

State of the Watershed

The State of the Watershed is an annual report created by the Haywood Waterways Association for the citizens of Haywood County. It provides an update on the quality of our streams, good and bad, and some of the changes taking place in the landscape.

Haywood County is a headwaters community. Because the county line follows the mountain ridges, all the water in the county originates from springs or as rainfall. No rivers or streams flow into the county, which puts us, as its citizens, in a unique situation - we have a lot of control over how clean we want our streams.



Pigeon River Watershed Summary

- Allens Creek, upper Richland Creek, and the East and West Forks of the Pigeon River have water quality ranked among the best in western NC.
- Nine monitored streams have water quality below the average for western NC.
- Haywood County has 6 streams on the NC 303(d) list of impaired waterways.
- Sedimentation is the #1 water quality problem in our streams and lakes.
- Land uses are changing from agricultural to residential and commercial.
- The population of Haywood County is increasing (7% increase in 8 years).
- Haywood County has had significantly low rainfall in 2007-2008.

Water Quality and Quantity Impairment: Sources and Impacts

Haywood County has some of the cleanest streams in western NC. The county also has some of the dirtiest. Pollutants enter our streams primarily from stormwater flushing off the landscape; whatever is on the ground ends up in our streams. This can be exacerbated when natural riparian buffers are altered by human activity. Riparian buffers filter pollutants from runoff. (mowed grass is not a good buffer). Also, when development replaces the natural landscape with impervious surfaces (roads, sidewalks, rooftops, driveways), less water infiltrates the ground when it rains, which means less water available in wells. This becomes particularly critical during times of drought.

Pollutant	Common Sources	Impacts
Sediment	Stream banks, unpaved roads, road ditches, land clearing, livestock in streams	#1 pollutant in NC, smothers aquatic habitat and life, clogs intake pipes, fills reservoirs
Bacteria and other pathogens	Failing septic systems, livestock and pet waste	Threaten water supply and groundwater, make streams unsafe for recreation
Nutrients	Fertilizers, lawn clippings, failing septic systems, livestock waste	Cause algal blooms, reduce oxygen levels in streams, elevate stream temperatures, harm or kill aquatic life
Pesticides and other chemicals	Industry, agriculture, household uses, landfills/dump sites	Threaten water supply and groundwater, harm or kill aquatic life, build up in fish tissue
Heavy metals (lead, copper, zinc)	Landfills/dump sites, pipes, brakes, batteries, old paint, livestock waste	Harm or kill aquatic life, build up in fish tissue
Oil/Grease/Antifreeze	Automobiles, farm machinery	Harm or kill aquatic life, threaten water supply and groundwater
Trash	Human carelessness	Clogs intake pipes, harm or kill aquatic life
High Temperature	Stormwater runoff over pavement, poor riparian buffers	Harm or kill aquatic life

Water Quality Report Card

The Volunteer Water Information Network (VWIN) Program monitors 29 sites on 19 streams. The VWIN Program is managed by the Environmental Quality Institute at the University of North Carolina - Asheville, and monitors pH, conductivity, alkalinity, turbidity, total suspended solids, metals (copper, lead, zinc), and nutrients (orthophosphate, nitrates, ammonia). The following table summarizes results from the 2008 report.

2008 VWIN Highlights

- 19 sites (66% of all sites) had sediment loads greater than the regional average.
- 19 sites (66% of all sites) also had nutrient loads greater than the regional average.
- Allens Creek, Plott Creek, Richland Creek, Rush Fork Creek, and the Pigeon River below Canton have improved in recent years.
- Ratcliff Cove Branch has been degrading in recent years.

