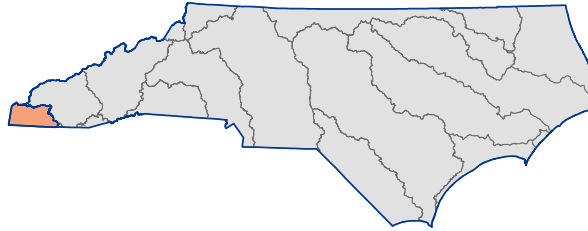


HIWASSEE RIVER BASINWIDE WATER QUALITY PLAN



Summary

This 2012 document is the fourth five-year update of the Hiwassee River Basinwide Water Quality Plan. Previous basinwide plans for the Hiwassee River Basin were completed in 1997, 2002, and 2007 and are available from the NC Division of Water Quality Basinwide Planning [website](#). This basin plan was written to provide guidance for watershed stakeholders, municipal planners, natural resource regulators, and other environmental professionals with identifying and addressing water quality stressors, sources, and emerging issues. This document can be used in conjunction with the [Supplemental Guide to Basinwide Planning](#) which provides general information about water quality issues and DWQ programs.

National Pollution Discharge Elimination System (NPDES) permits were issued in 2012 for a five year period. Basinwide biological and lake sampling last occurred in the Hiwassee River Basin in 2009 and will be conducted again in 2014.

The Hiwassee River Basin spans over 644 square miles and is divided into two subbasins (Figure 1-3), although 97% of the basin falls within subbasin 06020002. The Division of Water Quality grouped these subbasins to conform to the federal system of river basin management. Previously, DWQ had its own set of subbasins and numbering system (04-05-01 & 04-05-02), but is now using the federal cataloging unit known as hydrologic unit codes (HUCs), Figure 1-2. This report is organized by chapters at the 10-digit hydrologic unit or watershed level.

This plan includes eight chapters covering water quality information for each of the watersheds:

- 💧 Chatuge Lake / Shooting Creek Watershed (HUC 0602000201)
- 💧 Tusquitee Creek Watershed (HUC 0602000202)
- 💧 Brasstown Creek Watershed (HUC 0602000203)
- 💧 Valley River Watershed (HUC 0602000204)
- 💧 Nottely River Watershed (HUC 0602000206)
- 💧 Hiwassee Lake Watershed (HUC 0602000207)
- 💧 Apalachia Lake Watershed (HUC 0602000209)
- 💧 Ocoee River Watershed (HUC 0602000302)

BASIN AT A GLANCE

Area: square miles.....	644
acres.....	412,375
Stream Miles.....	931
Lake/Reservoir acres....	10,357

COUNTIES:

Cherokee, Clay

MUNICIPALITIES:

Andrews, Hayesville, Murphy

POPULATION:

