
Right Riparian Score (5)	3
Total Habitat Score (100)	75

Site Photograph

Substrate mostly cobble/sand, lesser amounts gravel, boulder, bedrock

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
06/08/06	9951	120	50	4.12	3.23	Excellent
07/25/01	8513	89	42	4.48	3.45	Good
07/24/96	7118	98	48	4.68	3.43	Excellent
07/29/88	4644	92	43	4.77	3.54	Good
08/08/85	3549	87	36	4.81	3.29	Good
08/10/83	3134	66	35	3.94	3.35	Good

Taxonomic Analysis

Several EPT taxa either common or abundant in 2006 were not previously identified from the site: *Plauditus dubius* group, *Brachycercus*, *Eurylophella aestiva*, *Perlesta*, *Apatania*, *Hydropsyche scalaris*, and *Rhyacophila formosa*. Seasonality is not an issue with regard to the high number of EPT collected in 2006. Other abundant EPT taxa at the site were: *Baetis intercalaris*, *Caenis*, *Epeorus rubidus*, *Leucrocuta*, *Maccaffertium modestum*, *Stenacron pallidum*, *Isonychia*, *Ephoron leukon*, *Acroneuria abnormis*, *Ceratopsyche sparna*, *Cheumatopsyche*, and *Neophylax fuscus*. Two uncommon oligochaetes were collected for the first time from the site in 2006: *Ripistes parasita* and *Vejdovskyella comata*.

Data Analysis

The site is eight miles NE of North Wilksboro NC and 4 stream miles from the confluence with Yadkin River. The lowest NCBI value since 1983 and the highest EPT richness ever recorded for the site occurred in 2006, pushing the bioclassification back into the Excellent category. There seems to be a trend towards improving water quality at the site since 1983, though the results from 2001 are anomalous in that regard.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
M Prong Roaring R	**SR 1002**	**08/04/06**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Wilkes	1	03040101	361736	810542	12-46-2-(6)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	57.3	1070	11	0.4	Yes

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	50	---	25	25 (rural residential)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

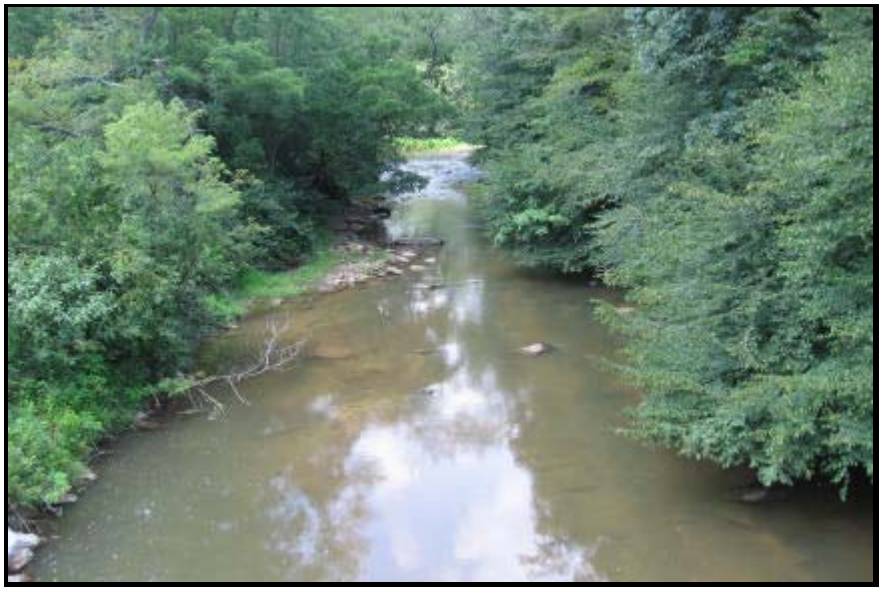
Temperature (°C)	25.1
Dissolved Oxygen (mg/L)	7.6
Specific Conductance (µS/cm)	37
pH (s.u.)	6.0

Water Clarity	Slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	10
Pool Variety (10)	8
Riffle Habitat (16)	15
Left Bank Stability (7)	6
Right Bank Stability (7)	5
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**84**

Site Photograph



Substrate cobble, boulder, gravel, sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
08/04/06	2006-113	19	58	Excellent
06/20/01	2001-66	20	56	Excellent
05/22/96	96-60	15	50	Good

Most Abundant Species Redlip Shiner

Exotic Species Striped Jumprock, Rock Bass, Smallmouth Bass

Species Change Since Last Cycle

Losses -- Notchlip Redhorse, V-lip Redhorse, Brassy Jumprock, Creek Chub **Gains** -- Rosyside Dace, Flat Bullhead

Data Analysis

Watershed -- drains the rural area of northeast Wilkes County to the northernmost tip of the county. **Habitats** -- pools, runs, good riffles, same as in 2001; side pools, snags, some eroded banks. **2006** -- good abundance (304 total) and high diversity with three darter species, two bass and one sunfish species, two sucker species, and six intolerant species; **1996-2006** -- 23 species have been collected from this site; this rural mountain stream continues to support a rich assemblage of fish and earns a high NCIBI score.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Big Bugaboo Cr	**SR 1924**	**06/22/06**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Wilkes	1	03040101	361357	805730	12-48-(0.7)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-IV	16.7	---	10	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	75	---	20	5 (rural residential)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	20.6
Dissolved Oxygen (mg/L)	7.8
Specific Conductance (µS/cm)	42
pH (s.u.)	6.0

Water Clarity	Very slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	12
Pool Variety (10)	10
Riffle Habitat (16)	15
Left Bank Stability (7)	6
Right Bank Stability (7)	5
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	2
Total Habitat Score (100)	**85**

Site Photograph

Substrate cobble, boulder, bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/22/06	2006-92	17	52	Good

Most Abundant Species Bluehead Chub

Exotic Species Striped Jumprock, Green Sunfish, Central Stoneroller

Species Change Since Last Cycle N/A, new site in 2006

Data Analysis

Watershed -- drains part of northeast Wilkes County, just northwest of the town of Ronda. **Habitats** -- high quality habitats; high gradient stream with boulder riffles, plunge pools, and bedrock shelves; open canopy at beginning of sample reach (powerline right of way); water very easily sited. **2006** -- first fish community sample at this site; very abundant fish (n = 1189) and biomass; moderate to high diversity with two darter species, three sunfish and one bass species, two sucker species, and two intolerant species; Bluehead Chub = 43% and Redlip Shiner = 26% of the sample. High end of Good water quality rating.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Elkin Cr	**SR 2044**	**06/22/06**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Wilkes	2	03040101	361651	805246	12-54-(0.5)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-II,HQW	25.6	---	13	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	40	---	55	5 (lawn)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	20.6
Dissolved Oxygen (mg/L)	7.6
Specific Conductance (µS/cm)	42
pH (s.u.)	6.0

Water Clarity	Very slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	8
Pool Variety (10)	9
Riffle Habitat (16)	16
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**87**

Site Photograph

Substrate bedrock, gravel, cobble, boulder

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/22/06	2006-91	14	48	Good

Most Abundant Species Bluehead Chub

Exotic Species Fathead Minnow

Species Change Since Last Cycle N/A, new site in 2006

Data Analysis

Watershed -- drains the extreme northeast corner of Wilkes County. **Habitats** -- high quality; shelves, pools, riffles; very rocky; old mill site; silts settled out on rocks; good riparian, *Rhododendron* on left. **2006** -- new fish community monitoring site; lots of fish (n= 860); moderate diversity with three darter species, two species of sunfish, suckers, and intolerants; trophic structure is slightly skewed with a relatively even percentage of Omnivores+Herbivores and Insectivores; Bluehead Chub = 44%, and Redlip Shiner = 38% of sample; no piscivores present.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
ELKIN CR	**NC 268**	**08/07/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
SURRY	2	03040101	12-54-(4.5)	361512	805146

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	35.9	8	0.2

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)		40	60	

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None		

Water Quality Parameters

Temperature (°C)	24.1
Dissolved Oxygen (mg/L)	7.5
Specific Conductance (µS/cm)	60
pH (s.u.)	6.3
Water Clarity	turbid

Habitat Assessment Scores (max)

Channel Modification (5)	3
Instream Habitat (20)	14
Bottom Substrate (15)	11
Pool Variety (10)	4
Riffle Habitat (16)	7
Left Bank Stability (7)	3
Right Bank Stability (7)	5
Light Penetration (10)	9
Left Riparian Score (5)	3
Right Riparian Score (5)	4
Total Habitat Score (100)	63

Site Photograph

Substrate gravel, sand silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/07/06	10007	NA	24	NA	4	Good-Fair
08/06/01	8561	NA	20	NA	3.8	Good-Fair
07/22/96	7081	NA	24	NA	3.6	Good-Fair

Taxonomic Analysis

EPT taxa at the site have increased and decreased in the past ten years with the previous report (2001) being the low. The current EPT taxa total was increased by relative addition of 4 caddisfly taxa with mayfly and stonefly taxa remaining constant. The EPT biotic index increased from 3.75 in 2001 to 3.96 in 2006; a modest change toward more tolerant species.

Data Analysis

Situated on the northwest corner of Elkin, this partly urban site drains a mostly rural area. The site is located adjacent to the Elkin water treatment plant and has local hiking trails along the right bank. Silty sand and gravel substrate suggest sediment loading from upstream. The amount of litter in the stream suggests its proximity to urban and residential areas. Water quality (as indicated by macroinvertebrate sampling) has apparently remained fairly consistent for the past ten years.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
MITCHELL R	**SR 1330**	**08/08/06**	**Good**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
SURRY	2	03040101	12-62-(1)	362605	805258

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	B Tr ORW	19.8	10	0.2

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	30	20	50	

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None		

Water Quality Parameters

Temperature (°C)	23.6
Dissolved Oxygen (mg/L)	8
Specific Conductance (µS/cm)	27
pH (s.u.)	6.7
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	16
Bottom Substrate (15)	12
Pool Variety (10)	6
Riffle Habitat (16)	12
Left Bank Stability (7)	6
Right Bank Stability (7)	5
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	3
Total Habitat Score (100)	76

Site Photograph

Substrate Rubble, boulder, gravel

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/08/06	10009	97	29	4.6	3.5	Good
08/06/01	8563	90	40	4.2	3.1	Good
07/23/96	7091	79	38	3.9	3.1	Good
02/07/91	5544	NA	41	NA	1.9	Excellent
10/25/89	5124	NA	34	NA	2.6	Good

Taxonomic Analysis

Declines in mayfly, stonefly and caddisfly taxa are accompanied by a large increase in chironomid taxa. While total taxa increased from 90 to 97 species between 2001 and 2006, the biotic index of the community now present indicates a loss of more pollution-sensitive species.

