

Watershed Improvement Plan for Silver Creek

September 30, 2011

Watershed: Silver Creek

River Basin: Coosa

Water Body: Silver Creek

Impaired Segment Location: Etowah River tributary

City or County: Floyd and Polk Counties, City of Rome

HUC 10: #0315010416

Criteria Violated: Fecal Coliform

303 (d) List Evaluation: Headwaters to Etowah River (15 mi.) non-supportive for fishing; 67% reduction necessary.

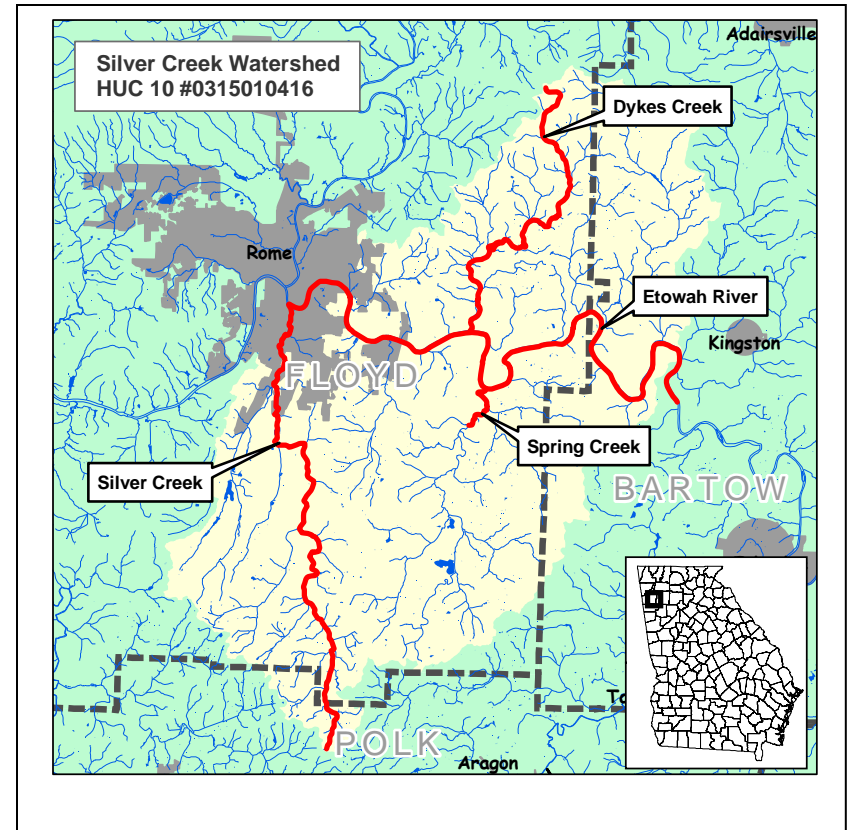


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1) Introduction

This Plan is intended to serve as a blueprint for implementing Best Management Practices for Silver Creek in Floyd and Polk Counties and evaluating their success in reducing fecal coliform counts in the creek.

2) Segment and Watershed Description

The Etowah River Basin occupies 1,185,540 acres in Dawson, Lumpkin, Forsyth, Pickens, Cherokee, Fulton, Cobb, Bartow, Paulding, Polk, and Floyd Counties. It rises northwest of Dahlonega, and flows 164 miles to its confluence with the Oostanaula in Rome.

Land Use: Forest 80.7%, Pasture or grass 9.8%, Urban 4.8%, Cropland 3%, Open Water 1.3%, Wetlands 0.3%, Barren or Mining 0.3%. Data is taken from *Total Maximum Daily Load Evaluation for Thirty-Four Segments in the Coosa River Basin for PCBs in Fish Tissue* (2009). This is the most recent land use data found.

Silver Creek, a tributary of the Etowah, rises in Polk County just north of Raiford (USGS: Casey) Road between its intersections with Fish Creek (USGS: Rome) Road and Collard Valley Road, and flows primarily through agricultural and forested land until it traverses the rural residential area of Silver Creek, where it collects water draining from houses and churches as well as agriculture and forestry. In Lindale, northwest of the Silver Creek settlement, the creek enters a compact mill town that has many characteristics of an urban environment including much impermeable surface, and fairly high density housing with some commercial uses. North of Lindale, the creek passes beneath a residential subdivision on the northern end of Booze Mountain, and then flows through the vicinity of DeSoto Park and Darlington School. Continuing northward, it passes through a transitional area that still has a relict stand of woods through which the creek flows to its confluence with the Etowah River near East 4th Avenue (now referred to as the Heritage Riverway Trail-Robert Moore Path).

