Appendix A

Use Support Ratings for All Monitored Waterbodies in South Yadkin River 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
12-108-18-(3)	**Bear Creek**		**Habitat Degradation** General Agriculture/Pasture Impervious Surface	Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
From a point 0.2 mile downstream of U.S. Hwy. 64 to South Yadkin River				Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity FishCom	2004	2008	5
WS-IV	03-07-06	8.6 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
12-108-16-6-1	**Dobbins Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From source to North Little Hunting Creek										
WS-III	03-07-06	4.5 FW Miles								
12-108-20a1	**Fourth Creek**		**Habitat Degradation** General Agriculture/Pasture Impervious Surface Industrial Site	Aquatic Life	Supporting	No Criteria Exceeded	Turbidity	2006	1998	2t
From source to Morrison				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
C	03-07-06	10.2 FW Miles		Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity FishCom	2003	1998	5
				Recreation	Not Rated	No Criteria Exceeded	Fecal Coliform (recreation)	2006	1998	4a
12-108-20a2	**Fourth Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Turbidity	2006	1998	2t
From Morrison Creek to SR2316				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2003		1
C	03-07-06	5.8 FW Miles		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2003		1
				Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
				Recreation	Not Rated	No Criteria Exceeded	Fecal Coliform (recreation)	2006	1998	4a
12-108-20a3	**Fourth Creek**		**Habitat Degradation** Stormwater Runoff **Toxic Impacts** WWTP NPDES **Turbidity** MS4 NPDES Stormwater Runoff WWTP NPDES	Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity Benthos	2003	1998	4s
From SR2316 to SR1272				Aquatic Life	Impaired	Standard Violation	Turbidity	2006	1998	4a
C	03-07-06	7.8 FW Miles		Recreation	Impaired	Standard Violation	Fecal Coliform (recreation)	2006	1998	4a
12-108-20b	**Fourth Creek**		**Habitat Degradation** General Agriculture/Pasture	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From SR 1972 to SR 1985										
C	03-07-06	6.7 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
12-108-20c	**Fourth Creek**		**Habitat Degradation**	Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity FishCom	2003	1998	5
From SR 1985 to South Yadkin River			Stormwater Runoff							
C	03-07-06	5.5 FW Miles		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2003		1
12-108-16-(0.5)	**Hunting Creek**		**Low pH**	Aquatic Life	Impaired	Standard Violation	Turbidity	2006	2008	5
From source to a point 1.1 miles upstream of Davie County SR 1147			**Turbidity**	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
WS-III	03-07-06	49.3 FW Miles	General Agriculture/Pasture	Recreation	Not Rated	Potential Standards Violation	Fecal Coliform (recreation)	2006		3a
12-108-20-3	**Morrison Creek**		**Habitat Degradation**	Aquatic Life	Not Rated	Data Inconclusive	Turbidity		1998	3t
From source to Fourth Creek			General Agriculture/Pasture	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2003		1
C	03-07-06	7.8 FW Miles	Impervious Surface	Recreation	Not Rated	Data Inconclusive	Fecal Coliform (recreation)		1998	3t
12-108-16-6	**North Little Hunting Creek**		**Habitat Degradation**	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Hunting Creek			General Agriculture/Pasture							
WS-III	03-07-06	23.8 FW Miles		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
12-108-11-3-3	**Olin Creek**		**Habitat Degradation**	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Patterson Creek			General Agriculture/Pasture							
C	03-07-06	9.7 FW Miles		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
12-108-11-3	**Patterson Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2004		1
From source to Rocky Creek										
C	03-07-06	10.6 FW Miles		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
12-108-11	**Rocky Creek (Rocky River)**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2004		1
From source to South Yadkin River										
C	03-07-06	42.2 FW Miles		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
12-108-21a	**Second Creek (North Second Creek)**			Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
From source to Withrow Creek				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
C	03-07-06	1.7 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
12-108-21b	**Second Creek (North Second Creek)**		Aquatic Life	Impaired	Standard Violation	Turbidity	2006		5
			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From Withrow Creek to Beaverdam Creek			Recreation	Not Rated	Data Inconclusive	Fecal Coliform (recreation)	2006		3a
C	03-07-06 3.4 FW Miles								
12-108-21c	**Second Creek (North Second Creek)**		Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
			Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
From Beaverdam Creek to South Yadkin River									
C	03-07-06 5.7 FW Miles								
12-108-9-(0.6)	**Snow Creek**	**Habitat Degradation** General Agriculture/Pasture	Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity FishCom	2006	2008	5
From a point 1.1 miles upstream of Iredell County SR 1614 to South Yadkin River									
WS-IV	03-07-06 12.5 FW Miles								
12-108-(14.5)	**South Yadkin River**	**Fecal Coliform Bacteria** **Turbidity**	Aquatic Life	Impaired	Standard Violation	Turbidity	2006	2004	5
			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From a point 1.0 mile upstream of Davie County SR 1159 to N.C. Hwy. 801			Recreation	Not Rated	Potential Standards Violation	Fecal Coliform (recreation)	2006		3a
WS-IV	03-07-06 9.5 FW Miles		Water Supply	Supporting	No Criteria Exceeded	Water Quality Standards Water Supply	2006		1
12-108-(19.5)b	**South Yadkin River**	**Turbidity** Stormwater Runoff	Aquatic Life	Impaired	Standard Violation	Turbidity	2006	2004	5
			Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
From mouth of Fourth Creek to Yadkin River									
C	03-07-06 5.3 FW Miles								
12-108-(5.5)	**South Yadkin River**	**Habitat Degradation** General Agriculture/Pasture Impervious Surface	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From Alexander County SR 1456 to a point 0.6 mile downstream of Iredell County SR 1907									
WS-IV	03-07-06 14.6 FW Miles								
12-108-20-4a	**Third Creek**	**Habitat Degradation** General Agriculture/Pasture Impervious Surface **Turbidity** General Agriculture/Pasture Impervious Surface	Aquatic Life	Impaired	Standard Violation	Turbidity	2006	2008	5
			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From source to SR 2359			Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
C	03-07-06 16.8 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
12-108-20-4b	**Third Creek**		**Fecal Coliform Bacteria**	Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity FishCom	2006	2004	4s
From SR 2359 to SR 1970			General Agriculture/Pasture	Aquatic Life	Impaired	Standard Violation	Turbidity	2006	2008	5
C	03-07-06	22.1 FW Miles	MS4 NPDES	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
			Habitat Degradation	Recreation	Not Rated	Potential Standards Violation	Fecal Coliform (recreation)	2006		3a
			General Agriculture/Pasture							
			Impervious Surface							
			Turbidity							
			General Agriculture/Pasture							
			Impervious Surface							
12-108-21-3	**Withrow Creek**		**Habitat Degradation**	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From source to Second Creek (North Second Creek)			General Agriculture/Pasture							
C	03-07-06	11.2 FW Miles								

Appendix B

Ambient Monitoring Stations

Summary Sheets

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

Location: S YADKIN RIV AT SR 1159 NR MOCKSVILLE
Station #: Q3460000 **Hydrologic Unit Code:** 3040102
Latitude: 35.84478 **Longitude:** -80.65910 **Stream class:** WS-IV
Agency: NCAMBNT **NC stream index:** 12-108-(14.5)

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

	# result	# ND	Results not meeting EL	#	%	%Conf	Percentiles Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	76	0	<4	0	0		4.8	6.8	7.4	9.1	10.8	12.2	14
	76	0	<5	1	1.3		4.8	6.8	7.4	9.1	10.8	12.2	14
pH (SU)	76	0	<6	0	0		6.1	6.6	6.9	7.3	7.6	7.8	8.5
	76	0	>9	0	0		6.1	6.6	6.9	7.3	7.6	7.8	8.5
Spec. conductance (umhos/cm at 25°C)	76	0	N/A				43	61	67	72	78	84	105
Water Temperature (°C)	76	0	>32	0	0		1	6.8	9.6	16	23	24.7	27.3
Other													
Chlorophyll a (ug/L)	1	0	>40	0	0		16	16	16	16	16	16	16
TSS (mg/L)	46	0	N/A				3.2	6.1	11.8	22.5	38.5	59.2	318
Turbidity (NTU)	76	0	>50	8	10.5	65.1	3.6	6.6	9.4	20	34	55	310
Nutrients (mg/L)													
NH3 as N	35	24	N/A				0.02	0.02	0.02	0.02	0.02	0.04	0.99
NO2 + NO3 as N	35	0	>10	0	0		0.37	0.49	0.54	0.6	0.72	0.79	0.91
TKN as N	35	8	N/A				0.2	0.2	0.22	0.31	0.44	0.58	1.7
Total Phosphorus	35	0	N/A				0.02	0.03	0.05	0.06	0.11	0.13	0.62
Metals (ug/L)													
Aluminum, total (Al)	19	0	N/A				190	210	280	730	1100	1700	3700
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	19	>50	0	0		25	25	25	25	25	25	25
Copper, total (Cu)	19	12	>7	0	0		2	2	2	2	2	4	4
Iron, total (Fe)	19	0	>1000	14	73.7	100	680	750	820	1400	1900	2900	4800
Lead, total (Pb)	19	19	>25	0	0		10	10	10	10	10	10	10
Manganese, total (Mn)	19	0	>200	1	5.3		47	51	59	85	110	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	19	>25	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	19	11	>50	0	0		10	10	10	10	15	21	47

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
58	343	21	36	99.9

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: HUNTING CRK AT SR 2115 NR HARMONY
Station #: Q3484000 **Hydrologic Unit Code:** 3040102
Latitude: 36.00024 **Longitude:** -80.74562 **Stream class:** WS-III
Agency: NCAMBNT **NC stream index:** 12-108-16-(0.5)