Data Analysis

This site, located in a largely agricultural and residential watershed, is downstream of Devotion and the undeveloped Reynolds property. Declines in water quality (as indicated by macroinvertebrate analysis) have been noted in the past, concurrent with the development of the Old Beau golf resort which was found responsible for sediment impacts to the stream. An apparent continued decline in the benthic community is implied by this round of sampling.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Mitchell R	**SR 1330**	**06/21/06**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Surry	2	03040101	362607	805221	12-62-(1)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
B,Tr,ORW	29.1	1200	13	0.4	Yes

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	40	---	60	---

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	19.4
Dissolved Oxygen (mg/L)	8.1
Specific Conductance (µS/cm)	28
pH (s.u.)	6.2

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	12
Pool Variety (10)	10
Riffle Habitat (16)	15
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	8
Left Riparian Score (5)	3
Right Riparian Score (5)	4
Total Habitat Score (100)	**87**

Site Photograph

Substrate cobble, bedrock, boulder, sand, silt

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/21/06	2006-89	18	60	Excellent
05/26/99	99-38	15	52	Good
05/16/96	96-51	15	46	Good-Fair

Most Abundant Species Redlip Shiner

Exotic Species Rock Bass, Smallmouth Bass, Brown Trout

Species Change Since Last Cycle **Gains** -- White Sucker, Brassy Jumprock, Largemouth Bass, Brown Trout. **Losses** -- none.

Data Analysis

Watershed -- drains western-central Surry County, including the community of Devotion. **Habitats** -- pool (lower 1/3 of site), bedrock boulders, riffles, plunge pools. **2006** -- three more species than in 1999; Redlip Shiner = 32% and Bluehead Chub = 26% of sample; unusual fish assemblage with cold, cool, and warm water species present; two large stocked Brook Trout collected; Rainbow Trout only represented by young-of-year; site is upstream of a Knapp Mill's Dam that was breached in the spring of 2006. **1996-2006** -- a total of 20 species have been collected here over a ten year period; this site shows a steady improvement of NCIBI score and bioclassification, which is likely related to ongoing conservation and restoration efforts in this watershed.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
MITCHELL R	**SR 1001**	**08/08/06**	**Good**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
SURRY	2	03040101	12-62-(12)	361841	804824

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C; ORW	76.8	10	1

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	50	20	30	

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None		

Water Quality Parameters

Temperature (°C)	23.7
Dissolved Oxygen (mg/L)	7.8
Specific Conductance (µS/cm)	37
pH (s.u.)	6.8
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	15
Bottom Substrate (15)	15
Pool Variety (10)	6
Riffle Habitat (16)	12
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	3
Total Habitat Score (100)	80

Site Photograph

Substrate Boulder, rubble, gravel, sand

Sample Date	Sample ID	78	EPT	BI	EPT BI	Bioclassification
08/08/06	10008	104	38	4.4	3.6	Good
08/06/01	8564	95	43	4.2	3.1	Excellent
07/27/96	7090	82	45	4.5	3.7	Good
07/01/87	4113	78	38	4.7	3.6	Good

Taxonomic Analysis

Reversing gains observed in 2001, mayfly and caddisfly taxa reduced sharply in 2006 samples. Total taxa observed increased due largely to an increase in dipteran taxa, particularly chironomid taxa. The overall biotic index for the site increased from 3.1 to almost 3.6 indicating the community shifted toward more tolerant organisms.

Data Analysis

The lower Mitchell River watershed, bounded by the US 21 and I-77 corridors west and east, respectively, drains residential and agricultural areas in a region with continued development. This site is located with the USGS gage # 02112360 (Mitchell River near State Road, NC). If, as subscribed by the 2001 report, this site enjoyed improved water quality due to drought conditions of that period, these improvements were not helpful to the site prior to the 2006 sampling event and the community reverted (in terms of tolerance) to 1996 conditions of community tolerance, though still increasing overall diversity.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
S Fk Mitchell R	**SR 1301**	**06/21/06**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Surry	2	03040101	362012	805005	12-62-13	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	24.2	---	10	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	45	---	50	5 (rural residential)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

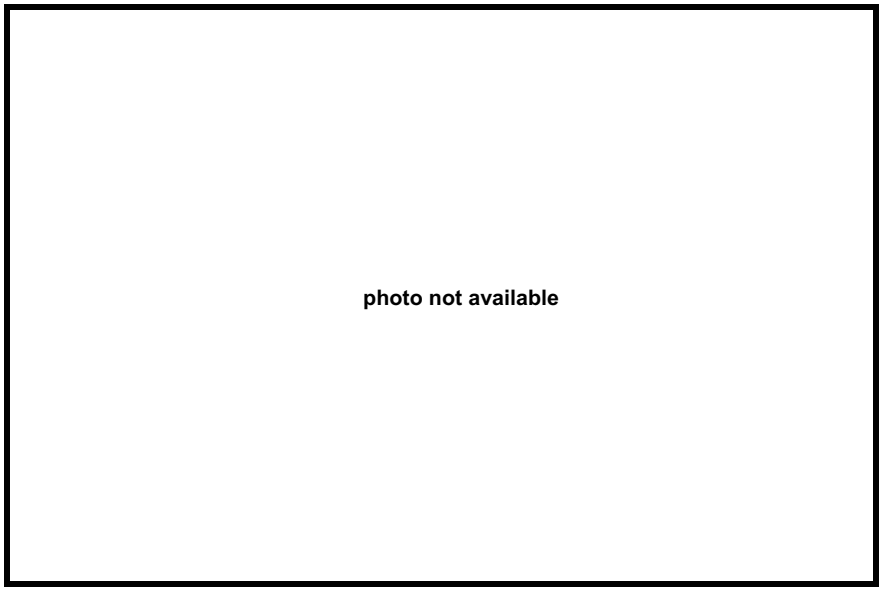
Temperature (°C)	21.9
Dissolved Oxygen (mg/L)	8.4
Specific Conductance (µS/cm)	37
pH (s.u.)	6.2

Water Clarity	Very slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	14
Bottom Substrate (15)	8
Pool Variety (10)	6
Riffle Habitat (16)	5
Left Bank Stability (7)	4
Right Bank Stability (7)	4
Light Penetration (10)	5
Left Riparian Score (5)	4
Right Riparian Score (5)	3
Total Habitat Score (100)	**58**

Site Photograph



Substrate sand, bedrock, cobble, silt

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/21/06	2006-90	19	60	Excellent

Most Abundant Species	Rosyside Dace	**Exotic Species**	Striped Jumprock, Rock Bass, Green Sunfish, Smallmouth Bass

Species Change Since Last Cycle N/A, new site in 2006

Data Analysis

Watershed -- drains the extreme west-central side of Surry County. **Habitats** -- bedrock shelf pools, sandy runs of uniform shallow depth, snags, undercuts; lower half of sample reach had better instream habitats; water easily silted. **2006** -- first fish community monitoring sample at this site; high diversity with three species of darter, six species of sunfish and bass, three sucker species, and four intolerant species; maximum NCIBI score and rating may be related to the extensive stream restoration and conservation efforts in this watershed.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
SNOW CR	**SR 1121**	**08/07/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
SURRY	2	03040101	12-62-15	361805	804604

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	17.3	6	0.2

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)		40	60	

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None		

Water Quality Parameters

Temperature (°C)	23.9
Dissolved Oxygen (mg/L)	7.2
Specific Conductance (µS/cm)	59
pH (s.u.)	6.1
Water Clarity	turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	12
Bottom Substrate (15)	6
Pool Variety (10)	10
Riffle Habitat (16)	7
Left Bank Stability (7)	6
Right Bank Stability (7)	5
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	3
Total Habitat Score (100)	65

Site Photograph

Substrate Sand, silt, gravel

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/07/06	10005	NA	25	NA	4.4	Good-Fair
08/06/01	8565	NA	24	NA	4	Good-Fair
07/23/96	7080	NA	31	NA	3.6	Good
07/01/87	4114	67	27	5.1	4.3	Good-Fair

Taxonomic Analysis

Though total taxa were similar between 2001 and 2006, The mayfly *Epeorus* was not present in the 2006 sample and the more tolerant mayflies *Caenis, Hexagenia* and *Isonychia* were present in the latter sample. The biotic index of the site rose in 2006 compared to 2001 indicating an overall more tolerant community present. Those minor differences existed, Trichoptera and Plecoptera taxa recorded remained fairly similar between 2001 and 2006 EPT samples.

Data Analysis

A silt line was noted in riparian trees 1.5 meters above the water level indicating that this site may be subject to high-flow spate events following heavy rainfall. Note was made of a muddy-silt bottom at the site. Along with a decline in mayfly taxa (*Epeorus*) that tend to inhabit cleaner, faster moving water, these facts may indicate that the site may be experiencing greater siltation than previously encountered. A decline from a Good bioclassification to Good-Fair in the last basinwide assessment cycle may be continuing at this site.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Snow Cr	**SR 1121**	**06/07/06**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Surry	2	03040101	361805	804605	12-62-15	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	17.2	---	12	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	85	---	15	---

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	18.7
Dissolved Oxygen (mg/L)	9.1
Specific Conductance (µS/cm)	57
pH (s.u.)	5.6

Water Clarity	Slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	8
Pool Variety (10)	8
Riffle Habitat (16)	14
Left Bank Stability (7)	7
Right Bank Stability (7)	6
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	3
Total Habitat Score (100)	**79**

Site Photograph

Substrate	gravel, sand, bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/07/06	2006-81	19	56	Excellent

Most Abundant Species	Bluehead Chub	**Exotic Species**	Striped Jumprock, Smallmouth Bass

Species Change Since Last Cycle	N/A, new site in 2006

Data Analysis

Watershed -- drains part of south-western Surry County. **Habitats** -- low flow; bedrock shelves with riffles, plunge and snag pools; old mill site. **2006** -- first fish community sample at this location; lots of fish collected (722 individuals); high diversity with three darter species, four sunfish species, four sucker species, and three intolerant species collected; trophic structure was slightly skewed towards a high percentage of Omnivores+Herbivores; 79% of species represented by multiple age classes.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Fisher R	**SR 1331**	**06/21/06**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Surry	2	03040101	362722	804900	12-63-(1)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-II,Tr,HQW	36.9	1185	13	0.4	Yes

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	25	---	75	---

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	21.0
Dissolved Oxygen (mg/L)	7.5
Specific Conductance (µS/cm)	39
pH (s.u.)	6.2

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	12
Pool Variety (10)	8
Riffle Habitat (16)	10
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	10
Left Riparian Score (5)	4
Right Riparian Score (5)	4
Total Habitat Score (100)	**83**