In 1996 the City of Rome completed an assessment of the riparian corridor along Silver Creek. The intent was to identify physical improvements and programs necessary to restore trout habitat in a 1.7 mile segment of the stream adjacent to the Etowah. Assessment results indicated that riparian vegetative cover would be required to establish a stream temp suitable for trout. Rome worked with Trout Unlimited to revegetate the stream banks and to install rock weirs and other habitat enhancements. Silver Creek is a trout stream that is stocked 4 times each stocking

season by the GADNR Wildlife Resources Division upstream of the urban areas. A previous NPDES discharger to Silver Creek, Lindale Manufacturing, permit # GA0000345, was closed in 2001.

3) Water Quality Impairment and Total Maximum Daily Load

Silver Creek is listed as impaired due to fecal coliform levels.

STREAM SEGMENT NAME	LOCATION	MILES/AREA	DESIGNATED USE	PS/NS
Silver Creek	Headwaters to Etowah River, Rome (Floyd County)	15	Fishing	NS

Necessary reduction is 67%

4) Visual Survey and Targeted Monitoring

(For the complete Visual Survey, see Attachment.)

Silver Creek Visual Survey Updated and augmented by McAuliff August 16, 2011.

Kevin McAuliff/Eric Lindberg/Barbara Stitt-Allen

Friday, September 10, 2010; augmented by McAuliff September 14, 2010

Weather: Clear and Sunny, temperature in the 80's

Silver Creek rises in Polk County just north of Raiford (USGS: Casey) Road between its intersections with Fish Creek (USGS: Rome) Road and Collard Valley Road, and flows primarily through agricultural and forested land until it traverses the rural residential area of Silver Creek, where it collects water draining from houses and churches as well as agriculture and forestry. In Lindale, northwest of the Silver Creek settlement, the creek enters a compact mill town that has many characteristics of an urban environment including much impermeable surface, and fairly high density housing with some commercial uses. North of Lindale, the creek passes beneath a residential subdivision on the northern end of Booz

Mountain, and then flows through the vicinity of DeSoto Park and Darlington School. Continuing northward, it passes through a transitional area that still has a relict stand of woods through which the creek flows to its confluence with the Etowah River.

The **Crescent Street** crossing is at the intersection of Highway 53 and Crescent Street, not far south of 53's intersection with 12th Street to the north. The water is shallow and clear, and flows well. Upstream, south of the crossing, a sewer pipe, somewhat suspect as a possible source of fecal coliform in the past, crosses the creek.

Crescent Street Crossing, August, 2011 Update.

During the September 2011 site visit, staff noted no significant change from September, 2010.

Downstream from Crescent Street, **Park Avenue**, a lower leg of Rome's Maple Avenue, crosses Silver Creek in Lindale, a mill village now in decline. Its period of prosperity created a compact urban-type environment with a collection mill buildings, civic institutions, commercial enterprises, and a great many housing units, all accompanied by extensive areas of impermeable surface that collect water that very likely drains into the creek, suggesting the possibility of non-point sources.

The water at the crossing is shallow, clear, and somewhat slow.

There is also a mixed gaggle of waterfowl that occupy the Park Avenue crossing area, encouraged by handouts from passers-by. Their contribution to the fecal coliform load may be significant, though difficult to gauge.

Park Avenue Crossing, August, 2011 update

Staff noted that the large number of waterfowl seen during the September, 2010 site visit had dwindled to only a few individuals in August of 2011. The observation was confirmed by the lack of feathers, which had formerly covered the stream bank.

Nixon Park is a small private park located on Silver Creek in the Silver Creek unincorporated area, a once rural collection of houses and churches centered on the intersections of Silver Creek, and Old Rockmart (USGS: Silver Creek) Road, Reeceburg, and Booze Mountain Roads. There is considerable housing development in the area, especially on Hickory Mountain above the creek, and much wooded land, but not a great deal of agriculture. The water is clear and shallow, and flows quickly.