2000.....	32,065
2010.....	38,237

2006 LAND COVER:

Developed.....	5%
Forested.....	87%
Agriculture.....	8%

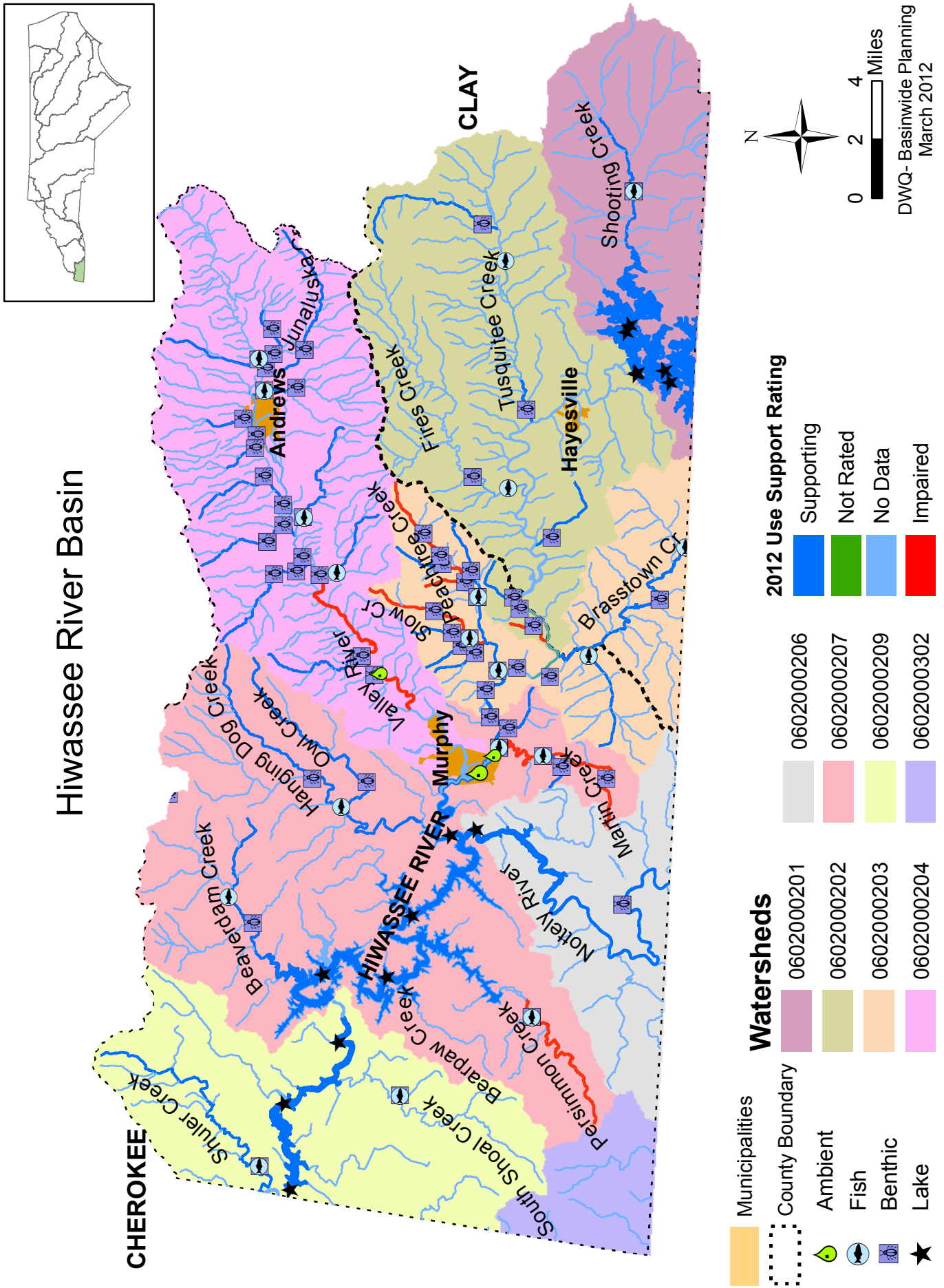
EPA LEVEL IV ECOREGIONS:

Broad Basins, High Mtns., Southern Crystalline Ridges & Mtns., & Southern Metasedimentary Mtns.

PERMITTED FACILITIES:

NPDES	
Wastewater Discharge	15
Wastewater Nondischarge .	1
Stormwater	18
Animal Operations	1

FIGURE 1-1: HIWASSEE RIVER BASIN MAP



The Hiwassee River is one of three North Carolina river basins that flow westward into the Tennessee Region and eventually drain into the Mississippi River (Figure 1-3). The headwaters of the Hiwassee River originate in North Carolina and north Georgia. The River flows west into Tennessee and eventually merges with the Tennessee River. The North Carolina portion of the Hiwassee River basin is 644 mi² and is located in the southwestern corner of North Carolina's Blue Ridge Province of the Appalachian Mountains.

The Hiwassee River and several of its tributaries (Valley River, Brasstown Creek, Hanging Dog Creek, Tusquitee Creek, and Fires Creek) are priority conservation areas for the Wildlife Resource Commission. Brasstown Creek and the Valley River are the largest unimpounded streams in the basin. The Tennessee Valley Authority (TVA) dams the Hiwassee River for production of hydroelectric power, forming Lake Chatuge, Appalachia Lake, and Hiwassee Lake in North Carolina.