Site Photograph

Substrate cobble, bouler, gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/21/06	2006-88	23	56	Excellent
06/20/01	2001-68	18	60	Excellent

Most Abundant Species Redlip Shiner

Exotic Species Rock Bass, Smallmouth Bass, Spotted Bass, Mountain Redbelly Dace

Species Change Since Last Cycle

Gains -- Brassy Jumprock, Rock Bass, Pumpkinseed, Spotted Bass, Spottail Shiner, Mountain Redbelly Dace, Flat Bullhead **Losses** -- Thicklip Chub, Fieryblack Shiner

Data Analysis

Watershed -- drains the extreme northwest corner of Surry County. **Habitats** -- runs, side snags, undercuts, woody debris, short and shallow riffles. **2006** -- lots of fish (n = 766, 325 more than in 2001); increase in diversity with three species of darters, seven species of bass and sunfish, three sucker species, and four intolerant species; large schools of Redlip Shiner colonizing Bluehead Chub nests. **2001-2006** -- 25 species known from this site; trout never collected here; slightly lower NCIBI score in 2006, but same Excellent rating.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
FISHER R	**US 601**	**08/08/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
SURRY	2	03040101	12-63-(7)	362451	804126

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	WS-II HQW	105.6	7	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	20	20	60	

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None		

Water Quality Parameters

Temperature (°C)	25.4
Dissolved Oxygen (mg/L)	7.9
Specific Conductance (µS/cm)	53
pH (s.u.)	6.9
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	3
Instream Habitat (20)	13
Bottom Substrate (15)	8
Pool Variety (10)	4
Riffle Habitat (16)	7
Left Bank Stability (7)	5
Right Bank Stability (7)	6
Light Penetration (10)	7
Left Riparian Score (5)	4
Right Riparian Score (5)	4
Total Habitat Score (100)	61

Site Photograph

Substrate Rubble, boulder, gravel, silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/08/06	10011	NA	27	NA	4.7	Good-Fair
08/08/01	8572	NA	30	NA	3.2	Good
07/23/96	7092	NA	30	NA	3.6	Good

Taxonomic Analysis

Compared to 2001 samples, the loss of sensitive mayflies *Epeorus rubidus* , *Ephoron leukon, Serratella serratoides,* and caddisflies *Hydropsyche scalaris, Brachycentrus nigrosoma* and *Ceraclea ancylus* raised this site's EPT biotic index from 3.19 to 4.7. Along with a decline in EPT taxa from 30 in 2001 to 27 in 2006, the site's bioclassification downgraded from Good to Good-Fair.

Data Analysis

Infrequent riffles and silty pools characterize the substrate of this site that had little organic habitat. Due to flow conditions that existed, many root mats were out of the water. The surrounding watershed, dominated by agricultural, pastoral, and sparse rural residential uses generally retains a good wooded buffer along the riparian zone of the river. Macroinvertebrate analysis indicates a slight decline in water quality compared to previous sampling.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
FISHER R	**NC 268**	**08/09/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
SURRY	2	03040101	12-63-(9)	362022	804107

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	124.6	15	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	30	20	50	

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None		

Water Quality Parameters

Temperature (°C)	24.3
Dissolved Oxygen (mg/L)	7.2
Specific Conductance (µS/cm)	68
pH (s.u.)	7
Water Clarity	turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	14
Bottom Substrate (15)	8
Pool Variety (10)	6
Riffle Habitat (16)	14
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	2
Left Riparian Score (5)	4
Right Riparian Score (5)	5
Total Habitat Score (100)	71

Site Photograph

Substrate Bedrock, boulder, rubble, silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/09/06	10012	93	28	5.4	4.5	Good-Fair
08/08/01	8571	88	39	5.1	3.9	Good
07/22/96	7079	84	36	5.1	4	Good

Taxonomic Analysis

A decline in sensitive mayfly taxa (including the complete absence of taxa abundant in 2001- *Ephoron, Leucrocuta, Stenacron)* and the absence of the previously abundant caddisfly *Symphitopsyche morosa* accompany an increase in chironomid, mollusk and dragonfly taxa in 2006 samples.

Data Analysis

Co-located with USGS Gage # 02113000 (Fisher River nr. Copeland, NC) this is the most downstream benthos site on the Fisher River, draining 125 square miles at this point. This site had heavy silt between riffles with silty periphyton covering rocks in areas of all but swiftest flow. A residential site under current construction just upstream of the site on the left bank was contributing silt runoff to the stream. Benthos results observed could imply the effects of additional embedding of silt on the habitat quality of this site.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
L FISHER R	**SR 1480**	**08/08/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
SURRY	2	03040101	12-63-10 (2)	362538	804243

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	36.2	5	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	10	40	50	

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None		

Water Quality Parameters

Temperature (°C)	24.9
Dissolved Oxygen (mg/L)	7.9
Specific Conductance (µS/cm)	63
pH (s.u.)	6.7
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	15
Bottom Substrate (15)	6
Pool Variety (10)	5
Riffle Habitat (16)	12
Left Bank Stability (7)	3
Right Bank Stability (7)	5
Light Penetration (10)	7
Left Riparian Score (5)	4
Right Riparian Score (5)	3
Total Habitat Score (100)	65

Site Photograph

Substrate Rubble, gravel, silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/08/06	10010	NA	25	NA	4.4	Good-Fair
08/07/01	8566	NA	22	NA	4.9	Good-Fair
07/23/96	7093	NA	29	NA	4.2	Good

Taxonomic Analysis

Slight increases in stonefly and caddisfly taxa in this 2006 EPT sample are offset by a slight decline in mayfly relative to 2001 sampling. The 2006 biotic index indicated a slightly more sensitive community present than in 2001.

Data Analysis

The Little Fisher River flows into North Carolina from Virginia and through north-central Surry County before discharging to the Fisher River. The watershed has mostly agricultural and residential uses. Steep banks along this reach are eroding in the bends of the stream. The substrate was noted as very silty. Macroinvertebrate data suggest improvement in community diversity and sensitivity since the 2001 sampling event but have not achieved values equivalent to 1996 results.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Little Fisher R	**SR 1480**	**06/20/06**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Surry	2	03040101	362743	804432	12-63-10-(2)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	21.3	---	10	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	20	---	80	---

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	22.8
Dissolved Oxygen (mg/L)	8.4
Specific Conductance (µS/cm)	50
pH (s.u.)	6.1

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	14
Bottom Substrate (15)	8
Pool Variety (10)	6
Riffle Habitat (16)	10
Left Bank Stability (7)	4
Right Bank Stability (7)	3
Light Penetration (10)	7
Left Riparian Score (5)	2
Right Riparian Score (5)	1
Total Habitat Score (100)	**60**

Site Photograph

Substrate cobble, gravel, sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/20/06	2006-87	17	52	Good
06/20/01	2001-67	19	50	Good
05/16/96	96-50	15	46	Good-Fair

Most Abundant Species Bluehead Chub

Exotic Species Striped Jumprock, Smallmouth Bass, Mountain Redbelly Dace, Rainbow Trout

Species Change Since Last Cycle **Losses** -- Satinfin Shiner, Thicklip Chub, Fieryblack Shiner, Flat Bullhead **Gains** -- Mountain Redbelly Dace, Rainbow Trout

Data Analysis

Watershed -- drains rural north-central Surry County up to the NC-VA state line; site is below NCWRC Hatchery Supported Trout Waters. **Habitats** -- deadfalls, undercuts, snags, short riffles; the riparian zone including the right bank was recently altered via the adjacent field (soil and vegetation was pushed over the bank edge), causing sediment to enter the stream; water clear but easily silted; more sediment than 2001. **2006** -- Lots of fish (n = 735) with three darter species, three sucker species, and four intolerant species (one less than 2001); Bluehead Chub = 36% and Redlip Shiner = 33% of sample; only one individual of one sunfish species (Redbreast) collected. **1996-2006** -- slight improvement in NCIBI score; stable water quality rating.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Cody Cr	**US 268**	**06/07/06**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Surry	2	03040101	362017	804135	12-63-14	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	10.8	---	7	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	40	---	60	---

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	16.9
Dissolved Oxygen (mg/L)	9.0
Specific Conductance (µS/cm)	62
pH (s.u.)	6.3

Water Clarity	Slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	16
Bottom Substrate (15)	8
Pool Variety (10)	7
Riffle Habitat (16)	7
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	8
Left Riparian Score (5)	4
Right Riparian Score (5)	4
Total Habitat Score (100)	**71**

Site Photograph

Substrate gravel, sand, bedrock shelves

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/07/06	2006-80	19	56	Excellent
05/16/96	96-49	18	52	Good

Most Abundant Species Bluehead Chub

Exotic Species Central Stoneroller, Fathead Minnow

Species Change Since Last Cycle

Gains -- Largemouth Bass, Central Stoneroller, Golden Shiner, Fathead Minnow **Losses** -- Notchlip Redhorse, Brassy Jumprock, Green Sunfish

Data Analysis

Watershed -- drains part of central Surry County, including the south side of Dobson. **Habitats** -- sandy runs with rocky ledges, overhanging bushes, a few snag pools and shallow plunge pools at the upper end of the site. **2006** -- good abundance (518 individuals); well balanced community of fish including three darter species, three sunfish species, one sucker species (two less than 1996), and two intolerant species. **1996-2006** -- an additional 211 fish were collected in 2006; the NCIBI metrics for this site have increased slightly and the bioclassification has improved to the highest rating.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
ARARAT R	**NC 104**	**07/24/06**	**Good**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
SURRY	3	03040101	12-72-(1)	363313	803408

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	WS-IV; Tr	36.2	12	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	40	0	60	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none		

Water Quality Parameters

Temperature (°C)	20.9
Dissolved Oxygen (mg/L)	8.7
Specific Conductance (µS/cm)	59
pH (s.u.)	6.8
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	16
Bottom Substrate (15)	14
Pool Variety (10)	5
Riffle Habitat (16)	13
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	10
Left Riparian Score (5)	3
Right Riparian Score (5)	2
Total Habitat Score (100)	79

Site Photograph

Substrate mostly gravel, cobble, sand; some boulder and silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/24/06	10025	-	29	-	3.88	Good
07/23/01	8507	-	25	-	4.04	Good-Fair
07/25/96	7123	-	26	-	3.96	Good-Fair

Taxonomic Analysis

Plecoptera are primarily responsible for the increased EPT in 2006 over prior sampling events. Six stonefly taxa were collected in 2006; two and four taxa were collected 1996 and 2001 respectively. New taxa records for the site in 2006 were: *Heterocloeon anoka*, *Ephemerella subvaria*, *Maccaffertium ithaca*, *Rhithrogena uhari*, *Acroneuria arenosa*, *Paragnetina immarginata*, *Malirekus hastatus*, and *Ceratopsyche bronta*.