Nixon Park, August, 2011 update

Pictures in the appendix are from the August, 2011 update. The earlier survey did not contain Nixon Park pictures. No significant change from September, 2010 was noticed during the update site visit.

The **Dunahoo Road crossing** is downstream from Nixon Park in a once rural, agricultural area of Floyd County. There is now considerable housing development less than half a mile above the creek on a ridge south of unincorporated Silver Creek, and bounded by Reeceburg Road on the west, and Old Rockmart (USGS: Silver Creek) Road on the east.

The crossing itself still appears agricultural and rural. The stream is somewhat narrow, and almost disappears under the rocks beneath the bridge, emerging once again on the downstream side. The water is tea-colored and clear. A small branch that drains a wooded area behind houses along Dunahoo Road and a subdivision off of Old Rockmart (USGS: Silver Creek) Road joins the creek at this crossing.

Pastures on both sides of Dunahoo Road appear to be devoid of cattle, and are parched, and there are many houses along Dunahoo Road east of the crossing.

Dunahoo Road Crossing, August, 2011 update

The creek was dry at this crossing. While there were some areas of soil dampness, there was no standing water.

The **Brice Station Road crossing** is the southernmost road crossing of Silver Creek in Floyd County. This area has remained somewhat more rural than that downstream, but it is being impacted by housing development. Scattered housing has sprung up along Buckhalter Road to the west of the Brice Station creek crossing, and small branches drain the area impacted, and carry the runoff into Silver Creek. Fronting Brice Station Road and lying directly on both sides of the creek is Running Wild Ranch, a property inhabited by various species of exotics, including zebra and other animals not recognized by visual survey staff. Few animals were visible, perhaps due to dry conditions, but the owners have bulldozed a large pond at the site, and the surrounding area resembles a mud flat. Animals have unimpeded access to the creek, which flows somewhat sluggishly and, downstream from the crossing is pooled and somewhat murky in appearance.

In general, the surrounding area is primarily agriculture and forestry, and driving through the countryside, survey staff noted drought blighted crops and pasture land, the latter mostly devoid of livestock.

Brice Station Road Crossing, August, 2011 update

Little had changed since the September, 2010 visit. A couple of zebras, some donkeys, and a few exotics were in sight in the distance, and access to the creek still appeared unlimited. The water was cloudy, and appeared almost stagnant. The dryness at the Dunahoo Road crossing downstream suggests that the channel here might be just deep enough to allow a long pool of water to stand in it. That there appears to be no flow also suggests the same possibility.

Fish Creek Crossing, August, 2011 update

This upper reach of the creek at **Fish Creek (Polk County) Crossing** was not included in the September, 2010 survey, though it was recorded in the field notes. Conditions appear to be the same. The creek was dry, and only a slight depression marked anything like a channel. The area is agricultural, with a hayfield on the upstream side of the road, and scrub growth with some small crop plantings on the downstream side.

Targeted Monitoring Recommendations

Sample Sites and Locations

Brice Station Road Crossing

Label: Silver Ck/ Brice Station Road

Name: Brice Station Road Crossing

Location Description: The **Brice Station Road crossing** is the southernmost road crossing of Silver Creek in Floyd County. This area has remained somewhat more rural than that downstream, but it is being impacted by housing development. Scattered housing has sprung up along Buckhalter Road to the west of the Brice Station creek crossing, and small branches drain the area impacted, and carry the runoff into Silver Creek. Fronting Brice Station Road and lying directly on both sides of the creek is Running Wild Ranch, a property inhabited by various species of exotics, including zebra and other animals not recognized by visual survey staff. Few animals were visible, perhaps due to dry conditions, but the owners have bulldozed a large pond at the site, and the surrounding area resembles a mud flat. Animals have unimpeded access to the creek, which flows somewhat sluggishly and, downstream from the crossing is pooled and somewhat murky in appearance.

In general, the surrounding area is primarily agriculture and forestry, and driving through the countryside, survey staff noted drought blighted crops and pasture land, the latter mostly devoid of livestock.