WATER QUALITY SUMMARY

There are two ambient water quality monitoring stations within the Basin, of which turbidity, low pH, and fecal coliform bacteria are the only parameters that have had incidences of exceeding surface water standards. Special Studies and data collected by other groups have documented incidences of high turbidity levels, high nutrient levels and high fecal coliform bacteria levels.

Biological samples were taken at 13 macroinvertebrate and 13 fish community basinwide sites with an additional 26 macroinvertebrate and three fish samples taken because of special study requests. Figure 1-4 and Figure 1-5 show the percent change in benthic or fish community rating since their last sample. The most recent biological samples collected since 2000 are color coded according to their latest Bioclassification rating are shown on Figure 1-6.

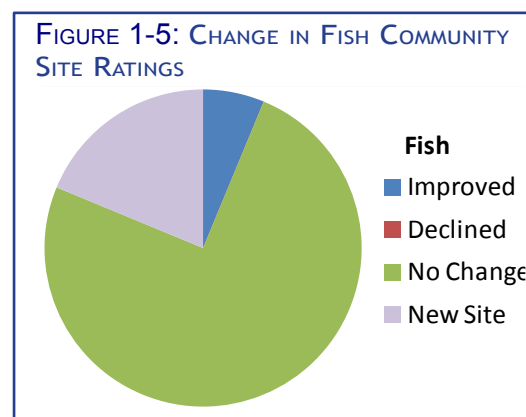
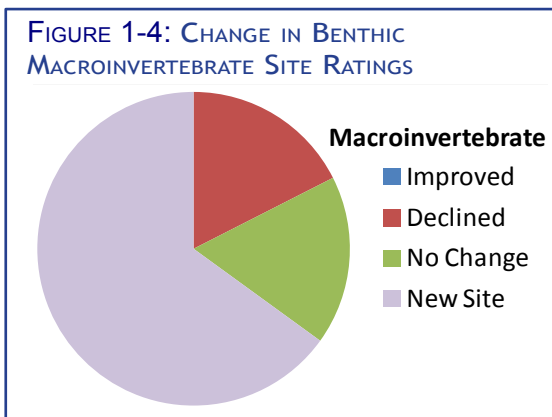
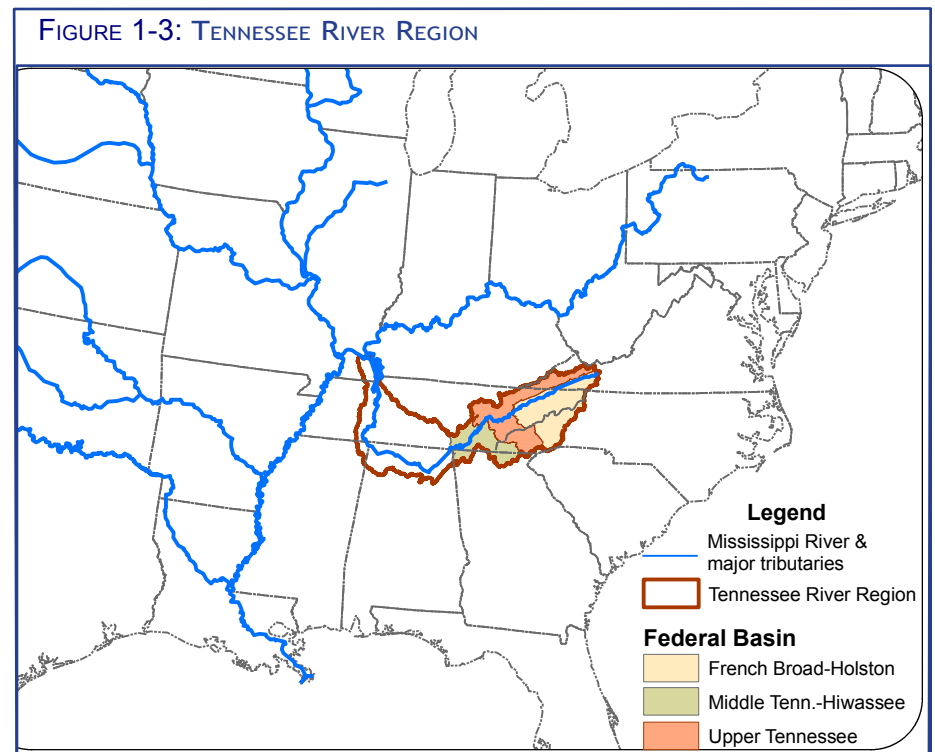
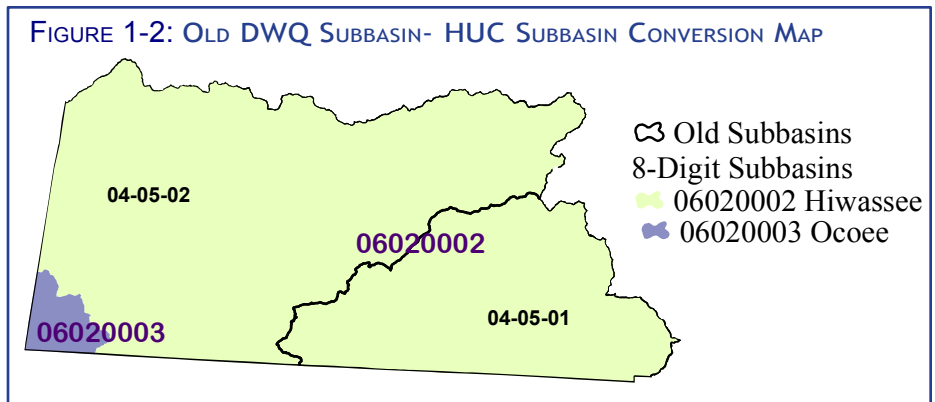
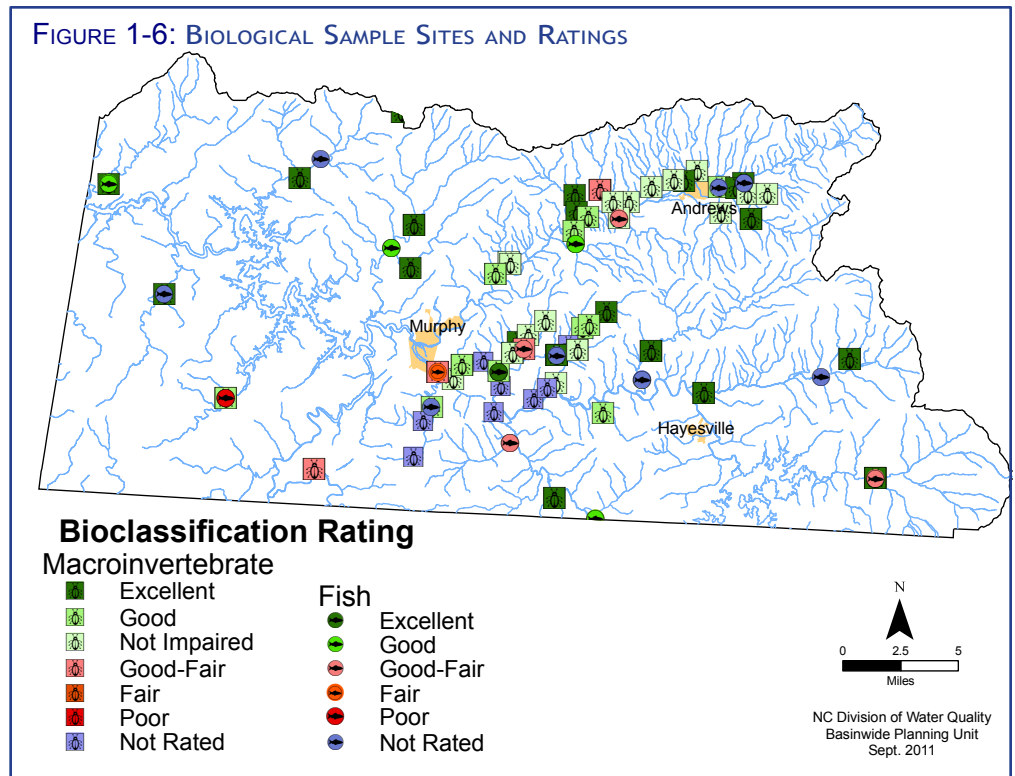


FIGURE 1-6: BIOLOGICAL SAMPLE SITES AND RATINGS



Impaired Waters

Water quality data within a five year data sampling period is assessed every two years and reported to EPA to meet requirements under Section 303(d) of the Clean Water Act of 1972. Impaired waterbodies exceed a surface water quality standard for that waterbody’s designated use; these waterbodies are listed on the 303(d) list. The following list includes waterbodies in which a parameter exceeded the standard and enough samples were collected to meet criteria assessment.