Time period: 01/10/2002 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		6.6	7.5	8.6	9.8	12	12.9	14.9
	59	0	<5	0	0		6.6	7.5	8.6	9.8	12	12.9	14.9
pH (SU)	59	0	<6	5	8.5		5.6	6	6.2	6.7	7.3	7.5	7.9
	59	0	>9	0	0		5.6	6	6.2	6.7	7.3	7.5	7.9
Spec. conductance (umhos/cm at 25°C)	59	0	N/A				40	49	51	54	58	62	70
Water Temperature (°C)	59	0	>32	0	0		0.9	5.3	7.2	15.3	20.8	23.7	28.1
Other													
TSS (mg/L)	20	3	N/A				2.5	2.6	4	6.8	14.8	92.4	310
Turbidity (NTU)	59	0	>50	10	16.9	96.9	1.6	3.5	4.9	10	21	120	400
Nutrients (mg/L)													
NH3 as N	1	1	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	1	0	>10	0	0		1.1	1.1	1.1	1.1	1.1	1.1	1.1
TKN as N	1	0	N/A				0.29	0.29	0.29	0.29	0.29	0.29	0.29
Total Phosphorus	1	0	N/A				0.03	0.03	0.03	0.03	0.03	0.03	0.03
Metals (ug/L)													
Aluminum, total (Al)	19	0	N/A				120	160	190	390	1100	5500	27000
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	19	>50	0	0		25	25	25	25	25	25	25
Copper, total (Cu)	19	11	>7	1	5.3		2	2	2	2	3	5	10
Iron, total (Fe)	19	0	>1000	6	31.6	99.8	290	310	340	560	1200	5000	20000
Lead, total (Pb)	19	18	>25	0	0		10	10	10	10	10	10	18
Manganese, total (Mn)	19	0	>200	1	5.3		11	13	17	28	37	110	480
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	13	>50	0	0		10	10	10	10	10	17	42

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
59	204	12	20	60.2

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: BEAR CRK AT SR 1116 JUNCTION RD NR COOLEEMEE
Station #: Q3555000 **Hydrologic Unit Code:** 3040102
Latitude: 35.82560 **Longitude:** -80.58500 **Stream class:** WS-IV
Agency: YPDRBA **NC stream index:** 12-108-18-(3)

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)	85	0	<4	0	0		5.2	5.5	6.5	7.7	9.2	10.5	12.4
	85	0	<5	0	0		5.2	5.5	6.5	7.7	9.2	10.5	12.4
pH (SU)	85	0	<6	0	0		6.6	6.8	6.9	7.1	7.5	8	8.2
	85	0	>9	0	0		6.6	6.8	6.9	7.1	7.5	8	8.2
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				81	100	119	136	161	190	239
Water Temperature (°C)	85	0	>32	0	0		2.8	6.2	11.9	19.8	22.3	23.7	27.2
Other													
Turbidity (NTU)	60	0	>50	4	6.7		2.1	5	7.2	12	17.8	38	320
Metals (ug/L)													
Aluminum, total (Al)	29	0	N/A				81	138	240	429	818	1337	6984
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	27	>50	0	0		5	5	5	5	5	5	9
Copper, total (Cu)	29	13	>7	5	17.2	93.6	2	2	2	2	4	10	96
Iron, total (Fe)	29	0	>1000	26	89.7	100	495	921	1178	1392	1789	2396	10168
Lead, total (Pb)	29	28	>25	0	0		5	5	5	5	5	5	7
Manganese, total (Mn)	29	0	>200	2	6.9		43	67	94	111	150	200	288
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	18
Zinc, total (Zn)	29	25	>50	0	0		10	10	10	10	10	13	25

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	120	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: FOURTH CRK AT SR 2316 BELL FARM RD NR STATESVILLE
Station #: Q3720000 **Hydrologic Unit Code:** 3040102
Latitude: 35.77607 **Longitude:** -80.79582 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-108-20

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

	# result	# ND	Results not meeting EL EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	85	0	<4	0	0		5.2	5.7	6.8	7.8	9.6	10.8	13.4
	85	0	<5	0	0		5.2	5.7	6.8	7.8	9.6	10.8	13.4
pH (SU)	85	0	<6	0	0		6.7	6.8	6.9	7.1	7.4	7.9	8.3
	85	0	>9	0	0		6.7	6.8	6.9	7.1	7.4	7.9	8.3
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				63	84	102	118	144	187	219
Water Temperature (°C)	85	0	>32	0	0		3.2	6.1	12.1	19.3	21.8	24	27.2
Other													
Turbidity (NTU)	60	0	>50	3	5		3.6	5.6	8	13	19.8	39.9	240

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	97	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: FOURTH CRK AT SR 2308 NR ELMWOOD
Station #: Q3735000 **Hydrologic Unit Code:** 3040102
Latitude: 35.76841 **Longitude:** -80.74978 **Stream class:** C
Agency: NCAMBNT **NC stream index:** 12-108-20

Time period: 01/10/2002 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		5.5	6.8	7.6	8.7	10.7	11.4	12.8
	59	0	<5	0	0		5.5	6.8	7.6	8.7	10.7	11.4	12.8
pH (SU)	59	0	<6	1	1.7		5.7	6.1	6.5	6.9	7.2	7.5	7.7
	59	0	>9	0	0		5.7	6.1	6.5	6.9	7.2	7.5	7.7
Spec. conductance (umhos/cm at 25°C)	59	0	N/A				39	97	112	131	146	163	219
Water Temperature (°C)	59	0	>32	0	0		4	7	9	16	21.4	23.9	26.9
Other													
TSS (mg/L)	20	0	N/A				4.2	5.3	6	12.5	32	144.4	410
Turbidity (NTU)	59	0	>50	11	18.6	98.7	3.1	6	9.4	16	38	220	500
Nutrients (mg/L)													
NH3 as N	56	3	N/A				0.02	0.02	0.05	0.08	0.2	0.37	0.91
NO2 + NO3 as N	56	0	N/A				0.32	0.55	0.74	0.88	1.28	1.83	4.4
TKN as N	56	0	N/A				0.2	0.23	0.32	0.4	0.59	0.97	1.6
Total Phosphorus	56	0	N/A				0.05	0.07	0.1	0.22	0.45	0.75	2.5
Metals (ug/L)													
Aluminum, total (Al)	20	0	N/A				170	191	260	615	2175	5660	50000
Arsenic, total (As)	20	20	>10	0	0		5	5	5	10	10	10	10
Cadmium, total (Cd)	20	19	>2	1	5		2	2	2	2	2	2	7
Chromium, total (Cr)	20	19	>50	1	5		25	25	25	25	25	25	53
Copper, total (Cu)	20	9	>7	3	15	86.7	2	2	2	3	4	12	25
Iron, total (Fe)	20	0	>1000	11	55	100	610	680	772	1300	2575	6970	48000
Lead, total (Pb)	20	18	>25	0	0		10	10	10	10	10	12	25
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	18	>88	0	0		10	10	10	10	10	15	24
Zinc, total (Zn)	20	6	>50	2	10	67.7	10	10	10	15	20	81	93

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
58	363	18	31	98.5

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: FOURTH CRK AT SR 2308 NR ELMWOOD
Station #: Q3735000 **Hydrologic Unit Code:** 3040102
Latitude: 35.76841 **Longitude:** -80.74978 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-108-20

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		5.2	5.9	6.6	7.8	9.8	10.9	13
	85	0	<5	0	0		5.2	5.9	6.6	7.8	9.8	10.9	13
pH (SU)	85	0	<6	0	0		6.7	6.8	6.9	7.1	7.4	7.9	8.3
	85	0	>9	0	0		6.7	6.8	6.9	7.1	7.4	7.9	8.3
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				84	106	122	142	184	216	280
Water Temperature (°C)	85	0	>32	0	0		3.6	6.4	12.1	19.6	22.1	23.7	27.5
Other													
Turbidity (NTU)	60	0	>50	4	6.7		3.5	7.2	9.2	15	22	44.5	210

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	97	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: THIRD CRK AT SR 2342 AMITY HILL RD NR STATESVILLE
Station #: Q3900000 **Hydrologic Unit Code:** 3040102
Latitude: 35.74920 **Longitude:** -80.87748 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-108-20-4

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

	# result	# ND	EL	Results not meeting EL #	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	85	0	<4	0	0		5.5	5.9	6.8	8	9.9	10.9	13.2
	85	0	<5	0	0		5.5	5.9	6.8	8	9.9	10.9	13.2
pH (SU)	85	0	<6	0	0		6.7	6.8	6.9	7	7.5	8.1	8.5
	85	0	>9	0	0		6.7	6.8	6.9	7	7.5	8.1	8.5
Spec. conductance (umhos/cm at 25°C)	84	3	N/A				50	70	84	112	139	176	326
Water Temperature (°C)	85	0	>32	0	0		3	5.7	12.3	19.3	22.4	23.8	26.4
Other													
Turbidity (NTU)	60	0	>50	7	11.7	75.2	4.2	6.9	8.5	13.5	20	82	160

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	108	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: THIRD CRK AT SR 2359 BETHESDA RD NR STATESVILLE
Station #: Q3932000 **Hydrologic Unit Code:** 3040102
Latitude: 35.73302 **Longitude:** -80.80395 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-108-20-4

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)	85	0	<4	0	0		5.3	6	6.9	8	9.9	10.9	12.6
	85	0	<5	0	0		5.3	6	6.9	8	9.9	10.9	12.6
pH (SU)	85	0	<6	0	0		6.6	6.8	6.9	7	7.4	8	8.3
	85	0	>9	0	0		6.6	6.8	6.9	7	7.4	8	8.3
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				69	97	104	116	159	220	577
Water Temperature (°C)	85	0	>32	0	0		3.4	6	12.1	19.5	22.2	23.6	26.8
Other													
Turbidity (NTU)	60	0	>50	7	11.7	75.2	4.2	7.2	8.9	13.5	20.8	59.5	160

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	97	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

Location: THIRD CRK AT SR 1970 NR WOODLEAF
Station #: Q3934500 **Hydrologic Unit Code:** 3040102
Latitude: 35.76742 **Longitude:** -80.62609 **Stream class:** C
Agency: NCAMBNT **NC stream index:** 12-108-20-4