GPS lat/long coordinates: 34° 06' 35"N 85° 09' 07"W

Dunahoo Road Crossing

Label: Silver Ck/Dunahoo Rd

Name: Dunahoo Road Crossing

Location Description: The **Dunahoo Road crossing** is downstream from Nixon Park in a once rural, agricultural area of Floyd County. There is now considerable housing development less than half a mile above the creek on a ridge south of unincorporated Silver Creek, and bounded by Reeceburg Road on the west, and Old Rockmart (USGS: Silver Creek) Road on the east.

The crossing itself still appears agricultural and rural. The stream is somewhat narrow, and almost disappears under the rocks beneath the bridge, emerging once again on the downstream side. The water is tea-colored and clear. A small branch that drains a wooded area behind houses along Dunahoo Road and a subdivision off of Old Rockmart (USGS: Silver Creek) Road joins the creek at this crossing.

Pastures on both sides of Dunahoo Road appear to be devoid of cattle, and are parched, and there are many houses along Dunahoo Road east of the crossing.

GPS lat/long coordinates: 34° 09' 01"N 85° 09' 31"W

Reeceburg Road Crossing

Label: Silver Ck/Reeceburg Rd

Name: Reeceburg Road crossing

Location Description: Nixon Park, at **Reeceburg Road crossing** is a small private park located on Silver Creek in the Silver Creek unincorporated area, a once rural collection of houses and churches centered on the intersections of Silver Creek, and Old Rockmart (USGS: Silver Creek) Road, Reeceburg, and Booze Mountain Roads. There is considerable housing development in the area, especially on Hickory Mountain above the creek, and much wooded land, but not a great deal of agriculture. The water is clear and shallow, and flows quickly.

GPS lat/long coordinates: 34° 10' 34"N 85° 9' 45"W

Park Avenue Crossing

Label: Silver Ck/Park Av

Name: Park Avenue crossing

GPS lat/long coordinates: 34° 11' 20"N 85° 10' 30"W

Downstream from Crescent Street, **Park Avenue**, a lower leg of Rome's Maple Avenue, crosses Silver Creek in Lindale, a mill village now in decline. Its period of prosperity created a compact urban-type environment with a collection mill buildings, civic institutions, commercial enterprises, and a great many housing units, all accompanied by extensive areas of impermeable surface that collect water that very likely drains into the creek, suggesting the possibility of non-point sources.

The water at the crossing is shallow, clear, and somewhat slow.

There is also a mixed gaggle of waterfowl that occupy the Park Avenue crossing area, encouraged by handouts from passers-by. Their contribution to the fecal coliform load may be significant, though difficult to gauge.

Crescent Street Crossing

Label: Silver Ck/Crescent St

Name: Crescent Street Crossing

Location Description: The **Crescent Street crossing** is at the intersection of Highway 53 and Crescent Street, not far south of 53's intersection with 12th Street to the north. The area could be described as urban fringe. The water is shallow and clear, and flows well. Upstream, south of the crossing, a sewer pipe, somewhat suspect as a possible source of fecal coliform in the past, crosses the creek, which runs parallel to Highway 53 for approximately a mile. Highway 53 was a major corridor until the late 1960's, and has many characteristics of sprawl, including linear, leapfrog development, both residential and commercial, though the west side remains fairly heavily wooded. The strip-like development on the east side of the highway could be a source of non-point pollution.

GPS lat/long coordinates: 34° 13' 57"N 85° 10' 40"W

12th Street Crossing

Label: Silver Ck/12th St

Name: 12th Street Crossing

Location Description: The **12th Street crossing** is in an area once industrialized, but now beginning to accommodate other uses as well. It lies less than a half mile from the Crescent Street Crossing, and is the last public alignment crossing Silver Creek before its confluence with the Etowah

River. Southwest of the crossing is a residential area off of Cave Spring Street. Southeast is the Floyd County Health Department on the former site of Anchor Duck Mill. Downstream, to the north, short rows of houses stand above the creek on both sides. Some debris, including old tires, lies in the water, and a sanitary sewer line on the west bank is distinguishable because of the manhole covers and the smell. To the east of the housing on the east side are industrial sites, apparently disused. To the west is a residential neighborhood. To the north, Silver Creek flows parallel to railroad tracks through a relict area of woods for about a third of a mile before it reaches the Etowah.