Data Analysis

The site is located about 4.3 miles NNE of Mount Airy NC and 1000 feet south of the Virginia border. Almost the entire drainage area is in Virginia. Sampling results from 1996, 2001, and 2006 show a relatively stable benthic community with little change in EPT BI values. The increase in the number of EPT taxa--and particularly stonefly taxa--might indicate slighty better conditions at the site in 2006 than during the prior two sampling events, though an increase in specific conductance over the three events (35, 52, and 59 µmhos/cm for 1996, 2001, and 2006 respectively) does not provide support.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Ararat R	**NC 104**	**06/20/06**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Surry	3	03040101	363313	803408	12-72-(1)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-IV, Tr	36.2	---	12	0.4	Yes

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	35	---	65	---

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

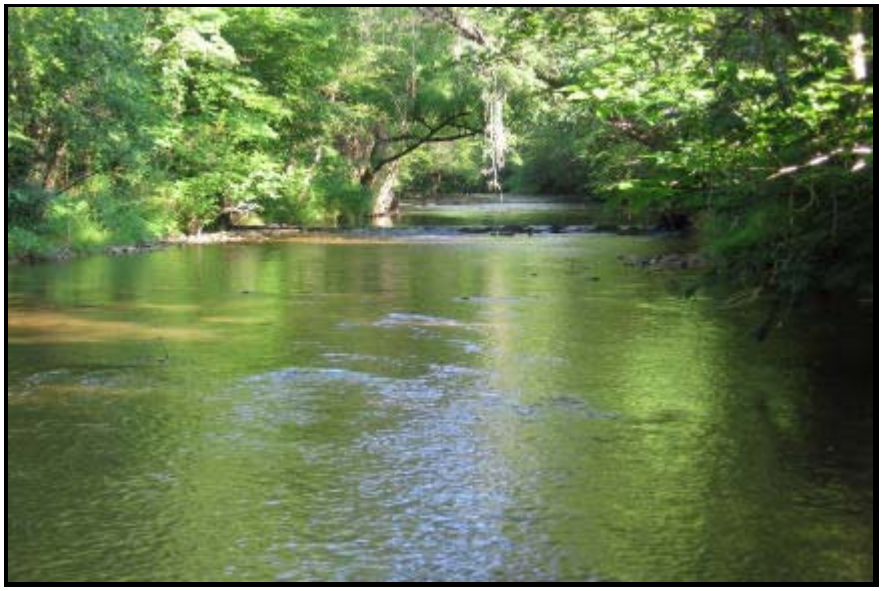
Temperature (°C)	19.1
Dissolved Oxygen (mg/L)	7.9
Specific Conductance (µS/cm)	53
pH (s.u.)	6.2

Water Clarity	Very slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	10
Pool Variety (10)	6
Riffle Habitat (16)	7
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	8
Left Riparian Score (5)	4
Right Riparian Score (5)	3
Total Habitat Score (100)	**73**

Site Photograph



Substrate cobble, gravel, sand, bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/20/06	2006-85	19	54	Excellent

Most Abundant Species Bluehead Chub

Exotic Species Green Sunfish, Mountain Redbelly Dace

Species Change Since Last Cycle N/A, new site in 2006

Data Analysis

Watershed -- flows from Patrick County in southwest Virginia; downstream the river flows south and drains the east side of Mount Airy. **Habitats** -- riffles, snags, bedrock shelves. **2006** -- new fish community monitoring site; lots of fish collected (total of 899); high diversity with three darter species, two sunfish species, three sucker species, and two intolerant species, but no piscivores and no trout.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
ARARAT R	SR 2026	07/25/06	Good

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
SURRY	3	03040101	12-72-(4.5)	362416	803343

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	231	30	0.5

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	0	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
Mount Airy WWTP	NC0021121	7.0

Water Quality Parameters

Temperature (°C)	24.6
Dissolved Oxygen (mg/L)	8.7
Specific Conductance (µS/cm)	146
pH (s.u.)	7.8
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	18
Bottom Substrate (15)	12
Pool Variety (10)	5
Riffle Habitat (16)	6
Left Bank Stability (7)	1
Right Bank Stability (7)	5
Light Penetration (10)	4
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	65

Site Photograph

Substrate mostly cobble, sand, gravel; some boulder, silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/25/06	10031	95	41	4.99	4.23	Good
07/23/01	8506	77	28	5.57	4.62	Good-Fair
08/28/96	7181	69	20	5.81	4.81	Fair
07/12/90	5378	59	17	6.17	5.43	Fair
07/26/88	4661	62	16	6.36	5.68	Fair
09/24/86	3919	50	11	6.56	5.46	Fair

Taxonomic Analysis

Since the sampling event in September 1986, richness in each of the orders Ephemeroptera, Plecoptera, and Trichoptera have increased. The increase in richness for each order was especially significant between the 2001 and 2006 collections (14 to 22 for mayflies, two to four for stoneflies, 12 to 15 for caddisflies). Of the six most pollution-intolerant EPT taxa recorded for the site, five were recorded for the first time in 2006: *Serratella molita* , *Brachycentrus numerosus* , *Paralepthophlebia* , *Paranyctiophylax* , and *Goera* . The most tolerant taxon recorded for the site, *Hydropsyche betteni* , has declined from abundant in 1986 and 1988 to common in 1990 and has not been collected from the site during the three most recent sampling events.

Data Analysis

The site is 7 miles SSE of Mt Airy NC and about 5 miles WNW of Pilot Mountain NC. Since the sampling event in September 1986 all indications from the benthic data show consistent improvements in water quality at the site. EPT richness has increased from the low of 11 taxa in 1986 to 41 in 2006; the NCBI has decreased in value from 6.56 to 4.99 over the same period. Accordingly, the resultant bioclassification has improved from Fair in 1986 to Good in 2006. The greatest difference occurred between the sampling events in 2001 and 2006 with an increase of 13 EPT taxa collected and the addition of several particularly intolerant taxa in 2006. From 1997 to 2006 there has been a reduction in the discharge from Mount Airy WWTP, from a monthly average of 6.1 MGD in April 1997 to 2.9 MGD in July 2006 (with a spike to 6.3 MGD in March 2000). A loss of textile production in Mount Airy is responsible for the reduced discharge from the WWTP.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
LOVILLS CR	**SR 1700**	**07/24/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
SURRY	3	03040101	12-72-8-(1)	363233	803735

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	WS-IV	26.8	13	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	0	100	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none		

Water Quality Parameters

Temperature (°C)	24.2
Dissolved Oxygen (mg/L)	8.8
Specific Conductance (µS/cm)	55
pH (s.u.)	7.4
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	16
Bottom Substrate (15)	13
Pool Variety (10)	8
Riffle Habitat (16)	12
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	4
Left Riparian Score (5)	4
Right Riparian Score (5)	3
Total Habitat Score (100)	76

Site Photograph

Substrate good mix of sand through bedrock classes; some silt present

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/24/06	10027	-	23	-	4.46	Good-Fair
07/24/01	8508	-	26	-	4.18	Good-Fair
07/25/96	7122	-	22	-	4.75	Good-Fair

Taxonomic Analysis

Twelve Ephemeroptera, three Plecoptera, and eight Trichoptera taxa were collected from the site in 2006. Abundant taxa were: *Acentrella* , *Baetis intercalaris* , *Heterocloeon anoka* , *Maccaffertium modestum* , *Stenacron pallidum* , *Isonychia* , *Leuctra* , *Cheumatopsyche* , and *Hydropsyche venularis* .

Data Analysis

The site is three miles NNW of downtown Mount Airy NC and one mile south of the Virginia border. Most of the drainage area for the site is in Virginia. EPT richness fell and the EPT BI value increased between 2001 and 2006, though both values are still slightly better than those attained in 1996. No specific stressors are indicated by the benthic community.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
LOVILLS CR	**SR 1371**	**07/24/06**	**Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
SURRY	3	03040101	12-72-8-(3)	362919	803701

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	35	8	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	0	90	10	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none		

Water Quality Parameters

Temperature (°C)	27.4
Dissolved Oxygen (mg/L)	9.7
Specific Conductance (µS/cm)	68
pH (s.u.)	9
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	13
Bottom Substrate (15)	12
Pool Variety (10)	9
Riffle Habitat (16)	9
Left Bank Stability (7)	2
Right Bank Stability (7)	2
Light Penetration (10)	0
Left Riparian Score (5)	2
Right Riparian Score (5)	2
Total Habitat Score (100)	55

Site Photograph

Substrate nearly even mix of sand, gravel, cobble; some bedrock

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/24/06	10026	73	19	5.63	4.88	Fair
07/24/01	8509	67	14	6.38	4.72	Fair
07/25/96	7121	63	16	6.42	5.06	Fair

Taxonomic Analysis

Twelve Ephemeroptera and seven Trichoptera taxa were collected in 2006; Plecoptera have never been collected from the site. Abundant EPT in 2006 were: *Heterocloeon anoka*, *Maccaffertium modestum*, *Isonychia*, *Cheumatopsyche*, *Hydropsyche venularis*, *Macronychus glabratus*, *Promoresia elegans*, *Simulium*, *Cricotopus bicinctus*, *Cricotopus vierriensis* group, Lumbriculidae, and Acari. Baetidae, a ubiquitous family of mayflies, were not identified from the site in 2001; seven baetid taxa were present in 2006.