Time period: 01/23/2002 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		4.9	6.4	7.7	8.9	10.3	11.4	13.4
	59	0	<5	1	1.7		4.9	6.4	7.7	8.9	10.3	11.4	13.4
pH (SU)	59	0	<6	0	0		6	6.2	6.3	6.8	7.3	7.6	8.6
	59	0	>9	0	0		6	6.2	6.3	6.8	7.3	7.6	8.6
Spec. conductance (umhos/cm at 25°C)	59	0	N/A				68	92	107	133	158	300	394
Water Temperature (°C)	59	0	>32	0	0		2.4	6.4	8.5	14.1	21.4	23.5	27.7
Other													
TSS (mg/L)	19	0	N/A				7	7	9	17	36	350	1100
Turbidity (NTU)	58	0	>50	11	19	98.9	5.2	9.1	13	23.5	38.5	123	850
Metals (ug/L)													
Aluminum, total (Al)	20	0	N/A				260	297	408	615	1250	15130	57000
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	19	>50	0	0		25	25	25	25	25	25	35
Copper, total (Cu)	20	6	>7	4	20	95.7	2	2	2	3	6	20	36
Iron, total (Fe)	20	0	>1000	15	75	100	790	822	1050	1600	1950	12900	46000
Lead, total (Pb)	20	19	>25	1	5		10	10	10	10	10	10	31
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	13	>50	1	5		10	10	10	10	13	29	120

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
57	425	21	37	99.9

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 YADKIN RIV AT US 601 NR COOLEEMEE
Station #: Q3970000 **Hydrologic Unit Code:** 3040102
Latitude: 35.77838 **Longitude:** -80.50673 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-108-(19.5)

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)	85	0	<4	0	0		5	5.6	6.3	7.3	9.1	10.2	12.1
	85	0	<5	0	0		5	5.6	6.3	7.3	9.1	10.2	12.1
pH (SU)	85	0	<6	0	0		6.7	6.9	6.9	7.1	7.4	7.9	8.3
	85	0	>9	0	0		6.7	6.9	6.9	7.1	7.4	7.9	8.3
Spec. conductance (umhos/cm at 25°C)	84	2	N/A				50	89	102	116	140	186	240
Water Temperature (°C)	85	0	>32	0	0		3.4	6.5	12.6	20.4	22.9	24.1	28.5
Other													
TSS (mg/L)	60	0	N/A				3.1	5.7	11	20	32.8	57.6	262
Turbidity (NTU)	60	0	>50	10	16.7	96.6	4.8	7.7	13.2	21	39	79.5	200
Nutrients (mg/L)													
NH3 as N	60	8	N/A				0.01	0.01	0.03	0.06	0.09	0.18	0.3
NO2 + NO3 as N	60	0	N/A				0.02	0.63	0.7	0.8	0.92	1.15	1.51
TKN as N	60	12	N/A				0.1	0.18	0.2	0.38	0.55	0.74	2.51
Total Phosphorus	60	0	N/A				0.05	0.05	0.08	0.11	0.14	0.2	0.57
Metals (ug/L)													
Aluminum, total (Al)	47	1	N/A				100	268	506	1117	2070	4009	16740
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	36	>50	0	0		5	5	5	5	5	8	22
Copper, total (Cu)	47	11	>7	4	8.5		2	2	2	3	4	7	15
Iron, total (Fe)	47	0	>1000	40	85.1	100	571	893	1257	1809	3092	5298	12015
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	43	>88	0	0		10	10	10	10	10	10	20
Zinc, total (Zn)	47	25	>50	2	4.3		10	10	10	10	15	26	231

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	112	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: SECOND CRK AT SR 1526 NR SALISBURY
Station #: Q4030000 **Hydrologic Unit Code:** 3040102
Latitude: 35.69702 **Longitude:** -80.61172 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-108-21

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	5.7	6.5	7.5	9.5	10.8	12.2
	85	0	<5	0	0		5.2	5.7	6.5	7.5	9.5	10.8	12.2
pH (SU)	85	0	<6	0	0		6.7	6.8	6.9	7.1	7.5	7.9	8.2
	85	0	>9	0	0		6.7	6.8	6.9	7.1	7.5	7.9	8.2
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				76	100	116	139	156	180	255
Water Temperature (°C)	85	0	>32	0	0		3.3	6.3	12.6	20.2	22.2	23.4	27.7
Other													
Turbidity (NTU)	60	0	>50	4	6.7		1.9	4.4	7.5	14	21.8	44.4	320
Metals (ug/L)													
Aluminum, total (Al)	29	0	N/A				133	148	250	576	868	1571	2746
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	27	>50	0	0		5	5	5	5	5	5	10
Copper, total (Cu)	29	11	>7	2	6.9		2	2	2	2	4	7	9
Iron, total (Fe)	29	0	>1000	19	65.5	100	483	714	912	1242	2049	4316	5210
Lead, total (Pb)	29	29	>25	0	0		5	5	5	5	5	5	5
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	>88	0	0		10	10	10	10	10	10	14
Zinc, total (Zn)	29	26	>50	0	0		10	10	10	10	10	14	24

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	112	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: SECOND CRK AT US 70 NR BARBER
Station #: Q4120000 **Hydrologic Unit Code:** 3040102
Latitude: 35.71840 **Longitude:** -80.59538 **Stream class:** C
Agency: NCAMBNT **NC stream index:** 12-108-21

Time period: 01/23/2002 to 12/05/2006

	# result	# ND	Results not meeting EL	#	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	59	0	<4	1	1.7		2.5	6.7	8	9.1	10.7	11.7	14.3
	59	0	<5	2	3.4		2.5	6.7	8	9.1	10.7	11.7	14.3
pH (SU)	59	0	<6	0	0		6	6.2	6.5	6.7	7.2	7.7	8.1
	59	0	>9	0	0		6	6.2	6.5	6.7	7.2	7.7	8.1
Spec. conductance (umhos/cm at 25°C)	59	0	N/A				72	102	118	126	145	173	342
Water Temperature (°C)	59	0	>32	0	0		1.9	6.3	8.8	14.3	21.5	23.7	29.5
Other													
TSS (mg/L)	19	0	N/A				4	4.2	8	14	32	160	1500
Turbidity (NTU)	58	0	>50	10	17.2	97.3	4.3	6.5	10.8	15.5	28	79.5	1800
Metals (ug/L)													
Aluminum, total (Al)	20	0	N/A				190	203	402	545	1745	32350	81000
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	19	>50	0	0		25	25	25	25	25	25	36
Copper, total (Cu)	20	3	>7	3	15	86.7	2	2	2	3	7	22	89
Iron, total (Fe)	20	0	>1000	11	55	100	570	599	848	1150	1850	22700	63000
Lead, total (Pb)	20	18	>25	1	5		10	10	10	10	10	14	36
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	10
Zinc, total (Zn)	20	15	>50	1	5		10	10	10	10	11	44	130

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
57	360	20	35	99.8

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: SECOND CRK AT US 601 NR SALISBURY
Station #: Q4165000 **Hydrologic Unit Code:** 3040102
Latitude: 35.76247 **Longitude:** -80.51075 **Stream class:** C
Agency: YPDRBA **NC stream index:** 12-108-21

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

	# result	# ND	Results not meeting EL: EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	85	0	<4	0	0		5.2	6	6.6	7.5	9.6	10.7	12.5
	85	0	<5	0	0		5.2	6	6.6	7.5	9.6	10.7	12.5
pH (SU)	85	0	<6	0	0		6.8	6.9	6.9	7.1	7.5	7.9	8.2
	85	0	>9	0	0		6.8	6.9	6.9	7.1	7.5	7.9	8.2
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				79	102	116	134	159	190	270
Water Temperature (°C)	85	0	>32	0	0		2.8	6.4	12.2	20	22.5	24.1	28.2
Other													
Turbidity (NTU)	59	0	>50	4	6.8		3.5	6.7	9.6	15	22	45	400
Metals (ug/L)													
Aluminum, total (Al)	29	0	N/A				101	121	330	482	890	1385	4921
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	25	>50	0	0		5	5	5	5	5	6	9
Copper, total (Cu)	29	8	>7	3	10.3	67.1	2	2	2	3	4	8	14
Iron, total (Fe)	29	0	>1000	25	86.2	100	678	917	1102	1376	1812	3948	9405
Lead, total (Pb)	29	29	>25	0	0		5	5	5	5	5	5	5
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	>88	0	0		10	10	10	10	10	10	26
Zinc, total (Zn)	29	20	>50	0	0		10	10	10	10	12	16	21

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	92	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

Appendix C

Biological Data Sample Sites

Summary

YADKIN RIVER HUC 03040102 – SOUTH YADKIN RIVER

Description

The South Yadkin River HUC 03040102 (subbasin 06) consists of the South Yadkin River watershed and its major tributaries: Hunting, Rocky, Fourth, Third, and Second Creeks (Figure 3). The tributary streams constitute large watersheds in Iredell, Davie, and Rowan counties. Except for a very small portion of the headwater sections of Rocky, Hunting and North Hunting Creeks (in Wilkes and Yadkin counties), which are located in the Eastern Blue Ridge Foothills ecoregion, the majority of the subbasin is located in the Southern Outer Piedmont and Northern Inner Piedmont ecoregions. The watershed includes the I-40 and US 70 corridors from Salisbury westward. The largest metropolitan area in this subbasin is Statesville. Land use is mainly forest and agriculture.