GPS lat/long coordinates: 34° 14' 18"N 85° 10' 30"W

Procedures

Staff Name: Kevin McAuliff

Staff affiliation: Northwest Georgia Regional Commission

Staff Qualifications: TBD

Methodology: TBD

Schedule

Sampling will be conducted monthly, contingent upon funding and its timing.

Quality Assurance

Names and affiliations of people providing training to field staff: TBD

Titles of training workshops, and dates attended by field staff: TBD

Rules for sample storage, transport, and disposal: TBD

Other steps to ensure quality assurance/ quality control:

Data Retention

Procedures for reporting and sharing data: Sampling data will be transmitted to EPD personnel within 24 hours after the results become available.

Location of data storage and duration: Data will be retained in the archives of the Northwest Georgia Regional Commission for a period of seven years, or as otherwise determined in consultation with EPD.

5) Identification and Ranking of Significant Sources of Impairment

The PAC members agree that the likely sources of fecal Coliform contamination are as listed in the following table. While there has been no DNA or RNA testing to identify the host species, probable sources are generally observable. However, one PAC member recounted an anecdote about a friend who lived on a creek in a secluded location, and returned home from work one day to find a septic tank pump truck discharging into the creek. This illustrates the real likelihood of some FC contamination from unknown sources, and that possibility has been taken into consideration.

Lack of extensive targeted monitoring data is probably the greatest limiting factor in our ability to address sources of contamination. That occasional samples at a particular point show high concentrations of contaminants proves only that there is a source somewhere upstream, and even then, that source may not lie on the main stream, but on a minor and apparently insignificant tributary. A comprehensive monitoring program is an essential prerequisite for effectively addressing the problem.

Source	Extent (Length of impairment)	Magnitude of Contribution	Permit (Y/N)	Estimated contribution (1 – 5)	Stakeholder priority (1 – 5)	Comments
Wildlife	Throughout	Considerable (40%)	NA	1	5	There is little that can be done about wildlife, although beaver dams are sometimes destroyed due to their interference with the public water supply.
Leaking septic	Throughout	Moderate		3	1	There is considerable residential

systems		(20%)	NA			development that has occurred in the watershed over the last few decades. Sewer extension has not generally accompanied residential development, and most new developments rely on septic systems.
Agricultural/ Livestock	Throughout	Moderate (30%)	NA	2	4	NRCS administers BMP programs throughout the watershed. Participation is voluntary and widespread, and many conventional agricultural BMPs have been implemented. With education and financial incentives, producers who have been reluctant to participate could be convinced to implement BMPs, and current participants might expand their own BMP systems.
Leaking sewers	From the confluence with Booze Creek northward to the Etowah	Low (5%)	NA	4	4	
Unknown sources	Possibly throughout.	Low (5%)	NA	5	4	Unknowable until discovered. One PAC member recounted an anecdote about a friend who lived on a creek in a secluded location, and returned home from work one day to find a septic tank pump truck discharging into the creek.

According to the 303 (d) list, a 67% reduction in fecal coliform is necessary.

6) Identification of Applicable Existing Management Measures

PARAMETER 2	MEASURE	RESPONSIBILITY	DESCRIPTION	SOURCE OF FUNDING	STATUS	ENACTED/IMPLEMENTED	EFFECTIVENESS (Very, Moderate, Weak)
Fecal Coliform	Rules and regulations for onsite wastewater management (Septic system permitting)	Rome-Floyd County Department of Public Health	Regulates through permits and inspections of on-site sewage management systems; requires plumbers and other maintenance operators to submit monthly logs of pump-outs and maintenance done to systems	General Fund	Enforced	Ongoing	Very
FC	Sanitary Sewer Maintenance Program	Rome-Floyd County	Sanitary Sewer system inventory and inspection (mapping, television inspections); infiltration and inflow identification and reduction (flow monitoring, smoke testing); sewer line rehabilitation (pipe bursting, relining, cleaning) and manhole rehabilitation.	General Fund	Enforced	Ongoing	Very
FC	District-wide Septic System Maintenance	Floyd County Environmental Health, Northwest Georgia Health District	Expand ongoing education and outreach to promote proper maintenance of private septic systems using DVD program	District funds	Homeowners with existing septic systems	Recommended in future	Moderate
FC	Acquisition and Preservation of Riparian Buffers	Rome-Floyd	Committee will buy land along Etowah River and plant or allow lands to return to original usage	SPLOST			Varies with extent of purchases