The draft 2012 303(d) list of Impaired waters includes the waterbodies listed below:

WATERBODY	CLASS	ASSESSMENT UNIT #	LENGTH	PARAMETER	IMPAIRED YEAR
Valley River	C;Tr	1-52c	7.7 mi.	Turbidity	2008
Persimmon Creek (Lake Cherokee)	C	1-63a	5.9 mi.	EBIF	2008
Martin Creek	C	1-49	8.8 mi.	EBIF FCB	2012 2012
Peachtree Creek	C	1-44a	5.3 mi.	FCB	2012
Slow Creek	C	1-44-9	5.2 mi.	FCB	2012
Lamb Branch	C	1-44-5	1.7 mi.	FCB	2012
Mission Branch	WS-IV	1-41	1.8 mi.	FCB	2012
NO LONGER IMPAIRED					
HIWASSEE RIVER (Hiwassee Lake)	C	1-(50)	143.4 ac.	Low pH	2010

EBIF= Ecological Biological Integrity Fish Community
EBIB= Ecological Biological Integrity Benthos (Macroinvertebrates) Community
FCB= Fecal Coliform Bacteria

Improved Waters

The Hiwassee River (near Murphy) AU# 1-(50) is no longer Impaired for aquatic life as ambient samples no longer detected low pH. It is possible the previous low pH readings were a result of Anakeesta (acid rock) disturbance from construction of the new US 64 bypass, otherwise the cause of the low pH conditions remains unknown.

LOCAL INITIATIVES & NEEDS

One of the major assets this basin has to protect and preserve water quality are the local groups that are actively participating in stream restoration, protection, monitoring, education, research and land acquisition. Their specific activities are incorporated within the descriptions of water quality issues within the subbasin chapters of this Basin Plan. DWQ supports and encourages these local groups to continue to identify problems and solutions and to implement activities to improve and protect water quality.

Sediment Control

Building sites perched along mountainsides provide access to unparalleled vistas and are a major incentive for development. However, construction on steep slopes presents a variety of risks to the environment and human safety. Poorly controlled erosion and sediment from steep slope disturbance negatively impacts water quality, hydrology, aquatic habitat, and can threaten human safety. Steep slope disturbance usually involves some form of grading. Grading is the mechanical excavation and filling of natural slopes to produce a level working surface. Improper grading practices disrupt natural stormwater runoff patterns and result in poor drainage, high runoff velocities, and increased peak flows during storm events.

In November 2009, nine organizations and agencies including the Hiwassee River Watershed Coalition, Land Trust for the Little Tennessee, and Southwestern NC Resource Conservation & Development (RC&D) Council began meeting to discuss the need for a system of erosion and sediment control (E&SC) trainings within the western North Carolina region. E&SC training for the seven western counties were identified as a priority because some counties require contractors to have annual E&SC training while other counties do not. Research about mountainous terrain E&SC best management practices specific to western NC has been identified as a need. This steering committee has been meeting since that time, working on the Regional Erosion and Sediment Control Initiative for Western North Carolina. The steering committee continues to pursue grant funding and promote this effort which could have a significant impact on the sedimentation problem in mountain region stream systems. In addition to the benefit of reduced sedimentation, the initiative will benefit local economies and small businesses by helping contractors create and retain jobs.

Impervious Surfaces

Impervious surfaces alter the natural hydrology by preventing infiltration of water into the soil. Impervious surfaces include roads, rooftops, and parking lots; all are characteristics of conventional growth and development. As watershed vegetation is replaced with impervious surfaces, the ability of the landscape to absorb and diffuse the effects of natural rainfall is diminished. Urbanization results in increased surface runoff and correspondingly earlier and higher peak streamflows after rainfall. Bank scour from these frequent high flow events tends to enlarge streams and increase suspended sediment. These effects are compounded when small streams are channelized or piped, and storm sewer systems are installed to increase transport of stormwater downstream.