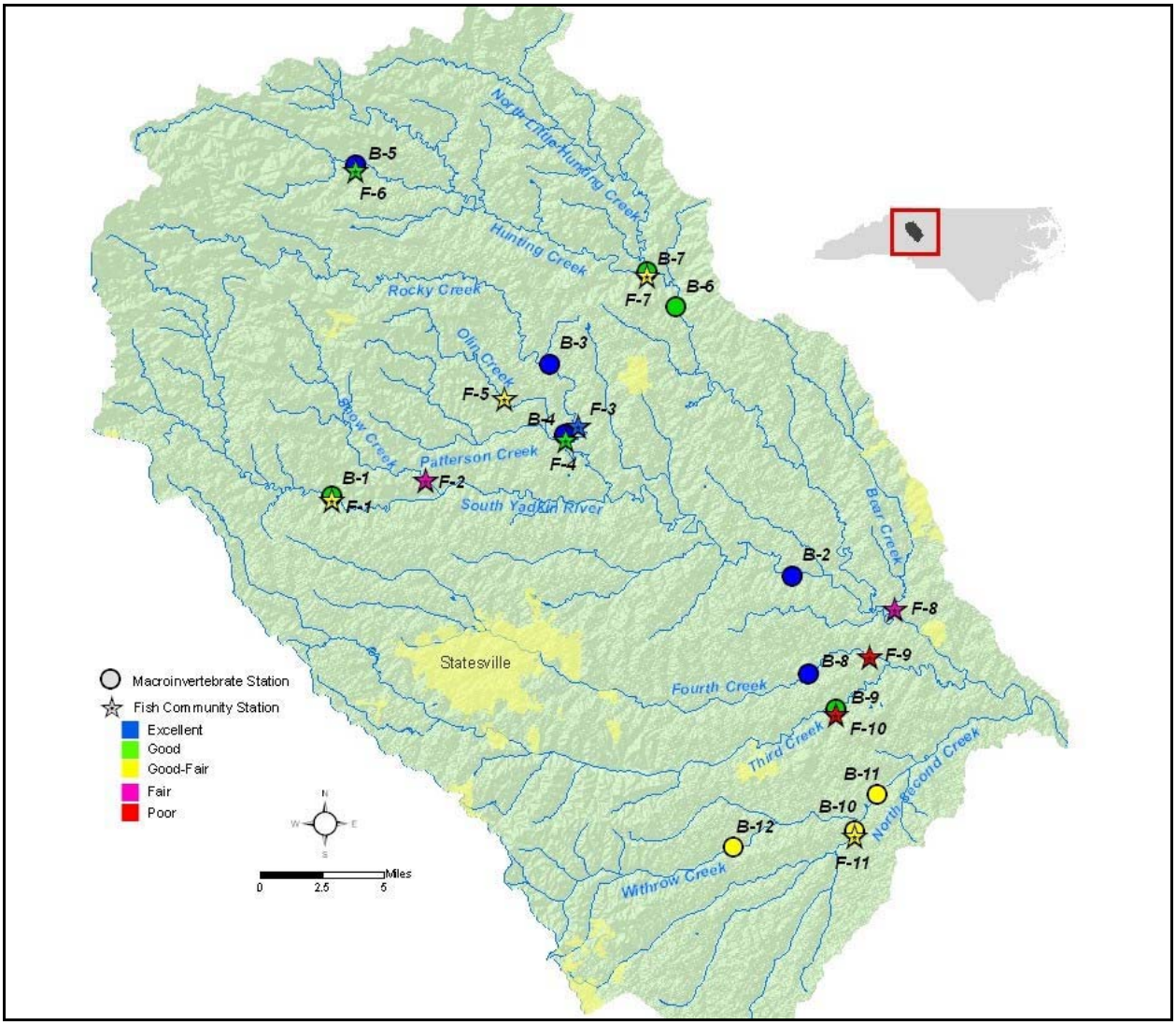

Figure 3. Sampling sites in HUC 03040102 in the Yadkin River basin. Monitoring sites are listed in Table 2.

North Little Hunting, Hunting and Rocky Creeks originate in the foothills of the Brushy Mountains. Hunting and Rocky Creeks flow from southeast Wilkes County south southeastward across the northern third of Iredell County where the land use is mostly forested. North Little Hunting Creek flows southward

from Yadkin County into Iredell County where it joins Hunting Creek in the northeastern corner of Iredell County. Second Creek is on the 303(d) list from its source to the South Yadkin River. Third and Fourth Creeks, which drain much of Statesville, the largest metropolitan area in the subbasin, are 303(d) listed as well. Both Third Creek and Fourth Creek originate above Statesville, in an area of agricultural land use. The streams flow east southeastward across Iredell County through the city of Statesville and receive urban runoff from several small tributaries. Downstream of the city, the catchment is a combination of forest, agricultural and residential land use. The city of Statesville is permitted to discharge up to 6.0 MGD to Fourth Creek and 4.0 MGD to Third Creek.

There are over 25 major and minor dischargers in this HUC of which several have permitted flows > 1 MGD. The facilities that have permitted flows > 1 MGD mainly discharge to the South Yadkin River and Hunting, Second, Third, and Fourth Creeks.

Overview Of Water Quality

Many of the streams in this HUC have moderate to severe bank erosion and are suffering from shifting sandy substrates, channelization, and sedimentation. During benthos sampling most of the streams were slightly turbid to turbid. Table 2 presents the waterbodies monitored in HUC 03040102 for benthos and fish basinwide assessment in 2006. Figure 3 presents the sites monitored for benthos and fish in 2006, depicting the bioclassification for each location.

Table 2. Waterbodies monitored in HUC 03040102 in the Yadkin River basin for basinwide assessment, 2001 and 2006.

Map #[1]	Waterbody	County	Location	2001	2006
B-1	South Yadkin R	Iredell	SR 1561	Good	Good
B-2	South Yadkin R	Davie	SR 1159	Excellent	Excellent
B-3	Rocky Cr	Iredell	SR 1884	Excellent	Excellent
B-4	Patterson Cr	Iredell	SR 1890	Good	Excellent
B-5	Hunting Cr	Wilkes	NC 115	Excellent	Excellent
B-6	Hunting Cr	Iredell	SR 2115	Excellent	Good
B-7	North Little Hunting Cr	Iredell	SR 1829	Excellent	Good
B-8	Fourth Cr	Rowan	SR 1003	Good	Excellent
B-9	Third Cr	Rowan	SR 1970	Good	Good
B-10	North Second Cr	Rowan	SR 1526	Fair	Good-Fair
B-11	North Second Cr	Rowan	US 70	Fair	Good-Fair
B-12	Withrow Cr	Rowan	SR 1547	Good-Fair	Good-Fair
F-1	S Yadkin R	Iredell	SR 1561	Good-Fair	Good-Fair
F-2	Snow Cr	Iredell	SR 1905	---	Fair
F-3	Rocky Cr	Iredell	SR 1890	---	Excellent (2004)[2]
F-4	Patterson Cr	Iredell	SR 1890	---	Good (2004)[2]
F-5	Olin Cr	Iredell	SR 1892	Fair (1996)	Good-Fair
F-6	Hunting Cr	Wilkes	NC 115	Excellent	Good
F-7	N Little Hunting Cr	Iredell	SR 1829	Good	Good-Fair
F-8	Bear Cr	Davie	SR 1116	---	Fair (2004)[2]
F-9	Fourth Cr	Iredell	SR 1985	Poor	Poor (2003)
F-10	Third Cr	Rowan	SR 1970	Poor	Poor
F-11	N Second Cr	Rowan	SR 1526	Good-Fair	Good-Fair

[1]B = benthic macroinvertebrate monitoring sites; F = fish community monitoring sites.
[2]special study site that has become a basinwide site.

Twelve sites were sampled for benthic macroinvertebrates in this HUC in 2006. All the streams sampled for benthos were classified using Piedmont criteria, except for Hunting Creek at NC 115 (Mountain ecoregion). Among these, four sites (Patterson Creek, Fourth Creek, North Second Creek at SR 1526, and North Second Creek at US 70) showed improved bioclassifications compared with 2001 sampling, six sites retained the same bioclassification as 2001, and two sites (Hunting Creek at SR 2115 and North Little Hunting Creek) showed degraded bioclassifications compared to 2001. None of the sites improved or degraded more than one level of bioclassification.

Eleven sites were sampled to evaluate fish populations. One site, Olin Creek, showed an improved bioclassification, four sites retained their 2001 classification, and two sites (Hunting Creek at NC 115 and North Little Hunting Creek) showed degraded classification compared to 2001. Four additional fish sites were added as basinwide sites: Snow Creek, Rocky Creek at SR 1890, Patterson Creek at SR 1890, and Bear Creek.

The watersheds in the northern half of the HUC (north of Statesville) all have Good or Excellent water quality based on benthic macroinvertebrates. The fish communities generally supported the benthos findings with the exception of South Yadkin River and North Little Hunting Creek. The number of fish and the number of fish species collected at these two sites decreased and the number of tolerant fish species collected increased. Conversely, the benthos data showed an increase in the number of intolerant macroinvertebrate species.

The watersheds in the southern half of the HUC (Third Creek, Fourth Creek, North Second Creek, and Withrow Creek) support more tolerant benthic and fish communities than the upper South Yadkin River watershed. The fish community reflected less species diversity than the benthic community, especially in Fourth and Third Creeks, which were rated Poor by the fish but Good or Excellent by the benthos. This may be explained by the lack of good instream habitats in these very sandy streams.

River And Stream Assessment

Fourth Creek was sampled in 2003, which was within the five-year basinwide window. Therefore, the 2003 rating was used to compare with the 2001 rating. Four additional fish sites, of which three were sampled in 2004 and one in 2005, were added to the basinwide schedule and will be sampled as a basinwide site in future assessments.

Specific site summaries of the 12 benthic macroinvertebrate and 11 fish community samples may be found at this link: **03040102**.

SPECIAL STUDIES

Fish Community Urbanization Study

Rocky Creek at SR 1890 and Patterson Creek at SR 1890 in Iredell County and Bear Creek at SR 1116 in Davie County were sampled by DWQ in 2004 as part of a North Carolina State University fish community urbanization study (unpublished data). The fish communities were rated Excellent, Good, and Fair, respectively.