FC	Pollution Prevention Litter Removal	Rome-Floyd	Remove litter from County roads and properties using labor from State correctional facilities	General Fund	Ongoing		Very
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7) Recommended Additional Management Measures

BMP	Pollutant Source	Estimated Effectiveness	Estimated Load Reduction (%)	Cost Estimate	Public Support (1-5)	Install Priority	Comment
Implement three-year Targeted Monitoring Program on Silver Creek and selected tributaries.	FC from various non-point sources	This is a prerequisite for any effective FC reduction program.	No direct reduction.		1	1	Water quality monitoring has to be a keystone of any watershed improvement program. "Hotspots" must be located to determine the source of contamination. This cannot be done without a program of regular monitoring, which records not only FC levels, but also weather conditions for several days before each sample is taken.
Purchase water monitoring and testing equipment, both for fluoroscopic monitoring, in addition to Adopt-A-Stream protocols.	FC from various non-point sources	This is a prerequisite for any effective FC reduction program.	No direct reduction.		1	1	
Establish Adopt-A-Stream group to assist with water quality monitoring.	FC from various non-point sources				1	1	
Grant program to assist owners repair or replace	FC from failing septic systems	Very	100%	\$28,000	1	1	

failing systems							
Septic system owner education for system maintenance (required for receiving grant assistance)	FC from failing septic systems				1	2	Will enhance program's chance of long-term success.
Effective BMP education, marketing, and technical assistance See 7.a below for BMP effectiveness.	FC from various agricultural sources		See table 7.a below		1	2	Additional education, possibly one-on-one and on-site, will be necessary to implement further BMPs.
Agricultural BMP implementation See 7.a below for BMP effectiveness.	FC from various agricultural sources		See table 7.a below				
Effective Environmental Quality Incentives Program (EQIP) education, marketing, and technical assistance See 7.a below for BMP effectiveness.	FC from various agricultural sources	Very	See table 7.a below		1	2	See comment above.
Establish controlled waterfowl hunts	FC from waterfowl						

Establish a beaver control program	FC from beaver.						

7.a) General Types of BMPs Likely to be Implemented

BMP	Estimated Load Reduction	Responsible Parties	Unit Cost
Vegetated buffers (wastewater treatment strip)	Reduces runoff of solids 80-90%	Floyd and Polk County Agricultural Extension Services	180-120/ac
Critical area treatment (mulch)	Analogous to vegetated buffers	Floyd and Polk County Agricultural Extension Services	1,320-1,920/ac
Fencing and use exclusion	Up to 99% reduction	Floyd and Polk County Agricultural Extension Services	1.08-1.50/lf
Alternative water sources	In conjunction with fencing up to 99%	Floyd and Polk County Agricultural Extension Services	105-210/trough; 1,500/pumping system; 1.8-3.6/ lf piping
Prescribed grazing		Floyd and Polk County Agricultural	105-240/ac to plant

		Extension Services	
Livestock stream crossings (pipe)	In conjunction with fencing up to 99%	Floyd and Polk County Agricultural Extension Services	3,840-6,060/ea
Streamside forest buffers	Analogous to vegetated buffers	Floyd and Polk County Agricultural Extension Services	330/ac
Composter (wood or steel frame)	On slopes up to 15%, can reduce runoff by 70%	Floyd and Polk County Agricultural Extension Services	9.45/lf

8) Partnership Advisory Council

Members of the Partnership Advisory Council were originally assembled for earlier watershed planning projects. Many of them have participated in several earlier planning activities, and most of them are employed in professions where they deal with water issues for a variety of reasons. All serve on a voluntary basis. Members are listed in the following chart:

Name/Organization	Title	Phone	Email		
John Boyd/ Floyd County W&S	Utilities Manager	(706) 291-5172 cell: (706) 252-5176	boydj@floydcountyga.org		
Eric Lindberg/Rome-Floyd Environmental Services	Director	(706) 236-4674	elindberg@romea.us		
Phil Worley/ UGA Livestock Experiment	Director	(706) 624-1398	pworley@uga.edu		