Data Analysis

The site is located near US 52 southwest of downtown Mount Airy NC. An increase in the number of EPT taxa collected and a decrease in the NCBI value in 2006 may be indicating slightly better water quality over 1996 and 2001. The benthic fauna do not indicate a particular stressor as a problem.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Lovills Cr	**SR 1371**	**06/19/06**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Surry	3	03040101	362919	803700	12-72-8-(3)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	9.7	---	9	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	10	90	---	---

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	28.4
Dissolved Oxygen (mg/L)	9.5
Specific Conductance (µS/cm)	74
pH (s.u.)	6.2

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	3
Instream Habitat (20)	15
Bottom Substrate (15)	6
Pool Variety (10)	7
Riffle Habitat (16)	15
Left Bank Stability (7)	2
Right Bank Stability (7)	2
Light Penetration (10)	0
Left Riparian Score (5)	1
Right Riparian Score (5)	1
Total Habitat Score (100)	**52**

Site Photograph

Substrate cobble, gravel, sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/19/06	2006-84	16	48	Good

Most Abundant Species	Redlip Shiner	**Exotic Species**	Central Stoneroller

Species Change Since Last Cycle	N/A, new site in 2006

Data Analysis

Watershed -- drains the west side of Mount Airy in northern Surry County; stream runs through town. **Habitats** -- riffles (with *Podostemum*), runs, pools; excessive periphyton; banks stabilized with pavers near bridge crossing; open canopy, grasses, no trees. **2006** -- first fish community sample at this location; extreme number of fish (2073) and biomass; three darter species, one sunfish species, two sucker species, and two intolerant species collected; Redlip Shiner = 40% of total, and Bluehead Chub = 31%.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Stewarts Cr	**SR 1622**	**06/20/06**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Surry	3	03040101	363138	804239	12-72-9-1	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-IV;Tr	24.2	---	10	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	30	---	60	10 (rural residential)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	26.0
Dissolved Oxygen (mg/L)	8.1
Specific Conductance (µS/cm)	42
pH (s.u.)	5.9

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	11
Pool Variety (10)	8
Riffle Habitat (16)	15
Left Bank Stability (7)	6
Right Bank Stability (7)	7
Light Penetration (10)	10
Left Riparian Score (5)	4
Right Riparian Score (5)	5
Total Habitat Score (100)	**89**

Site Photograph

Substrate gravel, cobble, sand, bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/20/06	2006-86	20	54	Excellent
06/21/01	2001-69	17	54	Excellent
05/17/96	96-52	19	54	Excellent

Most Abundant Species Redlip Shiner

Exotic Species Central Stoneroller, Warpaint Shiner

Species Change Since Last Cycle

Gains -- Bluegill, Spottail Shiner, Sandbar Shiner, Mountain Redbelly Dace. **Losses** -- Smallmouth Bass, Fieryblack Shiner

Data Analysis

Watershed -- drains the extreme upper north-central region of Surry County and a small portion of south Carroll County, Virginia. **Habitats** -- runs, riffles, side woody debris; *Fissidens moss*. **2006** -- abundant fish (906 total) including three darter species, two sunfish species, three sucker species, and two intolerant species; three more species collected than in 2001, yet two less intolerants. **1996-2006** -- total of 22 species collected from this site; very consistent metrics among three samples, and identical NCIBI scores and ratings.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
STEWARTS CR	**SR 2258**	**07/25/06**	**Good**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
SURRY	3	03040101	12-72-9-(1)	362744	803731

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	WS-IV; Tr	78.6	15	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	20	80	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none		

Water Quality Parameters

Temperature (°C)	22.5
Dissolved Oxygen (mg/L)	8.1
Specific Conductance (µS/cm)	72
pH (s.u.)	6.8
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	15
Bottom Substrate (15)	14
Pool Variety (10)	10
Riffle Habitat (16)	6
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	6
Left Riparian Score (5)	3
Right Riparian Score (5)	3
Total Habitat Score (100)	73

Site Photograph

Substrate gravel, sand, cobble; some silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/25/06	10028	110	37	5.35	4.56	Good
07/24/01	8511	78	34	5.31	4.48	Good
07/25/96	7120	81	27	5.61	4.78	Good-Fair

Taxonomic Analysis

The greatest number of EPT taxa for a sampling event occurred in 2006. The increase in EPT richness in 2006 over 2001 was due to Plecoptera; one stonefly taxon was collected in 2001 and four in 2006. Abundant EPT taxa in 2006 included: *Baetis intercalaris*, *Serratella deficiens*, *Maccaffertium ithaca*, *Isonychia*, *Ceratopsyche bronta*, *C. sparna*, *Cheumatopsyche*, and *Hydropsyche venularis*.

Data Analysis

The site is about 3 miles SSW of downtown Mount Airy and 2.3 stream miles from the confluence with Ararat River. NCBI and EPT BI values suggest similar water quality conditions between 2001 and 2006; more significant differences are seen between 1996 and 2001 (as reflected in the improved classification of Good in 2001 from Good-Fair in 1996).

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
FLAT SHOAL	**SR 2017**	**07/25/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
SURRY	3	03040101	12-72-13	362420	803338

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	9	5	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	0	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none		

Water Quality Parameters

Temperature (°C)	21.7
Dissolved Oxygen (mg/L)	8
Specific Conductance (µS/cm)	52
pH (s.u.)	6.1
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	14
Bottom Substrate (15)	4
Pool Variety (10)	10
Riffle Habitat (16)	5
Left Bank Stability (7)	3
Right Bank Stability (7)	1
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	61

Site Photograph

Substrate mostly sand, gravel; some silt, cobble

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/25/06	10030	-	25	-	3.30	Good-Fair

Taxonomic Analysis

Thirteen Ephemeroptera, three Plecoptera, and nine Trichoptera taxa were collected from the site. Abundant taxa were: *Baetis pluto* , *Serratella deficiens* , *Maccaffertium modestum* , *Leuctra* , *Chimarra* , and *Neophylax oligius* .

Data Analysis

The site is 7 miles SSE of Mt Airy NC, about 5 miles WNW of the city of Pilot Mountain NC, and about 250 from the confluence with Ararat River. The site was sampled for benthic invertebrates for the first time in 2006. The former basinwide site was upstream at SR 1827 and had a small drainage area; presently the BAU does not have criteria to rate such streams. Though the site at SR 2017 has the advantage of a possessing a large enough drainage area so that a rating can be assessed, the hydrology of the stream at the site is influenced by high flow events in nearby Ararat River and therefore is not representative of the stream as a whole. During the next cycle consideration for a basinwide site should be given to the next upstream road crossing or to the original site if small-stream criteria have been developed.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Toms Cr	**SR 2024**	**06/19/06**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Surry	3	03040101	362308	803150	12-72-14-(4)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	37.7	---	14	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	90	---	5	5 (rural residential)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	20.1
Dissolved Oxygen (mg/L)	8.0
Specific Conductance (µS/cm)	65
pH (s.u.)	5.9

Water Clarity	Slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	10
Pool Variety (10)	9
Riffle Habitat (16)	10
Left Bank Stability (7)	6
Right Bank Stability (7)	5
Light Penetration (10)	8
Left Riparian Score (5)	4
Right Riparian Score (5)	5
Total Habitat Score (100)	**80**

Site Photograph

Substrate gravel, cobble, bedrock, sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/19/06	2006-83	22	58	Excellent
06/21/01	2001-70	23	56	Excellent

Most Abundant Species Redlip Shiner

Exotic Species Northern Hogsucker, Green Sunfish, Spotted Bass, Central Stoneroller

Species Change Since Last Cycle

Losses -- Notchlip Redhorse, Warmouth, Thicklip Chub, Snail Bullhead **Gains** -- Spotted Bass, Creek Chub, Flat Bullhead

Data Analysis

Watershed -- drains part of the eastern edge of Surry County including the town of Pilot Mountain and a small section of Stokes County. **Habitats** -- pools, riffles, cobble, flat rocks; mountain-like; good riparian including Rhododendron and Mountain Laurel. **2006** -- lots of fish (834 total); very diverse, well balanced community of fish including three darter species, five sunfish species, three sucker species, and two intolerant species; approaching a maximum NCIBI score. **2001-2006** -- This watershed continues to support a diverse community of fish (26 species collected here) and has earned two consecutive Excellent bioclassifications.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Little Yadkin R	**SR 1236**	**06/19/06**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Stokes	2	03040101	361847	802402	12-77	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	32.3	---	14	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	85	---	10	5 (rural residential)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	19.7
Dissolved Oxygen (mg/L)	7.8
Specific Conductance (µS/cm)	71
pH (s.u.)	6.0

Water Clarity	Slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	6
Pool Variety (10)	8
Riffle Habitat (16)	14
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**78**

Site Photograph

Substrate gravel, cobble, bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/19/06	2006-82	17	54	Excellent
06/21/01	2001-71	22	54	Excellent
05/17/96	96-53	21	54	Excellent

Most Abundant Species Redlip Shiner

Exotic Species Mountain Redbelly Dace

Species Change Since Last Cycle

Losses -- Notchlip Redhorse, Green Sunfish, Largemouth Bass, Goldfish, Thicklip Chub, Fieryblack Shiner, Flat Bullhead **Gains** -- Bluegill, Mountain Redbelly Dace

Data Analysis

Watershed -- drains the rural southwest corner of Stokes County. **Habitats** -- gravel and cobble riffles, woody debris, tires; open canopy at upper end of reach. **2006** -- lots of fish (1002); well balanced community, but five fewer species collected since 2001 including two intolerants (Thicklip Chub and Fieryblack Shiner). **1996-2006** -- 25 fish species have been collected at this site; slight increase in specific conductance over three cycles from 43 to 71 µS/cm; third cycle with identical NCIBI score and Excellent bioclassification.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
L YADKIN R	SR 1102	08/09/06	Good-Fair

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
STOKES	2	03040101	12-77	361704	802549

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	WS-IV	48.9	10	0.2

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	70	10	20	

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None		

Water Quality Parameters

Temperature (°C)	26
Dissolved Oxygen (mg/L)	6.7
Specific Conductance (µS/cm)	73
pH (s.u.)	6.7
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	11
Bottom Substrate (15)	3
Pool Variety (10)	4
Riffle Habitat (16)	3
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	53

Site Photograph

Substrate Sand with little gravel and silt.

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/09/06	10014	102	33	5.4	4.5	Good-Fair

Taxonomic Analysis

A fairly diverse, though relatively tolerant community of macroinvertebrates was identified at this site. Edge habitat (snags, undercut banks, root mats) provided diverse taxa despite a predominately sand substrate across the stream channel. Leptocerid caddisflies and coleopterans were well represented among taxa taking advantage of the organic habitat.

Data Analysis

This site was moved to this location for the first time in this sampling trip of 2006. At this point, the Little Yadkin River drains approximately 49 square miles, much of it in the US 52 corridor with agricultural, commercial, and residential land uses. Previous sampling, labeled as Little Yadkin River at SR 1236 had actually been collected from Danbury Creek at SR 1236, upstream of the confluence of Danbury Creek and West Prong where the Little Yadkin River is formed. The current site at SR 1102 is approximately 6 river miles downstream of this location.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
FORBUSH CR	**SR 1570**	**08/10/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
YADKIN	2	03040101	12-83-(1.5)	360725	803034

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Outer Piedmont	WS-IV	26.9	6	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	60	10	30	

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None		

Water Quality Parameters

Temperature (°C)	24.9
Dissolved Oxygen (mg/L)	7.3
Specific Conductance (µS/cm)	72
pH (s.u.)	7
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	16
Bottom Substrate (15)	6
Pool Variety (10)	4
Riffle Habitat (16)	3
Left Bank Stability (7)	2
Right Bank Stability (7)	2
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	3
Total Habitat Score (100)	55

Site Photograph

Substrate Rubble, sand, boulder, gravel

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/10/06	10017	NA	22	NA	4.8	Good-Fair
08/08/01	8573	NA	22	NA	4.2	Good-Fair
07/24/96	7099	NA	23	NA	4	Good-Fair

Taxonomic Analysis

Taxa richness was identical at this site in 2006 and 2001 samples though a few more tolerant species in 2006 raised the EPT biotic index slightly. The lack of the caddisfly genera *Oecetis, Triaenodes* and *Brachycentrus* in 2006 samples may be an indication that woody habitat available at higher flow may have been absent during this sampling event due to low flows.