Fourth Creek Fish Community TMDL Study

Four sites on Fourth Creek (at SR 1930, SR 2320, and SR 2308 in Iredell County and at SR 1985 in Rowan County) were sampled by DWQ in 2003 as part of a Total Maximum Daily Load stressor study (Biological Assessment Unit Memorandum 20031006). The study concluded that flows in the creek are extreme – from as little as 1 cfs during droughts to more than 4,000 cfs during the winter of 2003. The stream also has elevated specific conductance, turbidity, and fecal coliform bacteria, and degraded instream and riparian habitats. The sources of these stressors (causes of impairment) are the historic poor landuse practices in the watershed, the current urban landuse practices surrounding the City of Statesville, the erosive soils throughout the watershed, and the wastewater treatment plant. These stressors have resulted in degraded fish communities where the fish communities were sparse and dominated by species indicative of some nutrient enrichment, tolerance to pollution, variable flows, and degraded instream habitats.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
S YADKIN R	**SR 1561**	**07/25/06**	**Good**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
IREDELL	6	03040102	12-108-(5.5)	355311	805924

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	WS-IV	69.3	12	0.3

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

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)	6.2
Specific Conductance (µS/cm)	57
pH (s.u.)	6.4
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	10
Bottom Substrate (15)	3
Pool Variety (10)	3
Riffle Habitat (16)	3
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	6
Left Riparian Score (5)	4
Right Riparian Score (5)	4
Total Habitat Score (100)	47

Site Photograph

Substrate Sand, Gravel, Silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/25/06	9988	96	28	5.5	4.5	Good
09/11/01	8621	68	21	5.7	4.9	Good-Fair
07/24/01	8488	77	25	5.8	5.1	Good
08/05/96	7148	70	30	5.0	4.3	Excellent

Taxonomic Analysis

The 2006 sample produced a stonefly community that was comparable to the 1996 community. The intolerant stonefly Leuctra (TV=2.5) was collected for the first time in 2006.

Data Analysis

This site is located in the upper portion of the watershed before the stream receives any influence from major tributaries. In 1996, this site was rated Excellent. Since then, it has rated Good or Good-Fair and a definite decline in the diversity and tolerance of the macroinvertebrate community has occured. This was most evident in the loss of the stonefly community between sampling periods. The overall EPT taxa richness decreased from 30 to 25 in July 2001. It further decreased to 21 two months later when another field crew sampled the site as a Quality Assurance Sample. The 2006 sample produced a slightly higher EPT taxa richness suggesting a slight increase in water quality.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
S Yadkin R	**SR 1561**	**06/06/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Iredell	6	03040102	355311	805924	12-108-(5.5)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-IV	69.3	--	13	0.3	No

	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)	15.6
Dissolved Oxygen (mg/L)	8.9
Specific Conductance (µS/cm)	54
pH (s.u.)	5.6

Water Clarity	Very slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	11
Bottom Substrate (15)	3
Pool Variety (10)	3
Riffle Habitat (16)	1
Left Bank Stability (7)	3
Right Bank Stability (7)	3
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**48**

Site Photograph

Substrate Sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/06/06	2006-75	14	42	Good-Fair
05/03/01	2001-39	16	46	Good-Fair
05/14/96	96-45	11	40	Fair

Most Abundant Species Bluehead Chub

Exotic Species Green Sunfish

Species Change Since Last Cycle

Losses -- Notchlip Redhorse, Striped Jumprock, Brassy Jumprock, Flat Bullhead, and Largemouth Bass.
Gains -- Satinfin Shiner, Green Sunfish, and Bluegill.

Data Analysis

Watershed -- drains the northeast quadrant of Alexander County, including the Town of Taylorsville. Habitat -- shallow sandy runs, side snags, some buried woody debris; "holes" missing. **2006** -- high percentage of omnivores+herbivores (61% of all fish were Bluehead Chub); low total species diversity; only one species of sucker collected; first time Green Sunfish collected at the site. **1996 - 2006** -- consistently low total habitat scores; specific conductance ~ 50 µS/cm; total species at site = 20, but the Tessellated Darter has never been collected from the site; increase in the percentage of Bluehead Chub from 31 to 45 to 61%, decrease in the percentage of insectivores from 66 to 55 to 39%; slight decrease in the NCIBI score, but not the rating.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
S YADKIN R	**SR 1159**	**09/11/06**	**Excellent**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
DAVIE	6	03040102	12-108-(14.5)	355040	803934

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Outer Piedmont	WS-IV	306.5	19	0.7

	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)	21.4
Dissolved Oxygen (mg/L)	7.9
Specific Conductance (µS/cm)	77
pH (s.u.)	6.5
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	14
Bottom Substrate (15)	8
Pool Variety (10)	5
Riffle Habitat (16)	12
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	4
Left Riparian Score (5)	5
Right Riparian Score (5)	2
Total Habitat Score (100)	64

Site Photograph

Substrate Boulder, Rubble, Silt, Sand, Gravel

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
09/11/06	9995	77	32	5.2	4.6	Excellent
07/24/01	8489	80	32	4.7	3.9	Excellent
08/06/96	7150	60	29	4.5	3.8	Good
07/13/89	4980	73	32	4.7	3.9	Excellent
08/05/86	3899	79	26	5.1	4.1	Good

Taxonomic Analysis

The addition of two tolerant taxa, the mayfly Caenis (TV=7.4) and the oligochaete Branchiura sowerbyi (TV=8.3), which had not previously been collected at this location, may have contributed to the slightly higher Biotic Index. Abundant EPT taxa included *Baetis intercalaris, Caenis, Hexagenia, Isonychia, Stenonema modestum, Acroneuria abnormis, Hydropsyche venularis*, and *Nectopsyche exquisita*.

Data Analysis

This site is located at the Davie/Rowan County line and has consistenly rated Good or Excellent since 1986. It continues to support a diverse and intolerant benthic macroinvertebrate community. However, the Biotic Index did increase slightly from previous collections.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Snow Cr	**SR 1905**	**06/06/06**	**Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Iredell	6	03040102	355346	805522	12-108-9-(0.6)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-IV	29.3	--	5	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	85	0	15	0

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

Water Quality Parameters

Temperature (°C)	15.9
Dissolved Oxygen (mg/L)	6.7
Specific Conductance (µS/cm)	73
pH (s.u.)	6.6

Water Clarity	Very slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	14
Bottom Substrate (15)	4
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)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**62**

Site Photograph

Substrate Sand, gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/06/06	2006-76	12	38	Fair

Most Abundant Species Bluehead Chub

Exotic Species Stripped Jumprock

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

Data Analysis

Watershed -- drains rural northwest Iredell and extreme northeast Alexander counties; no municipalities in watershed; site is ~ 1 mi. above mouth. **Habitat** -- sand and gravel substrate; bar development; channel filled with sediment from upstream sediment sources. **2006** -- low diversity; one of a few sites in 2006 without any Tessellated Darter; high percentage of omnivores+herbivores; ~ 60% of all fish were Bluehead Chub.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
ROCKY CR	SR 1884	07/26/06	Excellent

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
IREDELL	6	03040102	12-108-11	355755	805010

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	56.5	12	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)
None		

Water Quality Parameters

Temperature (°C)	23.3
Dissolved Oxygen (mg/L)	6.7
Specific Conductance (µS/cm)	44
pH (s.u.)	6.4
Water Clarity	turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	12
Bottom Substrate (15)	8
Pool Variety (10)	6
Riffle Habitat (16)	14
Left Bank Stability (7)	4
Right Bank Stability (7)	4
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	2
Total Habitat Score (100)	65

Site Photograph

Substrate Sand, Rubble, Gravel, Boulder, Silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/26/06	9990	--	44	--	4.2	Excellent
07/23/01	8485	--	38	--	3.8	Excellent
08/05/96	7146	--	26	--	3.9	Good

Taxonomic Analysis

Although the EPT biotic index increased slightly, only one pollution tolerant mayfly, *Caenis* , went from rare or not collected in 1996 or 2001, repectively, to abundant in 2006. Several intolerant EPT taxa were collected for the first time at this location and included the mayflies *Brachycercus, Epeorus, Ephemera, Ephoron Leukon, Heterocloeon curiosum, Paraleptophlebia, Plauditus dubius* group, *Procloeon* , and *Pseudocloeon dardanum* , the stonefly *Leuctra* , and the caddisflies *Glossosoma* , *Paranyctiophylax celta, Psychomyia flavida* , and *Setodes* .

Data Analysis

This site is located approximately two miles upstream of its confluence with Patterson Creek. In 1996, this site missed an Excellent bioclassification by two taxa (26 EPT taxa found). This site received an Excellent bioclassification in 2001 (39 EPT) and in 2006 (44 EPT).

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Rocky Cr	**SR 1890**	**07/26/04**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Iredell	6	03040102	355545	804850	12-108-11	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	62.4	--	8	0.4	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)	23.0
Dissolved Oxygen (mg/L)	7.3
Specific Conductance (µS/cm)	46
pH (s.u.)	5.8

Water Clarity	Slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	14
Bottom Substrate (15)	3
Pool Variety (10)	9
Riffle Habitat (16)	7
Left Bank Stability (7)	3
Right Bank Stability (7)	3
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**64**

Site Photograph

Substrate Sand, boulder, gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
07/26/04	2004-135	19	54	Excellent

Most Abundant Species Bluehead Chub

Exotic Species Green Sunfish and Smallmouth Bass

Species Change Since Last Cycle N/A; new site in 2004.