Station			nwgastn@uga.edu		
Sherri Teems/ NRCS	District Conservationist	(706) 291-5651 x 3	Sheri.teems@ga.usda.gov		
Joe Cook/CRBI	Upper Coosa Riverkeeper	(706) 232-2724	jcook@coosa.org		
Clinton Agnew	CRBI Board	(706) 346-4885	chagnew@comcast.net		
Keith Mickler/ UGA Cooperative Extension	Floyd County Extension Agent	(706) 295-6210	Mickler@uga.edu		
Mike Pitts	Floyd County Environmental Health	(706) 295-6316	wmpitts@dhr.state.ga.us		
Julia Knight	CRBI Member	(770) 334-6467	Julia@juliaknight.com		
David Gregory/ John's Mtn. WMA, GA DNR WRD	Wildlife Biologist	(706) 295-6041	David.gregory@dnr.state.ga.us		
Brent Womack/ John's Mtn. WMA, GA DNR WRD	Wildlife Biologist	(706) 295-6041	brent.womack@dnr.state.ga.us		

9) Public Involvement

10) Interim Milestones

The intent of this Watershed Improvement Plan is to provide some structure for moving toward Woodward Creek's compliance with water quality standards by lessening the fecal coliform load. This will require an 82% reduction of that load.

Since BMPs have been widely implemented in the watershed, and NRCS and RC&D staff believe that further implementation of conventional measures is unlikely to occur without legislative coercion, activities in the near future should include more intensive water quality monitoring to narrow down locations of fecal coliform sources, and to focus on likely sources, such as failing septic systems, that can be easily identified when owners seek assistance in remedying the problem.

In addition, the County’s Agricultural Extension Office should seek funding to undertake educational programs, perhaps conducted on one-on-one basis, to convince reluctant farmers to implement BMPs to reduce the amount of fecal coliform entering the waterways from their operations.

Measure	Year	Responsible Parties
Purchase fluorometer, incubator, and testing supplies, train personnel to operate systems, and initiate three-year monitoring of Woodward Creek and selected tributaries	2012	NWGRC
Establish an Adopt-A-Stream group to implement water quality monitoring according to Adopt-A-Stream protocols	2012	Floyd and Polk County Cooperative Extension; Coosa River Basin Initiative; NWGRC
Identification and recruitment of additional stakeholders for the Partnership Advisory Group members	2012	NWGRC
Establish a grant program to assist owners of failing septic systems in undertaking repair replacement, and to provide maintenance education for participants	2012	NWGRC; Polk County Environmental Health Department.
Provide BMP education to convince reluctant farmers to implement appropriate BMPs.	2012	Floyd and Polk County Cooperative Extension; NRCS
Begin implementation of agricultural BMPs.	2013	Floyd and Polk County Cooperative Extension; NRCS
Seek funding to implement a program to repair previously-installed deteriorated or damaged agricultural BMPs.	2013	Floyd and Polk County Cooperative Extension; NRCS

Establish controlled hunts for waterfowl	2013	
Establish a beaver control program	2014	

11) Recommendations for Monitoring and Criteria for Measuring Success

The lack of water quality data is the greatest impediment to gauging the success of BMP implementation. Targeted Monitoring should be undertaken as soon as funding becomes available to purchase equipment and supplies, train personnel, and fund actual monitoring activities. Experience suggests that volunteer labor is not sufficiently reliable to be entrusted with a task that must be performed on a regular basis over a long period of time. Monitoring must begin early enough to develop a realistic estimate of actual fecal coliform loads in waterways that are likely to be impacted by the implementation of BMPs, and must continue during and after BMP implementation.

If funding for targeted monitoring becomes available, it is possible that Regional Commission staff could carry out the monitoring program.

The criteria for measuring the success of BMPs will be the declines (or lack of the same) in fecal Coliform counts from before and during implementation to their post-implementation levels.

Specific recommendations for monitoring are found in Section 4, "Visual Survey and Targeted Monitoring."