Excellent	Average
➤ Allens Creek	➤ Beaverdam Creek (upstream)
➤ Pigeon River, East Fork	➤ Crabtree Creek
➤ Pigeon River, West Fork	➤ Eaglenest Creek
➤ Richland Creek (West Waynesville)	➤ Fines Creek (downstream)
	➤ Raccoon Creek
	➤ Pigeon River (below Canton)
	➤ Rush Fork Creek (downstream)



Good	Below Average	Poor
➤ Beaverdam Creek (downstream)	➤ Fines Creek (mid/upstream)	➤ Cove Creek
➤ Jonathans Creek	➤ Left Branch (Hyatt Creek watershed)	➤ Hyatt Creek
➤ Plott Creek	➤ Pigeon River (Hepco Bridge)	➤ Green Valley Branch (Hyatt Creek watershed)
➤ Richland Creek (Lake Junaluska)	➤ Ratcliff Cove Branch	➤ Owl Ridge Branch (Hyatt Creek watershed)
	➤ Rush Fork Creek (upstream)	

More information on the VWIN program can be found at www.haywoodwaterways.org/vwin.htm

Impaired Waterways

Haywood County has six streams on the impaired waterways list (2006, NC Division of Water Quality). The Clean Water Act mandates every stream in the nation meet specific water quality standards. Any stream not meeting the

Waterway	Miles Impaired	Reason for Impairment *	Listing Year
Pigeon River	6.4	Biological Integrity	1998
Richland Creek	15.5	Biological Integrity Fecal coliform bacteria	1998, 2006
Richland Creek (Lake Junaluska)	200 acres	High pH	2006
Raccoon Creek	4.7	Biological Integrity	2006
Hyatt Creek	0.9	Biological Integrity	1998
Fines Creek	9.7	Biological Integrity	2006

standards is placed on the “303(d) list” of impaired waterways, 303(d) refers to that section of the Clean Water Act. Once on the list, it is a priority for restoration and landowners are eligible for more financial and technical resources to protect land and water.

* “Biological Integrity” = the benthic macroinvertebrate and/or fish communities do not meet expectations for adequate water quality.

Changing Land Uses

Water is inherently tied with the landscape. As land use changes, water quality and quantity can change, even with protection measures in place. Haywood County has seen tremendous land use changes as its population grows.

Land use ¹	1999 (acres)	2006 (acres)	Difference (acres)	% Increase
Residential	22,260	25,698	+3,438	15%
Commercial	3,871	4,283	+412	11%
Industrial	768	810	+42	6%
Row Crop ²	2,950	4,617	+1,667	57%
Pasture	37,861	31,304	-6,557	(-17%)
Forest	270,647	271,818	+1,171	0.4%
Other ³	4,721	4,481	+240	(-5%)
Total ⁴	343,077	343,011		