Data Analysis

Watershed -- headwaters arise in the Brushy Mountains in southern Wilkes County, flows through northeastern Alexander and northwestern Iredell County; rural, no municipalities in the watershed; tributary to Patterson Creek. **Habitat** -- sandy runs, gravel/boulder/bedrock/shelf riffles, two good plunge pools; bank instability; very similar (habitats, substrate, clarity, and species) to Hunting and North Little Hunting creeks. **2004** -- pH reading was correct and verified; relatively low specific conductance; percentage of tolerant fish was moderate (33 percent) and included the Satinfin Shiner, White Sucker, Flat Bullhead, Redbreast Sunfish, and Green Sunfish; but five intolerant species were also present and included the Thicklip Chub, Fieryblack Shiner, Highback Chub, Smallmouth Bass, and Piedmont Darter; sampled as part of a NCSU Urban Fish Study.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
PATTERSON CR	**SR 1890**	**07/26/06**	**Excellent**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
IREDELL	6	03040102	12-108-11-3	355527	804927

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	C	35.3	10	0.2

	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)	25.5
Dissolved Oxygen (mg/L)	6
Specific Conductance (µS/cm)	61
pH (s.u.)	6.5
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	20
Bottom Substrate (15)	15
Pool Variety (10)	8
Riffle Habitat (16)	16
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	97

Site Photograph

Substrate Boulder, Rubble, Silt, Bedrock, Gravel

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/26/06	9991	--	32	--	3.9	Excellent
07/23/01	8486	--	25	--	4.1	Good

Taxonomic Analysis

EPT taxa collected for the first time (at this site) in 2006 included the mayflies *Caenis, Epeorus rubidus, Hexagenia, Leucrocuta*, and *Pseudocloeon propinquum*, the stonefly *Leuctra*, and the caddisflies *Brachycentrus nigrosoma, Hydropsyche rossi, Neophylax oligius, Oecetis persimilis,* and *Rhyacophila fuscula*.

Data Analysis

Patterson Creek is a small tributary to Rocky Creek. It has been sampled on three prior occassions during winter and spring as part of Watershed Assessment Team (WAT) training. This site was added to the basinwide schedule in 2001 and has only been sampled twice as a basinwide site. In 2006, it rated Excellent, up from the Good rating it received in 2001. EPT taxa richness increased from 25 in 2001 to 32 in 2006. Since 2001 was a drought year, this may explain the increase in the number of EPT taxa collected.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Patterson Cr	**SR 1890**	**07/09/04**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Iredell	6	03040102	355525	804924	12-108-11-3	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	35.4	--	7	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	75	0	20	5 (rural residential)

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

Water Quality Parameters

Temperature (°C)	20.7
Dissolved Oxygen (mg/L)	7.0
Specific Conductance (µS/cm)	68
pH (s.u.)	5.8

Water Clarity	Slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	14
Bottom Substrate (15)	3
Pool Variety (10)	10
Riffle Habitat (16)	0
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	5
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**57**

Site Photograph

Substrate Sand, bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
07/09/04	2004-116	12	52	Good

Most Abundant Species Notchlip Redhorse

Exotic Species None

Species Change Since Last Cycle N/A; new site in 2004.

Data Analysis

Watershed -- drains rural north-central Iredell County; no municipalities in watershed; a tributary to Rocky Creek, site is ~ 0.5 mile above mouth. **Habitat** -- channel filled with sediment; no riffles; long pools and sandy runs; open canopy. **2004** -- total species diversity and diversity of darters lower than expected; only one species of darter collected (Tessellated Darter); lots of biomass with large suckers (White Sucker, Notchlip Redhorse, and Brassy Jumprock); Rosyside Dace and Creek Chub represented only by young-of-year; sampled as part of a NCSU Urban Fish Study.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Olin Cr	**SR 1892**	**06/05/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Iredell	6	03040102	355639	805204	12-108-11-3-3	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	9.4	--	4	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	25	0	75	0

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

Water Quality Parameters

Temperature (°C)	18.6
Dissolved Oxygen (mg/L)	7.8
Specific Conductance (µS/cm)	52
pH (s.u.)	6.2

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	13
Bottom Substrate (15)	3
Pool Variety (10)	6
Riffle Habitat (16)	4
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)	**53**

Site Photograph

Substrate Sand, gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/05/06	2006-74	10	44	Good-Fair
05/14/96	96-44	9	36	Fair

Most Abundant Species Bluehead Chub

Exotic Species Fathead Minnow

Species Change Since Last Cycle **Losses** -- Margined Madtom. **Gains** -- Highback Chub and Fathead Minnow.

Data Analysis

Watershed -- drains rural north-north central Iredell County; rural, no municipalities in watershed; small tributary to Patterson Creek. Habitat -- shallow sandy runs, stick and gravel riffles, snag pools; very turbid when walking in channel. **2006** -- low total species diversity; no suckers; moderately high percentage of omnivores+herbivores. **1996 and 2006** -- slight improvement observed; increase in the total number of fish collected; less dominance by the Bluehead Chub; consistently low total habitat scores and total species diversity; number of species known from site = 11; NCIBI score increased and rating improved to Good-Fair.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
HUNTING CR	**NC 115**	**07/25/06**	**Excellent**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
WILKES	6	03040102	12-108-16-(0.5)	360444	805839

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	WS-III	29.8	16	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	25	0	75	0

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

Water Quality Parameters

Temperature (°C)	22
Dissolved Oxygen (mg/L)	6.5
Specific Conductance (µS/cm)	50
pH (s.u.)	6.3
Water Clarity	turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	14
Bottom Substrate (15)	10
Pool Variety (10)	5
Riffle Habitat (16)	14
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)	72

Site Photograph

Substrate Gravel, Sand, Boulder, Rubble, Silt, Bedrock

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/25/06	9987	100	43	4.2	3.4	Excellent
07/30/01	8483	--	37	--	3.7	Excellent
06/16/92	5856	84	43	4.0	3.5	Excellent

Taxonomic Analysis

Abundant taxa included *Baetis intercalaris, Epeorus rubidus, Isonychia, Stenonema modestum, Serratella deficiens, Acroneuria abnormis, Leuctra, Paragnetina immarginata, Perlesta, Brachycentrus nigrosoma, Cheumatopsyche, Chimarra, Dolophilodes, Neophylax oligius, Symphitopsyche sparna,* and *Triaenodes ignitus* .

Data Analysis

This site is located in southeastern Wilkes County near the Iredell County line. It has been sampled three times since 1992 and has always rated Excellent. A tributary with a heavy silt load is located just upstream of the bridge. During sampling in 2006, a plume of silt from this tributary was observed (see photo) even though there was no prior rain. Consequently, this heavy silt load has the potential to impact benthic habitats by filling in crevices where macroinvertebrates live and covering food supplies (i.e., algae on rocks).

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Hunting Cr	**NC 115**	**06/22/06**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Wilkes	6	03040102	360444	805839	12-108-16-(0.5)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-III	29.8	--	13	0.3	No

	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)	22.3
Dissolved Oxygen (mg/L)	7.7
Specific Conductance (µS/cm)	54
pH (s.u.)	5.8

Water Clarity	Slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	12
Bottom Substrate (15)	3
Pool Variety (10)	6
Riffle Habitat (16)	2
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	4
Total Habitat Score (100)	**56**

Site Photograph

Substrate Sand, gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/22/06	2006-93	14	52	Good
05/03/01	2001-40	17	58	Excellent
05/15/96	96-48	16	56	Excellent
06/16/92	92-19	12	52	Good

Most Abundant Species Rosyside Dace

Exotic Species Smallmouth Bass

Species Change Since Last Cycle

Losses -- White Sucker, Notchlip Redhorse, V-lip Redhorse, Flat Bullhead, and Piedmont Darter. **Gains** -- Spottail Shiner (new record for creek) and Bluegill.

Data Analysis

Watershed -- drains the rural southeast corner of Wilkes County; stream flows parallel to NC 115 upstream of the sampling site; rural, no municipalities in watershed. Habitat -- eroding banks, shallow channel, seemed to have more silt in the creek than in 2001. **2006** -- number of fish and species, especially suckers and darters, lower than in 2001. **1992 - 2006** -- total habitat scores have varied from 49 to 68; specific conductance has gradually increased from 38 to 48 to 54 µS/cm since 1996; trophically no change; very stable metrics; total number of species known from site = 21; Bluehead Chub consistently the dominant species; NCIBI ratings fluctuate between high Good and high Excellent.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
HUNTING CR	**SR 2115**	**09/11/06**	**Good**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
IREDELL	6	03040102	12-108-16-(12)	360000	804444

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	WS-IV	156.0	20	0.5

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	25	0	75	0

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

Water Quality Parameters

Temperature (°C)	19.8
Dissolved Oxygen (mg/L)	9
Specific Conductance (µS/cm)	58
pH (s.u.)	6.2
Water Clarity	turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	12
Bottom Substrate (15)	10
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)	3
Right Riparian Score (5)	4
Total Habitat Score (100)	57

Site Photograph

Substrate Sand, Silt, Rubble, Boulder

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
09/11/06	9994	85	34	5.8	4.4	Good
07/23/01	8481	74	31	5.1	4.2	Excellent
07/07/96	7153	66	30	4.7	3.3	Excellent
07/27/88	4665	72	27	5.4	4.1	Good
07/30/85	3609	79	33	4.9	3.7	Excellent

Taxonomic Analysis

Abundant taxa included *Pseudocloeon propinquum, Caenis, Hexagenia, Isonychia, Stenonema modestum, Brachycentrus nigrasoma, Nextopsyche exquisita, Ancyronyx variegatus, Argia, Boyeria vinosa, Macromia, Corydalus cornutus, Ablabesmyia mallochi, Polypedilum flavum,* and *P. illino* .