12) Plan Implementation Schedule

Measure	Year	Cost	Funding Sources	Responsible Parties
Purchase fluorometer and incubator, and Idexx testing supplies, train personnel to operate systems, and initiate monitoring of Woodward Creek and selected tributaries	2012 -2017	Set up cost: \$3,100 for fluorometer, \$900 for incubator and supplies. Monitoring cost/yr: Staff time.	319 Grant	NWGRC
Establish an Adopt-A-Stream group to implement water quality monitoring according to Adopt-A-Stream protocols	2012		Operating budgets; 319 grant	Floyd and Polk County Agricultural Extension; Coosa River Basin Initiative; NWGRC

Identification and recruitment of additional stakeholders for the Partnership Advisory Group members	2012	Negligible	DNR Grant funds	NWGRC
Establish a grant program to assist owners of failing septic systems in undertaking repair replacement, and to provide maintenance education for participants	2012	Staff time	319 grant	NWGRC
Provide BMP education to convince reluctant farmers to implement appropriate BMPs, and carry out implementation.	2012	Staff time	Operating budgets	Floyd and Polk County Agricultural Extension; NRCS
Seek funding to implement a program to repair previously-installed deteriorated or damaged agricultural BMPs.	2012	Staff time	Operating budgets	Floyd County Agricultural Extension; NRCS
Establish controlled hunts for waterfowl	2013			
Establish a beaver control program	2014			

Plan Appendices

Nine Key Element Summary

One) Identification of causes of impairment and pollutant sources or groups of similar sources that need to be controlled to achieve needed load reductions, and any other goals identified in the watershed plan. Sources that need to be controlled should be identified at the significant subcategory level along with estimates of the extent to which they are present in the watershed (e.g., X number of dairy cattle feedlots needing upgrading, including a rough estimate of the number of cattle per facility; Y acres of row crops needing improved nutrient management or sediment control; or Z linear miles of eroded streambank needing remediation).

Causes of pollution that need to be addressed are found in § 3, “Water Quality Impairment and Total Maximum Daily Load,” and and § 5, “Identification and Ranking of Significant Sources of Impairment” of the Watershed Improvement Plan.

Two) An estimate of the load reductions expected from management measures.

Estimated load reductions from recommended management measures are found in § 7, "Recommended Additional Management Measures" in the Watershed Improvement Plan.

Three) A description of the nonpoint source management measures that will need to be implemented to achieve load reductions in paragraph 2, and a description of the critical areas in which those measures will be needed to implement this plan.

A description of the nonpoint source management measures that will need to be implemented to achieve load reductions from recommended management measures are found in § 7, "Recommended Additional Management Measures" in the Watershed Improvement Plan.

Four) Estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon to implement this plan.

Cost estimates are found in § 7, "Recommended Additional Management Measures" in the Watershed Improvement Plan.

Five) An information and education component used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing the nonpoint source management measures that will be implemented.

Information and education components are found in § 7, "Recommended Additional Management Measures" in the Watershed Improvement Plan.

Six) Schedule for implementing the nonpoint source management measures identified in this plan that is reasonably expeditious.

An implementation schedule is found in § 12, "Plan Implementation" of the Watershed Improvement Plan.

Seven) A description of interim measurable milestones for determining whether nonpoint source management measures or other control actions are being implemented.

A description of interim measurable milestones for determining whether nonpoint source management measures or other control actions are being implemented is in § 10, "Milestones" of the Watershed Improvement Plan.

Eight) A set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made toward attaining water quality standards.

Criteria for measuring success can be found in § 11, "Recommendations for Monitoring and Criteria for Measuring Success" of the Watershed Improvement Plan.

Nine) A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under item h immediately above.

The monitoring component is found in § 4, “Visual Survey and Targeted Monitoring” of the Watershed Improvement Plan.

Watershed Map (See page 1, above)

Maps

Targeted Monitoring Plan (See pp. 8-11, above)

Copies of Public Notices

Meeting Minutes

Water Sampling Results

Targeted Monitoring Data for Silver Creek

Location	Date	Time	Result
Reeseburg Road	8/5/2010	10:35 a.m.	45
Dunahoo Road	9/14/2010	9:55 a.m.	31
Crescent Street	9/21/2010	9:04 a.m.	226
Reeseburg Road	9/28/2010	9:35 a.m.	111
Dunahoo Road	10/05/2010	9:25 a.m.	17
Reeseburg Road	10/12/2010	9:40 a.m.	196

Reeseburg Road	10/19/2010	9:50 a.m.	44
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