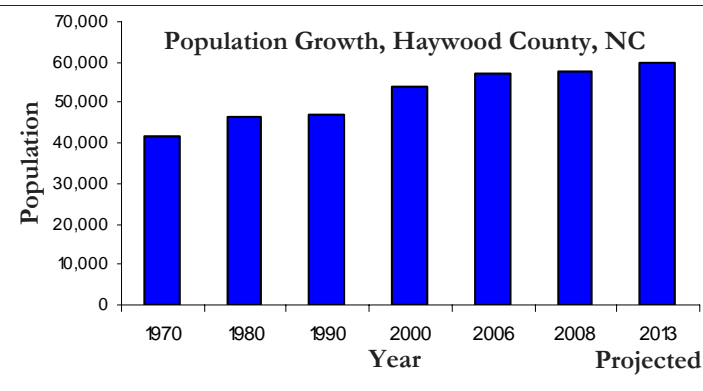
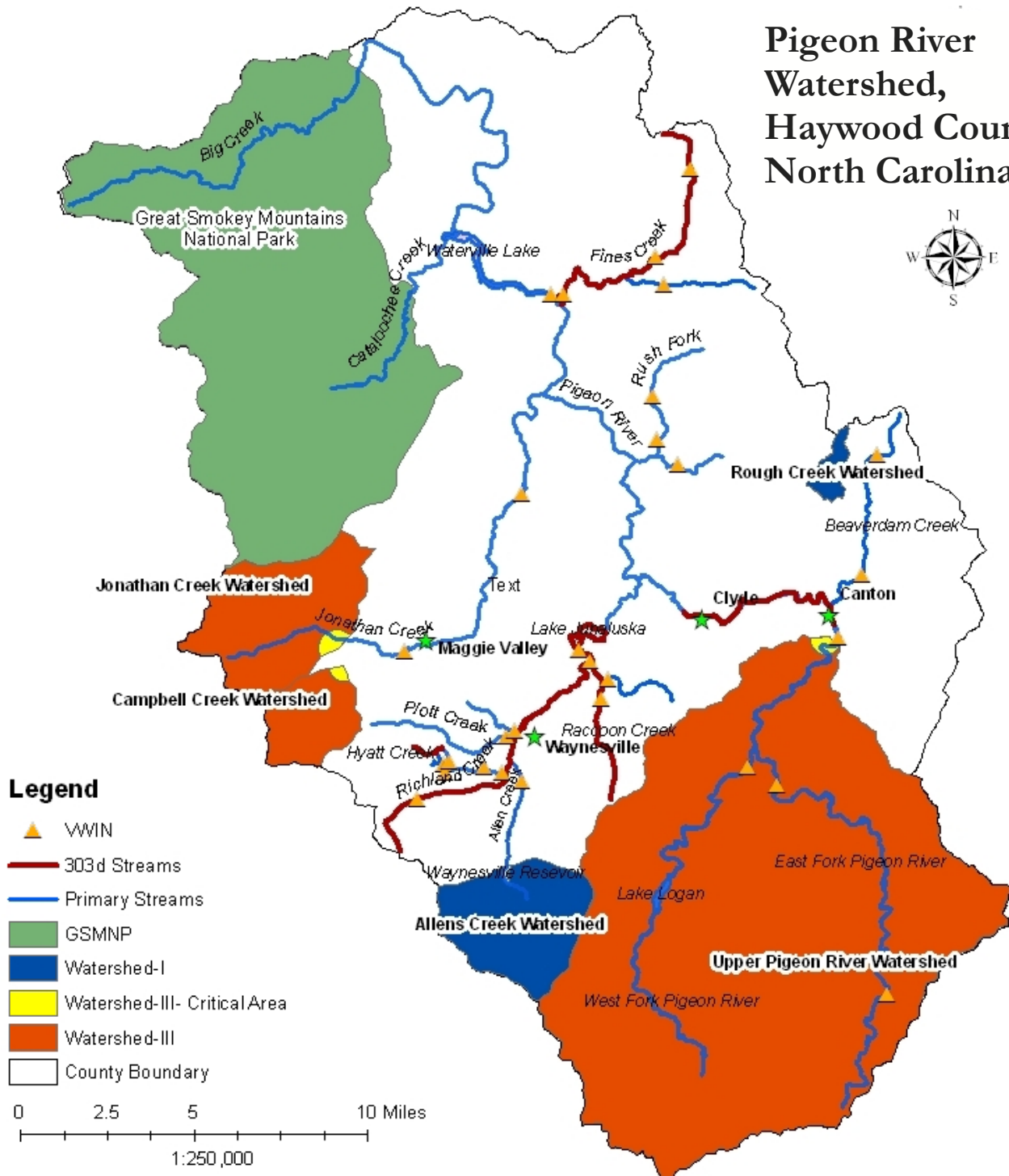
¹ Source: TVA Integrated Pollutant Source Identification pollutant loading model

² Difference partially attributed to interpretation of winter cover crop in 1999 IPSI.

³ Includes industry, road, wetland, open water, vineyard, nursery, aquaculture, land slide, mine, quarry, borrow pits, and other disturbed areas.

⁴ Discrepancy attributed to human error interpreting county boundaries on aerial photos.

Pigeon River Watershed, Haywood County, North Carolina



Growth and Development

According to the NC Department of Commerce, the population of Haywood County has increased 3,804 in the last 8 years, and 16,127 over the last 39 years. The projected population in 4 years will be 60,077, a 44% increase in 43 years.