Data Analysis

This site is located about midway between the headwaters of Hunting Creek and its confluence with the South Yadkin River. The site has rated Excellent or Good since 1985. Although the bioclassification was down in 2006, the EPT taxa richness and total taxa richness was the highest ever recorded at this location. With the exception of 1996, the EPT Biotic Index has gradually increased since 1985 suggesting a slight decline in water quality. However, no major changes in the biological community were observed.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
N L HUNTING CR	**SR 1829**	**07/26/06**	**Good**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
IREDELL	6	03040102	12-108-16-6	360113	804601

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Northern Inner Piedmont	WS-III	54.5	10	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	30	10	0	60

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

Water Quality Parameters

Temperature (°C)	22
Dissolved Oxygen (mg/L)	6.1
Specific Conductance (µS/cm)	55
pH (s.u.)	6.4
Water Clarity	turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	11
Bottom Substrate (15)	3
Pool Variety (10)	2
Riffle Habitat (16)	5
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	6
Left Riparian Score (5)	4
Right Riparian Score (5)	4
Total Habitat Score (100)	52

Site Photograph

Substrate Sand, Boulder, Rubble, Gravel

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/26/06	9989	87	30	5.2	4.6	Good
07/23/01	8480	--	31	--	4.1	Excellent
08/05/96	7145	--	28	--	3.7	Excellent

Taxonomic Analysis

EPT taxa that were not collected in 2006 but were common or abundant in 2001 include Heptagenia marginalis, Serratella serratoides, Stenacron pallidum, Polycentropus, and Pycnopsyche. Only one new taxon, *Baetis flavistriga* , a tolerant mayfly (TV=7.0), was collected in 2006.

Data Analysis

North Little Hunting Creek at SR 1829 is the most downstream bridge crossing before its confluence with Hunting Creek.The stream rated Excellent in 1996 and 2001. In 2006, EPT taxa richness decreased and the EPT Biotic Index increased resulting in a Good bioclassification rating.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
N Little Hunting Cr	**SR 1829**	**06/06/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Iredell	6	03040102	360113	804601	12-108-16-6	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-III	54.5	--	9	0.4	No

	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)	20.0
Dissolved Oxygen (mg/L)	8.5
Specific Conductance (µS/cm)	66
pH (s.u.)	6.6

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	10
Bottom Substrate (15)	3
Pool Variety (10)	8
Riffle Habitat (16)	2
Left Bank Stability (7)	2
Right Bank Stability (7)	2
Light Penetration (10)	4
Left Riparian Score (5)	3
Right Riparian Score (5)	5
Total Habitat Score (100)	**44**

Site Photograph

Substrate Sand, gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/06/06	2006-77	16	44	Good-Fair
05/03/01	2001-41	21	50	Good
05/14/96	96-43	17	44	Good-Fair

Most Abundant Species Bluehead Chub

Exotic Species Smallmouth Bass; no exotics in 1996 or 2001.

Species Change Since Last Cycle

Losses -- Rosyside Dace, Whitefin Shiner, Highback Chub, Snail Bullhead, Tessellated Darter, and Piedmont Darter. **Gains** -- Smallmouth Bass (first record for creek; 235 and 236 mm total length).

Data Analysis

Watershed -- includes the southeast corner of Wilkes and southwest corner of Yadkin counties south of US 421; bisected by I-77; part of the catchment is in the Brushy Mountains of Wilkes County; lowermost crossing before confluence with Hunting Creek; rural, no municipalities in watershed. Habitat -- shifting sandy runs, side snags, large deadfalls on the sides, bedrock outcrops on left; extreme fluctuations in flows. **2006** -- decline in number of fish and species, especially darters; high percentage of omnivores+herbivores and tolerant fish; large specimens of Notchlip Redhorse, Smallmouth Bass, and Redbreast Sunfish. **1996 - 2006** -- consistently low total habitat scores (~40); specific conductance has gradually increased from 37 to 56 to 66 µS/cm since 1996; total number of species known from the site = 22; trophically no change, very stable metrics; Bluehead Chub consistently the dominant species (~50%); NCIBI ratings fluctuate between medium Good-Fair and medium Good.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Bear Cr	**SR 1116**	**07/09/04**	**Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Davie	6	03040102	354932	803507	12-108-18-(1)	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-IV	29.1	--	6	0.5	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	75	0	0	25 (rural residential)

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

Water Quality Parameters

Temperature (°C)	23.4
Dissolved Oxygen (mg/L)	6.3
Specific Conductance (µS/cm)	150
pH (s.u.)	6.7

Water Clarity	Slightly turbid

Habitat Assessment Scores (max)

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

Site Photograph

Substrate Sand, silt

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
07/09/04	2004-117	15	40	Fair

Most Abundant Species	Redbreast Sunfish	**Exotic Species**	Green Sunfish

Species Change Since Last Cycle	N/A; new site in 2004.

Data Analysis

Watershed -- drains west-central Davie County, including the western area of the Town of Mocksville; site is ~ 1 mile above confluence with the South Yadkin River. **Habitat** -- sandy runs, snag and tree pools; bank instability. **2004** -- total species diversity and diversity of darters lower than expected; only one species of darter was collected (Tessellated Darter); intolerant species were absent; percentage of tolerant fish was greater than expected (56 percent) and included the Satinfin Shiner, White Sucker, Brown Bullhead, Redbreast Sunfish, and Green Sunfish; lots of biomass with large suckers (White Sucker, Creek Chubsucker; Notchlip Redhorse, and Brassy Jumprock); sampled as part of a NCSU Urban Fish Study.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
FOURTH CR	**SR 1003**	**07/26/06**	**Excellent**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
ROWAN	6	03040102	12-108-20	354716	803848

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Outer Piedmont	C	74.3	22	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)
Fourth Creek WWTP	NC0031836	6.0

Water Quality Parameters

Temperature (°C)	25
Dissolved Oxygen (mg/L)	6.2
Specific Conductance (µS/cm)	163
pH (s.u.)	7.1
Water Clarity	turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	12
Bottom Substrate (15)	8
Pool Variety (10)	5
Riffle Habitat (16)	14
Left Bank Stability (7)	6
Right Bank Stability (7)	7
Light Penetration (10)	5
Left Riparian Score (5)	4
Right Riparian Score (5)	5
Total Habitat Score (100)	70

Site Photograph

Substrate Boulder, Silt, Rubble

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/26/06	9992	--	28	--	4.8	Excellent
09/11/01	8614	--	21	--	5.3	Good
07/24/01	8484	--	20	--	5.3	Good-Fair
08/06/96	7151	--	23	--	5.2	Good

Taxonomic Analysis

Abundant taxa included *Acentrella, Baetis flavistriga, Baetis intercalaris, Stenonema modestum, Cheumatopsyche, Hydropsyche betteini, Leucotrichia pictipes, Nectopsyche exquisita, Psychomyia flavida, Symphitopsyche sparna, and Triaenodes ignitus*. New taxa that had not been previously collected at this site include the mayflies *Baetis pluto* and *Procloeon*, the stoneflies *Neoperla* and *Paragnetina immarginata*, and the caddisflies *Hydropsyche venularis, Hydroptila, Oecetis persimilis*, and *Psychomyia flavida*.

Data Analysis

This site is located approximately 10 miles downstream of the Fourth Creek WWTP. EPT taxa richness and EPT Biotic Index were similar for the 1996 sample and the two 2001 samples suggesting stable water quality. Although the July 2001 sample rated Good-Fair, it was one taxa away from receiving a Good rating and the Biotic Index was identical to the September 2001 sample. In 2006, a significant increase in the number of EPT taxa and a decrease in the EPT Biotic Index occurred suggesting an improvement in water quality. According to the Mooresville Regional Office, Statesville lost some of their industrial wastewater contributors, which may have played a part in the improvement of the creek's overall water quality.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Fourth Cr	**SR 1985**	**07/29/03**	**Poor**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Rowan	6	03040102	354751	803610	12-108-20	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	80	--	14	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	25	0	50	25 (rural residential)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
City of Statesville's Fourth Creek WWTP	NC0031836	4

Water Quality Parameters

Temperature (°C)	23.3
Dissolved Oxygen (mg/L)	7.4
Specific Conductance (µS/cm)	136
pH (s.u.)	7.3

Water Clarity	Turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	11
Bottom Substrate (15)	3
Pool Variety (10)	2
Riffle Habitat (16)	0
Left Bank Stability (7)	2
Right Bank Stability (7)	2
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	4
Total Habitat Score (100)	**43**

Site Photograph

Substrate Sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
07/29/03	2003-42	11	34	Poor
06/03/03	2003-19	8	26	Poor
05/02/01	2001-38	12	28	Poor
04/26/96	96-39	9	32	Poor

Most Abundant Species Bluehead Chub

Exotic Species Red Shiner, Fathead Minnow, Channel Catfish, and Spotted Bass

Species Change Since Last Cycle

Gains -- Fathead Minnow, White Perch, and Spotted Bass. **Losses** -- Eastern Silvery Minnow, Creek Chubsucker, Brown Bullhead, and Largemouth Bass.

Data Analysis

Watershed -- drains central Iredell and northwestern Rowan counties; City of Statesville is in the upper portion of the watershed; 12% of watershed is developed; 41% is cultivated; and 46% is forested. **Habitat** -- no riffles; side snags; good riparian zones and canopy, but eroding and "blown-out" banks; entrenched. **2003** -- few fish and species present, intolerant species absent; poor evidence of recruitment; Eastern Silvery Minnow and Common Carp represented only by young-of-year. **1996 - 2003** -- for a watershed of its size, the fauna is depauperate in the number of species and of individuals; intolerant specie absent; only 19 species are known from the site; of which 10 are tolerant species and 5 are nonindigenous; data were summarized in Biological Assessment Unit Memorandum F-20031006.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
THIRD CR	**SR 1970**	**07/27/06**	**Good**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
ROWAN	6	03040102	12-108-20-4	354603	803733

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Outer Piedmont	C	96.6	15	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)
Third Creek WWTP	NC0020591	4.0

Water Quality Parameters

Temperature (°C)	23
Dissolved Oxygen (mg/L)	6.8
Specific Conductance (µS/cm)	154
pH (s.u.)	6.7
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
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)	3
Light Penetration (10)	10
Left Riparian Score (5)	4
Right Riparian Score (5)	4
Total Habitat Score (100)	51

Site Photograph

Substrate Sand, Detritus

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/27/06	9993	70	24	5.5	4.4	Good
07/24/01	8490	52	22	5.2	4.4	Good
08/06/96	7149	56	23	4.9	4.4	Good
07/09/90	5369	62	23	5.6	4.2	Good

Taxonomic Analysis

EPT taxa richness has been nearly identical at this location since sampling commenced in 1990. Although total EPT taxa richness has not changed, there were a few intolerant EPT taxa collected at this location for the first time and included the mayflies *Acentrella parvula*, *Cercobrachys*, and *Pseudocloeon dardanum*.