Data Analysis

Forbush Creek, just north of North Deep Creek and US 421 drains an agricultural area though increasing development from the south along the highway corridor probably influences the area. The site has steep and highly eroded banks with a rubble/sand substrate. A large corn field abuts the stream on the right bank. The benthic community appears fairly consistent over time though a slight trend toward more tolerant species was observed during the 2006 sampling event.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
LOGAN CR	**SR 1571**	**08/11/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
YADKIN	2	03040101	12-83-2-(0.7)	360726	803015

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Outer Piedmont	WS-IV	26.3	5	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	70		30	

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None		

Water Quality Parameters

Temperature (°C)	23.9
Dissolved Oxygen (mg/L)	6.7
Specific Conductance (µS/cm)	89
pH (s.u.)	6.6
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	14
Bottom Substrate (15)	3
Pool Variety (10)	5
Riffle Habitat (16)	3
Left Bank Stability (7)	3
Right Bank Stability (7)	3
Light Penetration (10)	7
Left Riparian Score (5)	4
Right Riparian Score (5)	4
Total Habitat Score (100)	51

Site Photograph

Substrate Sand, gravel, silt, rubble

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/11/06	10018	NA	21	NA	5.1	Good-Fair
08/09/01	8576	NA	31	NA	4.8	Good
07/24/96	7098	NA	27	NA	4.7	Good-Fair

Taxonomic Analysis

EPT taxa declined sharply in 2006 sampling compared to 2001. Trichoptera and Plecoptera taxa dropped by half while the EPT biotic index declined only slightly. This fact may suggest that declines may have been habitat, rather than water quality related.

Data Analysis

The Logan Creek site is surrounded by open agricultural fields. The immediate watershed has a fairly broad floodplain, making the land ideal for this use. At the time of sampling, the stream was heavily laden with woody debris piles, suggesting recent high flows that may have scoured benthos populations and created the drop in taxa richness observed. Some riparian logging activities were also obvious at the site. Previous sampling had indicated a relatively stable community.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
N Deep Cr	**SR 1605**	**06/07/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Yadkin	2	03040101	360811	803744	12-84-1-(0.5)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	35.8	---	10	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	40	---	30	30 (overhead powerline)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	16.8
Dissolved Oxygen (mg/L)	7.9
Specific Conductance (µS/cm)	75
pH (s.u.)	5.9

Water Clarity	Slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	10
Bottom Substrate (15)	3
Pool Variety (10)	6
Riffle Habitat (16)	3
Left Bank Stability (7)	1
Right Bank Stability (7)	1
Light Penetration (10)	5
Left Riparian Score (5)	2
Right Riparian Score (5)	2
Total Habitat Score (100)	**38**

Site Photograph

Substrate sand, clay

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/07/06	2006-79	16	42	Good-Fair
06/21/01	2001-72	13	44	Good-Fair
05/15/96	96-46	13	44	Good-Fair

Most Abundant Species Bluehead Chub

Exotic Species None

Species Change Since Last Cycle **Gains** -- Highback Chub, Golden Shiner, Margined Madtom, Fantail Darter **Losses** -- Fieryblack Shiner

Data Analysis

Watershed -- drains eastern and northern Yadkinville and southern Booneville, in central Yadkin County. **Habitats** -- sandy runs, side snag pools, few root wads and undercuts; areas with severe vertical bank erosion; power line right of way and ATV access; no canopy in upper 1/3 of site. **2006** -- good diversity, with 16 species collected; first collection of Fantail Darter at this site. **1996-2006** -- 17 fish species are known from this site; little change in the fish community, with an almost identical NCIBI score, and the same rating; consistently very low habitat scores over three assessments.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
N DEEP CR	**SR 1510**	**08/11/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
YADKIN	2	03040101	12-84-1-(0.5)	360733	803532

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	42	10	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100			

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
Yadkinville WWTP	NC0020338	1.0

Water Quality Parameters

Temperature (°C)	23.5
Dissolved Oxygen (mg/L)	7.5
Specific Conductance (µS/cm)	91
pH (s.u.)	6.9
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	12
Pool Variety (10)	10
Riffle Habitat (16)	16
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	92

Site Photograph

Substrate Boulder, rubble, gravel, sand

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/11/06	10015	75	26	5.3	4.8	Good-Fair
08/09/01	8575	76	26	5.4	4.6	Good-Fair
07/25/96	7100	57	24	5.3	4.9	Good-Fair
04/12/93	6155	53	25	4.9	4.4	Good-Fair

Taxonomic Analysis

Taxonomic results for 2006 are very similar to 2001 data. EPT abundance has increased from 137 to 146, spurred by an increase in several baetid mayfly taxa. The stream maintains a fairly diverse, if somewhat tolerant community of macroinvertebrates. A jump in taxa between 1996 and 2001 appears to have been maintained fairly consistently since then. Blackfly larvae and the relatively sensitive mayfly *Serratella deficiens* are taxa that have reappeared in abundance.

Data Analysis

Located several miles downstream of the Yadkinville WWTP, this site is located in a forested drainage and is situated in Shore-Styers Mill Site park. A waterfall just upstream of the site provides good physical aeration when flowing. The substrate has a good mix of rock sizes provided common riffles and the riparian vegetation provides both good canopy and runoff buffer.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
S Deep Cr	**SR 1152**	**06/06/06**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Yadkin	2	03040101	360550	804035	12-84-2-(1)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-III	50.6	---	10	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	60	---	40	---

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	20.7
Dissolved Oxygen (mg/L)	7.8
Specific Conductance (µS/cm)	68
pH (s.u.)	6.7

Water Clarity	Turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	12
Bottom Substrate (15)	3
Pool Variety (10)	9
Riffle Habitat (16)	2
Left Bank Stability (7)	3
Right Bank Stability (7)	3
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	3
Total Habitat Score (100)	**55**

Site Photograph

Substrate sand, gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/06/06	2006-78	17	52	Good
06/22/01	2001-73	19	52	Good
05/15/96	96-47	17	48	Good

Most Abundant Species Bluehead Chub

Exotic Species None

Species Change Since Last Cycle

Gains -- Warmouth, Fieryblack Shiner, Fantail Darter, Eastern Mosquitofish **Losses** -- White Sucker, Green Sunfish, Whitefin Shiner, Spottail Shiner, Snail Bullhead, Flat Bullhead

Data Analysis

Watershed -- drains the southwest side of Yadkin County, west of Yadkinville. **Habitats** -- good pools (favored by sucker species), coarse woody debris, large bedrock outcrop on left side. **2006** -- good species diversity including four darter species, three sucker species, and three intolerant species (Fieryblack Shiner, Highback Chub, Piedmont Darter). **1996-2006** -- 25 species have been collected here; this site has sustained a stable and diverse fish community, and a rating of Good since 1996.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
S DEEP CR	SR 1710	08/09/01	Good-Fair

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
YADKIN	2	03040101	12-84-2-(5.5)	360624	803518

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	WS-IV	63.5	10	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	70	10	20	

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None		

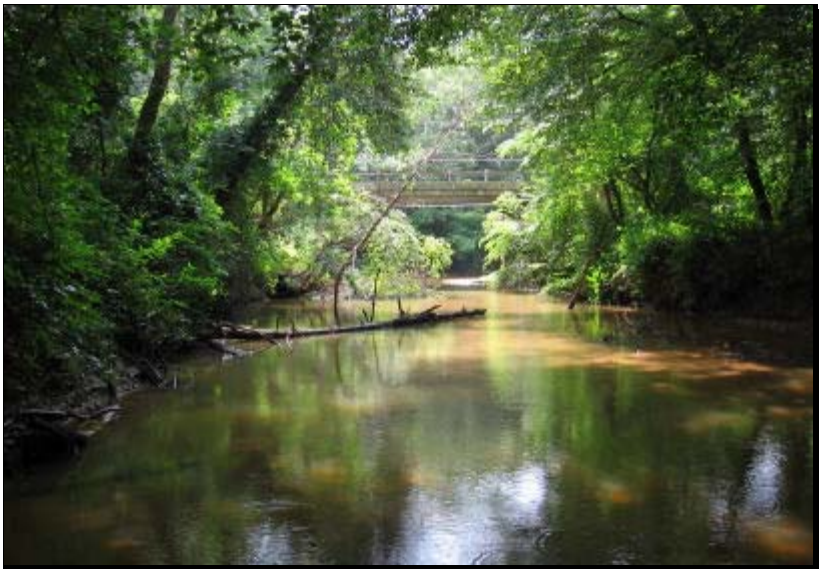
Water Quality Parameters

Temperature (°C)	23
Dissolved Oxygen (mg/L)	6.4
Specific Conductance (µS/cm)	68
pH (s.u.)	7.4
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	15
Bottom Substrate (15)	3
Pool Variety (10)	4
Riffle Habitat (16)	3
Left Bank Stability (7)	2
Right Bank Stability (7)	2
Light Penetration (10)	8
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	52

Site Photograph



Substrate Sand, silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/10/06	10016	75	24	4.9	3.9	Good-Fair
08/09/01	8574	65	19	5.3	4.4	Good-Fair
07/26/96	7101	56	26	4.8	4.4	Good-Fair

Taxonomic Analysis

The 2006 sampling event at this site realized a gain in mayfly, stonefly and caddisfly taxa, all contributing to a decrease in the biotic index (overall and EPT); an indication that a less tolerant benthic community currently inhabits the site. Overall, 10 taxa were gained in this most current survey.