Progressive planning is needed to protect our water resources to prevent exceeding a watershed's impervious surface threshold. Both counties and the municipal jurisdictions within the basin should implement the voluntary Universal Stormwater Management Program (USMP) to address stormwater runoff concerns. Under the USMP, a local government will be able to meet the different post-construction requirements for many existing stormwater strategies (HQW, Phase 2 NPDES, etc) with just a single set of requirements.

Bacteria

Whether a stream is classified for primary recreation (B) or not, the nature of mountain streams lead to a heavy recreation use. High levels of fecal coliform bacteria have been detected in several streams due to the increase in monitoring during a special study. The bacteria normally would have gone undetected because DWQ's limited monitoring resources primarily focus on Class B waters. The detected instream high bacteria counts reinforce the need to reduce non-point source pollution, focus on limiting livestock access to streams, implement agriculture BMPs, promote domestic pet waste pick-up, control urban stormwater and repair failing septic systems.

WaDE

The discharge of untreated or partially treated sewage can be extremely harmful to humans and the aquatic environment. Pollutants from illegally discharged household wastewater contain chemical nutrients, disease pathogens and endocrine disrupting chemicals. Special study requests led to an increase in number of streams sampled for bacteria and have led to several new stream impairments. As of 2012, there are 58 stream miles and 171 lake acres Impaired because of high fecal coliform bacteria levels. The economies of the counties in this basin are highly dependent upon river recreation, especially for tourists and seasonal residents. Reducing bacterial contamination is crucial for supporting a tourist economy. In order to protect human health and maintain water quality, straight pipes must be eliminated and failing septic systems should be repaired.

Recent budgetary changes caused the dissolution of an important program that provided significant water quality as well as human health and quality of life benefits. The Wastewater Discharge Elimination (WaDE) Program formed to identify and correct straight-piped wastewater discharges and failing septic systems, lost funding for all activities. The work that had been accomplished by the program assisted in the reduction of fecal coliform levels in several watersheds across the region. At a community, quality-of-life level, the assistance once provided to very-low and low-income households to repair and/or replace failing, or even non-existent septic systems, was lost. The Division of Water Quality in the Asheville region receives regular phone calls from health department personnel, county personnel and other agencies seeking assistance to help families in need of septic system repairs. This on-going need is sometimes met with the aid of church groups and there has been some funding provided by assistance agencies, but the availability of that funding is extremely restricted in comparison to the former WaDE Program's abilities. Funds need to be reallocated to reestablish the WaDE program or allocated to County Health Departments to assist in detecting and eliminating straight pipes and septic failures.

DWQ Asheville Regional Office Outreach

The Asheville Regional Office (ARO) has recently embarked upon a long-term, outreach initiative designed to establish partnership and understanding across the wide variety of industries and organizations within its management area. To accomplish its mission and obtain its goals, the DWQ understands that partnership-building, continuous education efforts and leveraging of resources are required. In that direction, the ARO has launched several efforts with more to come:

- Western North Carolina is home to a large set of active environmental organizations (EOs) involved in numerous initiatives, many involving water quality. Those organizations, located across the nineteen counties of the Asheville Regional Office, house many resources, including experienced staff, community members and local knowledge. The DWQ employs experienced staff as well, with regulatory and technical expertise. Clearly, leveraging the resources of EOs and the DWQ would benefit all parties in the common mission of protecting water quality. In late 2011, DWQ staff launched an effort in pursuit of such partnering. EOs from across the western region along with DWQ personnel will convene several summits during 2012 to develop a better understanding of the work being done across the region and how to mutually benefit from building partnerships.
- In an effort to improve and protect water quality, while supporting the trout farm industry in the region, a collaborative approach has been undertaken which includes trout farmers, NC Department of Agriculture and Consumer Services, NC Cooperative Extension and DWQ. The outcome of the collaborative work should lead to a better understanding of farm operations, best management practices (BMPs), water resource/quality protection and regulatory needs for all parties.