Data Analysis

This site is located in the lower reach of the watershed approximately ten miles below Third Creek WWTP and five miles above the creek's confluence with Fourth Creek. EPT taxa richness and EPT Biotic Index have been nearly identical since 1990. Overall, these data suggest stable conditions in the Third Creek watershed.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Third Cr	**SR 1970**	**05/11/06**	**Poor**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Rowan	6	03040102	354603	803733	12-108-20-4	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	96.6	--	12	0.5	No

	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)
City of Statesville's Third Creek WWTP	NC0020591	4

Water Quality Parameters

Temperature (°C)	17.5
Dissolved Oxygen (mg/L)	7.9
Specific Conductance (µS/cm)	149
pH (s.u.)	6.2

Water Clarity	Turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	11
Bottom Substrate (15)	3
Pool Variety (10)	9
Riffle Habitat (16)	1
Left Bank Stability (7)	4
Right Bank Stability (7)	4
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**56**

Site Photograph

Substrate Sand, coarse woody debris

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
05/11/06	2006-44	10	32	Poor
05/02/01	2001-37	11	34	Poor
04/25/96	96-38	13	40	Fair

Most Abundant Species Bluehead Chub

Exotic Species Channel catfish, Green Sunfish, Yellow Perch

Species Change Since Last Cycle

Losses -- Common Carp, Satinfin Shiner; Whitefin Shiner; Fieryblack Shiner; Gizzard Shad; Largemouth Bass, and Tessellated Darter. **Gains** -- White Sucker, Notchlip Redhorse, Eastern Mosquitofish, Green Sunfish, Pumpkinseed, Bluegill, and Yellow Perch.

Data Analysis

Watershed -- drains southeast Alexander, central Iredell, including the southern edge of the City of Statesville, and northwest Rowan counties. WWTP with rare violations for dissolved oxygen, cadmium, and total suspended solids from June 2001 to June 2006 (BIMS query 12/14/2006). Habitat -- no riffles, logs in the current, side snags, fast flow; water still turbid three days after rains. **2006** -- fewest fish of any Piedmont/Mountain site; low diversity; no intolerant species; 1 of 3 Piedmont/Mountain sites with no darters; Redlip Shiner has never been collected at the site. **1996 - 2006** -- consistently low total habitat scores (~50); specific conductance variable (144 - 262 µS/cm); consistently very few fish and species, < 130 specimens have been collected in 3 attempts; consistently poor reproduction; total number of species known from site = 21, but none consistently collected except for Bluehead Chub, Channel Catfish, and Redbreast Sunfish.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
N SECOND CR	**SR 1526**	**07/24/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
ROWAN	6	03040102	12-108-21	354149	803642

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Outer Piedmont	C	63.3	7	0.2

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	50	0	50	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)	7.1
Specific Conductance (µS/cm)	117
pH (s.u.)	6.6
Water Clarity	turbid

Habitat Assessment Scores (max)

Channel Modification (5)	2
Instream Habitat (20)	13
Bottom Substrate (15)	3
Pool Variety (10)	4
Riffle Habitat (16)	10
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	10
Left Riparian Score (5)	3
Right Riparian Score (5)	3
Total Habitat Score (100)	58

Site Photograph

Substrate Sand

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/24/06	9984	--	18	--	5.0	Good-Fair
07/02/02	8856	61	17	6.7	5.4	Fair
07/24/01	8487	--	10	--	6.0	Fair
08/06/96	7152	--	16	--	4.8	Good-Fair

Taxonomic Analysis

The biological community collected in 2006 was almost identical to what was collected in 1996. Three new EPT taxa were collected in 2006: the mayfly, *Pseudocloeon frondale* and the caddisflies, *Lype diversa* and *Oecetis persimilis*.

Data Analysis

This is the most upstream site on North Second Creek. A sand mininig operation was located downstream of the bridge. In 1996, this site rated Good-Fair, it fell to Fair in 2001 and 2002, and increased back to Good-Fair in 2006. The lowest EPT taxa richness and highest EPT Biotic Index scores for this site were recorded in 2001 during the drought. In 2002, EPT richness increased from 10 to 17 and the EPT Biotic Index decreased from 6.0 to 5.4 indicating some improvement in water quality. In 2006, the site rated Good-Fair and had EPT richness and Biotic Index scores similar to that recored in 1996 suggesting that the stream had recovered from the drought.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
N Second Cr	**SR 1526**	**05/11/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Rowan	6	03040102	354149	803642	12-108-21	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	63.3	--	9	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	50	0	45	5 -- powerline corridor

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

Water Quality Parameters

Temperature (°C)	17.7
Dissolved Oxygen (mg/L)	8.7
Specific Conductance (µS/cm)	123
pH (s.u.)	6.4

Water Clarity	Slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	6
Bottom Substrate (15)	3
Pool Variety (10)	4
Riffle Habitat (16)	1
Left Bank Stability (7)	2
Right Bank Stability (7)	2
Light Penetration (10)	9
Left Riparian Score (5)	3
Right Riparian Score (5)	3
Total Habitat Score (100)	**37**

Site Photograph

Substrate Sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
05/11/06	2006-43	12	46	Good-Fair
05/02/01	2001-36	9	42	Good-Fair
04/25/96	96-37	13	40	Fair

Most Abundant Species Bluehead Chub

Exotic Species Green Sunfish and Redear Sunfish

Species Change Since Last Cycle **Losses** -- Striped Jumprock. **Gains** -- Eastern Mosquitofish, Green Sunfish, Bluegill, Largemouth Bass.

Data Analysis

Watershed -- drains rural eastern Iredell and western Rowan counties; includes northeast part of the Town of Mooresville. Habitat -- lowest habitat score of any fish site in 2006; one long sandy run with poor instream habitats; good canopy, but deeply entrenched; sand dipping operation below the bridge. **2006** -- two-thirds fewer fish than in 2001 but slight increases in the diversity of sunfish and percentage of insectivores; no species of suckers. **1996 - 2006** -- consistently low total habitat scores (22 - 50); specific conductance ~ 100 µS/cm; consistently very few species, total number of species known from site = 16; Redlip Shiner has never been collected at the site; Bluehead Chub has been the dominant species in 2001 and 2006; NCIBI ratings have ranged from high Fair to high Good-Fair.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
N SECOND CR	**US 70**	**07/24/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
ROWAN	6	03040102	12-108-21	354305	803544

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Outer Piedmont	C	117.4	11	0.5

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

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
Second Creek WWTP	NC0078361	0.03
Arteva Specialties	NC0004944	2.3

Water Quality Parameters

Temperature (°C)	23.3
Dissolved Oxygen (mg/L)	7.1
Specific Conductance (µS/cm)	129
pH (s.u.)	6.6
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	3
Instream Habitat (20)	12
Bottom Substrate (15)	2
Pool Variety (10)	4
Riffle Habitat (16)	5
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)	52

Site Photograph

Substrate Sand, Silt, Rubble, Boulder

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/24/06	9983	75	18	6.3	5.6	Good-Fair
07/02/02	8855	65	14	6.8	6.0	Fair
07/24/01	8492	66	16	6.8	6.1	Fair
08/07/96	7154	54	17	6.2	5.8	Good-Fair

Taxonomic Analysis

No major changes in the benthic community were observed. Abundant taxa included *Pseudocloeon propinquum, Stenonema modestum, Tricorythodes, Cheumatopsyche, Hydropsyche betteni, Hydroptila, Nextopsyche exquisita, Triaenodes ignitus, Ancyronyx variegatus, Macronychus glabratus, Boyeria vinosa, Gomphus, Ophiogomphus, Conchapelopia* group, *Polypedilum illinoense, P. scalaenum, Anopholes, Antocha* , and *Corbicula fluminea* .

Data Analysis

This is the most downstream site on North Second Creek approximately one half mile downstream of the confluence with Withrow Creek. It is also an ambient chemistry monitoring site. The outfall from Second Creek WWTP is located approximately 150 meters upstream of the bridge. This site rated Good-Fair in 1996, fell to Fair in 2001 and 2002, and increased back to Good-Fair in 2006. The lowest EPT taxa richness and highest Biotic Index scores for this site were recorded in 2001 and 2002 during the drought. Since the WWTP has not incurred any limit violations in the past five years, these low ratings appear to be more drought related than from WWTP effluent impacts. The Good-Fair rating in 2006 indicates some recovery since the drought.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
WITHROW CR	**SR 1547**	**07/24/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
ROWAN	6	03040102	12-108-21-3	354109	804152

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Southern Outer Piedmont	C	29.0	7	0.1

	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)	25
Dissolved Oxygen (mg/L)	7.5
Specific Conductance (µS/cm)	92
pH (s.u.)	6.5
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	2
Instream Habitat (20)	11
Bottom Substrate (15)	3
Pool Variety (10)	4
Riffle Habitat (16)	10
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	10
Left Riparian Score (5)	3
Right Riparian Score (5)	2
Total Habitat Score (100)	55

Site Photograph

Substrate Sand, Gravel, Silt, Detritus

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/24/06	9985	--	19	--	4.7	Good-Fair
07/25/01	8491	--	18	--	4.8	Good-Fair
08/07/96	7155	--	14	--	4.8	Good-Fair

Taxonomic Analysis

Abundant taxa included *Baetis intercalaris, Isonychia, Stenonema modestum, Serratella deficiens, Tricorythodes, Cheumatopsyche* , and *Triaenodes ignitus* .

Data Analysis

Withrow Creek, a tributary to North Second Creek, was sampled at this location to assess the overall water quality of this portion of the North Second Creek watershed. This site has rate Good-Fair since 1996. Thus, no changes in water quality were observed. EPT taxa richness and EPT Biotic Index have been nearly identical since 1996.