Data Analysis

South Deep Creek drains the southwest corner of Yadkin County before joining North Deep Creek 3 miles downstream of this site. The sandy/silty substrate here is likely contributed in some part by the steep, badly eroded banks. Evidence of flash flows of 5 feet stage were present, though flow was low at the time of sampling with many root mats out of the water. Stream-edge woody debris and remaining root mats provided much of the habitat for the benthic community observed, qualifying the site for a Good-Fair bioclassification.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
MUDDY CR	**SR 1898**	**08/07/06**	**Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
FORSYTH	4	03040101	12-94-(0.5)	361331	802022

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	7.3	3	0.2

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	60	40	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none	---	---

Water Quality Parameters

Temperature (°C)	24
Dissolved Oxygen (mg/L)	6.9
Specific Conductance (µS/cm)	65
pH (s.u.)	6.5
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	14
Bottom Substrate (15)	3
Pool Variety (10)	7
Riffle Habitat (16)	7
Left Bank Stability (7)	5
Right Bank Stability (7)	6
Light Penetration (10)	9
Left Riparian Score (5)	4
Right Riparian Score (5)	4
Total Habitat Score (100)	63

Site Photograph

Substrate mostly sand with some gravel and cobble

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/07/06	10038	---	14	---	5.9	Fair
08/06/01	8500	---	19	---	5.1	Good-Fair
08/05/96	7103	---	18	---	5.0	Good-Fair

Taxonomic Analysis

Benthic sampling in 2006 resulted in the lowest number of EPT ever collected at this site. Taxa collected in 2001 that were absent in 2006 included two intolerant caddisflies, *Neophylax oligius* and *Pycnopsyche* as well as three mayflies, *Baetisca carolina* , *Hexagenia,* and *Stenacron interpunctatu* m. Taxa never before collected included the mayfly *Plauditus,* and the caddisfly *Polycentropus.* The increase in the EPT BI indicates an overall more tolerant EPT community.

Data Analysis

Upstream of Winston-Salem, this segment of Muddy Creek primarily drains agricultural land, though the immediate landuse at the site was forest and residential. The reduction of the rating from Good-Fair in 2001 to Fair in 2006 appears to be associated with poorer habitat (73 in 2001). Sediment loading from agriculture and erosion has possibly impacted the macroinvertebrate community as higher sediment homogeneity was observed in 2006 than in previous years.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
MUDDY CR	**SR 2995**	**09/28/06**	**Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
FORSYTH	4	03040101	12-94-(0.5)	360001	802025

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Outer Piedmont	C	224.2	17	0.5

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	0	100	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none	---	---

Water Quality Parameters

Temperature (°C)	19.3
Dissolved Oxygen (mg/L)	8.6
Specific Conductance (µS/cm)	420
pH (s.u.)	7.5
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	14
Bottom Substrate (15)	3
Pool Variety (10)	4
Riffle Habitat (16)	5
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	10
Left Riparian Score (5)	1
Right Riparian Score (5)	1
Total Habitat Score (100)	52

Site Photograph

Substrate mostly sand with some bedrock, boulder and cobble

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
09/28/06	10071	58	12	6.3	5.4	Fair
08/07/01	8462	50	14	6.5	5.8	Good-Fair
08/06/96	7125	51	18	6.4	5.6	Good-Fair
07/31/85	3572	53	17	6.6	5.2	Fair

Taxonomic Analysis

The loss of two EPT taxa and a reduced EPT abundance (from 80 in 2001 to 70 in 2006) at this site reduced the bioclassification to Fair for 2006. Previously abundant taxa not collected in 2006 included only the mayfly *Stenacron interpunctatum.* Of note, two intolerant stoneflies, *Acroneuria abnormis* and *Paragnetina fumosa* have been present since 1985. The midge (Chironomidae) community was more diverse than in past years with a higher number of tolerant species, five of which were abundant (*Conchapelopia* gr. and *Polypedilum illinoense* gr., *P. flavum* , *Rheocrocopus robacki* and *Rheotanytarsus*)

Data Analysis

This site is below the confluence of Muddy and Salem Creeks. The high specific conductance measured (420) is a result of urban runoff from southwestern Winston-Salem and the W-S Archie-Elledge WWTP that discharges into Salem Creek. Although the biotic index is lower than the 2001 BI, the stream still rated Fair due a low EPT richness and EPT abundance. However, this site only missed a Good-Fair rating by one abundance value (EPT N =70) indicating that stream conditions have not changed much since 2001.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Silas Cr	**SR 1137**	**06/05/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Forsyth	4	03040101	360244	802115	12-94-10	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	11.9	---	6	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	60	10	30	---

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	18.3
Dissolved Oxygen (mg/L)	7.0
Specific Conductance (µS/cm)	127
pH (s.u.)	6.2

Water Clarity	Slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	13
Bottom Substrate (15)	3
Pool Variety (10)	6
Riffle Habitat (16)	1
Left Bank Stability (7)	2
Right Bank Stability (7)	2
Light Penetration (10)	9
Left Riparian Score (5)	4
Right Riparian Score (5)	4
Total Habitat Score (100)	**49**

Site Photograph

Substrate sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/05/06	2006-72	13	44	Good-Fair
04/24/02	2002-31	12	44	Good-Fair
04/30/01	2001-28	12	40	Fair

Most Abundant Species Bluehead Chub

Exotic Species Rosefin Shiner

Species Change Since Last Cycle **Gains** -- Warmouth, Speckled Killifish, Tessellated Darter **Losses** -- Bluegill, Highback Chub

Data Analysis

Watershed -- drains a section of central Winston-Salem in southwest Forsyth County. **Habitats** -- shallow sandy runs, side snags, undercuts, coarse woody debris. **2006** -- good species diversity, yet lowest number of fish collected at this site (total = 154); first time Tessellated Darter collected here; Highback Chub (intolerant) is missing (collected in the 2002 303(d) sample). **2001-2006** -- among three assessments, there have been 18 fish species collected from this urban site; the Bluehead Chub has always been the most abundant fish; after an improvement in 2002, the fish community rating has remained stable.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
SALEM CR	**SR 2902**	**08/08/06**	**Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
FORSYTH	4	03040101	12-94-12-(4)	360318	801708

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Outer Piedmont	C	59.4	7	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	50	50	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none	---	---

Water Quality Parameters

Temperature (°C)	25.6
Dissolved Oxygen (mg/L)	7
Specific Conductance (µS/cm)	178
pH (s.u.)	6.4
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	3
Instream Habitat (20)	16
Bottom Substrate (15)	3
Pool Variety (10)	4
Riffle Habitat (16)	7
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	10
Left Riparian Score (5)	2
Right Riparian Score (5)	5
Total Habitat Score (100)	60

Site Photograph

Substrate Mostly sand, some gravel and cobble

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/08/06	10042	58	16	6.6	6.0	Fair
08/06/01	8501	45	9	6.9	6.3	Fair
08/05/96	7104	53	11	7.2	6.0	Fair
09/27/82	2870	31	4	7.9	7.1	Poor

Taxonomic Analysis

A total of 16 EPT taxa were collected in 2006, seven of which have never before been collected at this site. Of these new taxa, only two were abundant, the very tolerant mayflies *Paracloeodes fleeki* and *P. minutus*. The remaining five new taxa were rare to common and included two relatively intolerant caddisflies (*Diplectrona modesta* and *Polycentropus*), one moderately tolerant caddisfly (*Triaenodes ignitus*), one moderately tolerant mayfly (*Tricorythodes*) and one tolerant caddisfly (*Hydroptila*). Macroinvertebrate taxa tolerant of organic loading were abundant particularly the midges *Dicrotendipes neomodestus* and *Polypedilum illinoense* gr. In addition to the increase in EPT, the biotic index has consistently decreased every sampling year.

Data Analysis

This portion of Salem Creek drains much of Winston-Salem and though many small dischargers exist upstream none are within a mile of the sampling site. This stream has maintained a Fair bioclassification every year except 1982 when it was rated Poor. The habitat improved in 2006 (score 60) since 2001 (score 39), most likely contributing to the increase in EPT taxa. Also, excessive periphyton growth was observed in both 2001 and 2006, further evidence of high nutrient loadings in this stream. Salem Creek at SR 2902 appears to be improving though more monitoring is needed to verify this trend.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
SALEM CR	**SR 2991**	**08/09/06**	**Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
FORSYTH	4	03040101	12-94-12-(4)	360030	802009

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Outer Piedmont	C	69.3	15	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	30	20	50	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
Winston-Salem Archie Elledge WWTP	NC0037843	30

Water Quality Parameters

Temperature (°C)	29.1
Dissolved Oxygen (mg/L)	6
Specific Conductance (µS/cm)	500
pH (s.u.)	7.1
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	12
Bottom Substrate (15)	3
Pool Variety (10)	6
Riffle Habitat (16)	3
Left Bank Stability (7)	3
Right Bank Stability (7)	3
Light Penetration (10)	4
Left Riparian Score (5)	2
Right Riparian Score (5)	5
Total Habitat Score (100)	45

Site Photograph

Substrate Sand with some bedrock

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/09/06	10044	51	11	6.6	6.3	Fair
08/06/01	8544	42	10	7.1	6.4	Fair
08/05/96	7105	43	8	7.2	5.9	Fair
09/27/82	2871	22	0	8.4	---	Poor

Taxonomic Analysis

EPT richness has remained stable since 1996 although EPT N has increased steadily since 1982 (0 in 1982, 30 in 1996, 50 in 2001 and 58 in 2006). In addition, the biotic index has decreased every year. Absent from previous years, the heptageniid mayflies *Maccaffertium modestum* and *Stenacron interpunctatum* were collected but were rare. Tolerant taxa were found in abundance and included mayflies (*Baetis intercalaris* and *Pseudocloeon propinquum*) and hydropsychid caddisflies (*Cheumatopsyche, Hydropsyche betteni and H. venularis*). Organic waste indicator chironomid taxa, *Polypedilum illinoense* gr. and *P. flavum,* were also abundant.

Data Analysis

This site is downstream of Winston-Salem Archie Elledge WWTP but upstream of the confluence with Muddy Creek. Salem Creek has rated Fair since 1996. The high specific conductance is typical of a stream below a WWTP and relects the high volume of treated waste that is discharged. The low EPT and the current BI of 6.65 reflect substantially degraded water quality attributable in large part to the high degree of urbanization and poor habitat. It appears discharge from the WWTP may further degrade water quality as evidenced by the higher EPT richness (16) and abundance (85) seen at the Salem Creek site (SR 2902) above the WWTP.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
S FK MUDDY CR	**SR 2902**	**08/08/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
FORSYTH	4	03040101	12-94-13	360023	801810

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Outer Piedmont		42.3	10	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	20	30	20	30

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none	---	---

Water Quality Parameters

Temperature (°C)	24.9
Dissolved Oxygen (mg/L)	5.5
Specific Conductance (µS/cm)	111
pH (s.u.)	6.5
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	14
Bottom Substrate (15)	3
Pool Variety (10)	5
Riffle Habitat (16)	3
Left Bank Stability (7)	4
Right Bank Stability (7)	4
Light Penetration (10)	10
Left Riparian Score (5)	4
Right Riparian Score (5)	2
Total Habitat Score (100)	53

Site Photograph

Substrate Mostly sand with some gravel

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/08/06	10043	61	17	6.0	5.3	Good-Fair
08/06/01	8545	---	17	---	5.5	Good-Fair
08/05/96	7124	---	14	---	4.8	Good-Fair

Taxonomic Analysis

The number of EPT taxa remained constant at 17, however, the site was sampled with a more exhaustive method than in previous years. The majority of abundant taxa at the site were tolerant species (the mayflies *Baetis intercalaris, Pseudocloeon propinquum* , *Maccaffertium modestum* and the caddisfly *Cheumatopsyche*) though two fairly intolerent caddisfly taxa (*Nectopsyche exquisita* and *Triaenodes ignitus*) were also abundant. The number of stonefly species decreased from 3 in 2001 to 1 in 2006 (*Paragnetina fumosa*).