It has been well-documented that as a population grows, the surrounding environment degrades unless proactive measures are taken to control pollution.

Watershed Facts

- Size of Pigeon River watershed:
 - 343,077 acres, 536 square miles
- Number of public acres:
 - 148,850 acres, 232 square miles - Great Smoky Mountains National Park, Blue Ridge Parkway, Pisgah National Forest, and water supply watersheds in conservation easements (Waynesville, Rough Creek)
- Miles of streams:
 - 1,681 (713 perennial, 935 intermittent, 33 ephemeral)
- Miles/Acres of trout waters:
 - 484 miles, 51 acres in reservoirs
- Miles/Acres of High Quality Waters:
 - 115 miles and 51 acres
- Miles of Outstanding Resource Waters:
 - 106 miles.
- Miles/Acres protected in Water Supply Watersheds:
 - 215 miles and 51 acres (Jonathan Creek, Campbell Creek, Allens Creek, Upper Pigeon River)

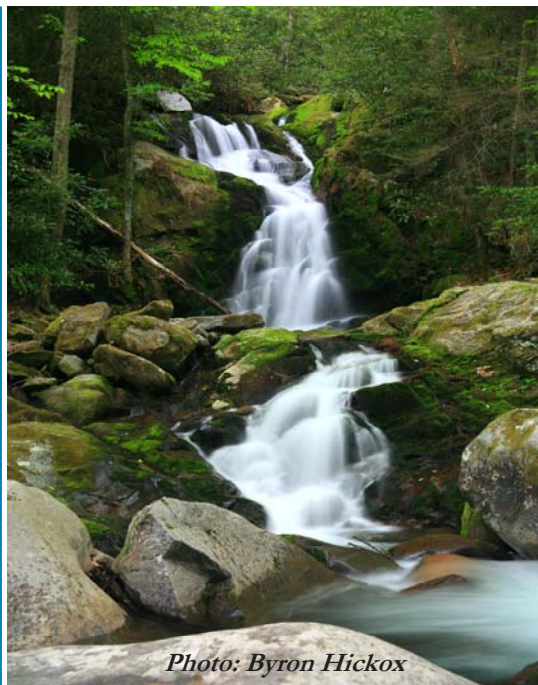


Photo: Byron Hickox

Drought

Recent Annual Rainfall* Droughts can and do occur. The recent drought conditions have been partially attributed to the absence of moisture from tropical storms. Due to significant rainfall this year, as of May 19, 2009, Haywood County is no longer listed as being in a drought by the NC Drought Management Advisory Council (www.ncdrought.org). Because of the potential for drought again this year, and every year, drought planning and water conservation should be a part of everyday lives.

2005 – 44 inches
2006 – 43 inches
2007 – 29 inches
2008 – 31 inches
Average – 48.7 inches

* Recorded at the State Climate Office of NC – Mountain Research Station, Waynesville, NC.

State of the Watershed

Additional copies are available from the Haywood Waterways Association, Inc.
P.O. Box 389, Waynesville, NC 28786, 828-452-9077; info@haywoodwaterways.org, www.haywoodwaterways.org
Haywood Waterways Association, Inc. is a 501(c)(3) tax-exempt, non-profit NC corporation.



It's Crystal Clear and Starts Right Here... Our Water Membership and Donation Form

If you believe clean water is important, please consider joining and making a donation.

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Home Phone: _____ Business Phone: _____

E-mail: _____

Membership (Circle one):

Benefactor \$1,000 Patron \$500 Donor \$200 Sponsor \$100 Supporter \$50 Contributor \$25

Donation: Reserve Fund: \$_____ Endowment Fund: \$_____ Kids in the Creek: \$_____

Write Check Payable to: Haywood Waterways Association, Inc.

Mail to: Haywood Waterways Association, PO Box 389 Waynesville, NC 28786