Data Analysis

A major tributary to Muddy Creek, the South Fork Muddy Creek drains the southestern portion of Winston-Salem. The stream has consistently rated Good-Fair since it was first monitored in 1996. This stream has more agricultural and less urban inputs than Salem Creek nearby and as a consequence has a higher bioclassification. The Biotic index indicates fairly degraded water quality which is primarily due to urban and agricultural runoff as no permitted dischargers exist on this stream. Though no direct camparisons can be made to previous data, it is clear that water quality at this site has not worsened since 2001.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
S Fk Muddy Cr	**SR 2902**	**06/05/06**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Forsyth	4	03040101	360022	801807	12-94-13	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	42.9	---	9	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	95	---	---	5 (old sand dipping operation)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	17.7
Dissolved Oxygen (mg/L)	7.9
Specific Conductance (µS/cm)	95
pH (s.u.)	6.5

Water Clarity	Turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	11
Bottom Substrate (15)	3
Pool Variety (10)	6
Riffle Habitat (16)	3
Left Bank Stability (7)	3
Right Bank Stability (7)	5
Light Penetration (10)	7
Left Riparian Score (5)	4
Right Riparian Score (5)	5
Total Habitat Score (100)	**52**

Site Photograph

Substrate sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/05/06	2006-71	19	52	Good
04/30/01	2001-31	13	42	Good-Fair

Most Abundant Species Satinfin Shiner

Exotic Species Rosefin Shiner, Channel Catfish

Species Change Since Last Cycle

Gains -- White Sucker, Pumpkinseed, Bluegill, Largemouth Bass, Gizzard Shad, Eastern Silvery Minnow, Rosefin Shiner, Bluehead Chub, Channel Catfish, Piedmont Darter, Eastern Mosquitofish. **Losses** -- Green Sunfish, Redlip Shiner, Flat Bullhead, Margined Madtom.

Data Analysis

Watershed -- drains the southeastern side of Winston-Salem and a portion of northern Davidson County. **Habitats** -- entrenched; shallow sandy runs, woody debris, side snags; site is just above an old sand dipping operation. **2006** -- high percentage of Insectivores collected (81%). Conductivity reading of 95 µS/cm continues to reflect the urban and agricultural nature of this watershed. **2001-2006** -- 65 fewer fish were collected in 2006; the change in community structure between these monitoring cycles includes a total of 15 fish species (gain of 11, and loss of four); 23 species are known from this site; substantial improvement in the NCIBI score, and an increase in one bioclassification.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
DUTCHMANS CR	US 158	08/10/06	Good-Fair

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
DAVIE	5	03040101	12-102-(2)	355648	803209

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Outer Piedmont	C	57.6	3	0.2

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	50	10	40	

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None		

Water Quality Parameters

Temperature (°C)	24.6
Dissolved Oxygen (mg/L)	6
Specific Conductance (µS/cm)	141
pH (s.u.)	6.9
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	11
Bottom Substrate (15)	3
Pool Variety (10)	4
Riffle Habitat (16)	3
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	7
Left Riparian Score (5)	4
Right Riparian Score (5)	3
Total Habitat Score (100)	49

Site Photograph

Substrate Sand, silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/10/06	10019	77	19	6	5.5	Good-Fair
08/07/01	8568	72	20	6.4	5.5	Good-Fair
07/24/96	7096	69	24	5.6	4.8	Good

Taxonomic Analysis

Total taxa encountered at this site in 2006 increased due to higher chironomid richness. EPT taxa remained nearly constant with a slight increase in odonates. The overall biotic index showed a slight improvement toward less tolerant organisms.

Data Analysis

Dutchmans Creek bisects Davie County. This site lies south of the I-40 corridor and is the most upstream benthos sampling location on the stream. The site has a low gradient with sandy, silty substrate. Low flow conditions existing during the sampling event had root mats exposed and only a central channel of flow remaining. These conditions seem to maintain a fairly consistent, if relatively tolerant macroinvertebrate community at the site.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Dutchmans Cr	**US 158**	**06/05/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Davie	5	03040101	355649	803208	12-102-(2)	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	57.6	---	10	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	90	---	---	10 (rural residential)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	19.4
Dissolved Oxygen (mg/L)	7.0
Specific Conductance (µS/cm)	140
pH (s.u.)	6.0

Water Clarity	Turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	12
Bottom Substrate (15)	3
Pool Variety (10)	8
Riffle Habitat (16)	2
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**61**

Site Photograph

Substrate sand, gravel, boulders

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/05/06	2006-73	20	46	Good-Fair
05/04/01	2001-42	17	44	Good-Fair
05/13/96	96-40	12	38	Fair

Most Abundant Species Redbreast Sunfish

Exotic Species Green Sunfish, Redear Sunfish, Spotted Bass, Threadfin Shad, Channel Catfish

Species Change Since Last Cycle

Gains -- White Sucker, Green Sunfish, Redear Sunfish, Spotted Bass, Threadfin Shad, Eastern Silvery Minnow, Flat Bullhead. **Losses** -- Creek Chubsucker, Red Shiner, Highback Chub, Redlip Shiner.

Data Analysis

Watershed -- drains the northwest quadrant of Davie County and a small area along the southern edge of Yadkin County. **Habitats** -- boulder and snag pools, sand bars, side snags. **2006** -- high number of species collected (n=20) including two darter species, five sunfish species, two bass species, and three sucker species. **1996-2006** -- a steady increase in species diversity and NCIBI Score since 1996; 26 species are known from this site; the trophic structure has shifted from a majority of Omnivores+Herbivores (Bluehead chubs = 40% of the sample in 2001) to a majority of Insectivores (76%) in 2006 (collectively, Redbreast Sunfish and Bluegill make up ~51% of sample); the percentage of piscivores has also increased slightly over these monitoring cycles. Stable NCIBI score and rating since 2001.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
DUTCHMANS CR	**NC 801**	**08/10/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
DAVIE	5	03040101	12-102-(2)	355107	802834

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Outer Piedmont	C	124.5	10	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	20	10	70	

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None		

Water Quality Parameters

Temperature (°C)	24.5
Dissolved Oxygen (mg/L)	5.6
Specific Conductance (µS/cm)	171
pH (s.u.)	6.8
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	11
Bottom Substrate (15)	3
Pool Variety (10)	0
Riffle Habitat (16)	0
Left Bank Stability (7)	5
Right Bank Stability (7)	3
Light Penetration (10)	8
Left Riparian Score (5)	3
Right Riparian Score (5)	3
Total Habitat Score (100)	41

Site Photograph

Substrate Sand, silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/10/06	10020	90	23	6.3	5.5	Good-Fair
08/07/01	8567	77	17	6.5	5.2	Fair
07/24/96	7095	84	30	6.2	4.7	Good

Taxonomic Analysis

Both total and EPT taxa at this site appear to have recovered somewhat since the drought conditions experienced in 2001 though the population now appears somewhat more tolerant with the biotic index climbing to 5.48. EPT abundance however lags below levels observed during 1996 sampling with only 3 mayfly and 1 caddisfly taxa abundant (>9 individuals). Chironomid taxa increased from 24 in 1001 to 31 in 2006.

Data Analysis

This site on Dutchmans Creek is located in the southeastern corner of Davie County near the bottom of the Dutchmans Creek watershed and well downstream of Mocksville and the Mocksville WWTP. A sandy low-gradient stream, it provides relatively poor habitat (habitat score of 41 out of 100) for macroinvertebrates and many of the taxa found are located in stream-edge woody habitat (snags, roots mats). The paucity of this habitat encountered in 2001 is slightly improved, though not ideal in 2006 with many root mats still out of the water due to low flows. Stream banks here are steep, sandy and eroded.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Cedar Cr	**off SR 1410**	**07/26/04**	**Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Davie	5	03040101	355756	803130	12-102-13-(2)	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	12.1	--	5	0.2	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	60	0	40	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None	---	---

Water Quality Parameters

Temperature (°C)	22.4
Dissolved Oxygen (mg/L)	5.3
Specific Conductance (µS/cm)	260
pH (s.u.)	6.6

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	12
Bottom Substrate (15)	4
Pool Variety (10)	4
Riffle Habitat (16)	1
Left Bank Stability (7)	3
Right Bank Stability (7)	3
Light Penetration (10)	10
Left Riparian Score (5)	3
Right Riparian Score (5)	5
Total Habitat Score (100)	**50**

Site Photograph

Substrate Gravel, sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
07/26/04	2004-134	8	40	Fair
05/04/01	2001-43	11	50	Good
05/13/96	96-41	11	46	Good-Fair

Most Abundant Species Redbreast Sunfish

Exotic Species Green Sunfish

Species Change Since Last Cycle **Losses** -- Red Shiner, Highback Chub, Creek Chub, and Creek Chubsucker. **Gains** -- Flat Bullhead.

Data Analysis

Watershed -- drains north-central Davie County; no municipalities in watershed; site is ~3.7 miles below Cedar Creek S&W Dam # 8 (there is no minimum flow requirement below the dam) and ~1.8 miles below site sampled in 1996 and 2001 (difference in drainage areas between the two sites is 1.2 square miles); on Vulcan quarry property, upstream from any quarry runoff, access to stream at the Pinebrook Science Center. **Habitat** -- gravely runs; no riffles; side roots and snags; very shallow and narrow. **2004** -- low flow; specific conductance was elevated; number of fish decreased from 437 in 2001 to 153 in 2004; lower than expected total species diversity; suckers and intolerant species absent. **1996 - 2004** -- specific conductance has steadily increased from 197 to 222 to 260 µS/cm; 15 species are known from the site, including the nonindigenous Red Shiner; the percentage of tolerant fish (primarily Redbreast Sunfish) very high (66 - 86%); Redbreast Sunfish consistently the dominant species; sampled as part of a NCSU Urban Fish Study. A low flow- and reservoir-affected stream.